Southern Company

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September 21, 2020

Langdale and Riverview Hydroelectric Projects (FERC No. 2341-033 & 2350-025)
Draft Study Reports: Hydraulic and Hydrologic (H&H), Water Quality, Potential Effects of Dam Removal on Shoal Bass, Mussels, and Cultural Resources

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 the Draft Study Reports with the Federal Energy Regulatory Commission (FERC) for the surrender of the licenses for the Langdale and Riverview Projects. On July 24, 2019, Georgia Power filed the Final Study Plan, which included plans for Hydraulic and Hydrologic (H&H), Water Quality, Potential Effects of Dam Removal on Shoal Bass, Mussel, and Cultural Resources studies. All five studies outlined in the Final Study Plan have been completed and the results are being filed as Draft Study Reports with this filing; the Cultural Resources Study is filed as Privileged, while the remaining studies are filed as Public. Study Plan consultation documentation is included at the end of each Draft Study Report.

Georgia Power will host public meetings on October 5, 2020 to present information provided in the Draft Study Reports. Stakeholders may file comments with FERC on or before October 24, 2020 regarding the information presented at the public meeting and in the Draft Study Reports. Final Study Reports will be filed concurrently with the Decommissioning Plan in December 2020.

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

LANGDALE AND RIVERVIEW PROJECTS DECOMMISSIONING DRAFT HYDRAULIC & HYDROLOGIC MODELING REPORT

Prepared for:

Georgia Power Company
Atlanta, Georgia

Prepared by:

Kleinschmidt

Hoover, Alabama
www.KleinschmidtGroup.com

MAY 2020

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1.0 INTRODUCTION

Georgia Power Company (Georgia Power) is filing with the Federal Energy Regulatory Commission (FERC) this report in support of Georgia Power's applications for the license surrender and decommissioning of the Langdale Project (FERC No. 2341) and the Riverview Project (FERC No. 2350) (the Projects). Pursuant to Section 6.1 of the Federal Energy Regulatory Commission (FERC) regulations (18 CFR § 6.1), Georgia Power Company (Georgia Power) filed an application on December 18, 2018, to surrender the Langdale Project (FERC Project No. 2341) and the Riverview Project (FERC Project No. 2350) (collectively, the Projects) licenses[1]. The Projects are located within approximately 2 river miles of each other on the Chattahoochee River. The current licenses for the Projects expire December 31, 2023. The proposed decommissioning of the Projects will include partial or total removal of three dams; the Langdale Dam, Crow Hop Diversion Dam, and Riverview Dam (both the Crow Hop Diversion Dam and Riverview Dam are part of FERC Project No. 2350), and complete removal of the Riverview Powerhouse. The Langdale Powerhouse will remain in place.

This report summarizes the development of a hydraulic & hydrologic (H&H) model used to evaluate the hydraulics at the dams pre- and post-removal. The model simulates how dam removal would affect the areas wetted by the river, the depths of flow in the river and its various channels, and the velocities in the river at various flow conditions. The model results were also used to evaluate anticipated impacts to infrastructure along the river, including boat launches, wastewater treatment plant discharges, and drinking water intakes. Finally, the model was used to evaluate depths of water near private residences and public recreation areas and river usability.

Commonly used acronyms that may appear in this draft H&H report are included in Appendix A.

[1] Riverview (Accession Number 20181218-5452; Langdale Accession Number 20181218-545)

2.0 PROJECT DESCRIPTION

The Projects are located on the Chattahoochee River between the U.S. Army Corps of Engineers' (USACE) West Point Dam, which is located approximately 9.5 miles upstream of the Projects, and Lake Harding (the reservoir for Georgia Power's Bartletts Ferry Project) located downstream of the Projects. The dams and powerhouses lie fully within the state of Georgia. The river flow at the Projects is regulated by the discharges from the upstream USACE's West Point Dam, which contains a hydroelectric station that operates as a peaking facility and which provides flood control for the region. Figure 2–1 shows the Projects' location in relation to West Point Dam and Figure 2-2 shows the project components.

The Langdale Project consists of an arch-shaped stone masonry dam and a powerhouse located on the western side of the dam, that was constructed between 1904 and 1908. The dam is approximately 1,300 feet long and has a crest elevation that varies from elevation 550.4 feet on the eastern side to 549.9 feet on the western side. Historically, the dam was equipped with flashboards; however, none are currently in place. The powerhouse has two horizontal generating turbine units that have not operated since approximately 1954 and two vertical units that have not operated since 2009.

The Riverview Project consists of two dams, the Crow Hop Diversion (Crow Hop) and Riverview Dams, and a powerhouse on the south bank near the Riverview Dam. Crow Hop Dam, constructed in 1920, is the most upstream dam of the Project and spans the main river, diverting flow into a channel between an island and the western riverbank that flows to the Riverview Dam. Riverview Dam and powerhouse, constructed in 1906 and 1918, respectively, are located at the lower end of this approximately 1-mile long head-race channel. The Crow Hop Dam is an approximately 1,000-foot long stone masonry dam with a crest elevation of 534.0 feet, and the Riverview Dam is an approximately 300 feet long stone masonry dam with a crest elevation of 531.4 feet. In addition to the two dams, there are three rock weirs that also direct water towards the Riverview Dam and powerhouse. The rock weirs are mostly submerged but are visible in aerial imagery. These rock weirs are not identified in the current FERC license; however, they are features associated most likely with original construction of the Riverview Project.

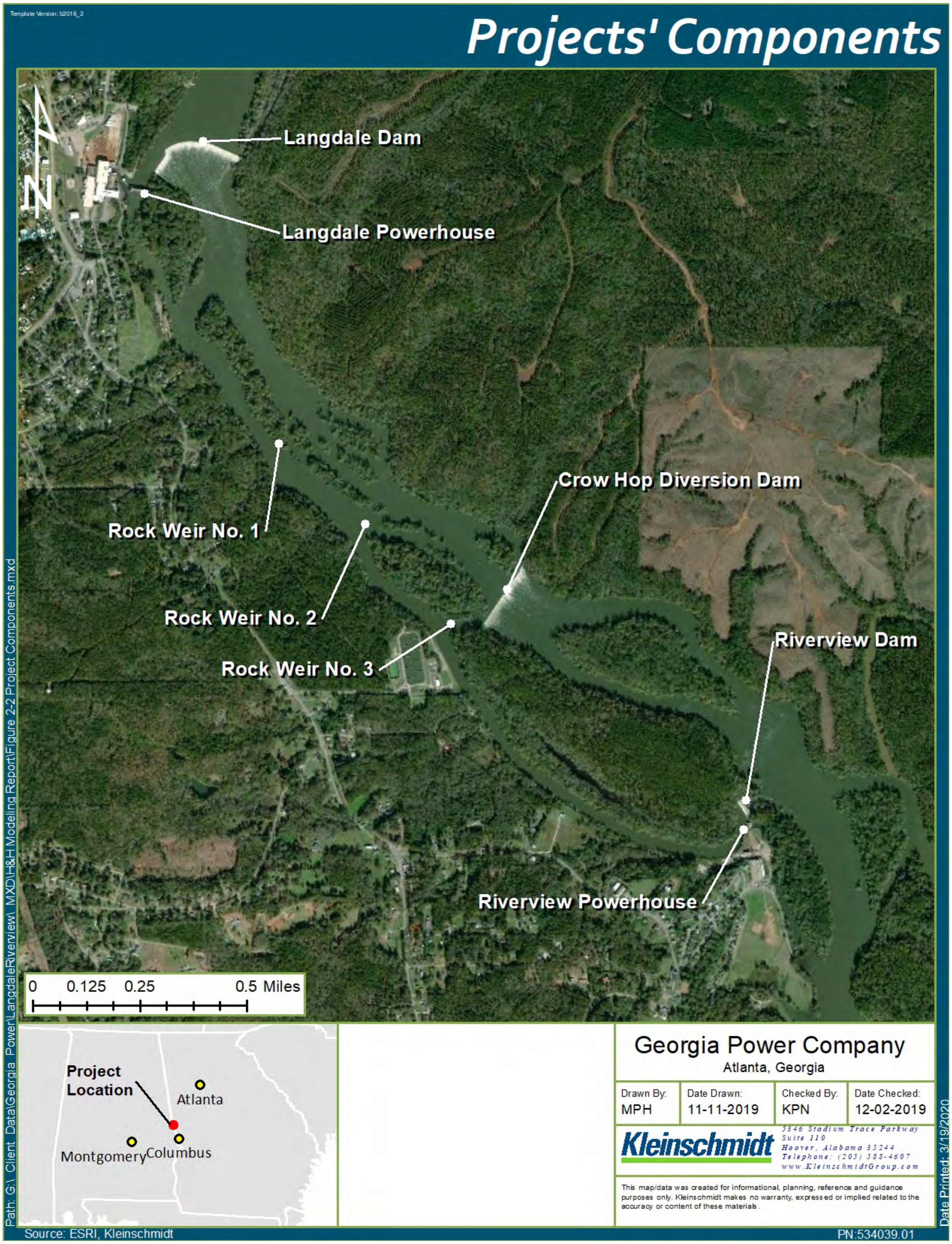

Figure 2–2 also shows the rock weirs numbered 1- 3, from upstream to downstream.

All elevations used in the hydraulic model and this report are referenced to the North American Vertical Datum of 1988 (NAVD88). References to river-left and river-right refer to directions when facing downstream.

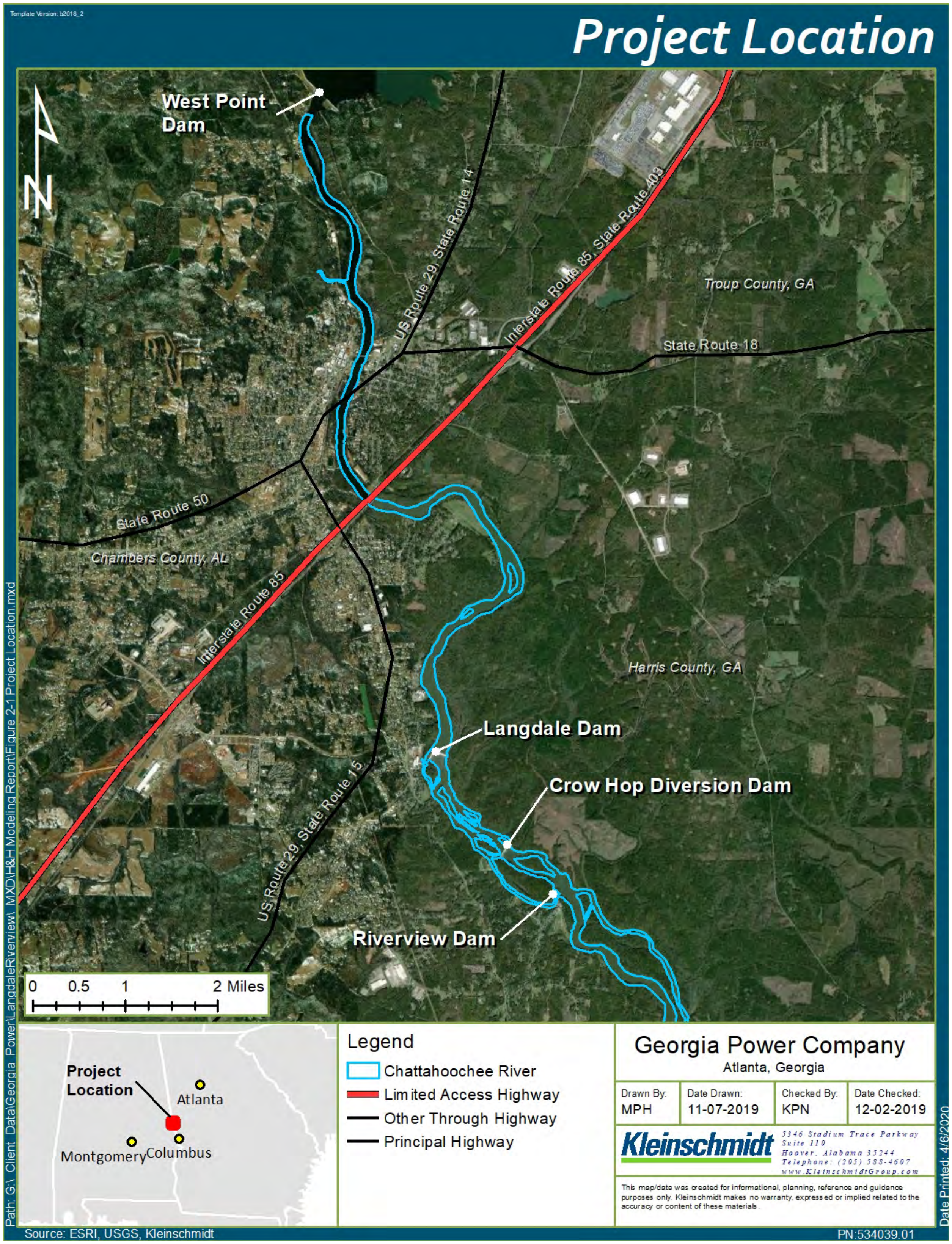

FIGURE 2–1 PROJECT LOCATION

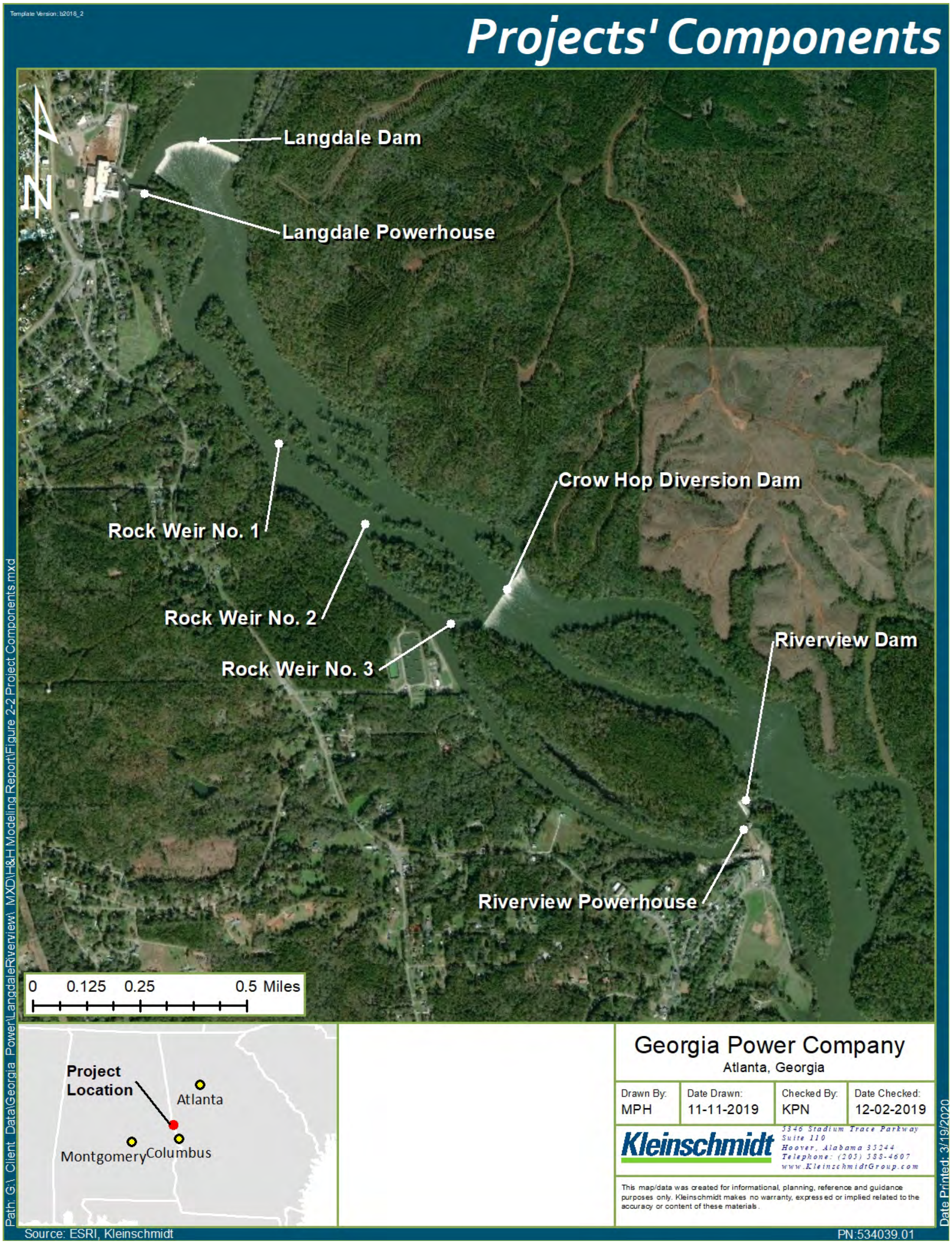

FIGURE 2–2 PROJECTS' COMPONENT STRUCTURES AND LOCATION OF ROCK WEIRS 1-3

3.0 PROPOSED DAM REMOVAL DESCRIPTION

Georgia Power is proposing to remove all three dams as part of the FERC license surrenders and decommissioning process. Additionally, Georgia Power will construct some new features at the project locations. Georgia Power's proposed activities will include the following:

- ☒ Removal of Langdale Dam from the western abutment on the island north of the powerhouse to approximately 300 feet from the eastern side. The remaining portion on the eastern side will be demolished down from the existing crest elevation of approximately 550.4 feet to approximately elevation 542 feet, excluding the 10-foot-long section abutting the shoreline, which will be preserved at original elevations for cultural resources protection and historical preservation to address input from the Georgia Department of Natural Resources, Historic Preservation Division (GAHPD). Leaving a portion of the dam beyond the shoreline abutment is necessary to help distribute water towards the western side of the channel and reduce water velocities on the eastern side. The provision to distribute water to reduce the water velocities on the eastern side is to address U.S. Fish and Wildlife Service's (USFWS) and Georgia Department of Natural Resource's (GADNR) request to lower velocities in this area to aid in fish movement.
- ☒ Preliminary hydraulic modeling indicated that removal of the Langdale Dam will cause the Langdale Powerhouse tailrace to become dry under West Point minimum flow (WP min flow) conditions (i.e., 670 cfs continuous minimum flow from the USACE's West Point Project). Georgia Power proposes to excavate a channel through the island that separates the main river channel from the powerhouse tailrace, which will supply flow to the powerhouse tailrace. This island is owned by Georgia Power. The provision of flow through the island is to address the City of Valley, Alabama's request for flow in this tailrace channel.
- ☒ The Langdale Powerhouse will remain in place for historical preservation, to address GAHPD comments, and will have the gates, draft tubes, and immediate tailrace area blocked from water conveyance.
- ☒ The Crow Hop and Riverview Dams will be removed entirely with the exception of the approximately 10-foot long abutment sections on each end of the dams, which will be preserved at the original elevations for cultural resources protection and historical preservation to address GAHPD comments.
- ☒ The Riverview Powerhouse will be demolished, and, in its place, the riverbank will be extended across the powerhouse's current location as a constructed berm to constrain flow to the Riverview channel.
- ☒ Near the upstream end of the Riverview channel a rock ramp will be constructed in the connector channel downstream of Rock Weir No. 3 to maintain the integrity of the weir that provides flow to the Riverview channel and wastewater flow dilution for East Alabama Water and Sewer's wastewater plant. Currently, the proposed design would create a sloping riffle (slope anticipated to be approximately 6 percent) constructed from material obtained

from the demolition of the Crow Hop Dam. Additional large stone, if needed, may be sourced locally from below Crow Hop Dam for the surface of the rock ramp.

These are the current proposed project decommissioning activities. The final design may differ from what is described herein based on continuing consultation with the U.S. Fish and Wildlife Service (USFWS), as well as other state and federal agencies, non-governmental organizations, and the public.

4.0 HYDRAULIC MODELING

Hydraulic analysis was performed using the 2-dimensional (2D) capabilities of the USACE's modeling software package HEC-RAS[2] v5.0.7. All model geometries were developed within HEC-RAS, and the results of all simulations were analyzed using the RAS Mapper viewer. Initial processing of terrain and land use data used in the analyses was performed within ESRI's ArcMap geographical information system (GIS) software. Model geometries were developed to examine both the existing conditions and the anticipated post-dam removal conditions. A 2D mesh composed of various size and shape cells covering the entire study area (Figure 4-1) was developed for existing and proposed conditions. The H&H model study area included the Chattahoochee River from immediately downstream from the West Point Dam to approximately 6 miles downstream from the Riverview Dam in Lake Harding. The model also extended laterally from the river approximately 0.3 miles on either side. During model simulations the software completes hydraulic calculations to determine the flow into and out of each cell in the mesh, as well as various hydraulic information such as depth of flow and velocity. Various flow conditions were simulated to understand what areas would be inundated, the depth of flow, and the velocity of flow in the river under existing and post-dam removal conditions.

4.1 DATA SOURCES

4.1.1 TERRAIN DATA

The model geometry was developed from a number of different data sources because no single dataset covered the entire model domain. The following sources were used for the overland topography in the model.

- ☒ 1/3 arc-second (10-meter) digital elevation model (DEM) from the U.S. Geological Survey (USGS) National Elevation Dataset;
- ☒ 1-meter DEM developed from 2010 USGS LiDAR (Light Detection and Point Ranging) point cloud data for Harris County, Georgia; and
- ☒ 1-meter DEM from 2015 USACE NCMP Topobathy LiDAR: West Point Lake, Georgia.

[2] Hydrologic Engineering Center – River Analysis System

Generally, the 2015 USACE LiDAR covered the overland areas between West Point Dam and Crow Hop Dam, and the 1-meter DEM developed from the 2010 USGS data covered Crow Hop Dam to downstream of the Riverview Project. Both LiDAR DEMs had small "holes" in various locations where elevation data was missing; thus, the 10-meter USGS DEM was only used for areas that were not covered by the higher resolution LiDAR data.

Topographic LiDAR is not able to capture elevation data beneath the surface of streams, rivers, and other bodies of water. Georgia Power contracted with Lowe Engineers (Lowe) to collect bathymetric elevation data along the Chattahoochee River. In 2013, Lowe collected bathymetric transect data across the river periodically for approximately 6 miles downstream of the Riverview Project to allow for the model to be extended downstream of the Projects into Lake Harding. In 2018, Lowe completed surveys that confirmed the elevations along the spillway crests of all three dams. Lowe completed two major bathymetric survey efforts of the river in 2019. The first survey, completed in May 2019, collected detailed data spanning the entire channel width (elevation measurements spaced roughly 30 feet on center) beginning a short distance upstream of the Langdale Project to downstream of the Riverview Project. During the second major survey effort completed in August 2019, Lowe collected detailed data spanning the entire channel width (elevation measurements spaced approximately 10 feet on center) beginning downstream of the West Point Dam to upstream of the Langdale Project where the May 2019 survey ended. AutoCAD Civil3D was used to convert the point data collected by Lowe into rasterized digital elevation model surfaces that could be used in the model; there are over 214,000 individual bathymetry data points utilized to create the digital elevation model surfaces for these Project. Figure 4-1 shows the extents of the different datasets used to develop the geometry. Both the existing conditions and post-dam removal geometries were based on the same terrain data, with the dam structures removed in the post-dam removal condition, as detailed in Section 4.1.3.

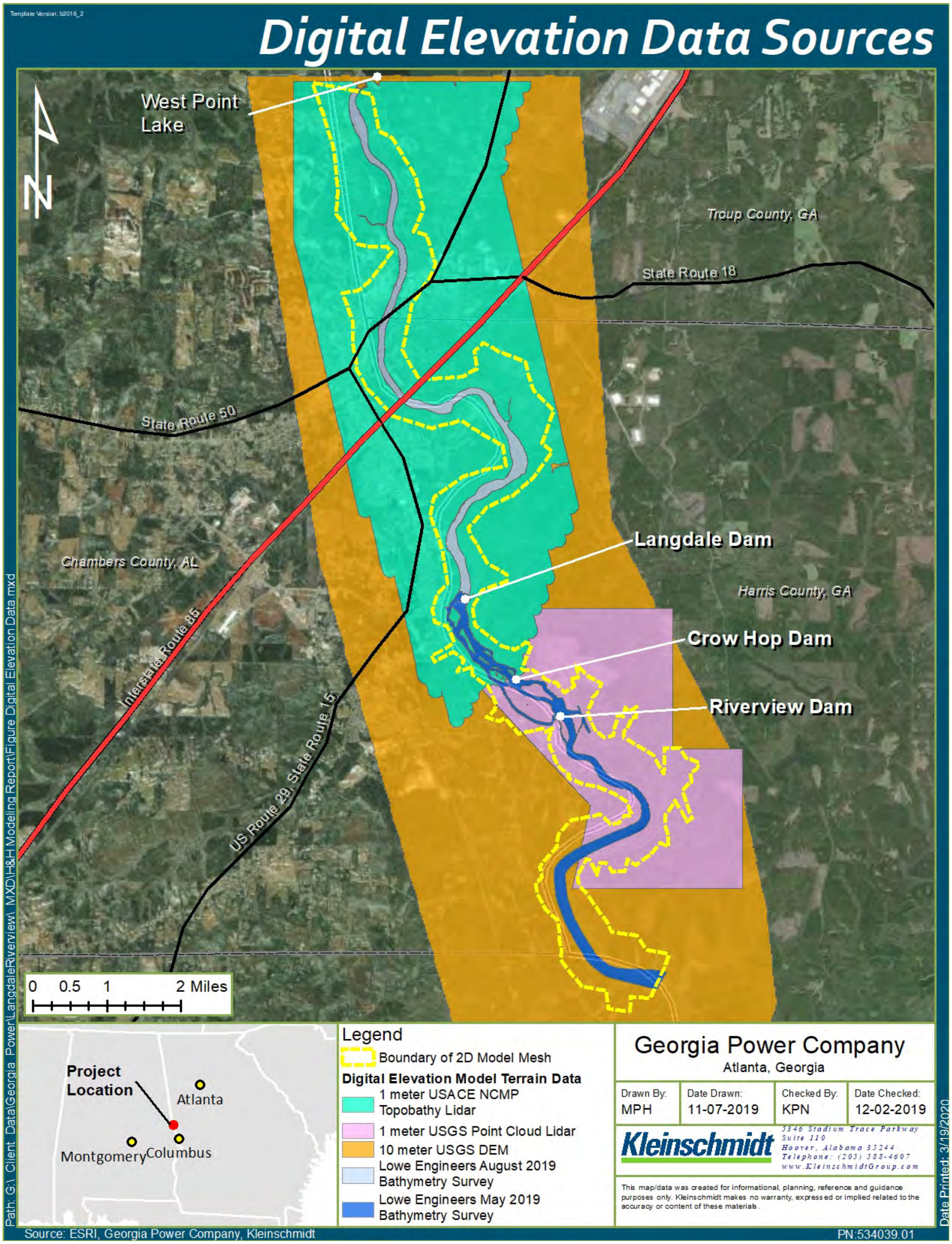

FIGURE 4–1 MODEL TERRAIN DATA EXTENTS

4.1.2 MANNING'S ROUGHNESS

Manning's roughness coefficients were selected using recommended values in *Open-Channel Hydraulics* (Chow, 1959) for the various land cover types present in the model domain. A land cover shapefile was developed in ArcMap by examining aerial imagery, assigning a land cover type to each area, and then assigning a Manning's value based on the type (Figure 4-2). The land cover shapefile was imported into HEC-RAS, which assigned Manning's roughness values to each cell in the 2D mesh based on the underlying land cover.

Table 4–1 provides the roughness coefficient associated with each land cover type. Both the existing conditions and post-dam removal geometries utilized the same land cover type and Manning's roughness data.

TABLE 4–1 LAND COVER TYPES AND MANNING'S ROUGHNESS

LAND COVER TYPE	MANNING'S ROUGHNESS
Conifer Forest	0.11
Mixed Forest	0.10
Developed, Low Intensity	0.08
Developed, Medium Intensity	0.10
Developed, High Intensity	0.11
Developed, Open Space	0.04
Road/Impervious	0.011
Large Building	10.0
Riprap	0.045
River	0.045
Stream	0.035

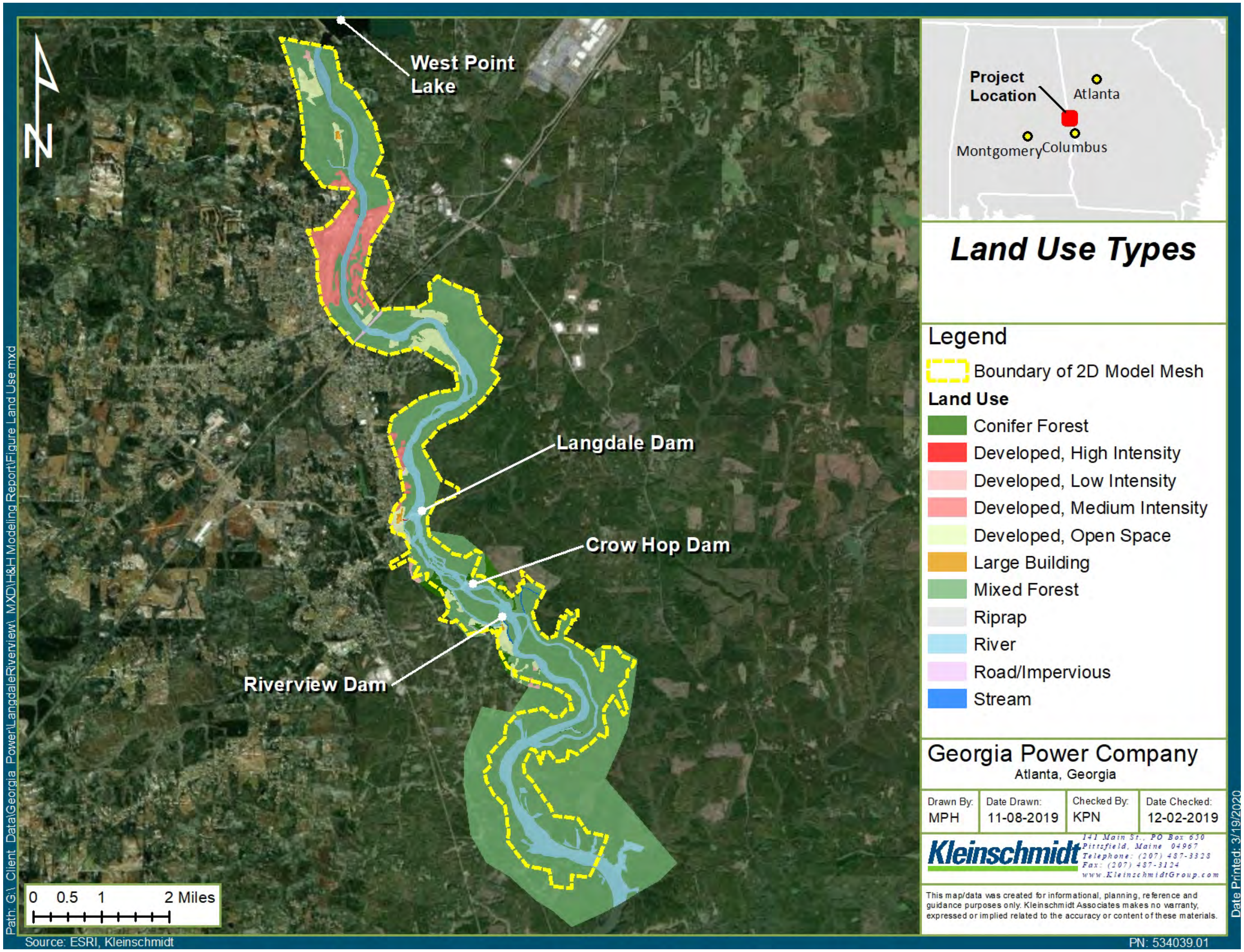

FIGURE 4–2 LAND COVER TYPES

4.1.3 HYDRAULIC STRUCTURE DATA

4.1.3.1 EXISTING CONDITIONS

The existing conditions geometry included structure data for the Langdale Dam, Langdale Powerhouse, Crow Hop Dam, Riverview Dam, and Riverview Powerhouse. These structures were represented in the model as 1-dimensional (1D) elements with station and elevation data, allowing them to be overtopped should the water surface be sufficiently high enough at each structure. Elevation and station length data were obtained from existing drawings for each Project. Lowe confirmed the dam crest elevations of the three dams using elevation points collected along the crests during 2018 surveys. Lowe also surveyed the three existing rock weirs upstream of Crow Hop Dam during the bathymetric survey of the river which was part of the terrain data used in the modeling.

4.1.3.2 POST-REMOVAL CONDITIONS

The proposed decommissioning activities are described in Section 3.0. The 1D elements representing the various structures in the model were modified to match the proposed dam removal modifications. Generally, the dam structures were shortened to allow water to pass through the breach locations, and the Riverview Powerhouse was replaced with a berm to constrain flow to the Riverview channel as described previously. The rock ramp, which would be constructed below the most downstream rock weir, was represented in the model using 1D elements having 12-foot long flat sections at the center of the channel and sloping up at 5 percent grades on each side. The invert elevation of the flat center portion of the upstream end of the rock ramp was set to be at the elevation of the upstream rock weir to maintain flow in the Riverview channel. The rock ramp will slope downstream at approximately 6 percent slope to the historic stream bed near the west abutment of Crow Hop Dam.

4.2 MODEL DOMAIN AND COMPUTATIONAL MESH

A single 2D computational mesh was used for the existing conditions and post-dam removal simulations. The model domain extended along the Chattahoochee River from directly downstream of the West Point Dam to approximately 5.6 river miles downstream of the Riverview Dam. To accommodate flood flow simulations, the mesh was extended away from the river into both overbanks up to approximately 0.6 miles from the river's centerline on either side. The model mesh was extended to the West Point Dam to assess any possible effects of the

Projects' dam removals on infrastructure not owned by Georgia Power located along the river. The 2D mesh was composed of cells generally 100 feet by 100 feet in the overbank areas of the model. The sizes of the cells in the river varied from 100 feet by 100 feet down to 10 feet by 10 feet, depending on their location in the river. The total number of cells in the 2D mesh was 64,355. Figure 4–3 shows a portion of the 2D model mesh near the Projects.

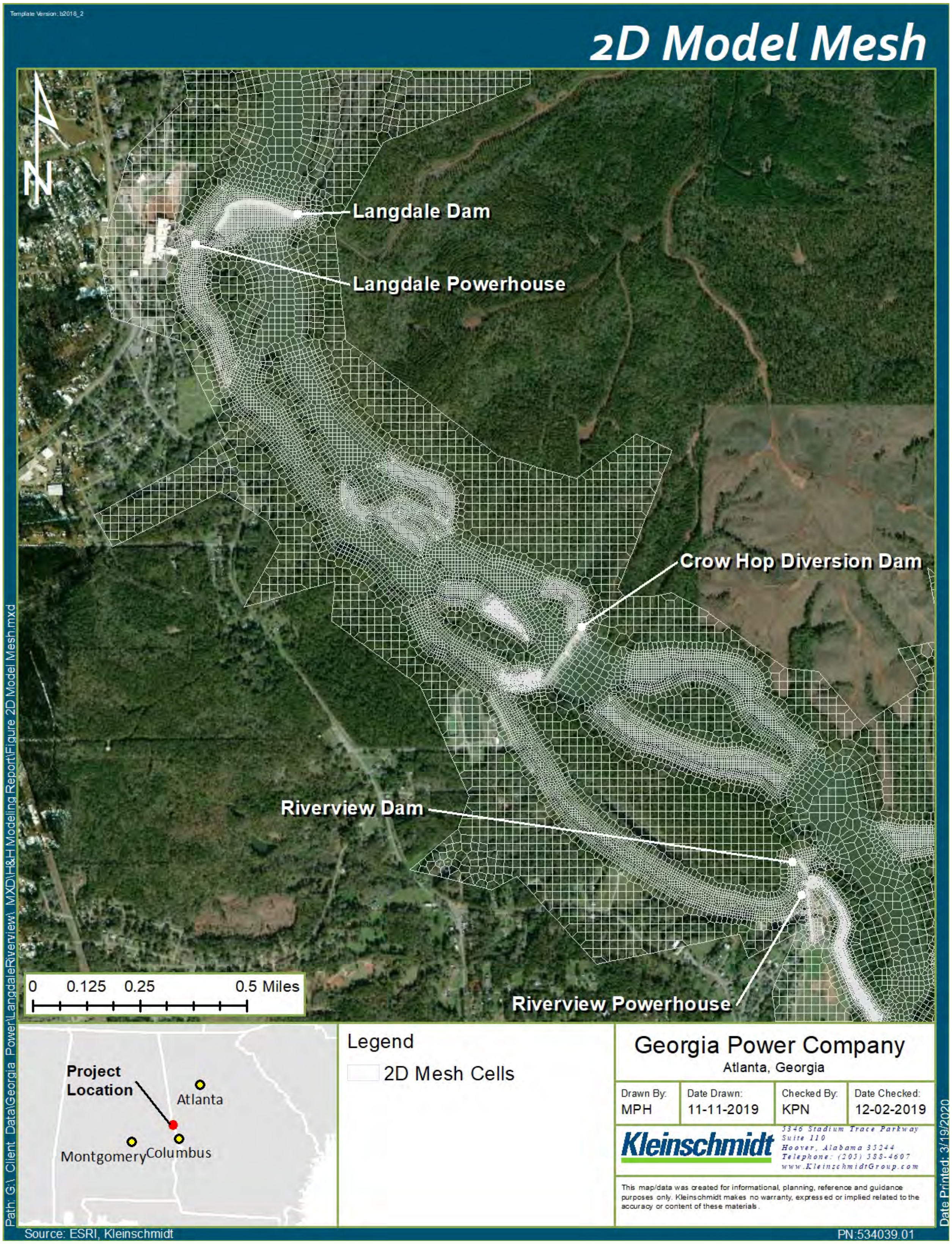

FIGURE 4–3 2D MODEL MESH

4.3 BOUNDARY CONDITIONS

All existing conditions and post-dam removal simulations used an inflow hydrograph at the upstream boundary of the mesh located near the West Point Dam. The flow entering the upstream boundary varied based on the hydrologic condition being assessed (see Section 5.0). Similarly, all simulations utilized a constant stage hydrograph of 519.10 feet3 for the downstream model boundary located at the upper (upstream) end of Lake Harding.

4.4 MODEL COMPUTATIONAL SPECIFICATIONS

The HEC-RAS software provides two different sets of solution techniques to complete hydraulic computations. For these Projects, all simulations used the Full Saint Venant equation set. The USACE guidance documentation recommends this equation set because the river contains various expansions and contractions. The computational timestep varied from 2 to 10 seconds to maintain numerical stability and model accuracy. The timesteps were selected to have Courant values, which are a function of cell size and flow velocity, generally less than 1.0 throughout the model domain when possible, as recommended in the HEC-RAS 2D Modeling User's Manual (USACE 2016). For all flow scenarios except for the 100-year flood, the model upstream boundary conditions were constant inflow hydrographs and the model duration was set to allow the model to reach a steady state condition throughout. The 100-year flood model scenarios used an actual hydrograph as measured by flow at a USGS gage station as discussed in Section 5.2. The flows simulated using the model are discussed in more detail in Section 5.0.

4.5 MODEL CALIBRATION

No historic water level data at Langdale or Riverview powerhouses was available for model calibration. As a result, Georgia Power contracted with the USGS to collect flow measurements at various locations in the river to compare with the hydraulic model. The USGS collected flow data at nine locations between the Projects (Figure 4–4).

[3] Melissa Crabbe, P.E. (Georgia Power) provided the Bartlett's Ferry project elevation via email to Mike Hross, P.E. (Kleinschmidt) May 31, 2019.

Table 4–2 provides flow measurements from the USGS field survey and results from the hydraulic model for the West Point minimum flow (WP min flow) condition for comparison. During the data collection, the flow in the river was measured to be 859 cfs, which is approximately 28 percent greater than the modeled WP min flow[4]. The USGS report summarizing their flow measurements is included in Appendix B.

[4] Georgia Power and USGS attempted to coordinate a flow measurement at the 670 cfs WP min flow, but the USACE was unable to provide flows from the turbine units at West Point as they were sluicing through a gate.

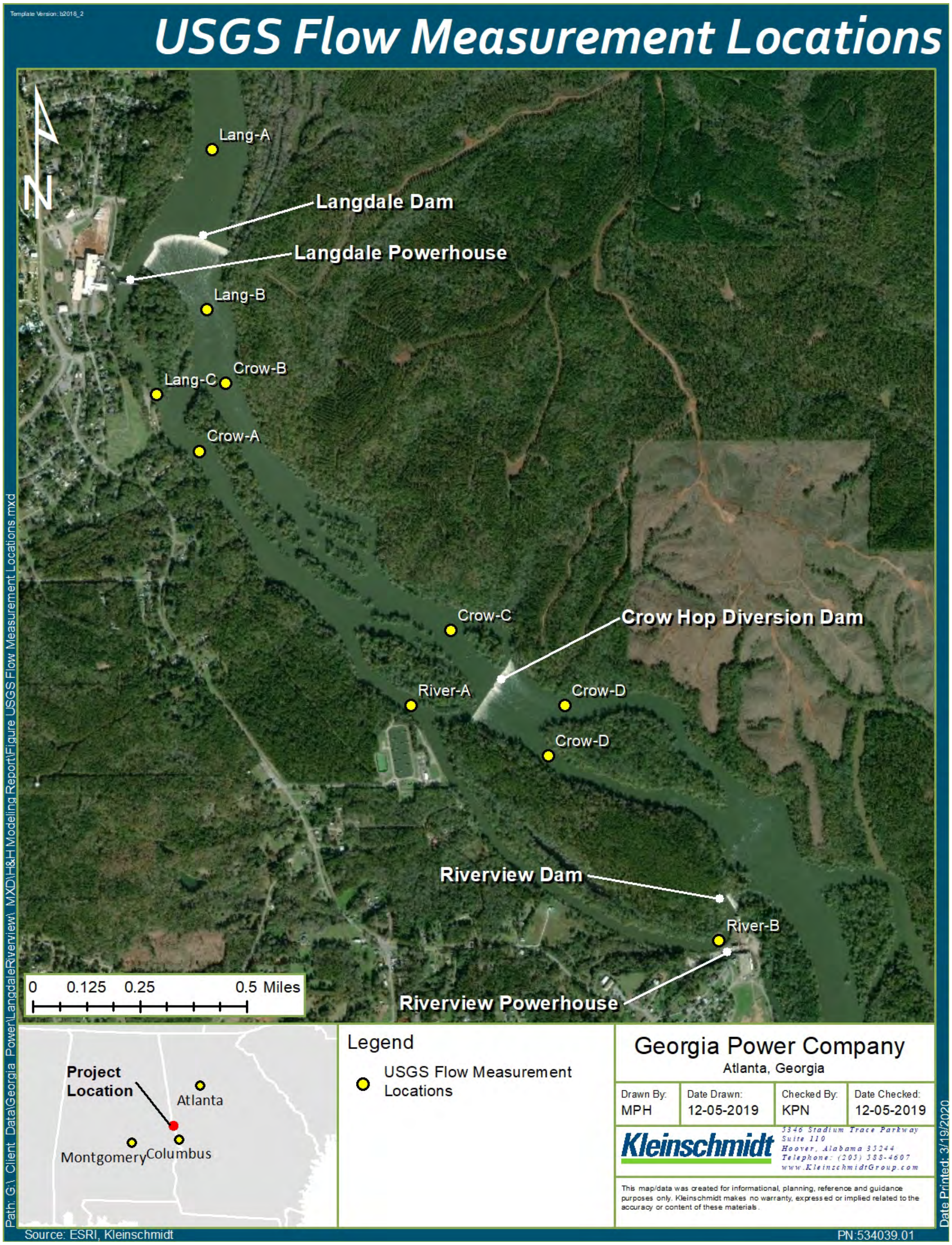

FIGURE 4–4 LOCATIONS OF USGS FLOW MEASUREMENTS

TABLE 4–2 USGS FLOW MEASUREMENTS VERSUS MODEL RESULTS

LOCATION	USGS MEASURED PERCENT OF RIVER FLOW (AT 859 CFS)	MODEL PREDICTED PERCENT OF RIVER FLOW (AT 670 CFS)	DIFFERENCE
Lang-A[5]	100%	100%	0.0%
Lang-B[5]	98%	89%	-9%
Lang-C[3]	2% (+/- 0.2%)	11%	8.8 – 9.2%
Crow-A[3]	96% (+/- 9.6%)	83%	-17 – (-3.4)%
Crow-B[3]	4% (+/- 0.4%)	17%	12.6 – 13.4%
Crow-C[4]	28% (+/- 2.8%)	37%	6.2 – 11.8%
Crow-D[4]	21% (+/-2.1%)	14%	-4.9 – (-9.1)%
River-A[2]	72%	63%	-9%
River-B[1]	79%	86%	-7%

[1]: Good Quality Measurement
[2]: Fair Quality Measurement
[3]: Poor Quality Measurement
[4]: Extremely Poor Quality Measurement
5: Quality not described

The results of the USGS field data collection indicate that the model distribution of flow among the different channels of the Chattahoochee River generally replicates the field conditions. All model results were within 15 percent of the measured data collected by the USGS when comparing the percentages of river flow directly. However, the USGS noted that results that were rated “Poor” are within 10 percent of the actual flow. The USGS measurements that were “Fair” or “Good” were within nine percent of the model results. Therefore, the model is well suited for assessing the post-decommissioning hydraulics in the river.

5.0 HYDROLOGY AND DESIGN FLOWS

5.1 NORMAL FLOW CONDITIONS

The flows in the Chattahoochee River at the Projects is heavily regulated by the discharges from the USACE West Point Dam. The drainage area of the Chattahoochee River at the West Point Dam is approximately 3,443 square miles and approximately 3,680 square miles at the Langdale Dam. Due to the similarity in drainage area of the Projects to the West Point Dam, we assumed that the flow in the hydraulic model was equal to typical discharges from West Point without any intervening inflow from the watershed below West Point. The West Point Dam typically peaks Monday through Friday with only minimum flow (670 cfs, through their minimum flow unit) being released Saturday and Sunday. When peak generating, the USACE uses either 1 or 2 units in addition to the minimum flow unit. The USACE generates during peak demand periods as scheduled by the Southeastern Power Administration (SEPA). During the winter, West Point releases generally consist of morning and afternoon peaks of 2-3 hours each. During the summer, releases from West Point generally consist of an afternoon peak of 3-4 hours. West Point Dam discharges 8,275 cfs and 15,875 cfs (including the minimum flow discharge) for generation with 1 and 2 generating units, respectively. For model simulations, the minimum flow was referred to as the “WP min flow”, an addition of 1 generating unit at West Point as “WP min flow +1 gen unit”, and the addition of 2 generating units at West Point “WP min flow +2 gen units” (Table 5–1). The model assumed no other inflows to the Chattahoochee River under any scenario analyzed using the hydraulic model.

TABLE 5–1 WEST POINT DAM TYPICAL DISCHARGES

UNIT OPERATION	FLOW (CFS)
WP min flow	670
WP min flow +1 Gen Unit	8,275
WP min flow +2 Gen Units	15,875

For the simulation of each unit operation scenario, a constant inflow hydrograph was set as the upstream boundary condition and the model was run until it achieved steady state at all locations within the model domain for that specific flow. All three inflows were simulated for existing conditions and post-dam removal conditions.

The USACE's Apalachicola-Chattahoochee-Flint River Basin Water Control Manual was approved on May 4, 2015. This manual mandates that USACE release 670 cfs at all times from West Point Dam. This flow is defined as the minimum flow in this document, and this flow does occur in drought periods for extended periods of time. During periods of normal rainfall, the instantaneous releases from West Point Dam are increased due to flow from Long Cane Creek and local runoff from surrounding areas. An analysis of combined historical instantaneous flows from West Point Dam releases (as measured from USGS gage 02339500 Chattahoochee River at West Point, GA, at 15-minute intervals) and estimated instantaneous flows on Long Cane Creek was performed to determine percentiles of instantaneous flows in the river during months which historically have lower flows than other times of the year. The instantaneous flows on Long Cane Creek were estimated using prorated flows from Upatoi Creek, which is a nearby gaged tributary (USGS gage 02341800 Upatoi Creek near Columbus, GA). Using the years 2016 – 2019, which are after the implementation of the mandated 670 cfs release from West Point Dam, the flows in the river are above an average flow 835 cfs for at least 90% of the time in July, 820 cfs for at least 90% of the time in August, 765 cfs for at least 90% of the time in September, and 775 cfs for at least 90% of the time in October. Tables 5-2 through 5-6 show the annual releases as well as releases during the dryer months of the year. Dam removal model simulations using a flow equal to 800 cfs in the Chattahoochee River were evaluated, however, the results did not differ significantly from the model results using 670 cfs in the river. Thus, the 670 cfs was used and the results of those simulations are presented in this report.

TABLE 5–2 ANNUAL INSTANTANEOUS RELEASES FROM WEST POINT DAM + LONG CANE CREEK

PERIOD	90% EXCEEDANCE DISCHARGE	95% EXCEEDANCE DISCHARGE	100% EXCEEDANCE DISCHARGE
2016	775	765	757
2017	795	768	670
2018	856	783	705
2019	851	811	762
Average	819.25	781.75	723.5

TABLE 5–3 JULY INSTANTANEOUS RELEASES FROM WEST POINT DAM + LONG CANE CREEK

PERIOD	90% EXCEEDANCE DISCHARGE	95% EXCEEDANCE DISCHARGE	100% EXCEEDANCE DISCHARGE
2016	862	798	774
2017	715	706	687

2018	826	812	710
2019	940	916	904
Average	835.75	808	768.75

TABLE 5–4 AUGUST INSTANTANEOUS RELEASES FROM WEST POINT DAM + LONG CANE CREEK

PERIOD	90% EXCEEDANCE DISCHARGE	95% EXCEEDANCE DISCHARGE	100% EXCEEDANCE DISCHARGE
2016	788	775	767
2017	730	713	670
2018	930	865	773
2019	833	824	815
Average	820.25	794.25	756.25

TABLE 5–5 SEPTEMBER INSTANTANEOUS RELEASES FROM WEST POINT DAM + LONG CANE CREEK

PERIOD	90% EXCEEDANCE DISCHARGE	95% EXCEEDANCE DISCHARGE	100% EXCEEDANCE DISCHARGE
2016	763	762	758
2017	797	792	759
2018	729	727	718
2019	770	770	761
Average	764.75	762.75	749

TABLE 5–6 OCTOBER INSTANTANEOUS RELEASES FROM WEST POINT DAM + LONG CANE CREEK

PERIOD	90% EXCEEDANCE DISCHARGE	95% EXCEEDANCE DISCHARGE	100% EXCEEDANCE DISCHARGE
2016	758	758	749
2017	795	793	783
2018	722	713	705
2019	824	815	801
Average	774.75	769.75	759.5

Note: ACF Water Control Manual Approval - May 4, 2015

5.2 100-YEAR FLOOD CONDITIONS

The Federal Emergency Management Agency (FEMA) Flood Insurance Study for Chambers County, Alabama, (effective February 18, 2011) lists a peak 100-year flood flow of 79,000 cfs at USGS gage 02339500 (Chattahoochee River at West Point, Georgia), which is located approximately 7 miles upstream of the Langdale Dam. In May 2003, a flood occurred in the river and the peak flow reached 75,100 cfs; this is also the largest flood measured at the same USGS gage that has occurred since West Point Dam was constructed and began operating for flood control. Because the May 2003 event had a similar peak flow as the reported FEMA peak 100-year flood, the hydrograph from this flood was obtained from the USGS gage and was routed through the hydraulic model to approximate 100-year flood conditions for pre- and post-dam removal. Figure 5–1 shows the flood hydrograph used in the model.

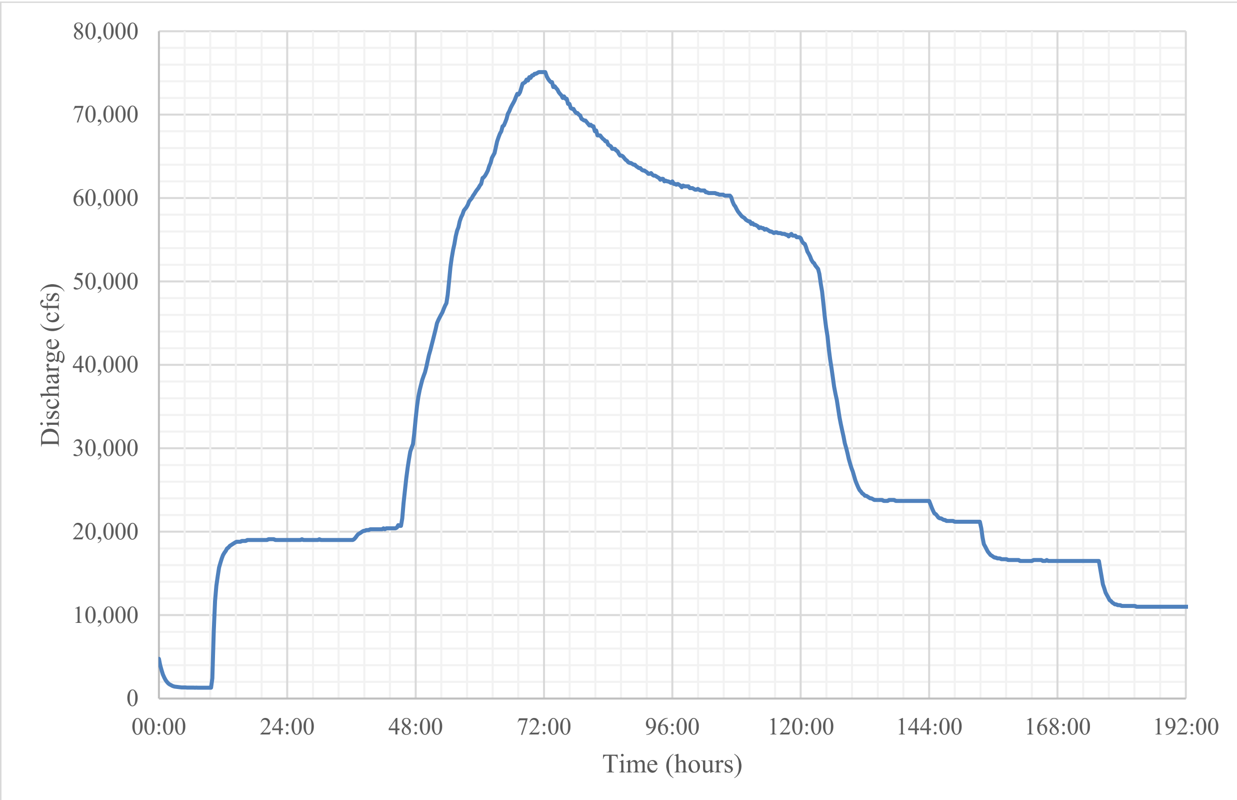

FIGURE 5–1 100-YEAR FLOOD HYDROGRAPH

5.3 LOW FLOW CONDITIONS

During drought periods the USACE's West Point Dam may release the WP min flow of 670 cfs for extended periods of time to preserve storage at the West Point Dam and its upstream Buford Dam, which is located above Atlanta. Georgia Power analyzed low flows pre- and post-West Point Dam construction using daily flow data from USGS gage 02339500 (Chattahoochee River at West Point, GA). For the period 1950 to 1973 (pre-West Point construction and fill period), the percent of days that the daily average flows were less than 1,000 cfs was 2.4 percent. After the filling of West Point Lake (for the period of 1976 – 2019), the average daily flows were less than 1,000 cfs for 14 percent of the time. For the period 2010 through 2019, the percent of days that the daily average flows were less than 1,000 cfs was 11.5 percent. Since the construction of

West Point Dam, the daily average flows at Langdale Dam and Riverview Dam have been less than prior to the construction of West Point Dam.

6.0 IMPOUNDMENT SEDIMENT DATA

6.1 SITE SPECIFIC SEDIMENT CHARACTERIZATION

Georgia Power evaluated the quantity and characteristics of the sediments stored upstream of the Projects' dams to understand how the hydraulics of the river may naturally evacuate the sediment down to the historic riverbed after dam removal. Georgia Power hired GEC Geotechnical & Environmental Consultants (GEC) to collect sediment borings upstream of all three dams. GEC drilled eleven Vibracore borings in August 2019; five upstream of the Langdale Dam, three upstream of Crow Hop Dam, and three upstream of Riverview Dam (Figure 6-1**Error! Reference source not found.**). The borings provided grain size distributions (generally silty sand with traces of fine gravel) and depth to refusal; detailed data from the borings are provided in Appendix C. Generally, the sediment upstream of Langdale Dam varies from 2.3 feet to 8 feet in depth and is deeper on the western side of the river, which is on the inside of the river bend and where sediment is more likely to accumulate. Based on these borings, there were two above the Langdale Dam that showed evidence of a sandy silt residuum (~0.5-1' thick) under a sandy alluvium that may be indicative of sediments that existed on the former shoreline or stream bed prior to the construction of the dam. Upstream of Crow Hop Dam the sediment varies from 3 feet to 6 feet in depth and is shallowest in the middle of the river and deepest below the most downstream rock weir. The sediment in the Riverview channel varies from 8 feet to 9 feet in depth and is deepest closest to the Riverview Dam.

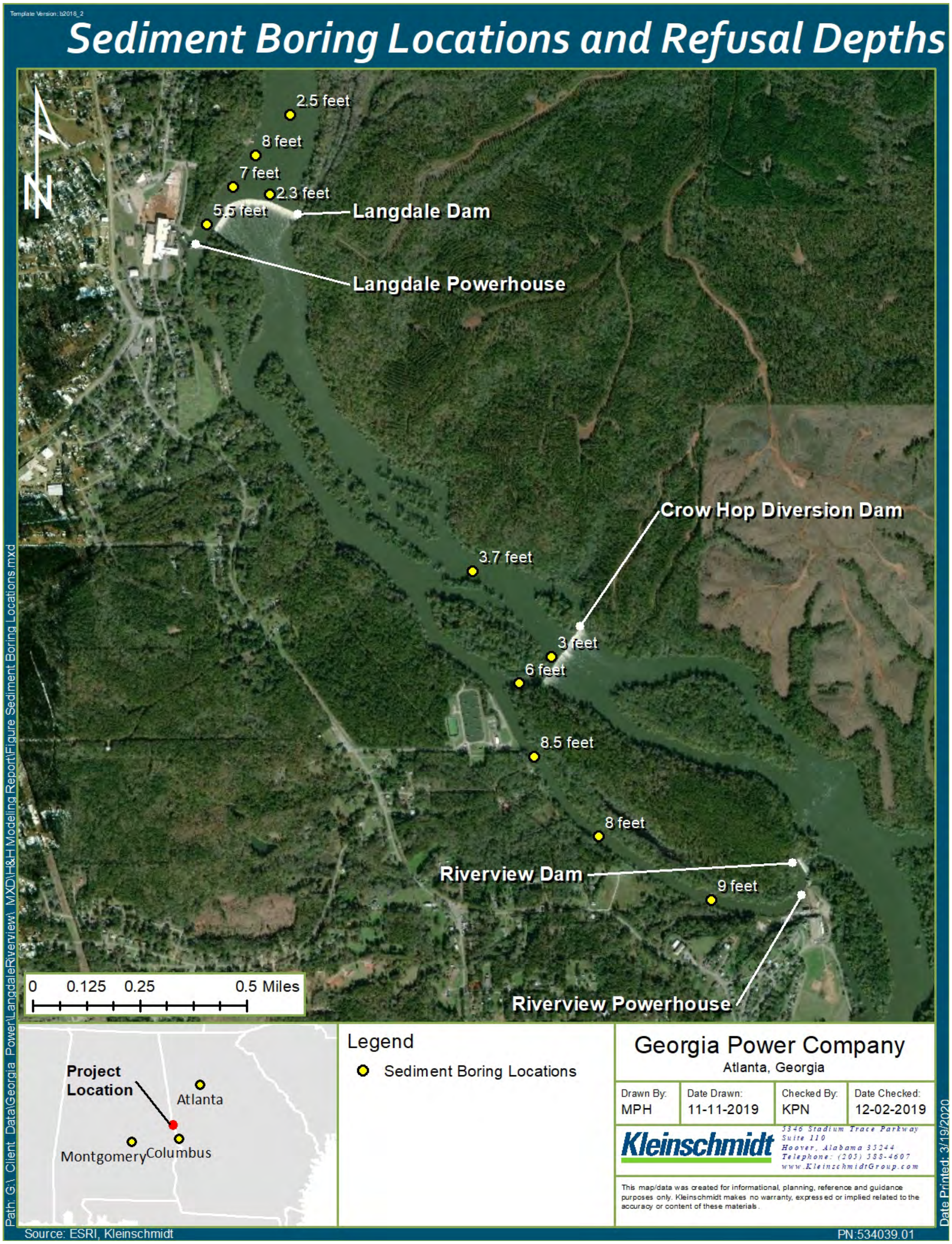

FIGURE 6–1 SEDIMENT BORING LOCATIONS AND DEPTHS OF SEDIMENT TO REFUSAL

6.2 SEDIMENT IN THE BASIN

Sediments and sedimentation within the Chattahoochee River basin have been assessed at both a basin-wide and individual reservoir level over the past few decades. Auburn University's study of sediment and nutrient storage within reservoirs of the Chattahoochee basin included the reach occupied by the Projects (Waters and Webster 2019). In that study, Auburn University collected sediment cores and surface sediment samples at West Point Lake (the next upstream reservoir above the Projects) and Lake Harding (Bartletts Ferry Dam), the next downstream reservoir below the Projects). Analysis of sediments at West Point and Lake Harding reservoirs show that both reservoirs serve as primary sediment and nutrient traps for the basin. Core analysis within the basin showed that Lake Harding served as the primary sink within the basin from its construction in 1925 until West Point was constructed in 1975. Concentrations of phosphorous, carbon, nitrogen, and organic matter generally remained stable in Lake Harding prior to 1960, showed a sharp increase with a 1960 population boom in the upper parts of the basin, and then a sharp decrease with the construction of West Point Dam. This indicates that West Point Dam may now be the primary sediment sink for the basin. These smaller Project reservoirs likely accumulated sediment initially, after which periodic, limited erosion and redeposition of the sediments occurred. Sediment deposition patterns in Harding suggest that the Projects' dams have achieved sediment equilibrium, like Harding, and have not served as primary sediment sinks for the basin since West Point's construction upstream.

USGS collected sediment samples below West Point Dam, near the city of West Point, from 1981-1985 and 1988-1989. Samples included grab samples of stream bed sediments and samples of suspended sediments within the water column during high flow events. Sediment analyses are consistent with the findings in Auburn's basin wide study. Bed sediment analyses throughout the decade were predominantly gravel with varying levels of sand and had almost no silt or clay (USGS 2019). Analysis of the suspended sediments found sand and silt, as is typical for suspended sediment. The lack of silt and clay in bed sediments suggests that either there is a large fine sediment sink just upstream (West Point Lake) and/or the river velocity in this area is too high to allow silt and clay to settle out. West Point Lake just upstream is now a primary sink for sediments introduced to the basin and the limited fine sediment that may occur in the river below West Point Dam is likely from bank erosion or fine sediment inputs from tributaries below West Point Dam.

In anticipation of the FERC license surrender and removal of the City Mills Dam (FERC Project 8519) and the Eagle and Phenix Dam (FERC Project 2655) on the Chattahoochee River in Columbus, Georgia (both approximately 30 river miles downstream of the Projects), the licensees conducted sediment analysis upstream of each dam in 2009 (GEL 2009). Sediments sizes ranged from silty fine-grained sands to coarse grain sands (similar to those at the Projects). Sediment samples were predominantly silty sands. Sediment chemistry analyses found that the sediment located upstream of the dams did not pose any hazard and could be released downstream once the dams were breached. This breaching and sediment release occurred in 2012 (Eagle and Phenix Dam) and 2013 (City Mills Dam) at these two dams downstream of the Projects.

6.3 ESTIMATED SEDIMENT QUANTITIES

Georgia Power estimated the sediment volume in each of the existing impoundments, based on current bathymetry, estimated pre-dam bathymetry, and the 2019 sediment borings. This volume of sediment is an estimate and may overestimate the potential volume of sediment that may mobilize after the dams are removed due to the uncertainty in the depth of natural sediments that were present at the Project site prior to the installation of the dams. The borings and profiles used to determine this volume are tied to refusal depths in the sediment probe and known rock outcropping elevation; therefore, any natural sediment that was in place prior to the construction of these three dams was not separated out from soils deposited since the dams were built. Areas of the bathymetry that replicated natural river conditions (e.g., irregular grade changes, non-uniform slopes) were assumed to have minimal sediment accumulation. These areas included the upper portion of the reach between Langdale and Crow Hop Dam, as well as the majority of the western channel of the river between rock Weir 3 and the junction of the Langdale tailrace with the main river channel. Based on Georgia Power's estimation, approximately 112 acre-feet of sediment exists in the river segment between Crow Hop Dam and Langdale Dam, approximately 185 acre-feet of sediment exists in the Langdale impoundment, of which 64 acre-feet is in the Langdale forebay area that extends approximately 1,200 feet upstream of the dam with the remaining 121 acre-feet further upstream. Approximately 219 acre-feet of sediment exists in the Riverview channel. Appendix D provides Georgia Power's calculation methods for estimating the sediment volume at the Projects.

Based on the Projects' existing sediment core data, the findings of the City Mills and Eagle and Phenix Dams' and Auburn University sediment studies, and Georgia Power's sediment volume estimates, Georgia Power anticipates the proposed dam removals' long-term ecological benefits to the Chattahoochee River will outweigh any short term effects associated with the natural evacuation of sediment following removal of the Projects' dams.

7.0 MODEL RESULTS

7.1 PRESENTATION OF RESULTS

The results in Section 7 are organized first by the existing condition with the dams in place followed by the effect of removing the dams on a particular resource. For example, dam removal typically affects wetted area and velocities, which may affect aquatic resources. Therefore, this report includes model analyses and results to address the following effects of dam removal:

- ☒ Effects on Velocity and Wetted Area
- ☒ Effects on River Flow Distribution
- ☒ Effects on Infrastructure and Public Access
- ☒ Effects on Public Recreation Facilities and River Accessibility
- ☒ Effects on Access from Private Property

7.2 EXISTING AND ADJUSTED BATHYMETRY

Each section describing the effects includes two scenarios: the "existing bathymetry" and "adjusted bathymetry". The two bathymetry scenarios represent the boundaries for anticipated natural migration of river sediments post-dam removal. The existing bathymetry condition is described in Section 4.1.1 and represents a condition where the bathymetry with the dams in place would not likely change following dam removal (i.e., little to no sediment movement following dam removal).

For the adjusted bathymetry, the depths to refusal provided with the Vibracore borings collected by GEC were used to modify the existing bathymetric surface upstream of Langdale and Riverview Dams to approximate conditions if all sediment naturally evacuated the system. An adjusted bathymetric surface was developed in ArcMap GIS by interpolating between the boring locations and decreasing the channel bottom (from bank to bank) in a straight vertical change from existing bottom of channel to adjusted bottom of channel. The actual anticipated conditions will likely slope up from the centerline of the flow in the channel to the top of bank of the existing shore elevations. Because the natural slope up to the bank was not estimated (due to unavailability of data on sediment depths near shore), the water surface modelled under the adjusted bathymetry scenario likely overestimates the water drop caused by the dam removal.

Figure 7-1 shows a profile drawn along the centerline of the Riverview Channel. Note that the adjusted bathymetric surface is identical to the existing bathymetric surface but has simply been lowered by the refusal depths along this profile. No modification to the bathymetry was made using the Crow Hop Dam borings because the width of the river at the dam and the available borings did not provide enough information for interpolation and the upstream natural riffles and rock weirs 1-3 are assumed to control flow to this portion of the river. The model was used to simulate the four flow conditions (WP min flow, WP min flow +1 gen unit, WP min flow +2 gen units, and 100-year flood) with the proposed dam removal scenario with both the existing and adjusted bathymetry. The results from the two river bottom simulations bracket the possible outcomes (i.e., the bathymetry does not change or all of the sediment migrates as described here), and the actual outcome will likely be somewhere in between.

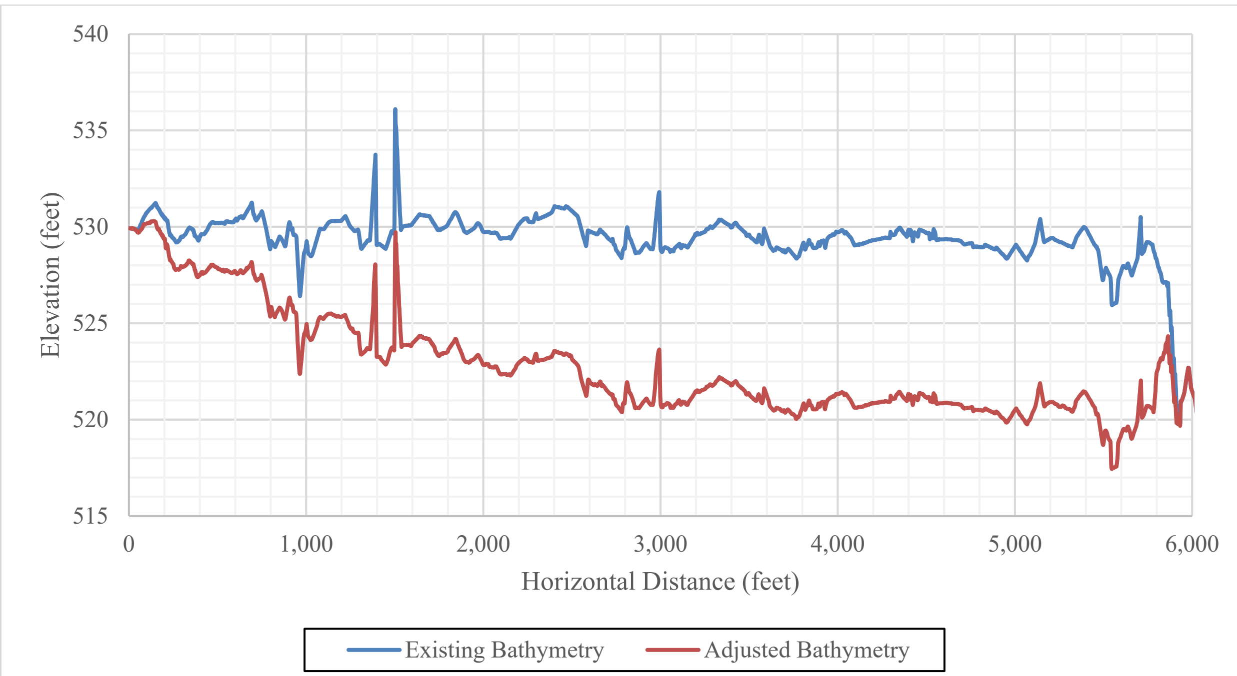

FIGURE 7–1 EXAMPLE OF EXISTING VERSUS ADJUSTED BATHYMETRY

7.3 EXISTING CONDITION – DAMS IN PLACE

Based on the existing bathymetry and historical drawings of the dams, the model was used to simulate the conditions at the Projects for comparison with the proposed decommissioning conditions. Figure 7–2 through Figure 7–4 show the flow extents and velocities under WP min flow, WP min flow +1 gen unit, and WP min flow +2 gen units conditions at the Langdale Dam. At WP min flow (Figure 7–2) the velocity is very slow (<0.5 feet per second (fps)) in the headpond and the tailrace of the Langdale Powerhouse. At WP min flow +1 gen unit and +2 gen units (Figure 7–3 and Figure 7–4) the velocities downstream of the dam exceed 5 fps in places.

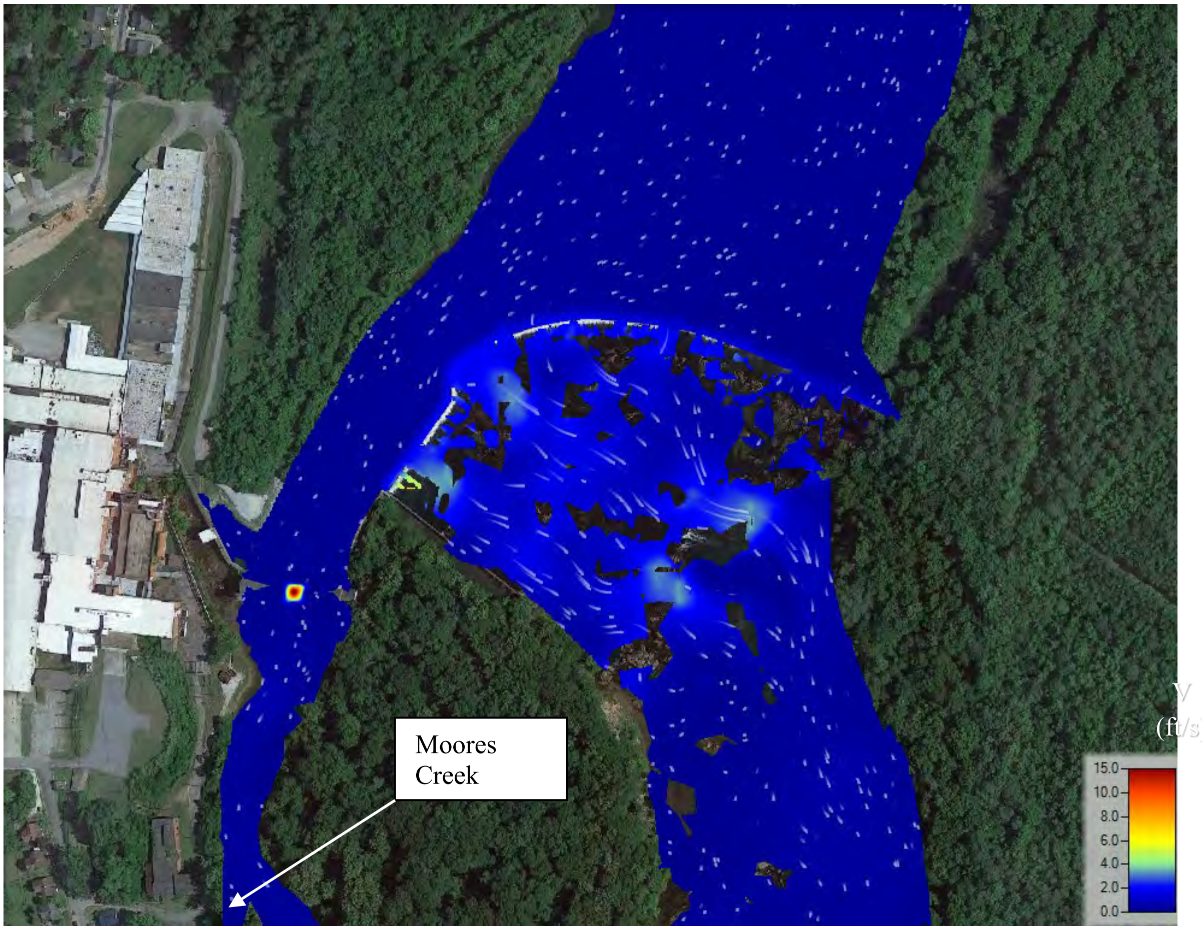

FIGURE 7–2 DAMS IN PLACE – WEST POINT MINIMUM FLOW VELOCITY AND WETTED AREA AT LANGDALE DAM

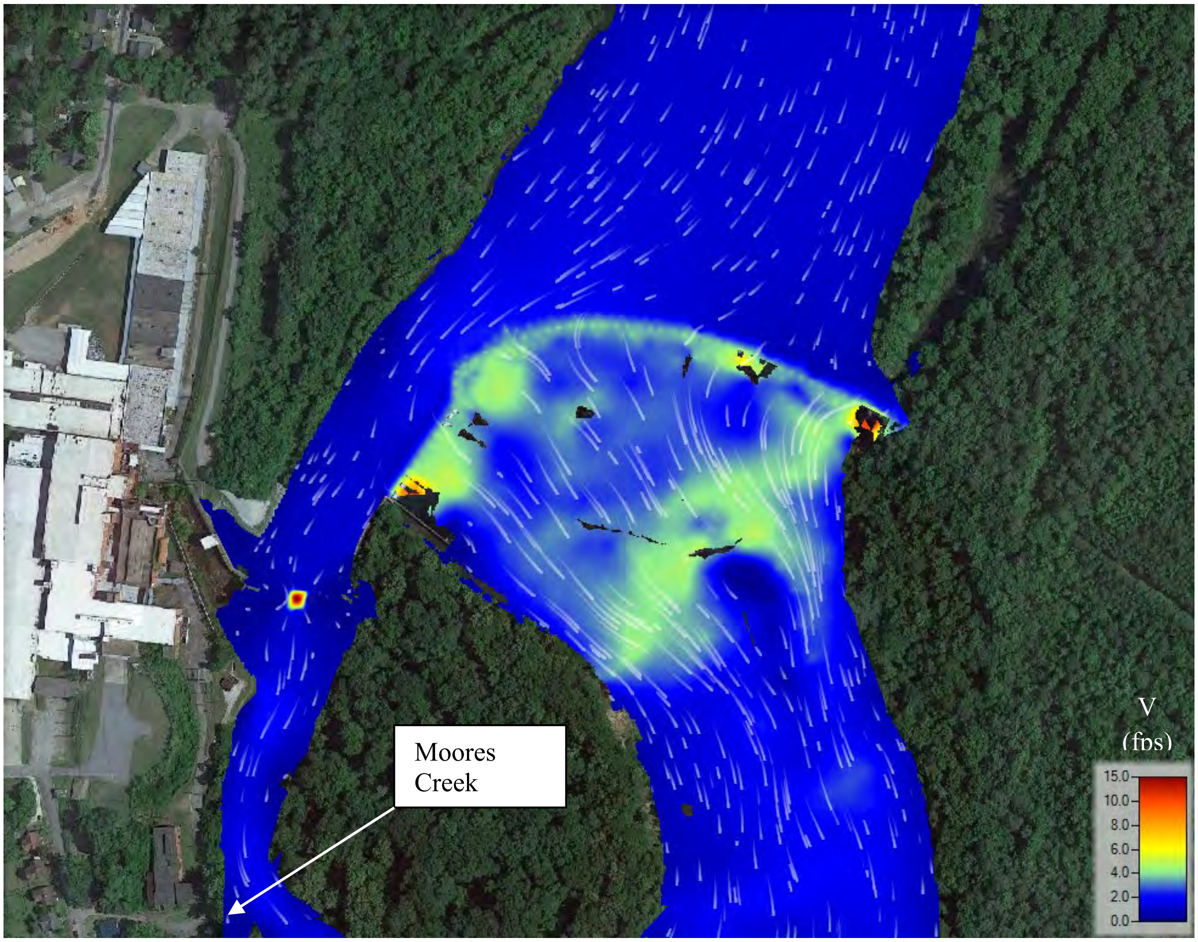

FIGURE 7–3 DAMS IN PLACE – WEST POINT MINIMUM FLOW +1 GENERATING UNIT VELOCITY AND WETTED AREA AT LANGDALE DAM

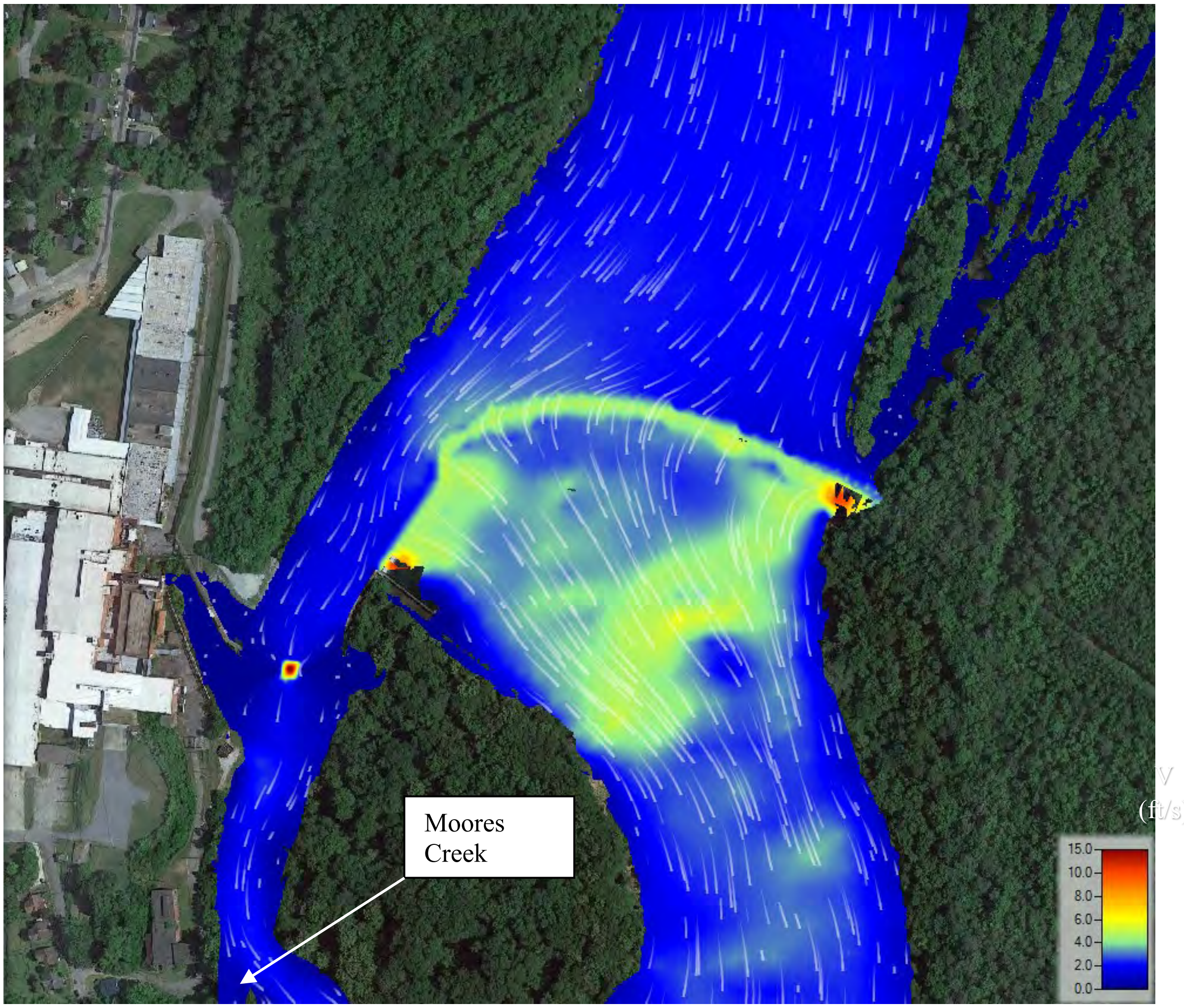

FIGURE 7–4 DAMS IN PLACE – WEST POINT MINIMUM FLOW +2 GENERATING UNITS VELOCITY AND WETTED AREA AT LANGDALE DAM

Figure 7–5 through Figure 7–7 show the results of the existing conditions simulations at the Crow Hop Dam. At WP min flow, the water upstream of Crow Hop Dam is slow moving and most of the flow is diverted into the Riverview Channel, which can be seen by the unwetted areas downstream of the dam (Figure 7–5). The aerial imagery underneath the model results show the area downstream of the dam is wetted; however, the model is a fair representation of conditions because the dam crest elevation governs flow into this area, not the downstream bathymetry. Due to access challenges associated with water depth, safety concerns associated with proximity to the dam, and the variation of the rocky riverbed, the surveyors were not able to collect the density of data that would be required to capture all details in the channel bottom with the bathymetry survey. At WP min flow +1 gen unit conditions (Figure 7–6) velocities downstream of the dam exceed 7 fps and at WP min flow +2 gen units conditions (Figure 7–7) velocities exceed 8 fps in some places.

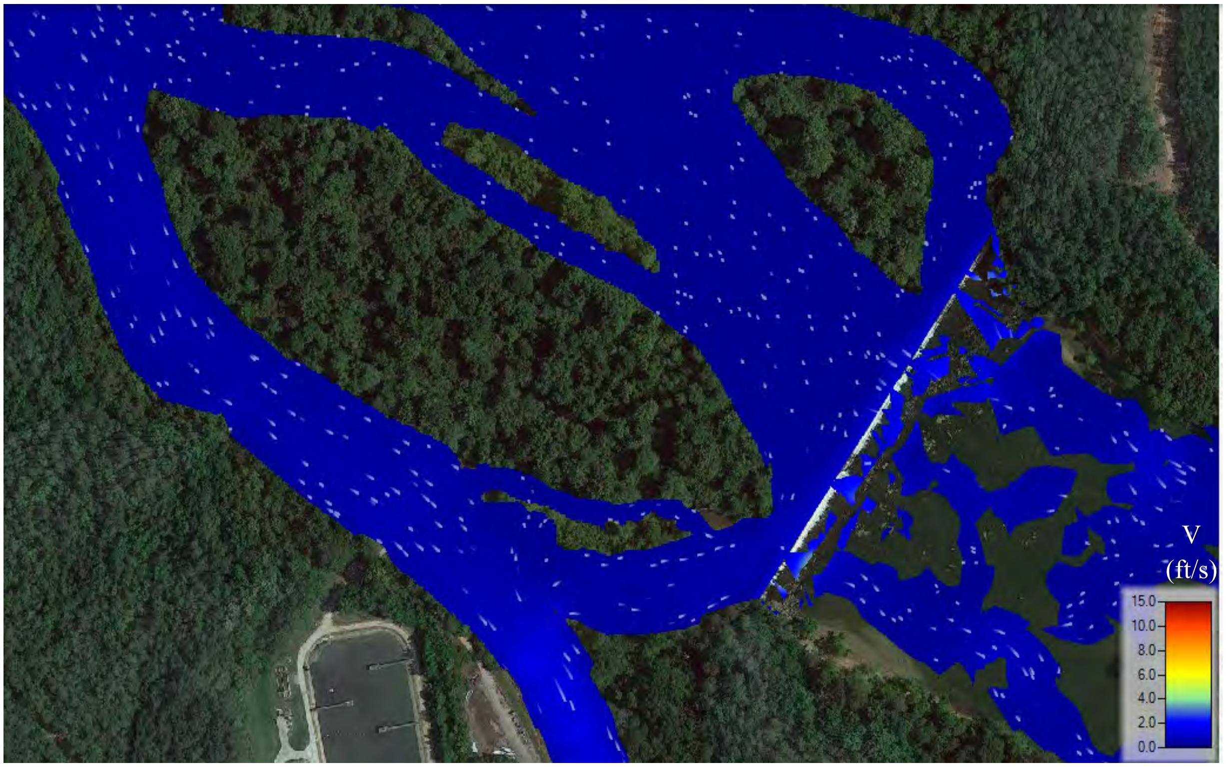

FIGURE 7–5 DAMS IN PLACE – WEST POINT MINIMUM FLOW VELOCITY AND WETTED AREA AT CROW HOP DAM

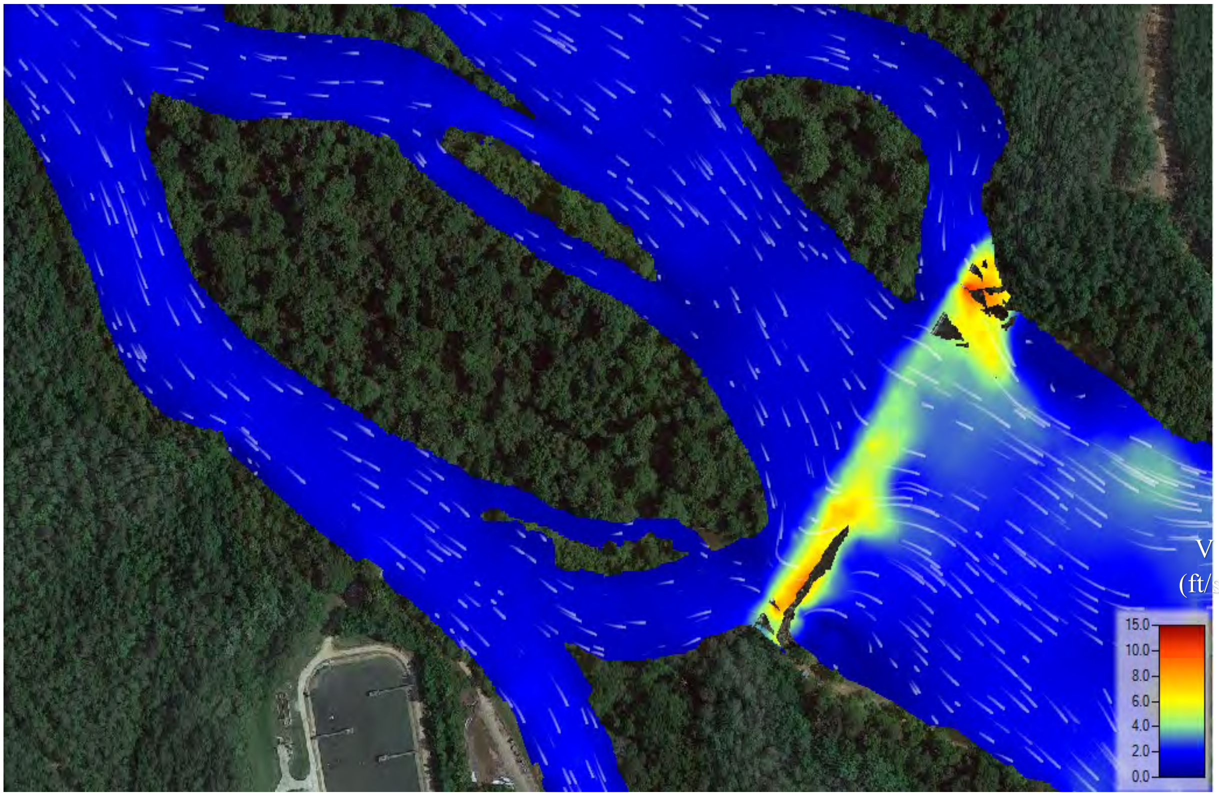

FIGURE 7–6 DAMS IN PLACE – WEST POINT MINIMUM FLOW +1 GENERATING UNIT VELOCITY AND WETTED AREA AT CROW HOP DAM

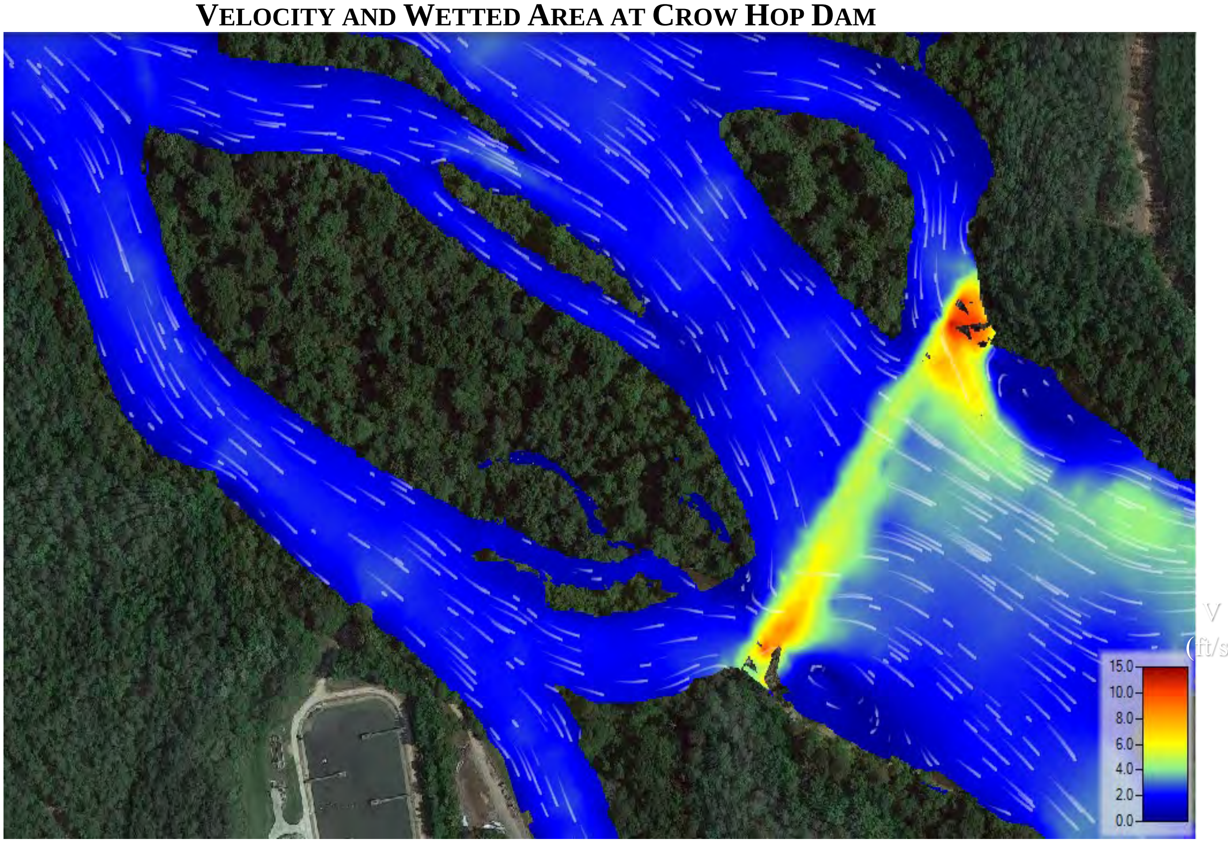

FIGURE 7–7 DAMS IN PLACE – WEST POINT MINIMUM FLOW +2 GENERATING UNITS VELOCITY AND WETTED AREA AT CROW HOP DAM

Figure 7–8 through Figure 7–10 show the results of the existing conditions simulations at the Riverview Dam. At the WP min flow condition (Figure 7–8), most of the river flow is diverted down the Riverview Channel by the Crow Hop Dam where the flow velocity approaches 2 fps in the headpond of the Riverview Dam, and the flow velocity spilling over the dam exceeds 5 fps. At WP min flow +1 gen unit and WP min flow +2 gen units conditions (Figure 7–9 and Figure 7–10) the velocity of flow spilling over the dam exceeds 7 fps.

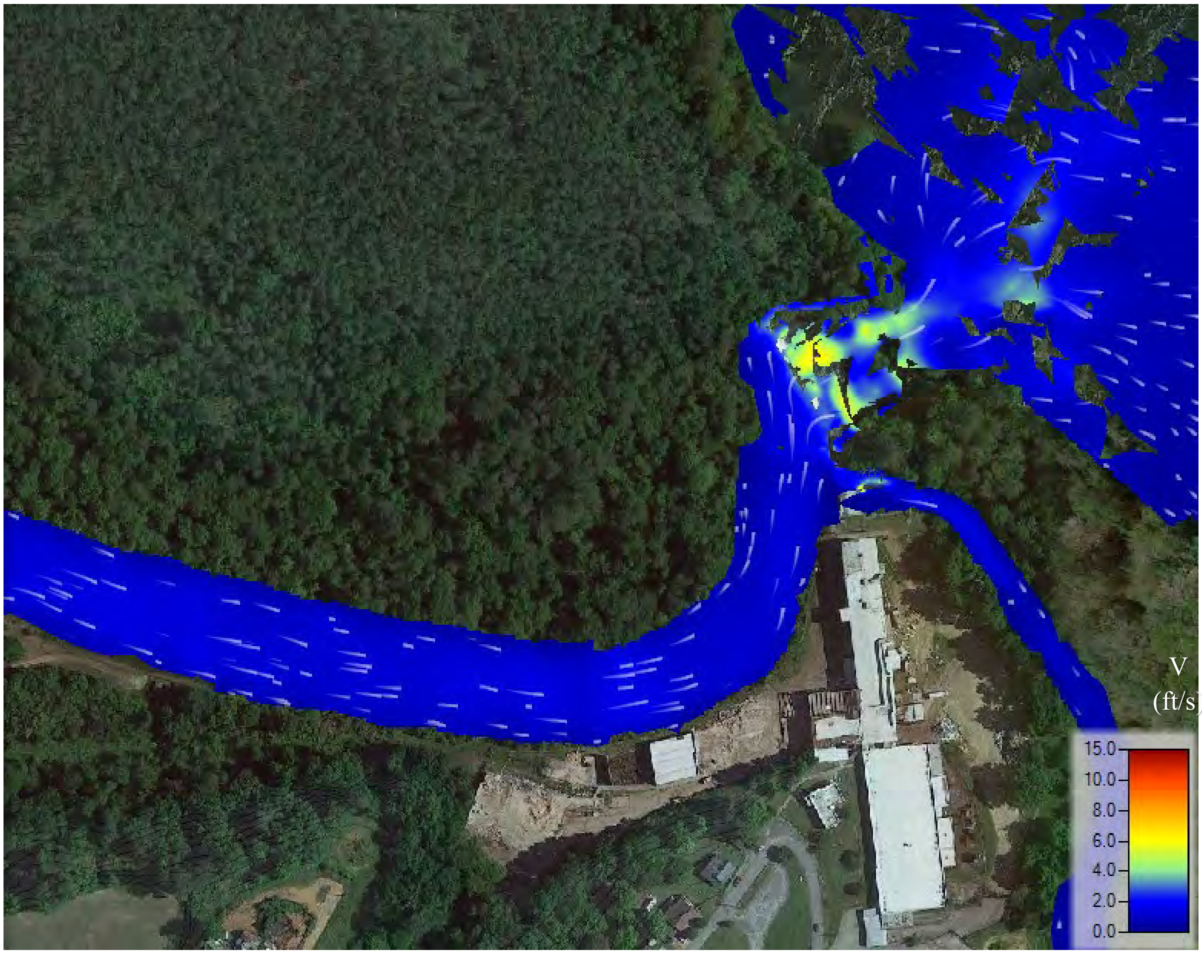

FIGURE 7–8 DAMS IN PLACE – WEST POINT MINIMUM FLOW VELOCITY AND WETTED AREA AT RIVERVIEW DAM

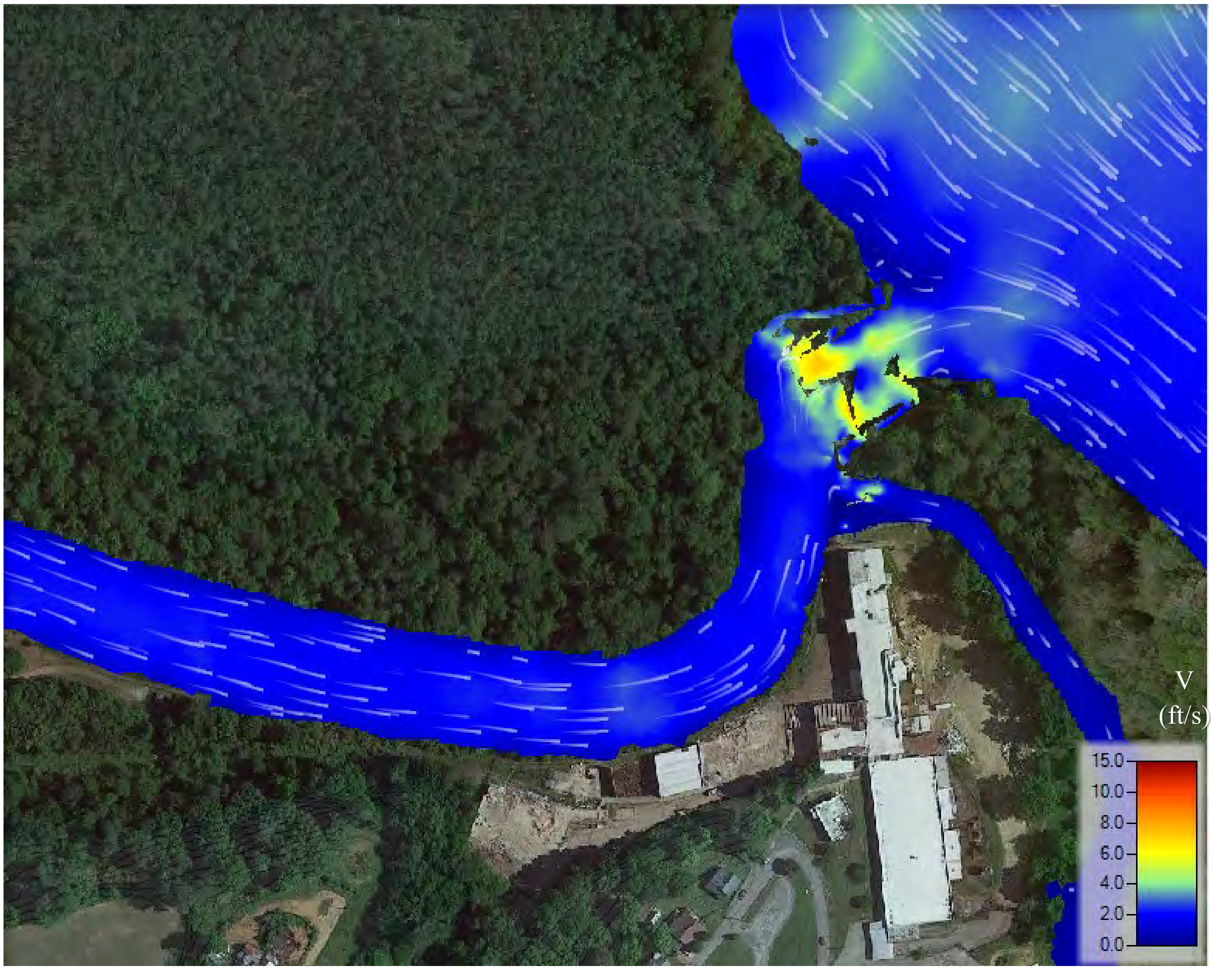

FIGURE 7–9 DAMS IN PLACE – WEST POINT MINIMUM FLOW +1 GENERATING UNIT VELOCITY AND WETTED AREA AT RIVERVIEW DAM

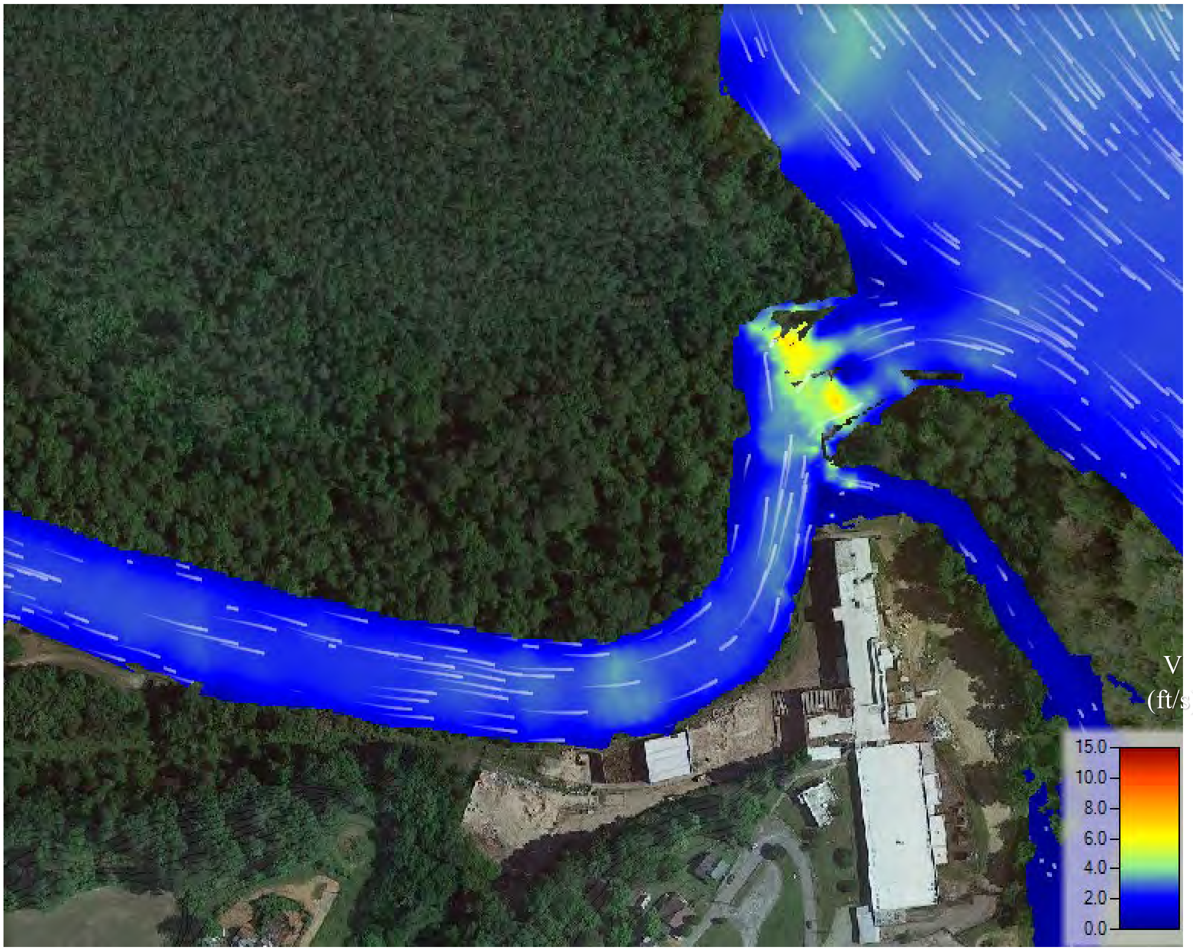

FIGURE 7–10 DAMS IN PLACE – WEST POINT MINIMUM FLOW +2 GENERATING UNITS VELOCITY AND WETTED AREA AT RIVERVIEW DAM

7.4 DAM REMOVAL – EFFECTS ON VELOCITY AND WETTED AREAS

7.4.1 EXISTING BATHYMETRY

The model indicates that with the existing bathymetry, the Langdale Dam removal will result in flow being concentrated on the eastern side of the river. At the three regularly occurring flow conditions[5], water no longer reaches the upstream side of the Langdale Powerhouse. Leaving a portion of the Langdale Dam (see Section 3.0) at a reduced crest elevation on the eastern side of the river will help to redistribute the flow towards the center of the river. At the WP min flow condition, a constructed channel through the island between the Langdale Dam and Powerhouse and flow from Moores Creek (Moores Creek flows were not included in the models as this tributary is not gaged by the USGS) will be used to maintain flow to the Powerhouse tailrace.

[5] WP min flow (670 cfs), WP min flow +1 gen unit (8,275 cfs), and WP min flow +2 gen units (15,875 cfs)

During the WP min +1 gen unit and WP min +2 gen units flows, the Powerhouse tailrace receives water through the constructed channel, Moores Creek, and will also be backwatered from the river downstream of the island. The maximum velocity through the breached dam approaches 6 fps at WP min flow and exceeds 11 fps at the WP min flow +2 gen units condition in the center of the channel, with lower velocities near the shores (Figure 7–11, Figure 7–12, and Figure 7–13). Fish will be able to seek refuge in pools between the dams and will find routes upstream of the dams by avoiding the high velocity areas in the center of the breach, which can be seen in the cross section plots through the breached dam section.

The remainder of the Langdale Dam that will be left in place is shown on Figure 7–11, Figure 7–12, and Figure 7–13. This portion of the dam will be exposed under the minimum flow condition and overtopped at higher flows (WP min flow +1 gen unit, WP min flow +2 gen units) because this is the portion of the spillway that will be demolished down from the existing crest elevation of approximately 550.4 feet to approximately elevation 542 feet as discussed in Section 3, excluding the 10-foot section which will be preserved at original elevations for cultural resources protection and historical preservation. It should also be noted that high velocities over existing sediments will likely mobilize sand-size substrates, as loose coarse sand is typically mobilized at a near-streambed velocity of 2 fps.

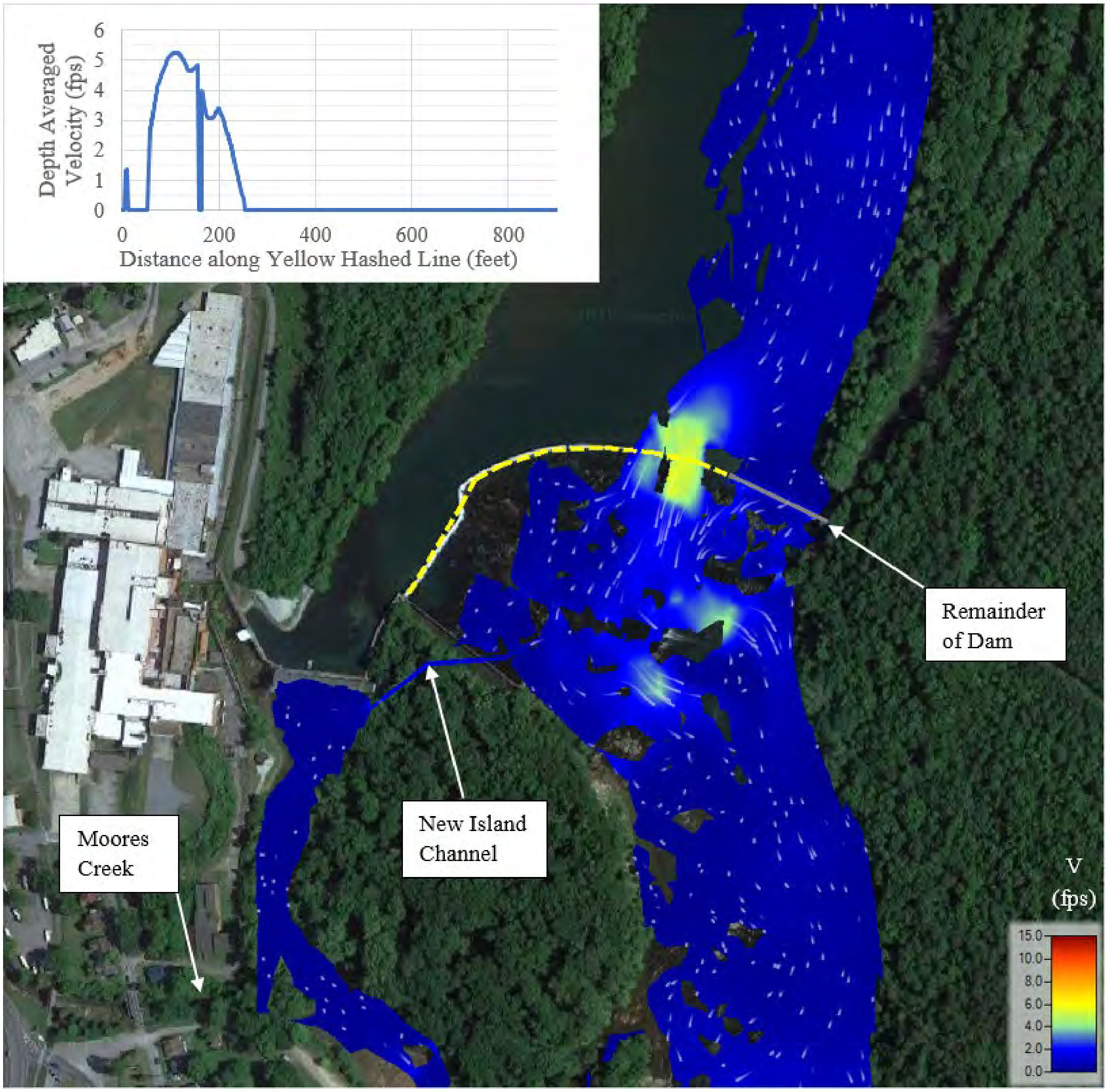

FIGURE 7–11 DAM REMOVAL, EXISTING BATHYMETRY – WEST POINT MINIMUM FLOW VELOCITY AND WETTED AREA AT LANGDALE DAM

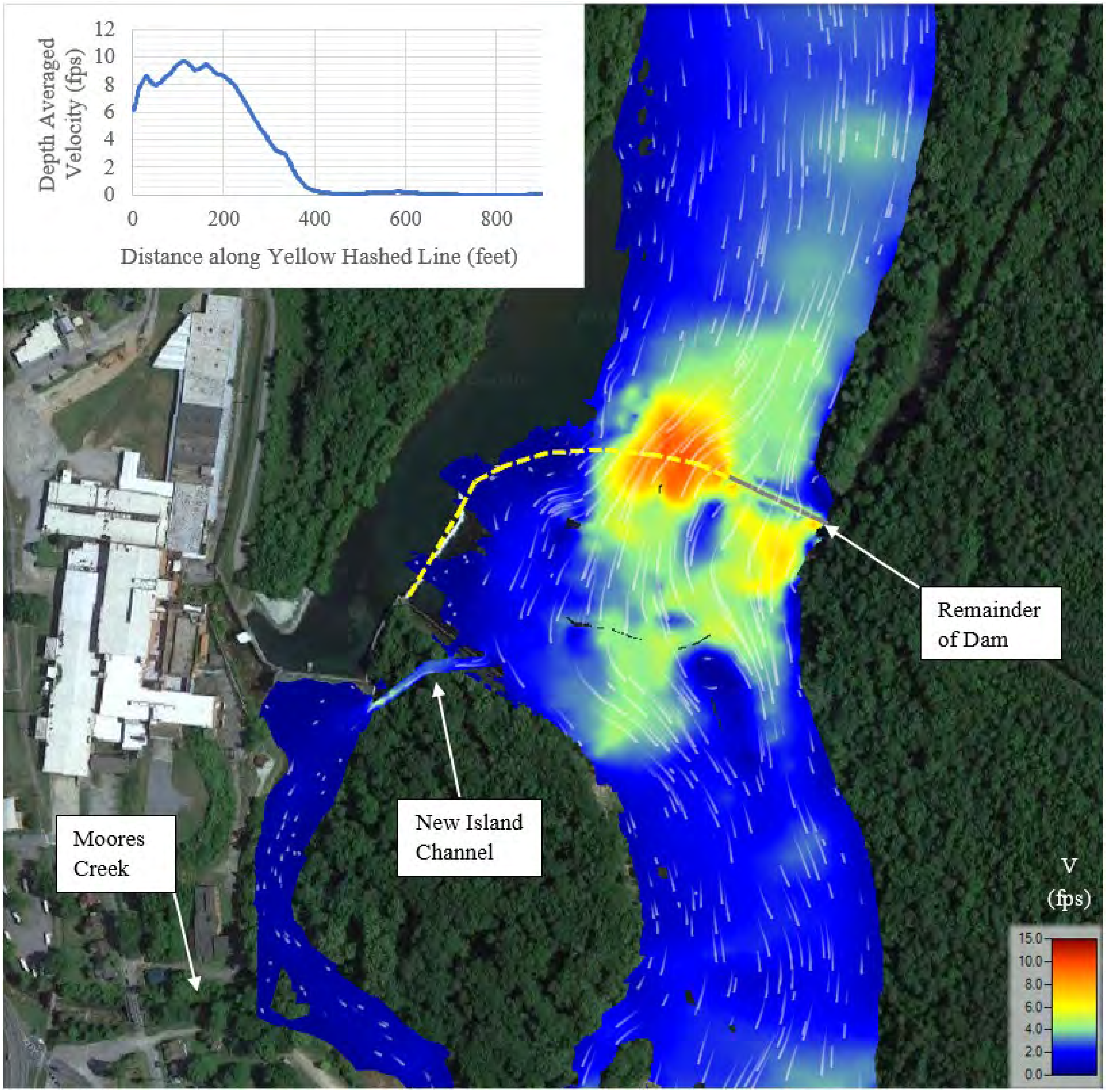

FIGURE 7–12 DAM REMOVAL, EXISTING BATHYMETRY – WEST POINT MINIMUM FLOW +1 GENERATING UNIT VELOCITY AND WETTED AREA AT LANGDALE DAM

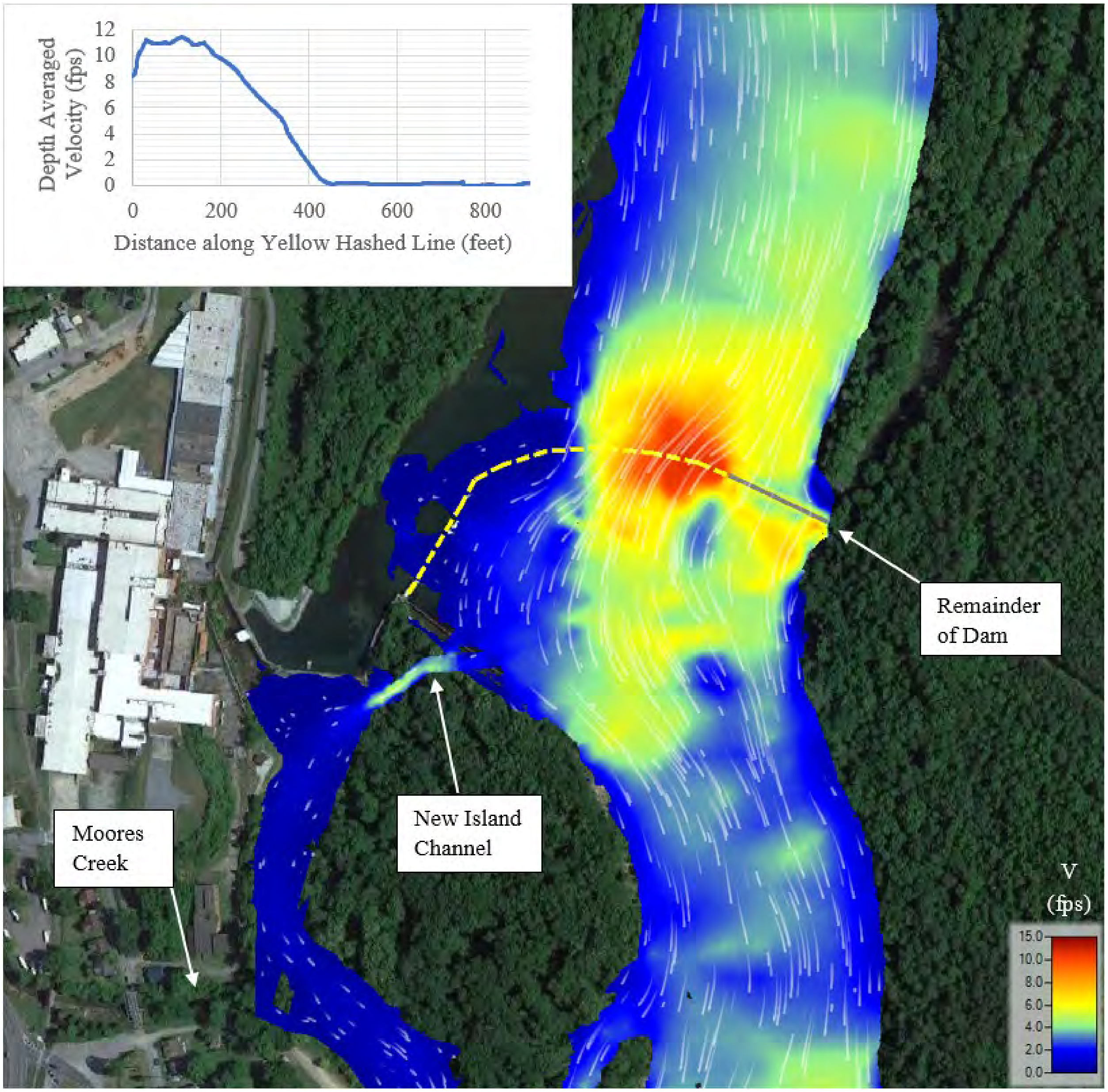

FIGURE 7–13 DAM REMOVAL, EXISTING BATHYMETRY – WEST POINT MINIMUM FLOW +2 GENERATING UNITS VELOCITY AND WETTED AREA AT LANGDALE DAM

The removal of Crow Hop Dam causes the flow to be centralized through the center of the breach due to the natural rock riverbed. At WP min flow, portions of the river on either bank are no longer wetted following dam removal. At WP min flow +1 gen unit, most of the river would be wetted and at WP min flow +2 gen unit the entire river is wetted, similar to existing conditions (i.e., dams in place). Maximum velocities through the breached dam are less than 4 fps at WP min flow and exceed 8 fps at WP min flow +2 gen units flow in the center of the channel, with lower velocities near shore (Figure 7–14, Figure 7–15, and Figure 7–16). Flow passing over the rock ramp is concentrated in the middle of the ramp; however, because the rock ramp does not modify the crest of the rock weir it does not affect the flow partitioning between the Riverview channel and the main channel. Fish will be able to seek refuge in pools approaching the dam and find routes upstream by avoiding the high velocity areas in the center of the breach, which can be seen in the cross section plots through the breached dam section in each of the figures. It should be noted that high velocities over existing sediments will likely mobilize sand-size substrates, as loose coarse sand is typically mobilized at a near-streambed velocity of 2 fps.

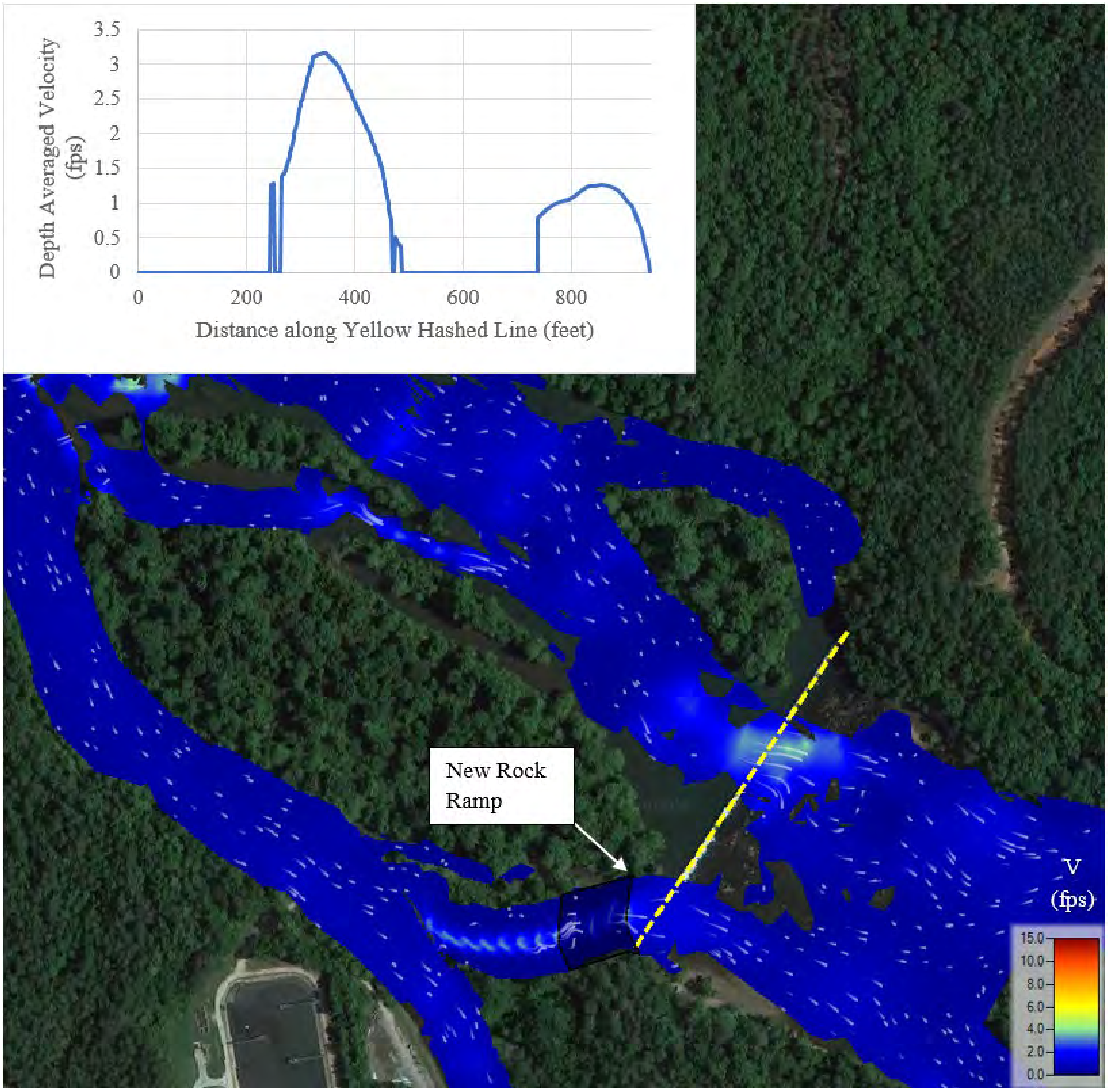

FIGURE 7–14 DAM REMOVAL, EXISTING BATHYMETRY – WEST POINT MINIMUM FLOW VELOCITY AND WETTED AREA NEAR CROW HOP DAM

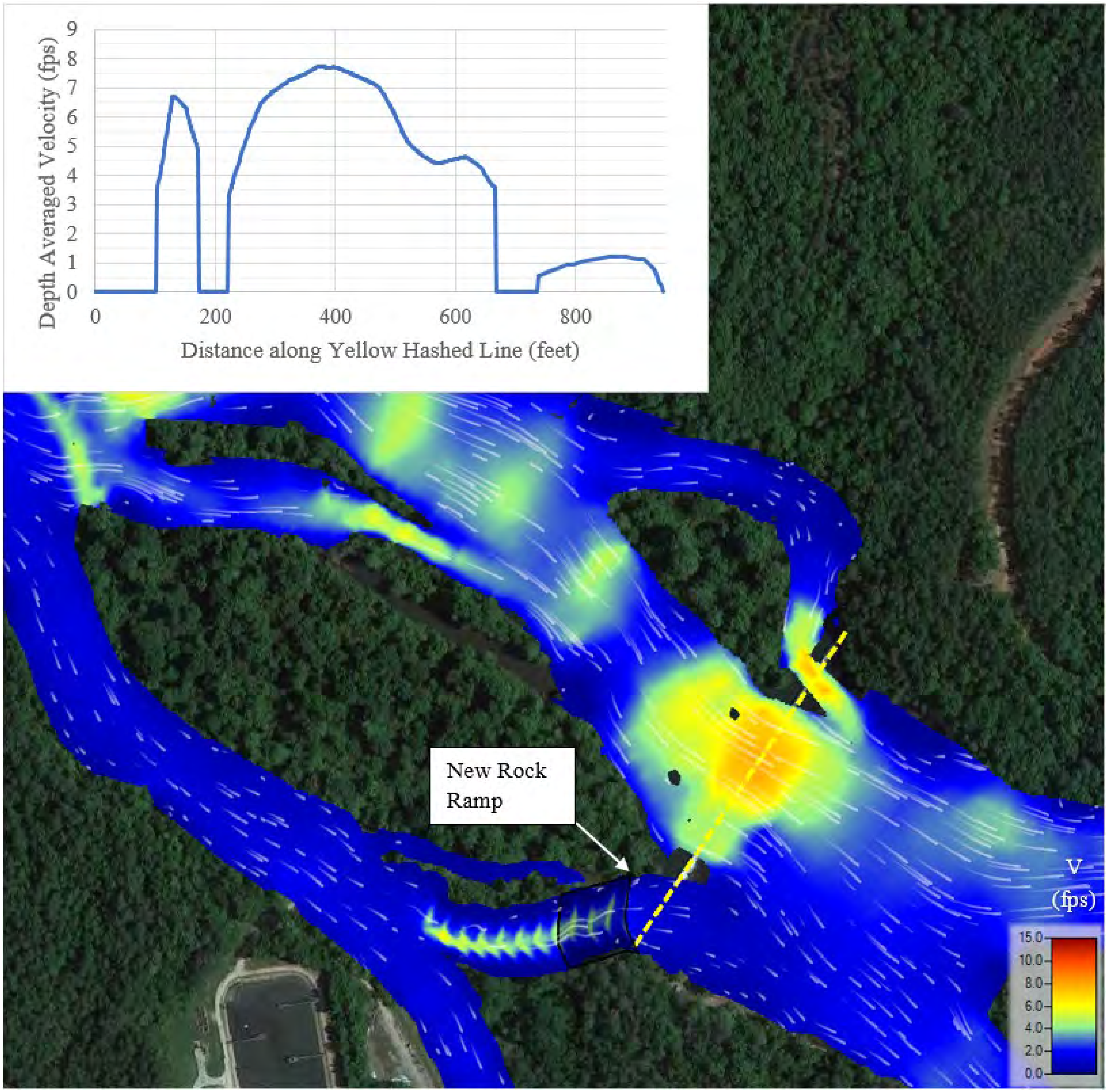

FIGURE 7–15 DAM REMOVAL, EXISTING BATHYMETRY – WEST POINT MINIMUM FLOW +1 GENERATING UNITS VELOCITY AND WETTED AREA NEAR CROW HOP DAM

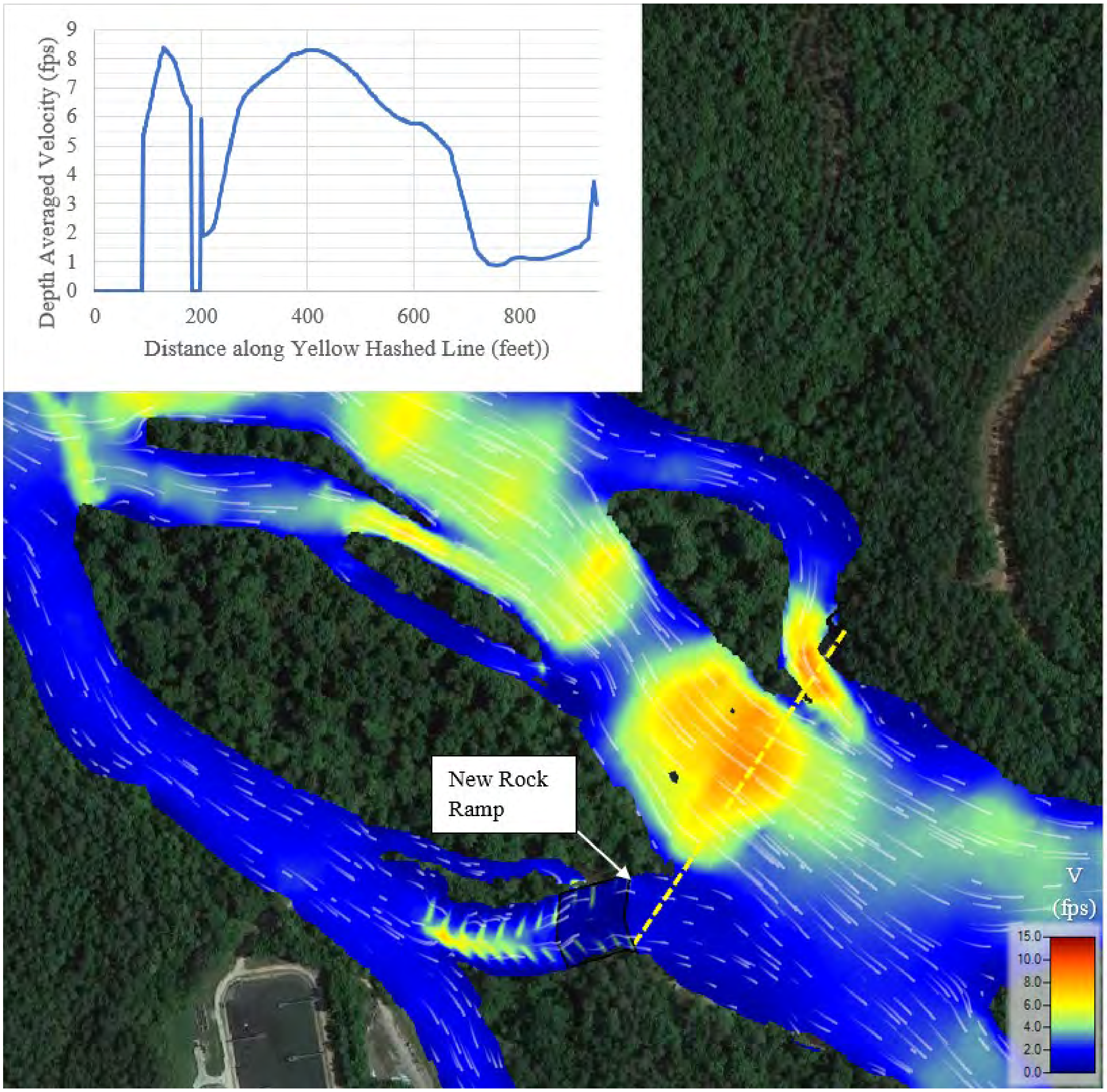

FIGURE 7–16 DAM REMOVAL, EXISTING BATHYMETRY – WEST POINT MINIMUM FLOW +2 GENERATING UNITS VELOCITY AND WETTED AREA NEAR CROW HOP DAM

The model indicates that near the Riverview Dam, the wetted area at WP min flow will decrease, similar to the Crow Hop Dam. At WP min flow +1 gen unit and WP min flow +2 gen units, the river will be wetted similar to existing conditions (i.e., dams in place). There is a steep drop in the terrain where the Riverview Dam is located, and maximum velocities spilling over the breached dam will exceed 5 fps at WP min flow and 8 fps at WP min flow +2 gen units, with lower velocities upstream and downstream of this area (Figure 7–17, Figure 7–18, and Figure 7–19). Fish will be able to seek refuge in pools approaching the dam and find routes upstream by avoiding the high velocity areas in the center of the breach, which can be seen in the cross section plots through the breached dam section in each of the figures. It should be noted that high velocities over existing sediments will likely mobilize sand-size substrates, as loose coarse sand is typically mobilized at a near-streambed velocity of 2 fps.

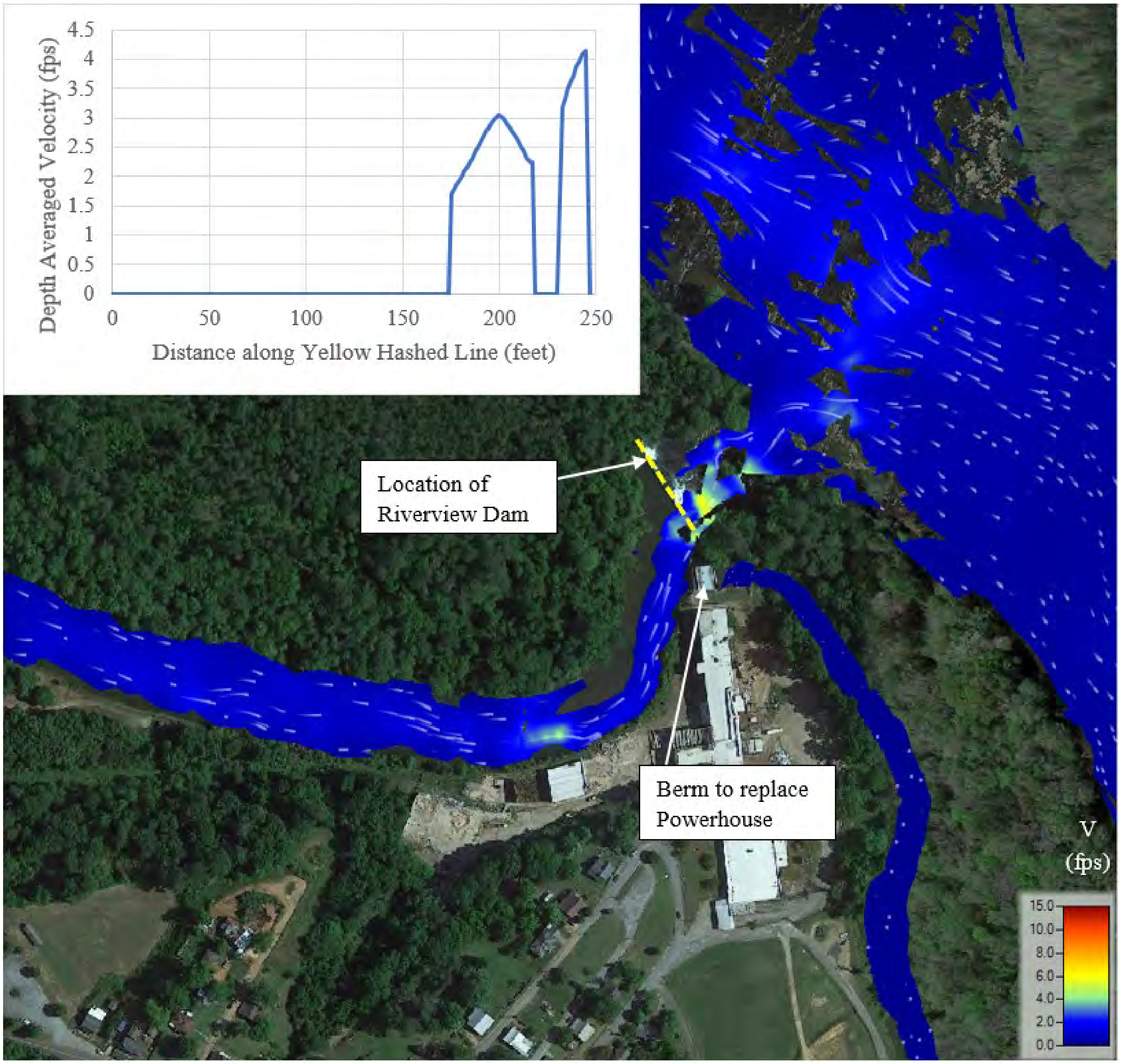

FIGURE 7–17 DAM REMOVAL, EXISTING BATHYMETRY – WEST POINT MINIMUM VELOCITY AND WETTED AREA NEAR RIVERVIEW DAM

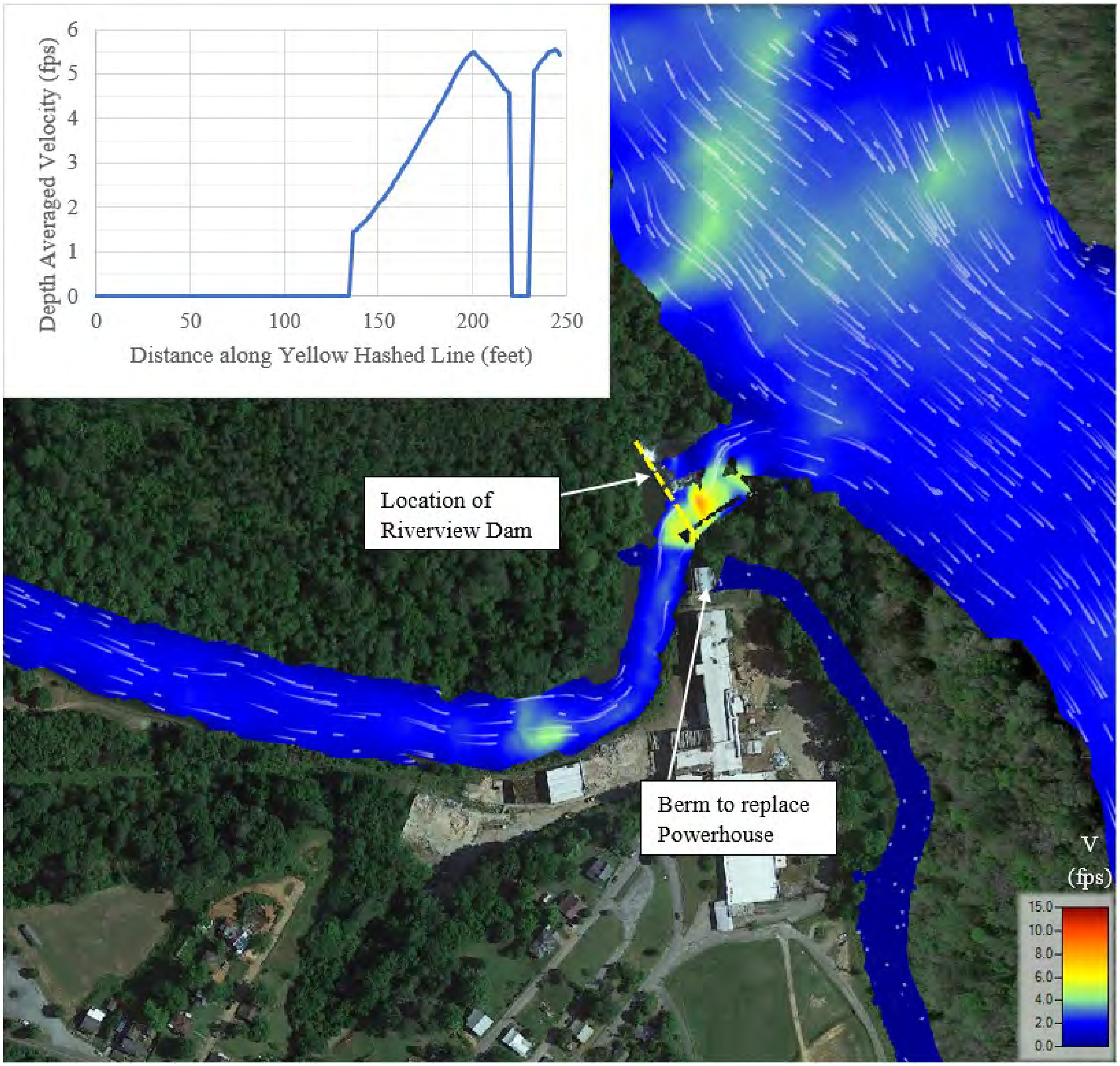

FIGURE 7–18 DAM REMOVAL, EXISTING BATHYMETRY – WEST POINT MINIMUM FLOW +1 GENERATING UNIT VELOCITY AND WETTED AREA NEAR RIVERVIEW DAM

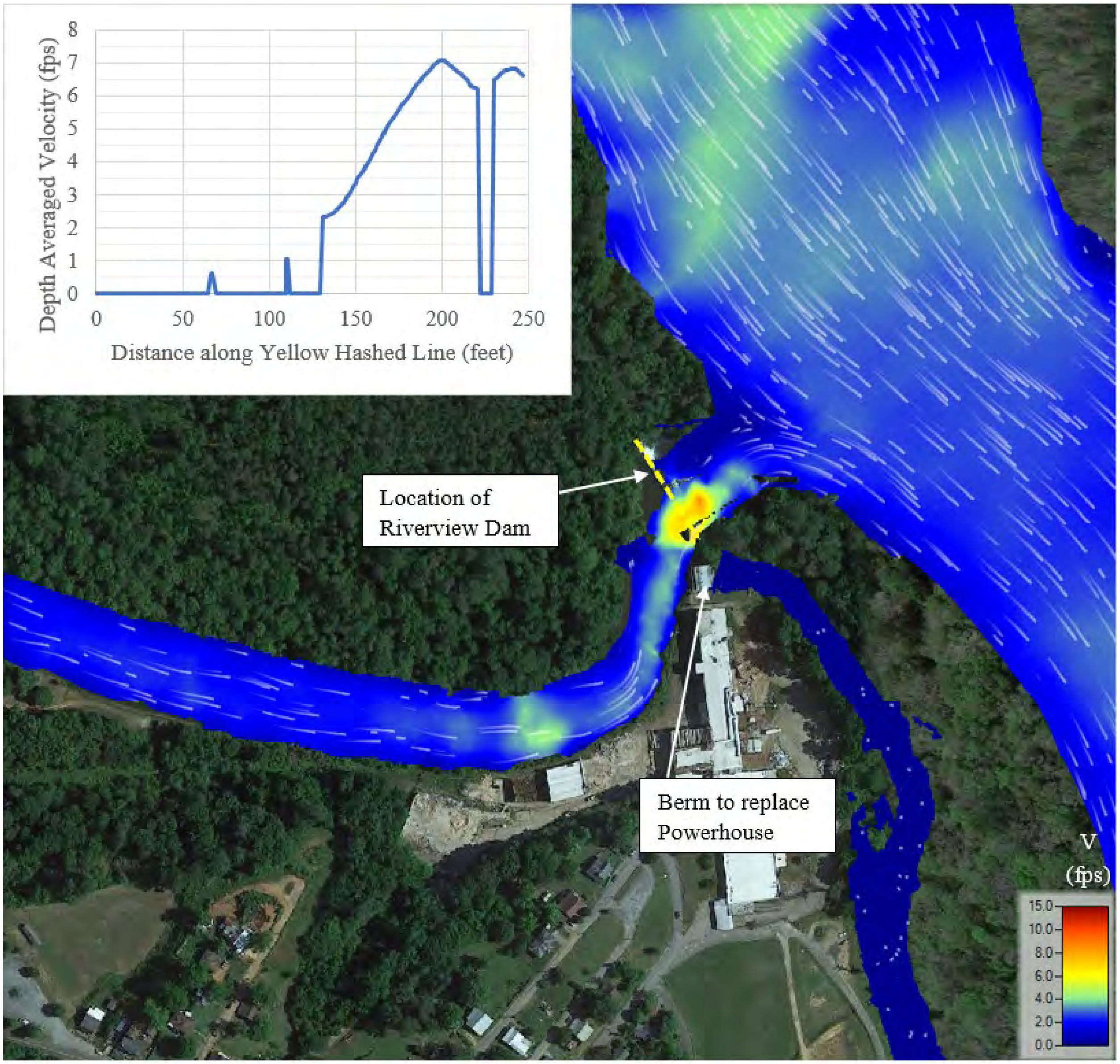

FIGURE 7–19 DAM REMOVAL, EXISTING BATHYMETRY – WEST POINT MINIMUM FLOW +2 GENERATING UNITS VELOCITY AND WETTED AREA NEAR RIVERVIEW DAM

Figure 7-20 provides a comparison of the areas wetted by the river at the Projects with dams removed and existing bathymetry for all three flow conditions.

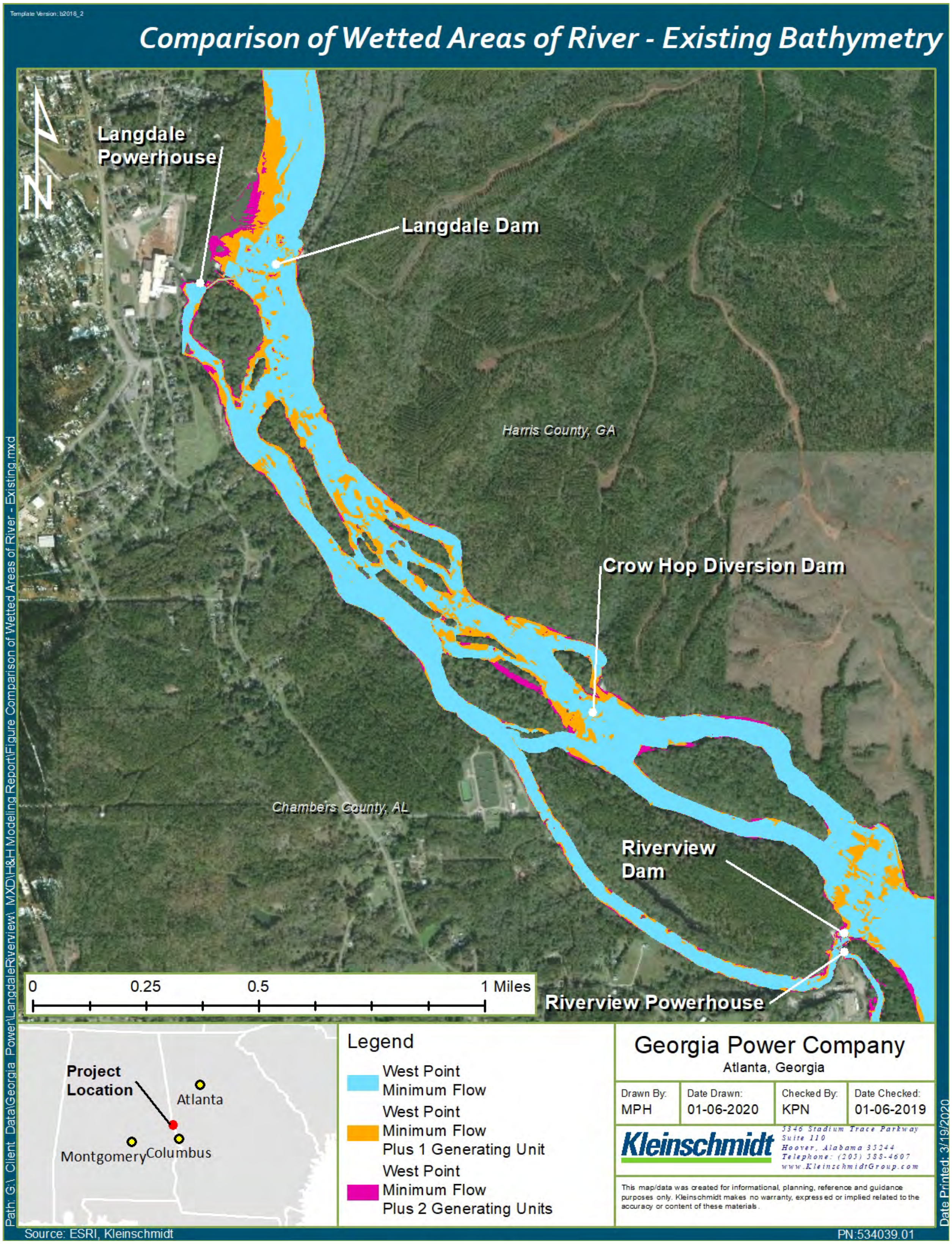

FIGURE 7–20 DAM REMOVAL, EXISTING BATHYMETRY – WETTED AREAS OF THE RIVER POST-DAM REMOVAL

7.4.2 ADJUSTED BATHYMETRY

For the adjusted bathymetry, the depths to refusal provided with the Vibracore borings collected by GEC were used to modify the existing bathymetric surface upstream of Langdale and Riverview Dams to approximate conditions if all sediment naturally evacuated the system. An adjusted bathymetric surface was developed in ArcMap GIS by interpolating between the boring locations and decreasing the channel bottom (from bank to bank) in a straight vertical change from existing bottom of channel to adjusted bottom of channel. The actual anticipated conditions will likely slope up from the centerline of the flow in the channel to the top of bank of the existing shore elevations. Because the natural slope up to the bank was not estimated (due to unavailability of data on sediment depths near shore), the water surface modelled under the adjusted bathymetry scenario likely overestimates the water drop caused by the dam removal. No modification to the bathymetry was made using the Crow Hop Dam borings because the width of the river at the dam and the available borings did not provide enough information for interpolation and the upstream natural riffles and rock weirs 1-3 are assumed to control flow to this portion of the river.

Following removal of the Langdale Dam, the model indicates that with the adjusted bathymetry the flow more widely distributes across the river. At the WP min flow and WP min flow +1 gen unit conditions, water does not reach the upstream side of the Langdale Powerhouse, but it does reach the powerhouse at the WP min flow +2 gen units. At the WP min flow condition, the channel excavated through the island between the Langdale Dam and Powerhouse and flow from Moores Creek (Moores Creek flows were not included in the models as there is poor data on flows in this creek) provides flow to the Powerhouse tailrace. During the WP min flow +1 gen unit and WP min flow +2 gen units flows, the Powerhouse tailrace receives water through the channel but will also be backwatered from the river downstream of the island. The maximum velocity through the breached dam approaches 4 fps at WP min flow and exceeds 8 fps at the WP min flow +2 gen units, with lower velocities near the shore (**Error! Reference source not found.**, **Error! Reference source not found.**, and Figure 7–22). Fish will be able to seek refuge in pools between the dams and will find routes upstream of the dams by avoiding the high velocity areas in the center of the breach, which can be seen in the cross section plots through the breached dam section in each of the figures. It should be noted that high velocities over existing sediments will likely mobilize sand-size substrates, as loose coarse sand is typically mobilized at a near-streambed velocity of 2 fps.

Note, **Error! Reference source not found.**Figure 7-21, Figure 7-22 and Figure 7-23 show the location of the remainder of the Langdale Dam that will be left in place, but this is for presentation purposes only. The remainder of dam will be overtopped at higher flows (WP min flow +1 gen unit, WP min flow +2 gen units).

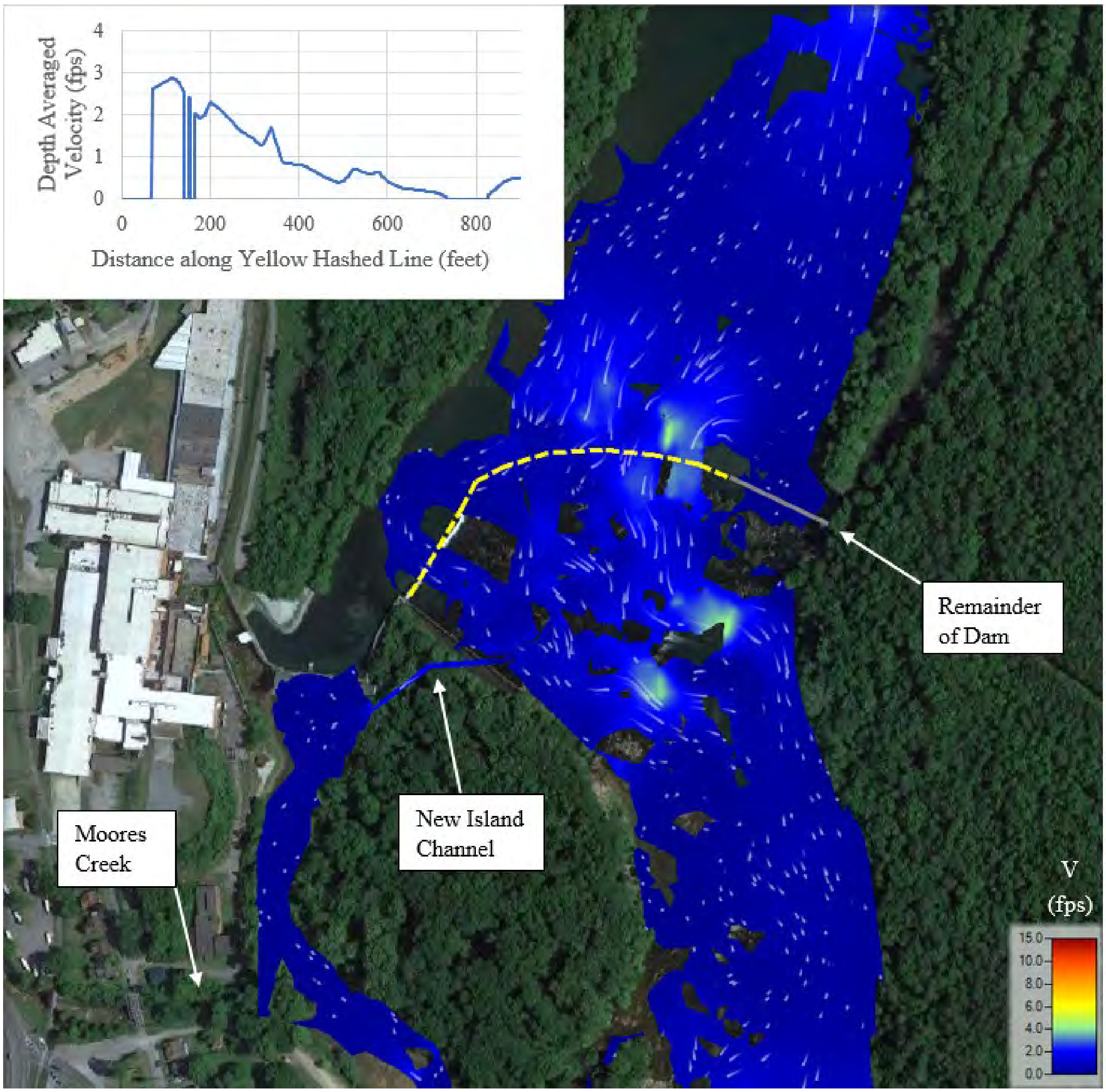

Figure 7-20 Dam Removal, Adjusted Bathymetry – West Point Minimum Flow Velocity and Wetted Area at Langdale Dam

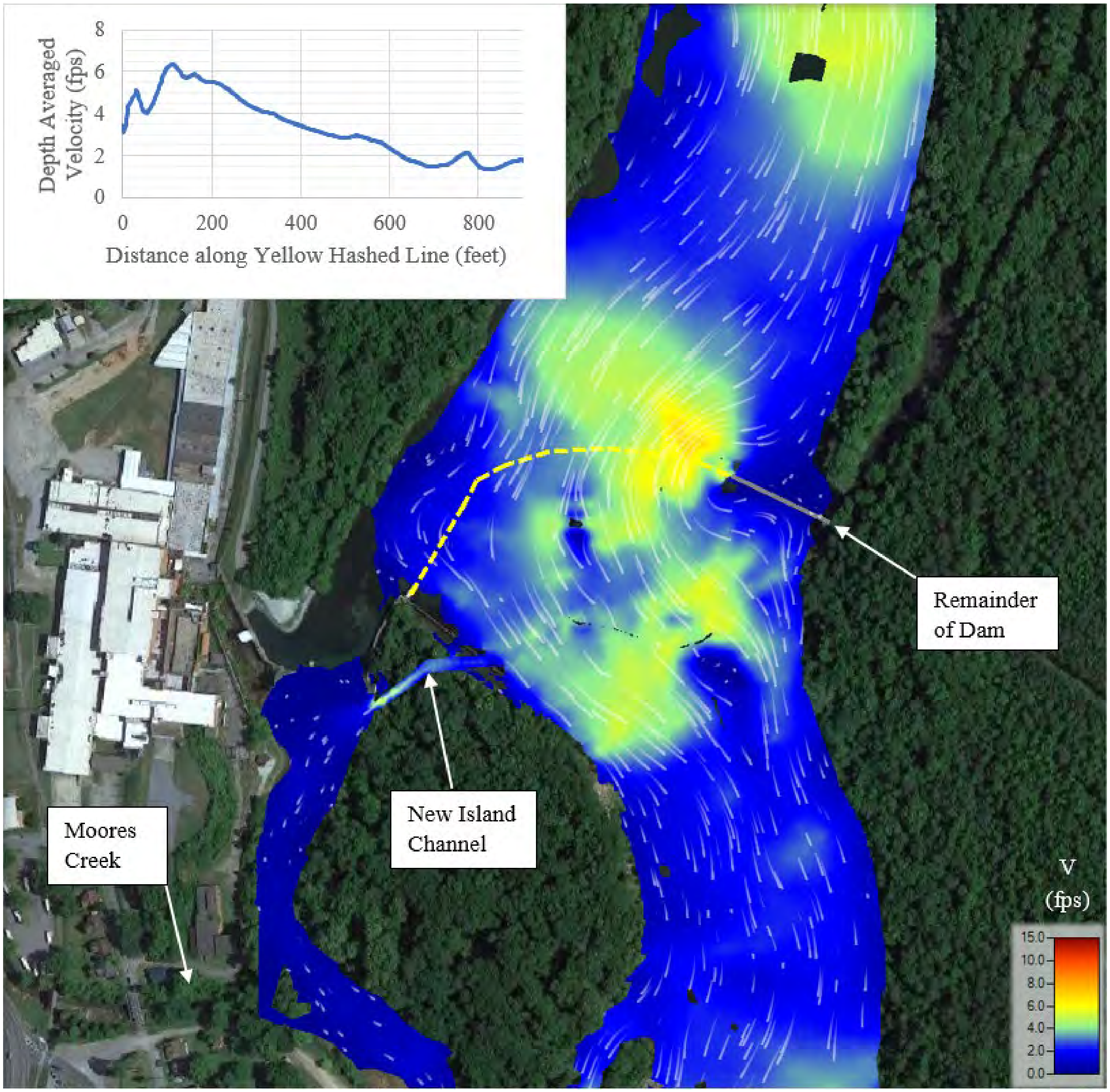

FIGURE 7–21 DAM REMOVAL, ADJUSTED BATHYMETRY – WEST POINT MINIMUM FLOW +1 GENERATING UNIT VELOCITY AND WETTED AREA AT LANGDALE DAM

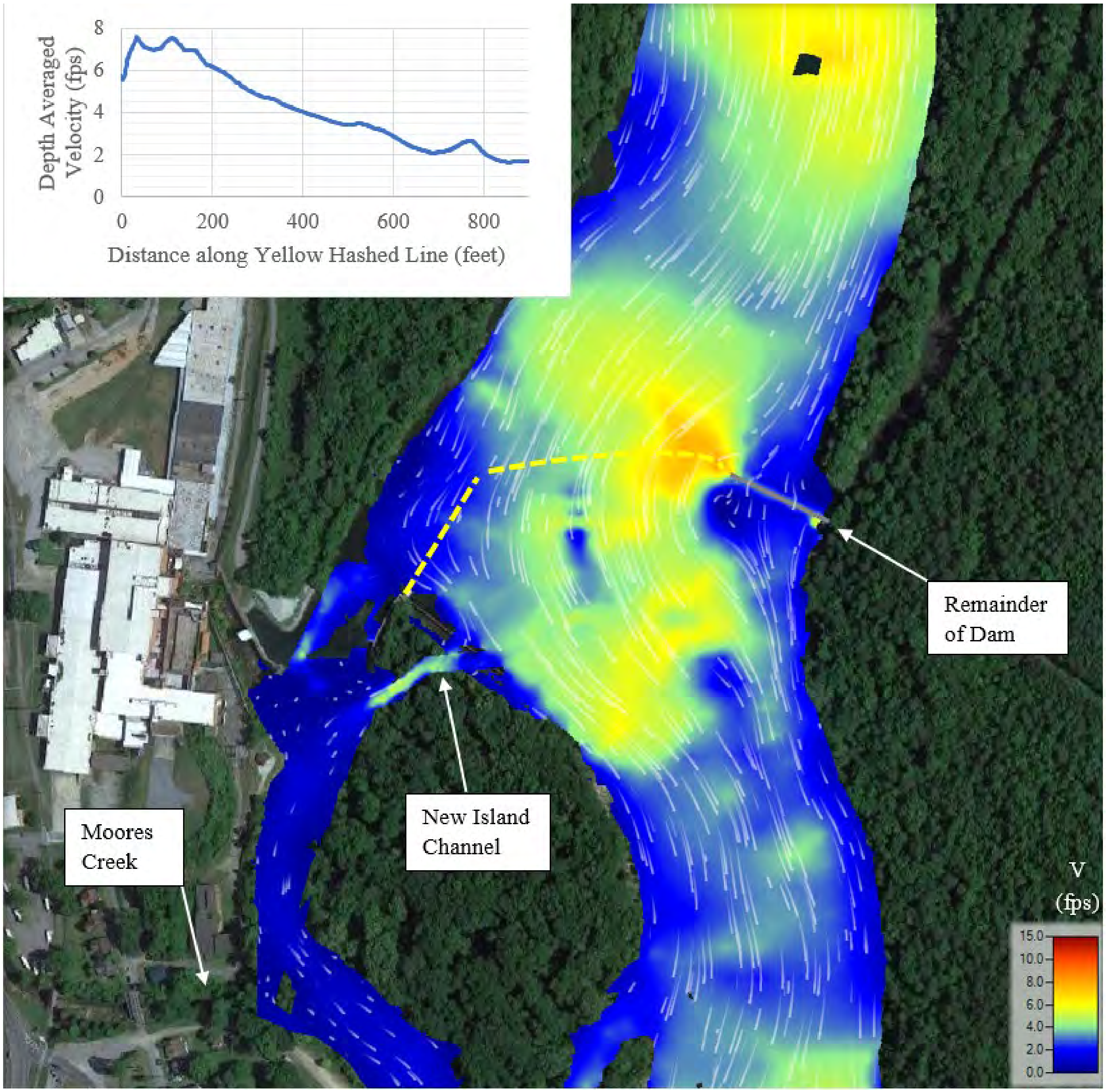

FIGURE 7–22 DAM REMOVAL, ADJUSTED BATHYMETRY – WEST POINT MINIMUM FLOW +2 GENERATING UNITS VELOCITY AND WETTED AREA AT LANGDALE DAM

Adjusting the bathymetry in the Riverview Channel using the refusal depth data resulted in substantial changes in the flow distribution in the river. Decreasing the elevation of the Riverview channel's bathymetry, while holding the existing rock weir and rock ramp elevations constant, resulted in most river flow entering the Riverview channel at the WP min flow, even with the removal of the Crow Hop Dam. As noted earlier, no adjustment to the bathymetry upstream of Crow Hop was made because there was not sufficient data to do so. The model shows that with the adjusted bathymetry, the flow through the Crow Hop Dam breach is diminished significantly and centralized through the center of the breach. At the WP min flow, portions of the main river channel are no longer wetted, and the areas downstream from the second and third rock weirs (including the proposed rock ramp) are dry. At WP min flow +1 gen unit, most of the river would be wetted and at WP min flow +2 gen units the entire river is wetted, similar to existing conditions (i.e., dams in place). Maximum velocities through the breached dam are approximately 2 fps at WP min flow and exceed 8 fps at WP min flow +2 gen units, with lower velocities near the shore. (Figure 7-23, Figure 7-24Figure 7–24, and Figure 7-25).

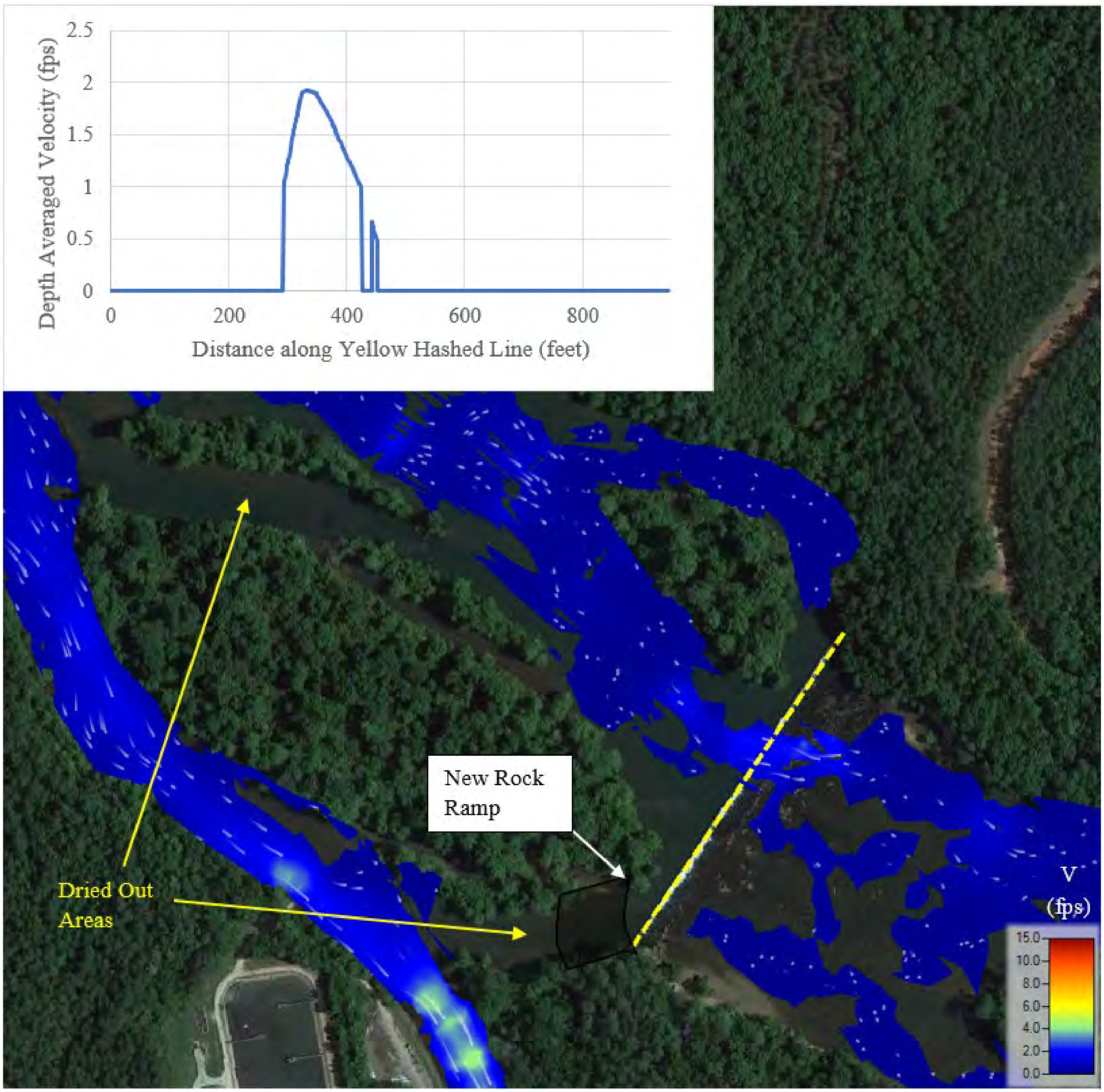

FIGURE 7–23 DAM REMOVAL, ADJUSTED BATHYMETRY – WEST POINT MINIMUM FLOW VELOCITY AND WETTED AREA NEAR CROW HOP DAM

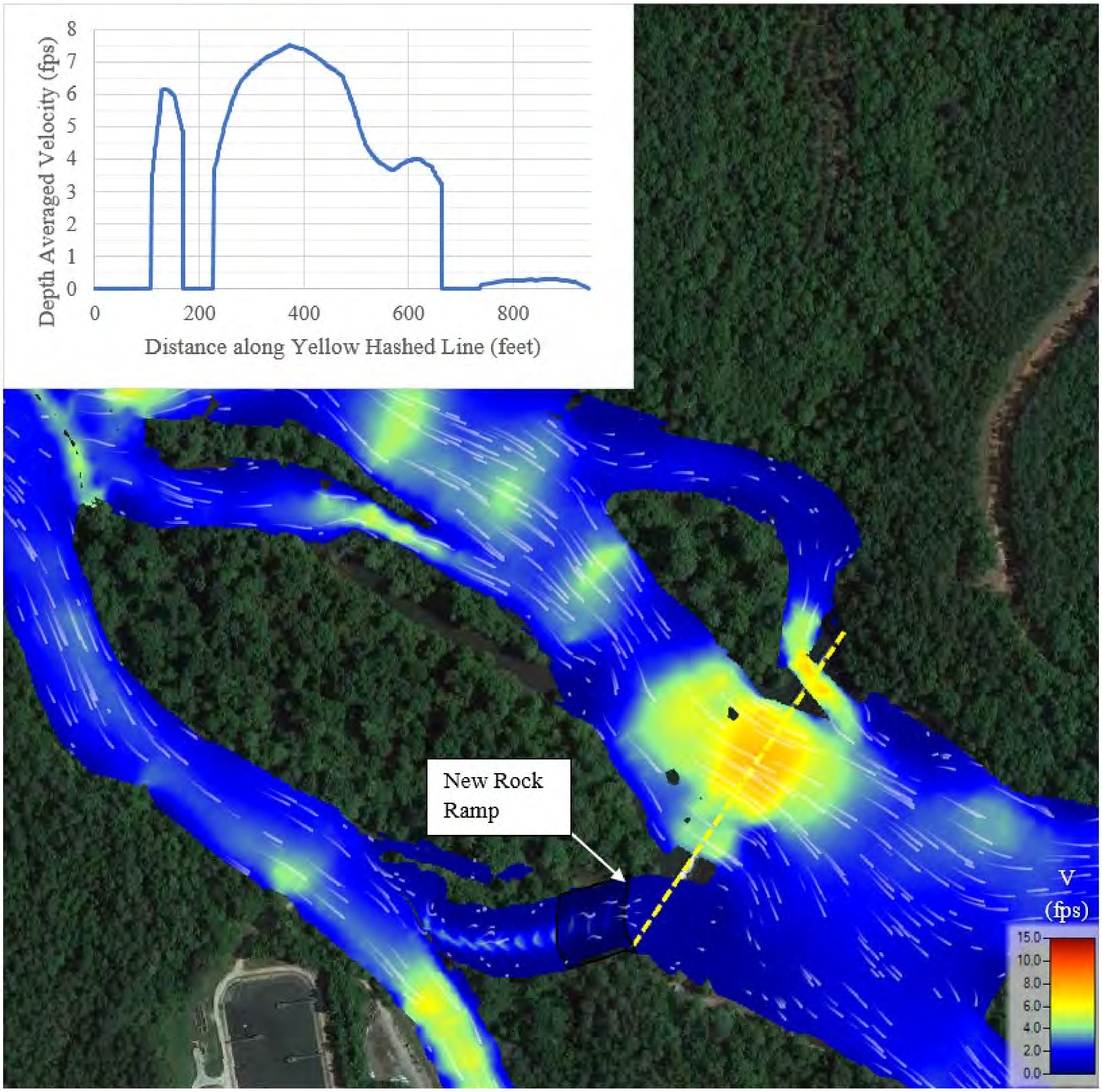

FIGURE 7–24 DAM REMOVAL, ADJUSTED BATHYMETRY – WEST POINT MINIMUM FLOW +1 GENERATING UNIT VELOCITY AND WETTED AREA NEAR CROW HOP DAM

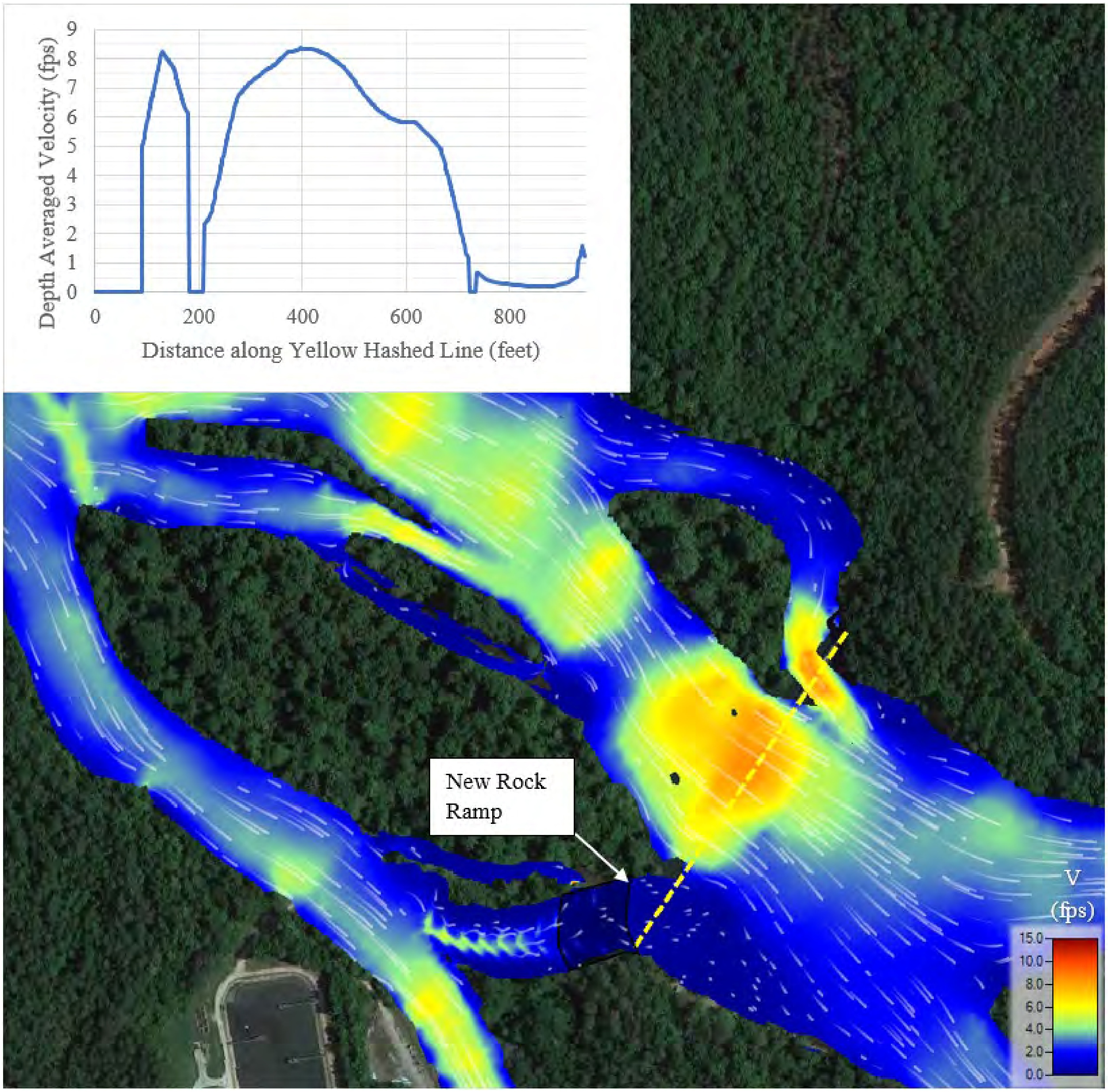

FIGURE 7–25 DAM REMOVAL, ADJUSTED BATHYMETRY – WEST POINT MINIMUM FLOW +2 GENERATING UNITS VELOCITY AND WETTED AREA NEAR CROW HOP DAM

The model indicates that due to the significant increase in flow associated with the adjusted bathymetry in the Riverview Channel, the water surface will drop but the area remains wetted under all flow conditions. The steep drop in the terrain where the Riverview Dam is located is removed with the adjusted bathymetry, and velocities spilling over the breached dam will exceed 5 fps at WP min flow and 6 fps at WP min flow +2 gen units, with lower velocities near shore, as well as upstream and downstream of the breach (Figure 7–26, Figure 7–27, and Figure 7–28). It should be noted that high velocities over existing sediments will likely mobilize sand-size substrates, as loose coarse sand is typically mobilized at a near-streambed velocity of 2 fps.

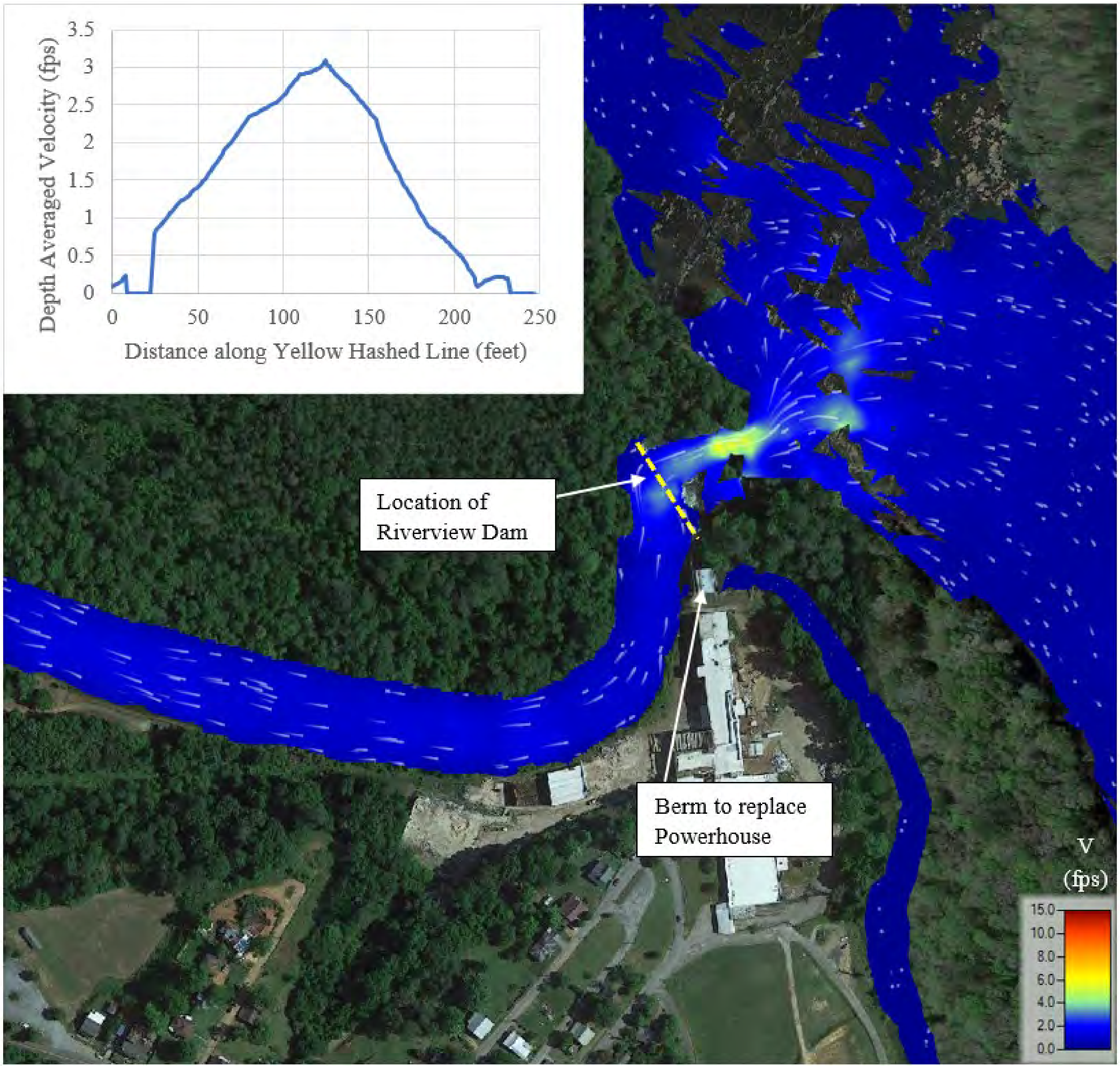

FIGURE 7–26 DAM REMOVAL, ADJUSTED BATHYMETRY – WEST POINT MINIMUM FLOW VELOCITY AND WETTED AREA NEAR RIVERVIEW DAM

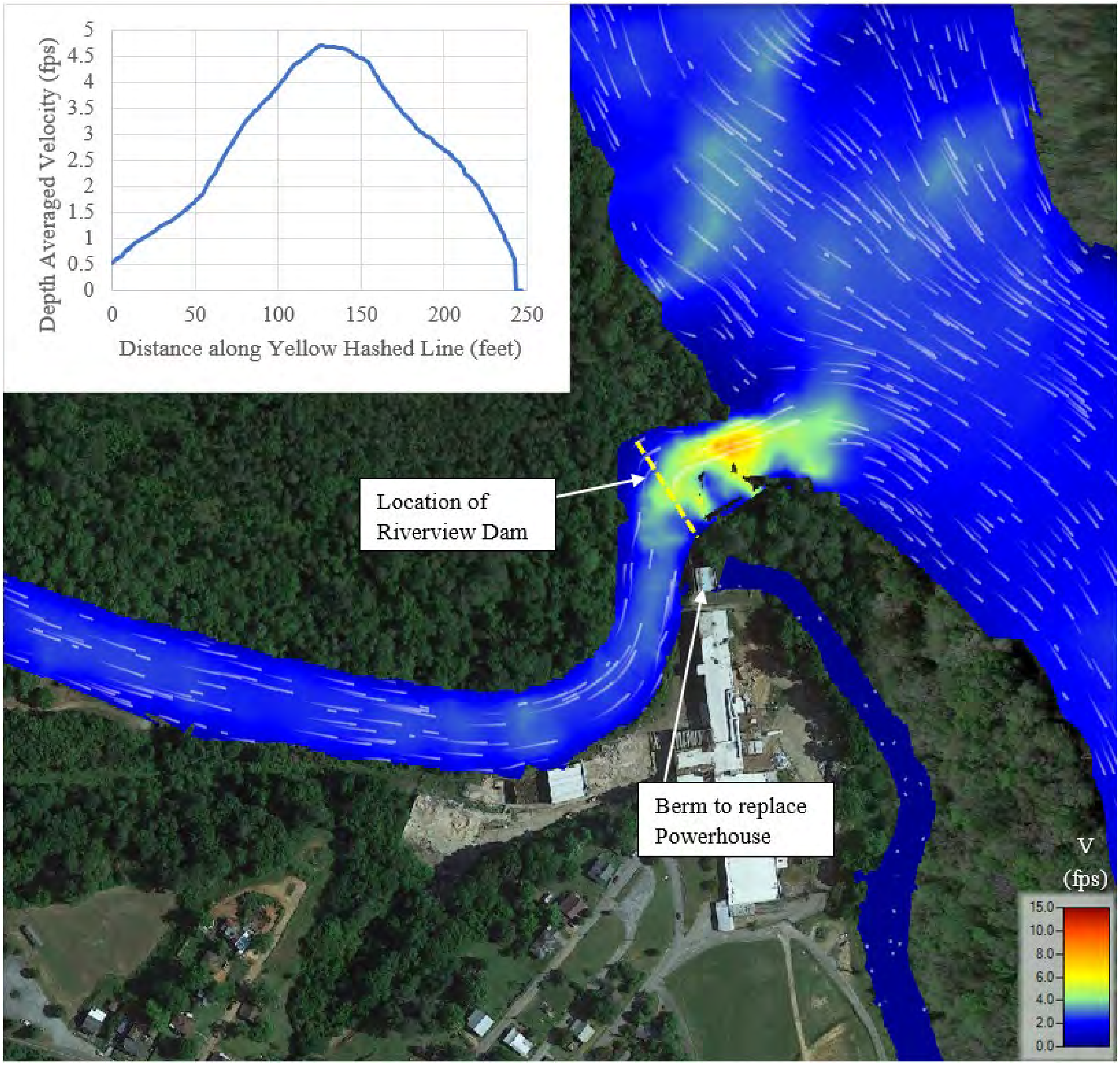

FIGURE 7–27 DAM REMOVAL, ADJUSTED BATHYMETRY – WEST POINT MINIMUM FLOW +1 GENERATING UNIT VELOCITY AND WETTED AREA NEAR RIVERVIEW DAM

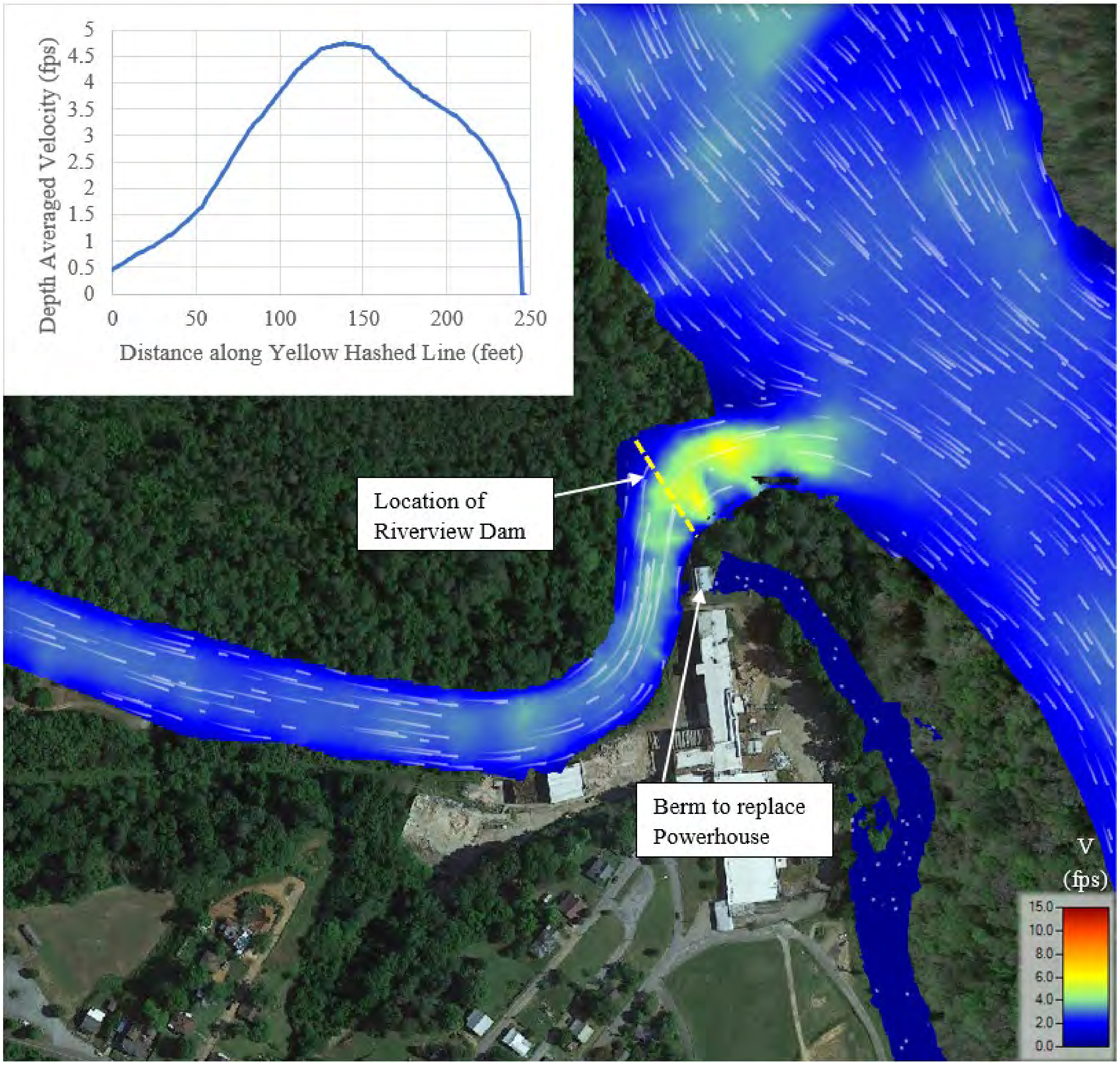

FIGURE 7–28 DAM REMOVAL, ADJUSTED BATHYMETRY – WEST POINT MINIMUM FLOW +2 GENERATING UNITS VELOCITY AND WETTED AREA NEAR RIVERVIEW DAM

Figure 7-29 provides a comparison of the areas wetted by the river at the Projects with dams removed and adjusted bathymetry for all three flow conditions.

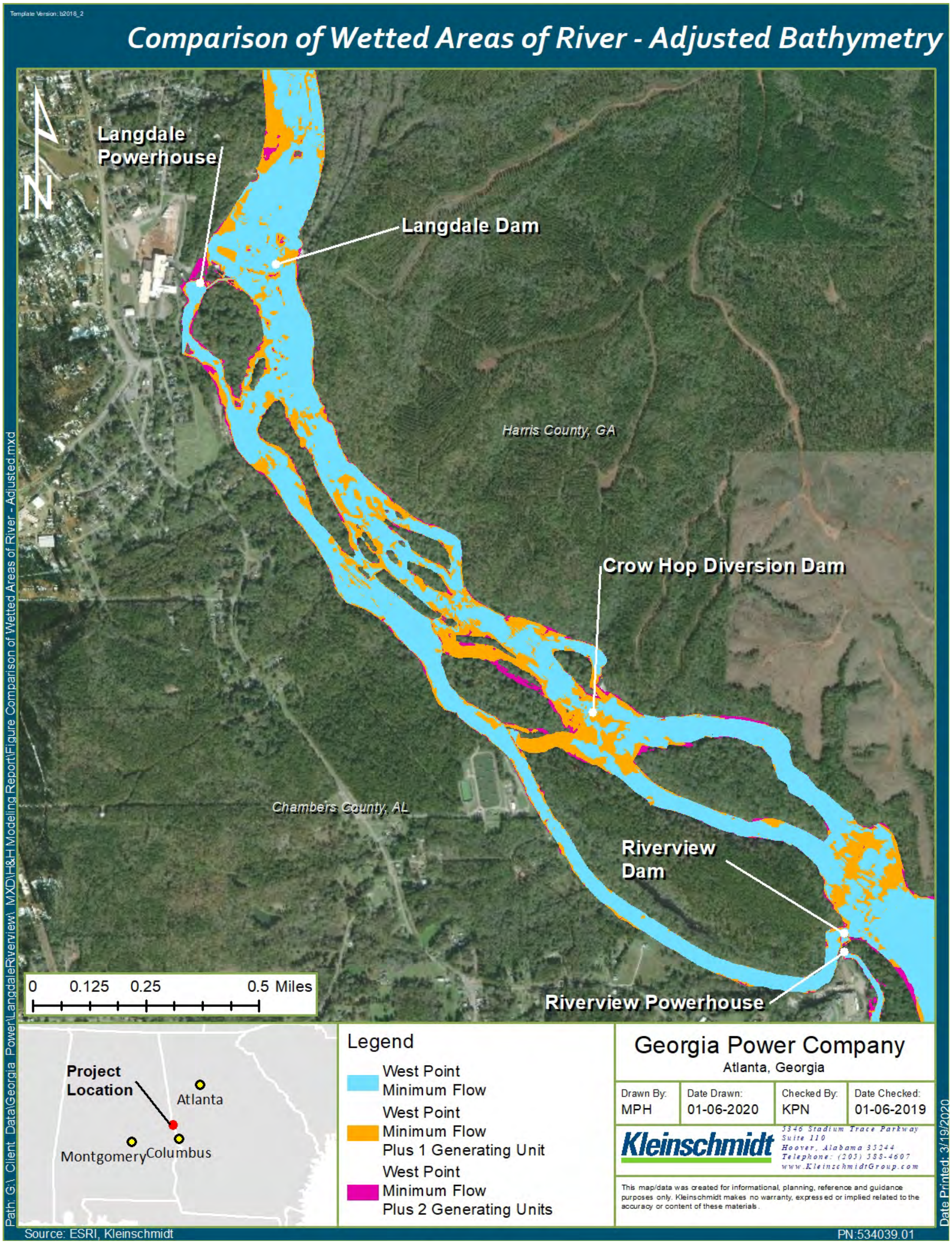

FIGURE 7–29 DAM REMOVAL, ADJUSTED BATHYMETRY – WETTED AREAS OF THE RIVER POST-DAM REMOVAL

7.5 Dam Removal – Effects on River Flow Distribution Changes

7.5.1 Existing Bathymetry

Removing the dams results in a redistribution of flow in the Chattahoochee River between its various channels. However, the proposed decommissioning is not anticipated to have any substantial change to the Chattahoochee River below the Riverview powerhouse as flows are redistributed in the Project areas, but all return to the main channel below Riverview Dam. There are no proposed changes to the amount of flow in the river. Figure 7–30 shows the river near the two Projects with different channels assigned numbers, and Table 7–1, Table 7–2, and Table 7–3 provide the flow in each channel under existing conditions and the post-dam removal, existing bathymetry conditions.

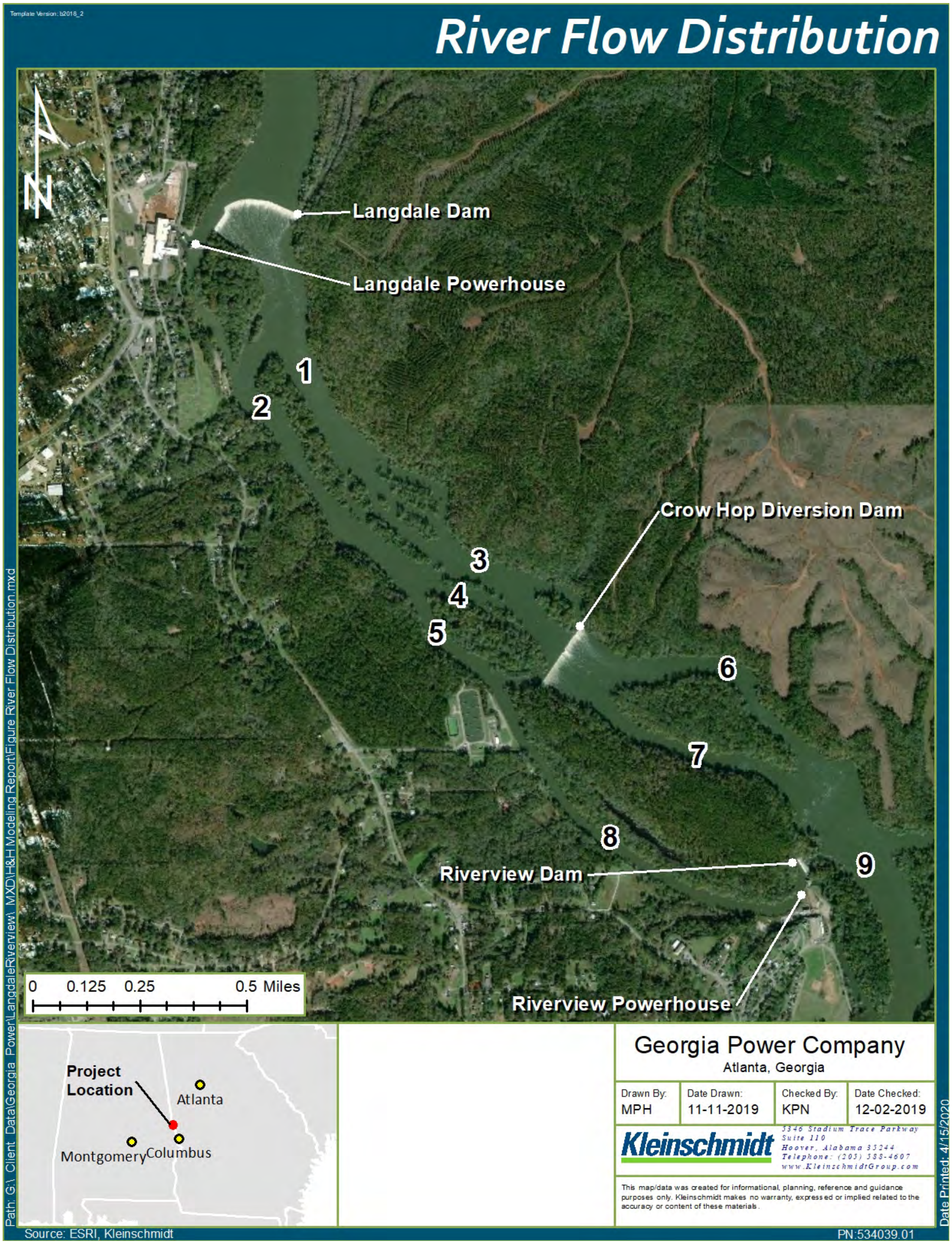

FIGURE 7–30 CHATTAHOOCHEE RIVER FLOW DISTRIBUTION LOCATIONS

TABLE 7–1 DAM REMOVAL, EXISTING BATHYMETRY FLOW DISTRIBUTION VERSUS EXISTING CONDITIONS – WEST POINT MINIMUM FLOW

RIVER LOCATION	EXISTING CONDITIONS FLOW (CFS)	POST-DAM REMOVAL FLOW (CFS)	CHANGE IN FLOW (CFS)	PERCENT CHANGE IN FLOW (%)
1	115	86	-29	-25%
2	560	589	29	5%
3	212	291	79	37%
4	35	49	14	40%
5	428	335	-93	-22%
6	74	349	275	372%
7	24	133	109	454%
8	577	193	-384	-67%
9	670	670	0	0%

TABLE 7–2 DAM REMOVAL, EXISTING BATHYMETRY FLOW DISTRIBUTION VERSUS EXISTING CONDITIONS – WEST POINT MINIMUM FLOW +1 GENERATING UNIT

RIVER LOCATION	EXISTING CONDITIONS FLOW (CFS)	POST-DAM REMOVAL FLOW (CFS)	CHANGE IN FLOW (CFS)	PERCENT CHANGE IN FLOW (%)
1	3,756	3,750	-6	0%
2	4,519	4,525	6	0%
3	5,146	5,999	853	17%
4	1,006	974	-32	-3%
5	2,123	1,302	-821	-39%
6	4,781	5,244	463	10%
7	2,203	2,449	246	11%
8	1,292	583	-710	-55%
9	8,275	8,275	0	0%

TABLE 7–3 DAM REMOVAL, EXISTING BATHYMETRY FLOW DISTRIBUTION VERSUS EXISTING CONDITIONS – WEST POINT MINIMUM FLOW +2 GENERATING UNITS

RIVER LOCATION	EXISTING CONDITIONS FLOW (CFS)	POST-DAM REMOVAL FLOW (CFS)	CHANGE IN FLOW (CFS)	PERCENT CHANGE IN FLOW (%)
1	7,940	7,916	-24	0%
2	7,933	7,957	24	0%
3	9,996	11,543	1,547	15%
4	2,050	1,949	-101	-5%
5	3,828	2,382	-1,446	-38%
6	9,234	9,807	573	6%
7	4,706	5,102	396	8%
8	1,934	965	-969	-50%
9	15,875	15,875	0	0%

7.5.2 ADJUSTED BATHYMETRY

Removing the dams and adjusting the bathymetry results in a redistribution of flow in the Chattahoochee River between its various channels, as was likely typical prior to the construction of the Project dams. Figure 7–30 shows the river near the Projects with different channels assigned numbers, and Table 7–4, Table 7–5, and Table 7–6 provide the flow in each channel under existing conditions (i.e., dams in place) and post-dam removal with the adjusted bathymetry. The model shows a significantly higher flow into the Riverview channel under the three flows.

TABLE 7–4 DAM REMOVAL, ADJUSTED BATHYMETRY FLOW DISTRIBUTION VERSUS EXISTING CONDITIONS – WEST POINT MINIMUM FLOW

RIVER LOCATION	EXISTING CONDITIONS FLOW (CFS)	POST-DAM REMOVAL FLOW (CFS)	CHANGE IN FLOW (CFS)	PERCENT CHANGE IN FLOW (%)
1	115	81	-34	-30%
2	560	594	34	6%
3	212	85	-127	-60%
4	35	0	-35	-100%
5	428	590	162	38%
6	74	84	10	14%
7	24	2	-22	-92%
8	577	589	12	2%
9	670	670	0	0%

TABLE 7–5 ADJUSTED BATHYMETRY DAM REMOVAL FLOW DISTRIBUTION VERSUS EXISTING CONDITIONS – WEST POINT MINIMUM +1 GENERATING UNIT

RIVER LOCATION	EXISTING CONDITIONS FLOW (CFS)	POST-DAM REMOVAL FLOW (CFS)	CHANGE IN FLOW (CFS)	PERCENT CHANGE IN FLOW (%)
1	3,756	3,712	-44	-1%
2	4,519	4,563	44	1%
3	5,146	5,190	44	1%
4	1,006	682	-324	-32%
5	2,123	2,403	280	13%
6	4,781	4,143	-638	-13%
7	2,203	1,878	-325	-15%
8	1,292	2,255	963	75%
9	8,275	8,275	0	0%

TABLE 7–6 ADJUSTED BATHYMETRY DAM REMOVAL FLOW DISTRIBUTION VERSUS EXISTING CONDITIONS – WEST POINT MINIMUM FLOW +2 GENERATING UNITS

RIVER LOCATION	EXISTING CONDITIONS FLOW (CFS)	POST-DAM REMOVAL FLOW (CFS)	CHANGE IN FLOW (CFS)	PERCENT CHANGE IN FLOW (%)
1	7,940	7,834	-106	-1%
2	7,933	8,039	106	1%
3	9,996	10,607	611	6%
4	2,050	1,617	-433	-21%
5	3,828	3,650	-178	-5%
6	9,234	8,350	-884	-10%
7	4,706	4,317	-389	-8%
8	1,934	3,207	1,273	66%
9	15,875	15,875	0	0%

As noted in the flow distribution tables, using the adjusted bathymetry resulted in the model predicting more water entering the Riverview Channel at all flow conditions. However, an increase in flow does not mean that the water surface elevations in the channel will rise above the existing conditions. Table 7–7 provides water surface elevation in the Riverview Channel at the WP min flow and WP min flow +2 gen units. It is important to note that due to the assumption made in the development of the adjusted bathymetry all the sediment across the entire width of the channel naturally migrates out of the channel down to a depth equal to the measured refusal depths. The actual anticipated conditions will likely slope up from the centerline of the flow in the channel to the top of bank of the existing shore elevations at a slope. Because the natural slope up to the bank was not estimated, the water surface modelled under the adjusted bathymetry scenario, overestimates the water drop caused by the dam removal.

TABLE 7–7 RIVERVIEW CHANNEL WATER SURFACE ELEVATION CHANGES

LOCATION	WEST POINT MINIMUM FLOW			WEST POINT MINIMUM FLOW +2 GEN UNITS		
	EXISTING WATER EL (FEET)	ADJUSTED BATHYMETRY WATER EL (FEET)	CHANGE (FEET)	EXISTING WATER EL (FEET)	ADJUSTED BATHYMETRY WATER EL (FEET)	CHANGE (FEET)
Downstream from Rock Weir No. 3	534	529.3	-4.7	536.8	532.5	-4.3
Upstream of Riverview Dam	532.3	523.9	-8.4	533.2	527.1	-6.1

7.6 DAM REMOVAL- EFFECTS ON INFRASTRUCTURE

Various types of infrastructure located on the Chattahoochee River between the West Point Dam and the Projects may be affected by Georgia Power's proposed removal of the dams. Infrastructure on the river includes wastewater treatment plant (WWTP) outfalls, raw water intakes, public boat launches, and lift stations. Figure 7–31 shows the infrastructure located throughout the model study area that may be affected by dam removal.

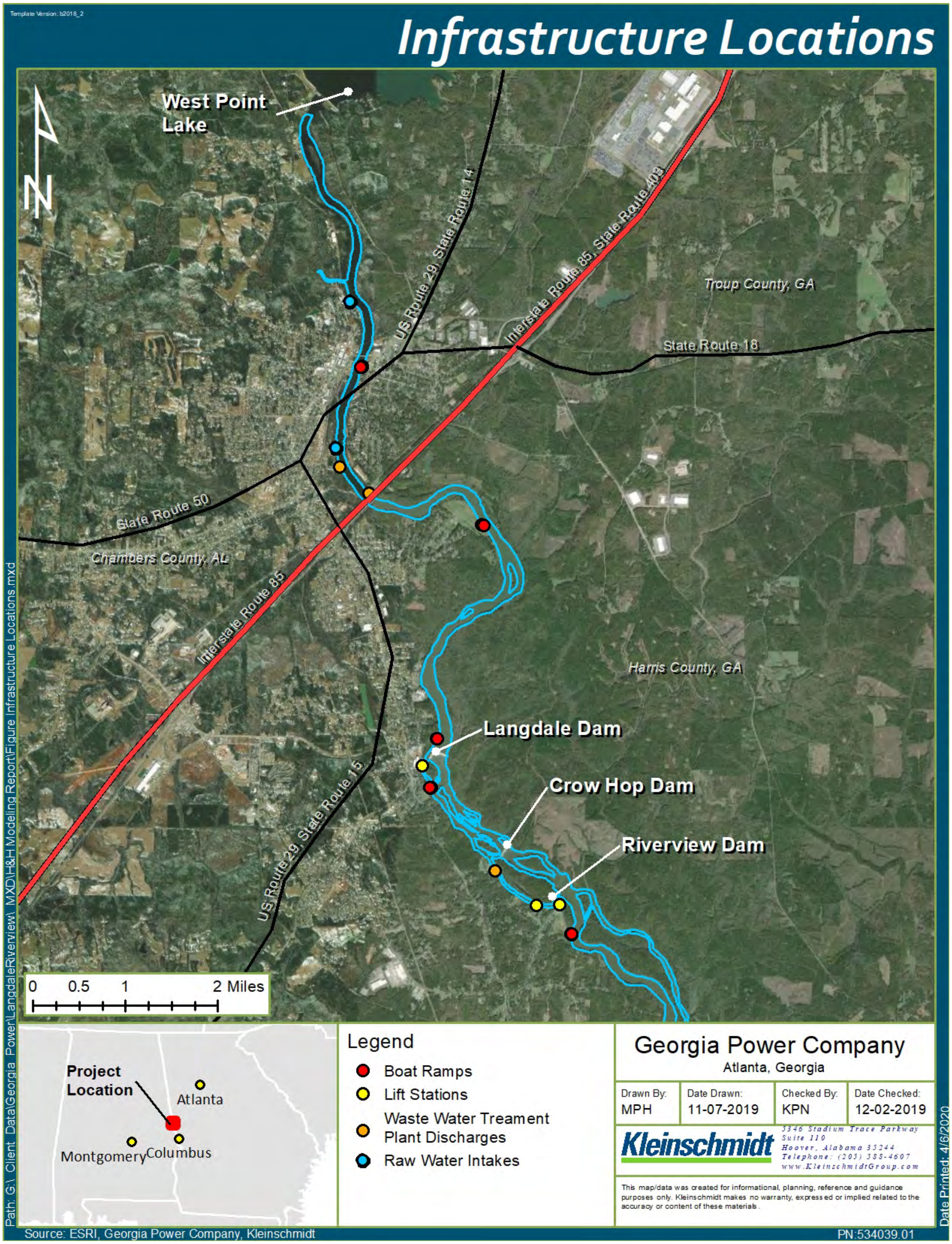

FIGURE 7–31 ON-RIVER INFRASTRUCTURE LOCATIONS

7.6.1 EXISTING BATHYMETRY

Based on the model, the proposed removal of the dams results in the following effects to infrastructure (see Figure 7–31) along the river:

- ☒ The public Cemetery Park boat ramp located between the Langdale and Crow Hop Dams may be partially dewatered at WP min flow, but not WP min flow +1 or +2 gen units. Under WP min flow post-dam removal, the velocity of the river closest to the boat launch would decrease from approximately 0.2 fps to 0.1 fps; under WP min flow +1 gen unit the velocity would decrease from approximately 1.4 fps to 0.5 fps; and under WP min flow +2 Gen units the velocity would decrease from approximately 1.8 fps to 1.1 fps.
- ☒ The Shawmut Airport boat ramp, located approximately 3 miles upstream of the Langdale Dam, would be dewatered at WP min flow. The ramp would not be dewatered at WP min flow +1 or +2 gen units but may be affected by the reduced water depth. Under WP min flow post-dam removal, the velocity of the river closest to the boat launch would not change from existing conditions; under WP min flow +1 gen unit the velocity would increase from approximately 1.5 fps to 1.7 fps; and under WP min flow +2 gen units the velocity would increase from approximately 2.0 fps to 2.3 fps.

7.6.2 ADJUSTED BATHYMETRY

The model indicates that proposed dam removal with the adjusted bathymetry results in the following effects to infrastructure (see Figure 7–33) along the river:

- ☒ The Cemetery Park boat ramp located between the Langdale and Crow Hop Dams may be partially dewatered at WP min flow but wetted under WP min flow +1 or +2 gen units. Under WP min flow post-dam removal, the velocity of the river closest to the boat launch would decrease from approximately 0.2 fps to 0.1 fps; under WP min flow +1 gen unit the velocity would decrease from approximately 1.4 fps to 0.5 fps; and under WP min flow +2 gen units the velocity would decrease from approximately 1.8 fps to 1.3 fps.
- ☒ The Shawmut Airport boat ramp, located approximately 3 miles upstream of Langdale Dam, would be dewatered at WP min flow. The ramp would not be dewatered at WP min flow +1 or +2 gen units but may be affected by reduced water depth. Under WP min flow post-dam removal, the velocity of the river closest to the boat launch would not change from existing conditions; under WP min flow +1 gen unit the velocity would increase from approximately 1.5 fps to 1.7 fps; and under WP min flow +2 gen units the velocity would increase from approximately 2.0 fps to 2.3 fps.

7.6.3 Infrastructure Not Affected

7.6.3.1 Existing Bathymetry

7.6.3.1.1 East Alabama Lower Valley Wastewater Treatment Plant (Valley WWTP)

The East Alabama Lower Valley Wastewater Treatment Plant (Valley WWTP) discharges treated effluent to the Chattahoochee River at the upstream end of the Riverview Channel. ADEM has indicated that the National Pollution Discharge Elimination System (NPDES) permit for the Valley WWTP is based on the 7Q10 flow of 136 cfs in the Riverview Channel. Based on modeling results, the decommissioning and removal of Crow Hop and Riverview Dams will result in a minimum flow of at least 193 cfs in the Riverview Channel under the WP min flow discharge from the upstream West Point Dam and the existing bathymetry and allow Valley WWTP to continue operating to meet NPDES requirements. Additionally, when West Point Dam's large turbine units are added during peaking there is significantly more flow than 193 cfs present in the Riverview Channel. Georgia Power discussed these issues with ADEM in its consultations which occurred on September 5, 2019, November 7, 2019, and via a follow-up phone conference on November 13, 2019. Additionally, this item was the subject of discussion with the East Alabama Water and Sewer Authority on July 22, 2019, and December 16, 2019. All consultation documentation is provided concurrent with this Final Study Results filing.

7.6.3.1.2 Water Intakes and Boat Ramp Infrastructure Upstream of the I-85 Bridge and the West Point Dam Tailrace

No other substantial impacts to known public infrastructure along the river, specifically upstream of Interstate 85, are anticipated based on the modeling results. Figure 7-32 shows the existing condition and post-dam removal, existing bathymetry condition water surface profiles measured along the Chattahoochee River from the Interstate 85 bridges to the Langdale Dam. As the profiles show, there is a natural hydraulic control (i.e., shoals) based on the bathymetry just downstream of the Interstate 85 bridge that prevents substantial impacts to infrastructure located upstream of Interstate 85. The model predicts a 0.3-foot water surface elevation decrease at the I-85 bridge at WP min flow, and the change continues to decrease moving upstream of I-85.

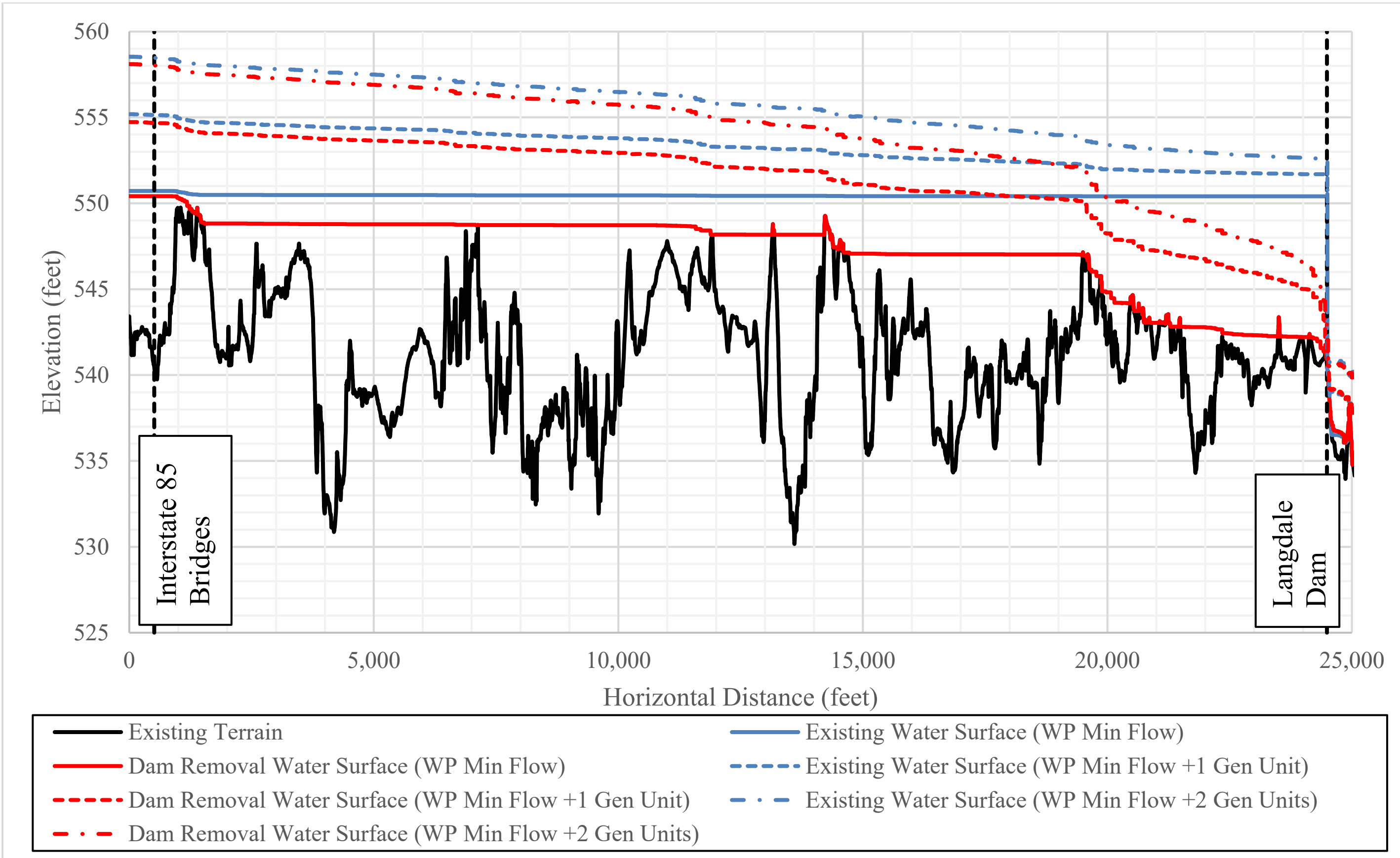

FIGURE 7–32 DAM REMOVAL, EXISTING BATHYMETRY – WATER SURFACE PROFILES FROM INTERSTATE 85 TO LANGDALE DAM

7.6.3.2 ADJUSTED BATHYMETRY

7.6.3.2.1 EAST ALABAMA LOWER VALLEY WASTEWATER TREATMENT PLANT (VALLEY WWTP)

The East Alabama Lower Valley Wastewater Treatment Plant (Valley WWTP) discharges treated effluent to the Chattahoochee River at the upstream end of the Riverview Channel. ADEM has indicated that the National Pollution Discharge Elimination System (NPDES) permit for the Valley WWTP is based on the 7Q10 flow of 136 cfs in the Riverview Channel. Based on modeling results, the decommissioning and removal of Crow Hop and Riverview Dams will result in a minimum flow of at least 589 cfs in the Riverview Channel under the WP min flow discharge from the upstream West Point Dam and the adjusted bathymetry and allow Valley WWTP to continue operating to meet NPDES requirements. Additionally, when West Point Dam's large turbine units are added during peaking there is significantly more flow than 589 cfs present in the Riverview Channel. Georgia Power discussed these issues with ADEM in its consultations which occurred on September 5, 2019, November 7, 2019, and via a follow-up phone conference on November 13, 2019. Additionally, this item was the subject of discussion with the East Alabama Water and Sewer Authority on July 22, 2019, and December 16, 2019. All consultation documentation is provided concurrent with this Final Study Results filing.

7.6.3.2.2 WATER INTAKES AND BOAT RAMP INFRASTRUCTURE UPSTREAM OF THE I-85 BRIDGE AND THE WEST POINT DAM TAILRACE

No other substantial impacts to known public infrastructure along the river, specifically upstream of Interstate 85, are anticipated based on the modeling results. **Error! Reference source not found.**Figure 7-33 shows the existing condition and post-dam removal, adjusted bathymetry condition water surface profiles measured along the Chattahoochee River from the Interstate 85 bridges to the Langdale Dam. As the profiles show, there is a natural hydraulic control (i.e., shoals) based on the bathymetry just downstream of the Interstate 85 bridge that prevents substantial impacts to infrastructure located upstream of Interstate 85. The model predicts a 0.3-foot water surface elevation decrease at the I-85 bridge at WP min flow, and the change continues to decrease moving upstream of I-85.

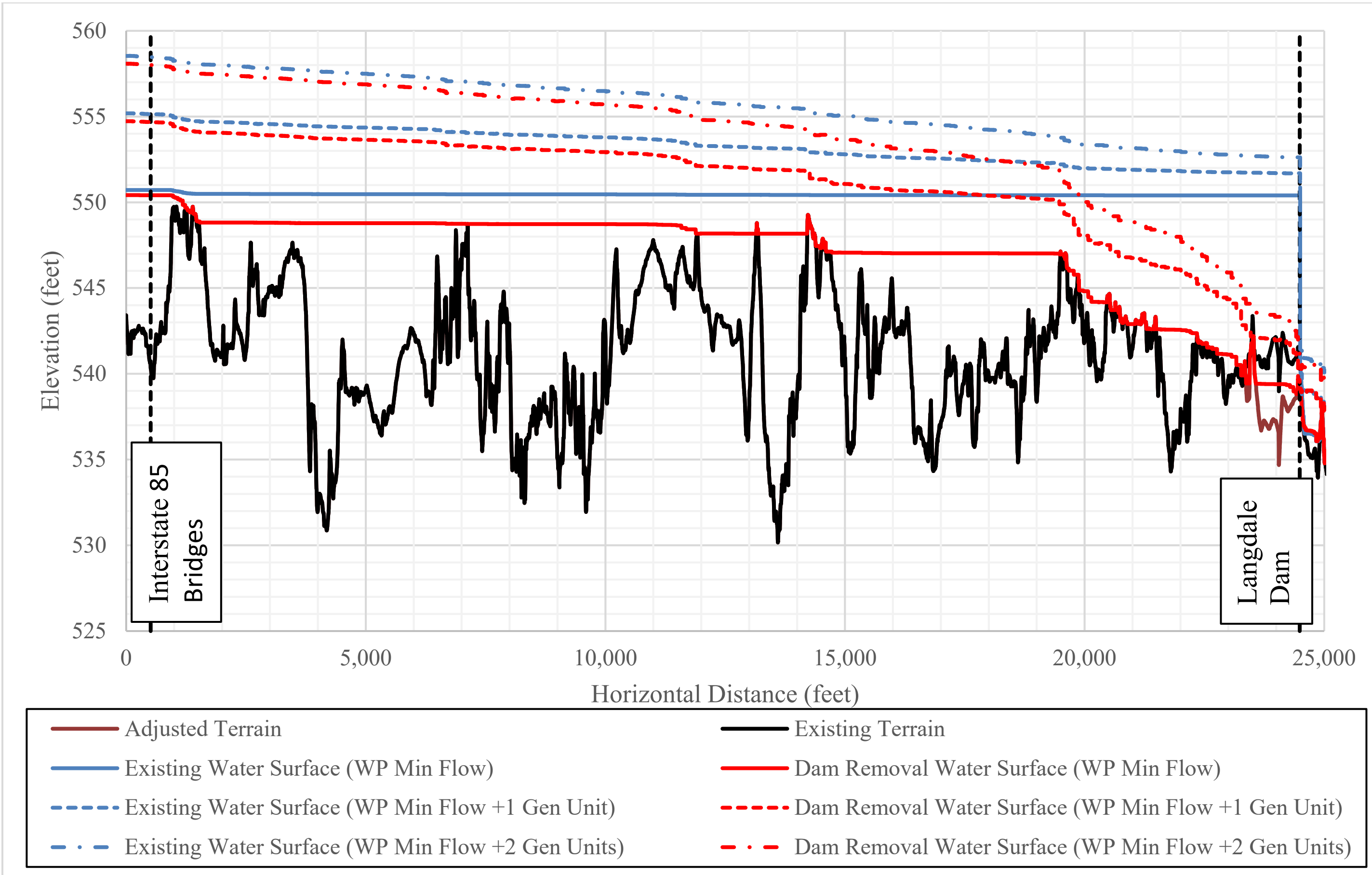

FIGURE 7–33 DAM REMOVAL, ADJUSTED BATHYMETRY – WATER SURFACE PROFILES FROM INTERSTATE 85 TO LANGDALE DAM

7.7 DAM REMOVAL – EFFECTS ON 100-YEAR FLOOD CONDITIONS

Removing the Projects' dams provides a benefit to the local communities by reducing the peak 100-year flood elevations upstream of the dams. The most dramatic reduction in the 100-year floodplain extent occurs upstream of the Langdale Dam (Figure 7–34 and Figure 7–35), and the model shows that removal of the dams would reduce the area affected by flooding upstream of the Projects during the 100-year flood by approximately 40 acres. The results of the 100-year flood modeling using the adjusted bathymetry are very similar to the results using the existing condition bathymetry with the dams removed.

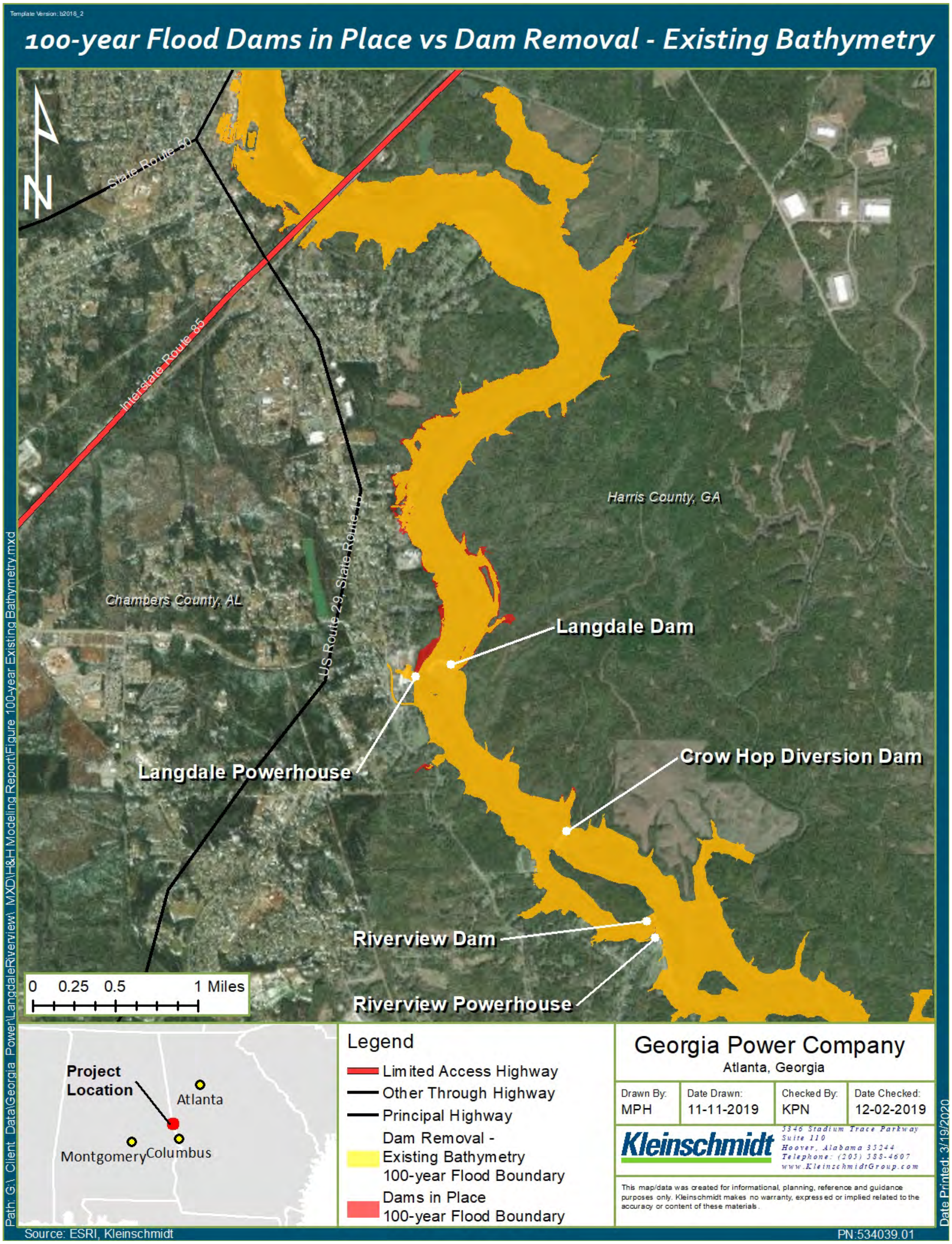

FIGURE 7–34 100-YEAR FLOOD BOUNDARY EXISTING CONDITIONS VS. DAM REMOVAL – EXISTING BATHYMETRY

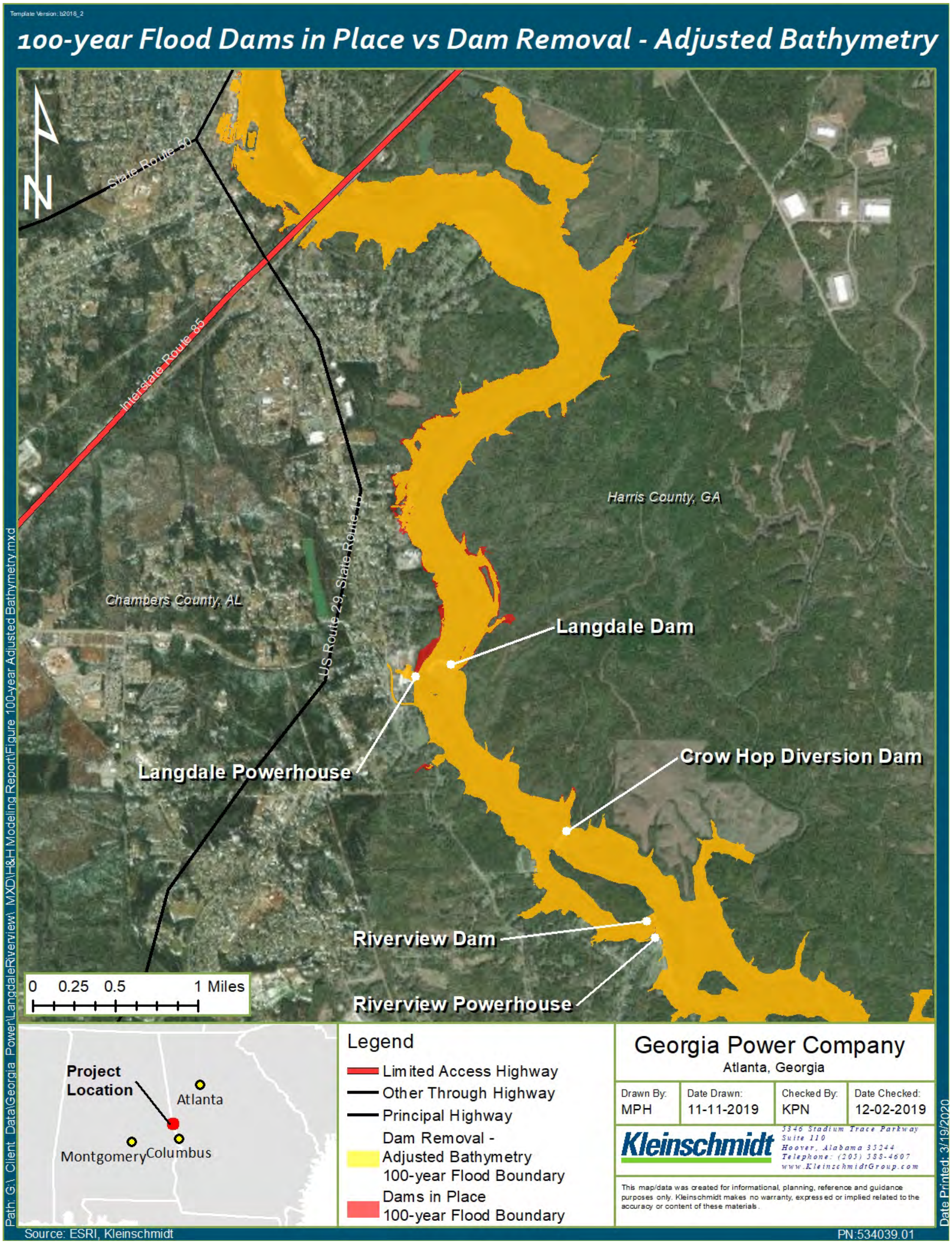

FIGURE 7–35 100-YEAR FLOOD BOUNDARY EXISTING CONDITIONS VS. DAM REMOVAL – ADJUSTED BATHYMETRY

7.8 DAM REMOVAL – EFFECTS ON PRIVATE PROPERTY OWNERS' PARCELS

There are 72 property parcels abutting the river between the I-85 bridges and Riverview Dam, which have been assigned values 1 to 79 (7 parcels are owned by GPC). The parcel maps show an existing conditions depth and velocity, a post-removal depth and a velocity, and post-removal water surface change, all at a location near where owners could access the river from their property. The model simulations that show the greatest lateral change at each property (e.g., dam removal simulations using existing bathymetry or adjusted bathymetry) are shown on each map. The simulations using existing bathymetry show greater lateral changes for parcels 1 to 42 and the simulations using the adjusted bathymetry show greater lateral changes for parcels 43 to 79. The parcel maps and figures are provided in Appendix E.

Stakeholders who own property adjacent to the Chattahoochee River near the Langdale and Riverview Projects were invited to meet with Georgia Power on January 23, 2020, to discuss how the proposed license surrender and dam removal may affect property owners' parcels. Georgia Power prepared large-scale figures showing the depth, velocity, and changes in wetted area to discuss with property owners. Project renderings were provided. Georgia Power also prepared individual parcel maps to show respective property owners the anticipated effects for both the existing and adjusted bathymetry.

7.9 DAM REMOVAL – EFFECTS ON RIVER RECREATIONAL BOATING ACCESS

Georgia Power used the H&H model to determine the depths and velocities in the river and correlated those depths with the conservatively estimated minimum depths necessary to operate three types of vessels: 1) canoes and kayaks; 2) jon boat; and 3) bass boat. Georgia Power used the following depths to color code the attached maps to determine what watercraft are useable at existing conditions-dams in place, compared to post-dam removal with existing and adjusted bathymetry. Figure 7–36 through Figure 7–44 show the depths. The depths used to create the aforementioned figures are as follows:

- ☒ Red (0 – 0.8 foot): this depth is not navigable by any boat type.
- ☒ Orange (0.8 – 1.5 feet): this depth can be floated/poled through with a canoe.
- ☒ Yellow (1.5 – 2.5 feet): this depth is navigable by canoes, but not Jon boats.
- ☒ Green (2.5 – 4.0 feet): this depth is navigable by canoes and Jon boats, but not bass boats.
- ☒ Blue (4.0 + feet): this depth is navigable by all three boat types.

Georgia Power developed these depth ranges based on conversations with the state departments of natural resources, their personal experience of personnel that use the river in various conditions, and research of available resources. There are not published official values of minimum depth requirements for different types of vessels, since boats within the same "vessel class" built by different manufacturers can have different operating ranges. It is also important to note that depths less than those described can provide passage by each respective vessel class, but their navigational ability may be limited at lesser depths.

7.9.1 EXISTING CONDITIONS

Figure 7–36 through Figure 7–38 show depth along the river for the existing conditions at the WP min flow. There is a shoal complex just downstream from I-85 that is navigable by kayaks and canoes, is not navigable by bass boat, and may possibly be navigated by skilled jon boat operators (Figure 7–36). There are two more shoal complexes further downstream that are not currently navigable by bass boats but can navigated by all other vessels. Figure 7-37 shows that the Langdale Dam poses an obvious impediment to travel upstream and downstream by any type of vessel. There are shoals downstream of Langdale Dam that can be kayaked and canoed. By sticking to the west side of the river, jon boats can navigate from Riverview Dam to the Langdale Dam tailrace (Figure 7–38).

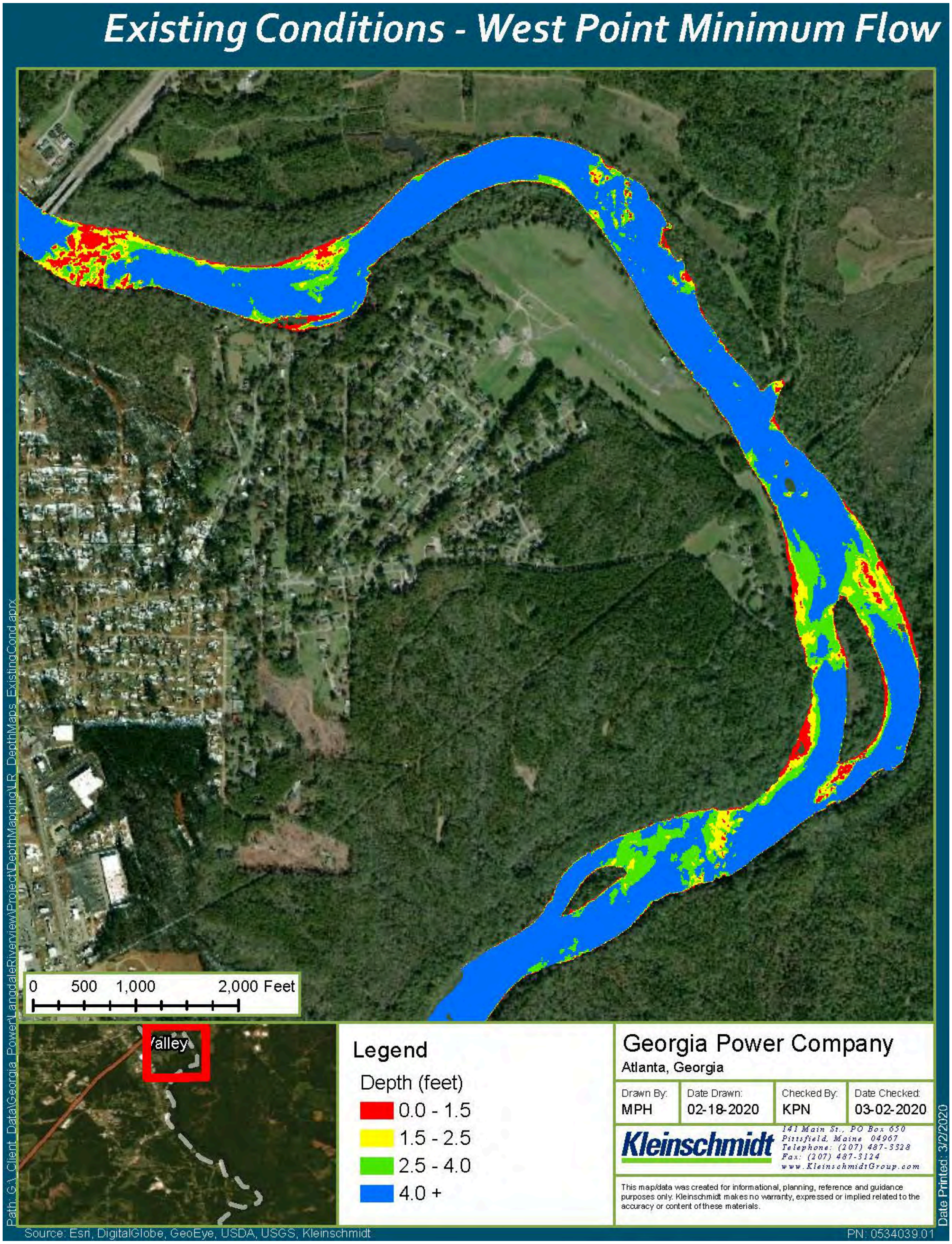

FIGURE 7–36 EXISTING CONDITIONS – WEST POINT MINIMUM FLOW – UPPER REACH

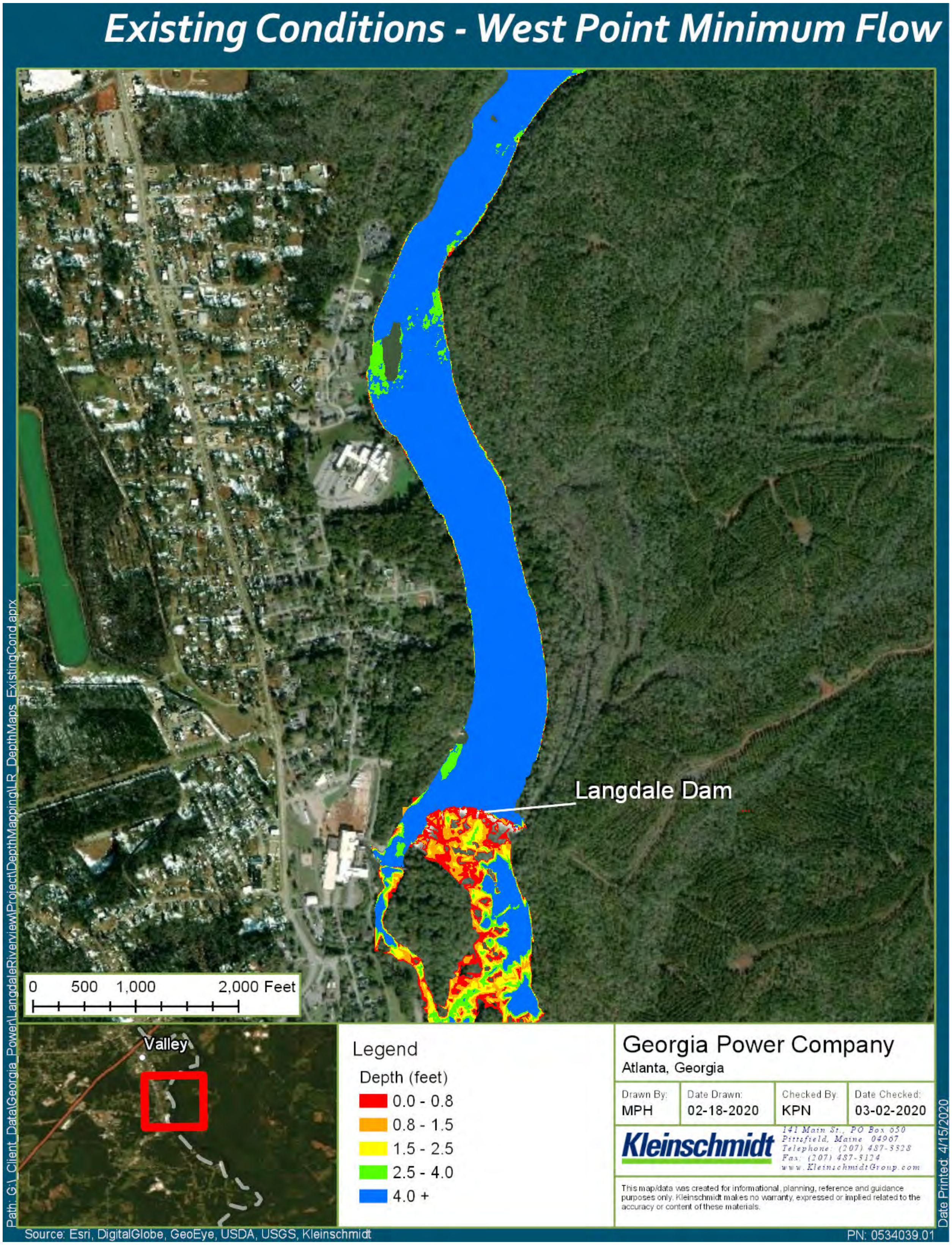

FIGURE 7–37 EXISTING CONDITIONS – WEST POINT MINIMUM FLOW – MIDDLE REACH

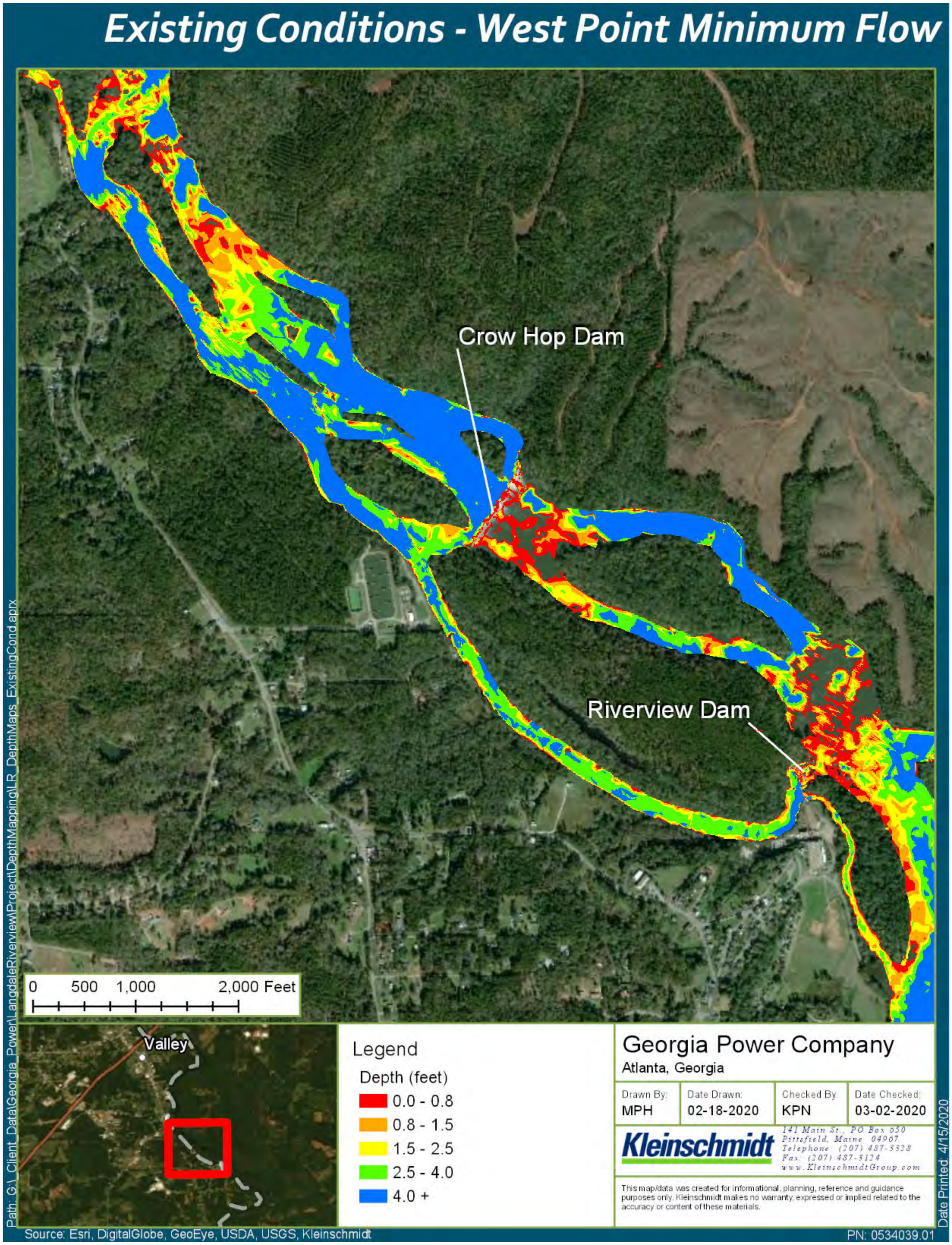

FIGURE 7–38 EXISTING CONDITIONS – WEST POINT MINIMUM FLOW – LOWER REACH

7.9.2 EXISTING BATHYMETRY

Figure 7–39 through Figure 7–41 show model results for depth along the river for the post-removal conditions using the existing bathymetry at the WP min flow, for the dam removal scenario. The shoal complex just downstream from I-85 that is still navigable by kayaks and canoes, continues to not be navigable by bass boat, and cannot be navigated by jon boat (Figure 7–39). The two shoal complexes further downstream can be navigated by kayaks and canoes but not by other vessels (Figure 7–40). Figure 7–41 shows that the removal of the Langdale Dam makes navigability upstream to downstream of the dam possible by kayaks and canoes, but the headpond of the Langdale Dam is no longer universally navigable by jon boat or bass boat. The shoals downstream of Langdale Dam continue to be navigable for kayaks and canoes. By sticking to the west side of the river, jon boats can navigate from the Langdale Powerhouse tailrace to the entrance to the Riverview Channel, but the Riverview Channel is not entirely navigable by jon boat. It is no longer possible to operate a bass boat between the Langdale Powerhouse tailrace and the Riverview Channel. After the Crow Hop Dam is removed, it appears that it may be possible to navigate upstream and downstream of the dam using a kayak or canoe (Figure 7–41).

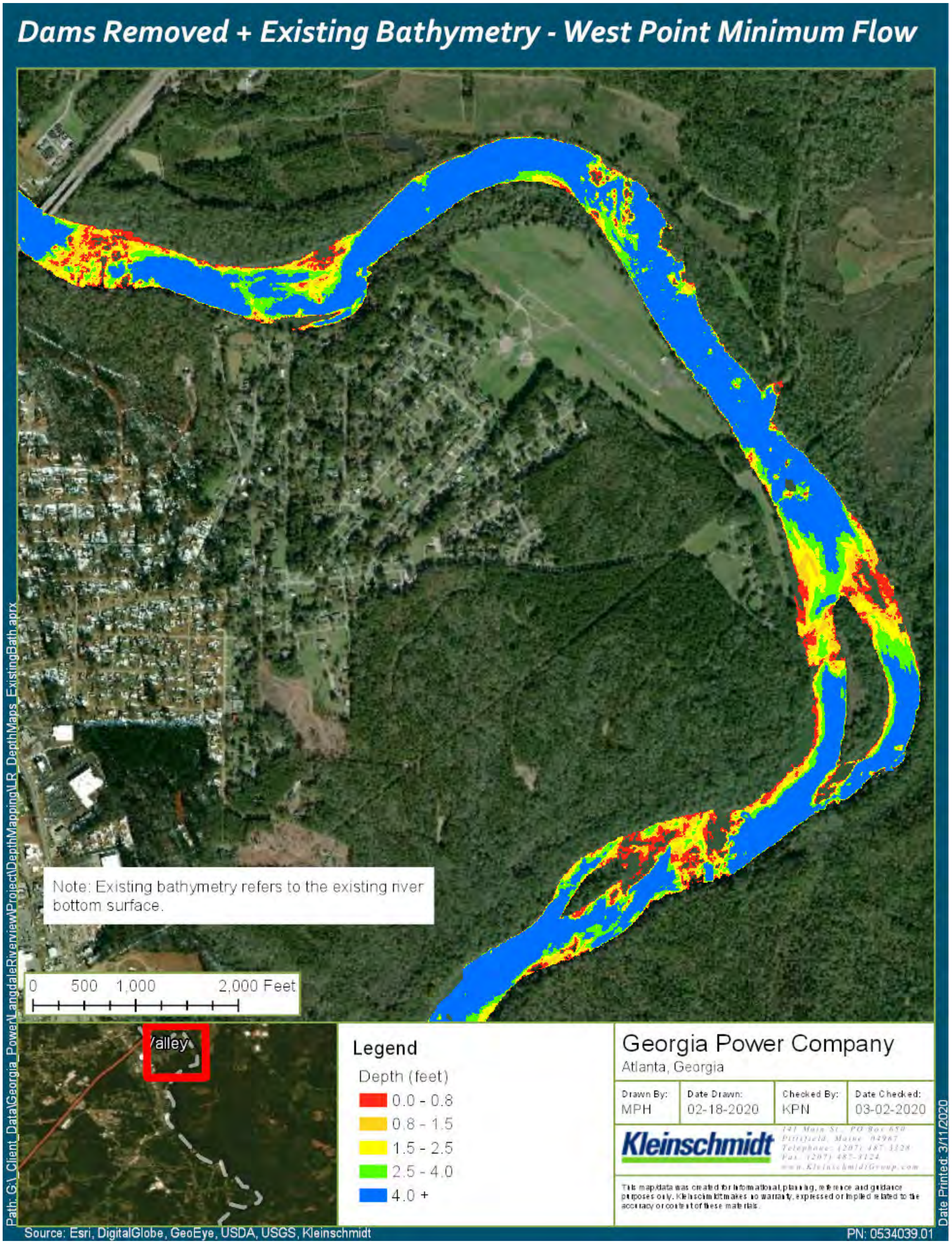

FIGURE 7–39 DAM REMOVAL, EXISTING BATHYMETRY – WEST POINT MINIMUM FLOW – UPPER REACH

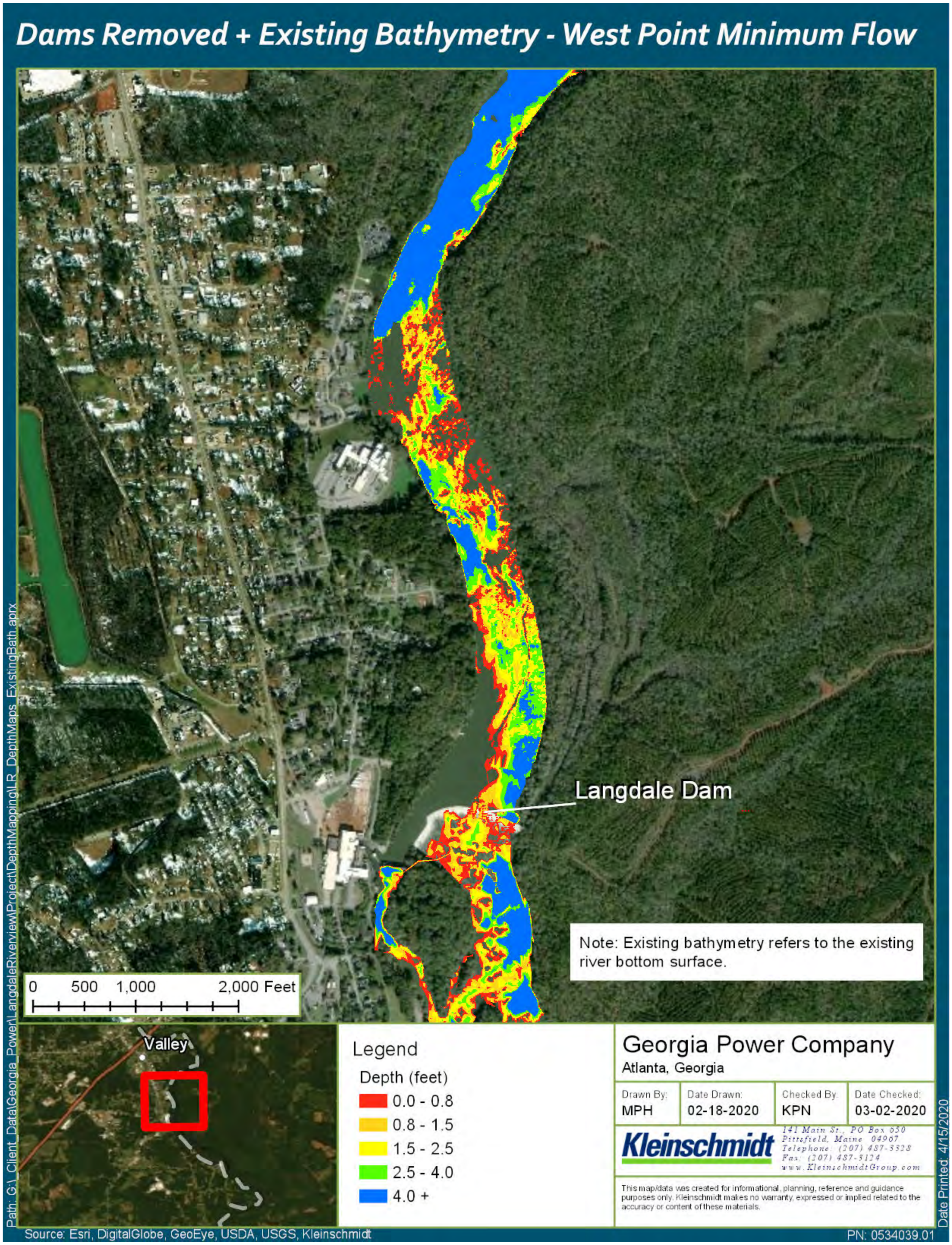

FIGURE 7–40 DAM REMOVAL, EXISTING BATHYMETRY – WEST POINT MINIMUM FLOW – MIDDLE REACH

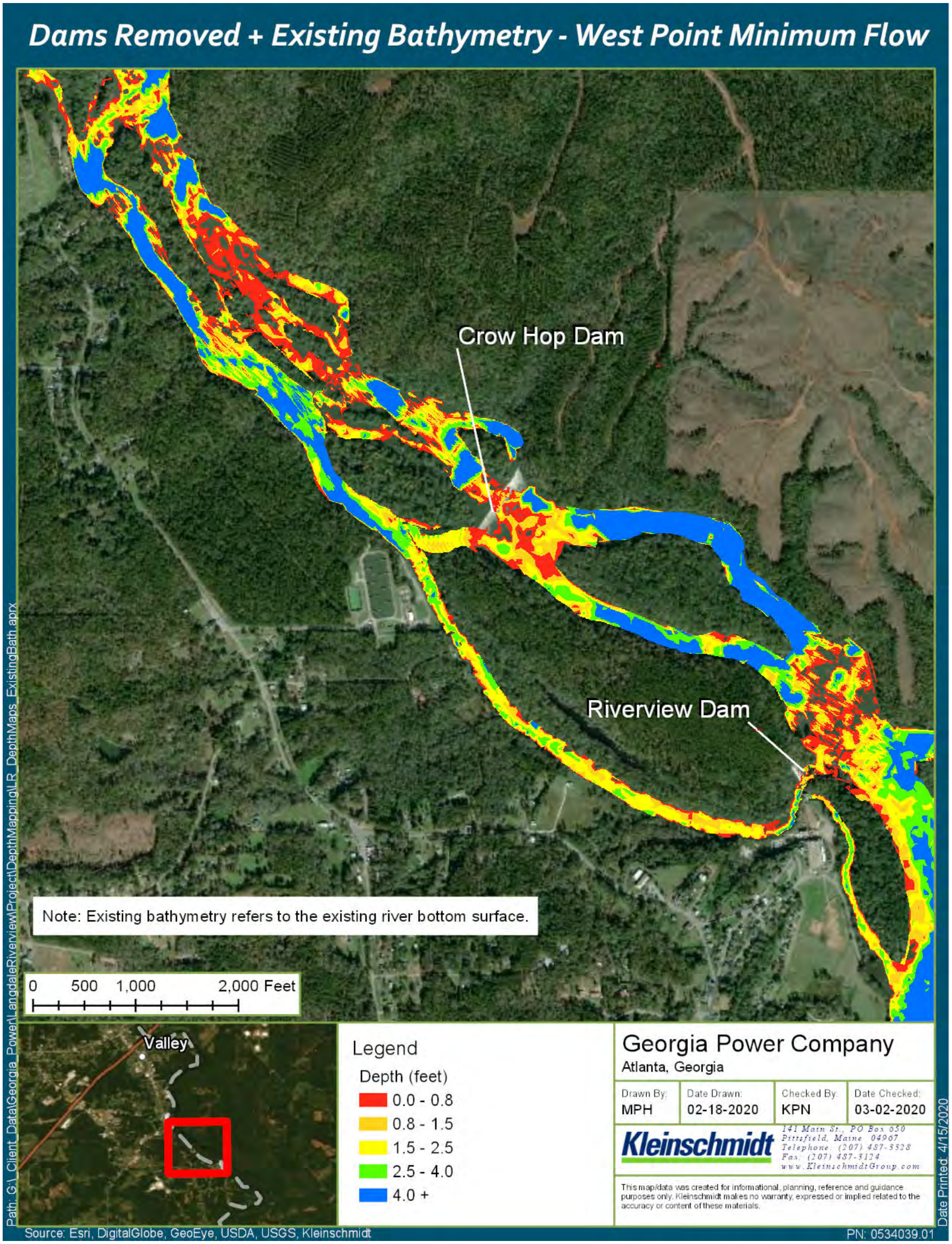

FIGURE 7–41 DAMS REMOVAL, EXISTING BATHYMETRY – WEST POINT MINIMUM FLOW – LOWER REACH

7.9.3 ADJUSTED BATHYMETRY

Figure 7–42 through Figure 7–44 show depth along the river for the post-removal conditions using the existing bathymetry at the WP min flow. The shoal complex just downstream from I-85 that is still navigable by kayaks and canoes, continues to not be navigable by bass boat, and cannot be navigated by jon boat (Figure 7–42). The two shoal complexes further downstream can be navigated by kayaks and canoes but not by other vessels (Figure 7-42). Figure 7–43 shows that the removal of the Langdale Dam makes navigability upstream to downstream of the dam very possible by kayaks and canoes, but the headpond of the Langdale Dam is no longer universally navigable by jon boat or bass boat. The shoals downstream of Langdale Dam continue to be navigable for kayaks and canoes. By sticking to the west side of the river, jon boats can navigate from the Langdale Powerhouse tailrace to the entrance to the Riverview Channel, and the Riverview Channel may possibly be navigable by skilled jon boat operators. It is no longer possible to operate a bass boat between the Langdale Powerhouse tailrace and the Riverview Channel. After the Crow Hop Dam is removed, it appears that it may be possible to navigate upstream and downstream of the dam using a kayak or canoe; however, due to the additional flow diverted into the Riverview Channel under the adjusted bathymetry simulations, portage may be required to pass upstream of Crow Hop (Figure 7–44).

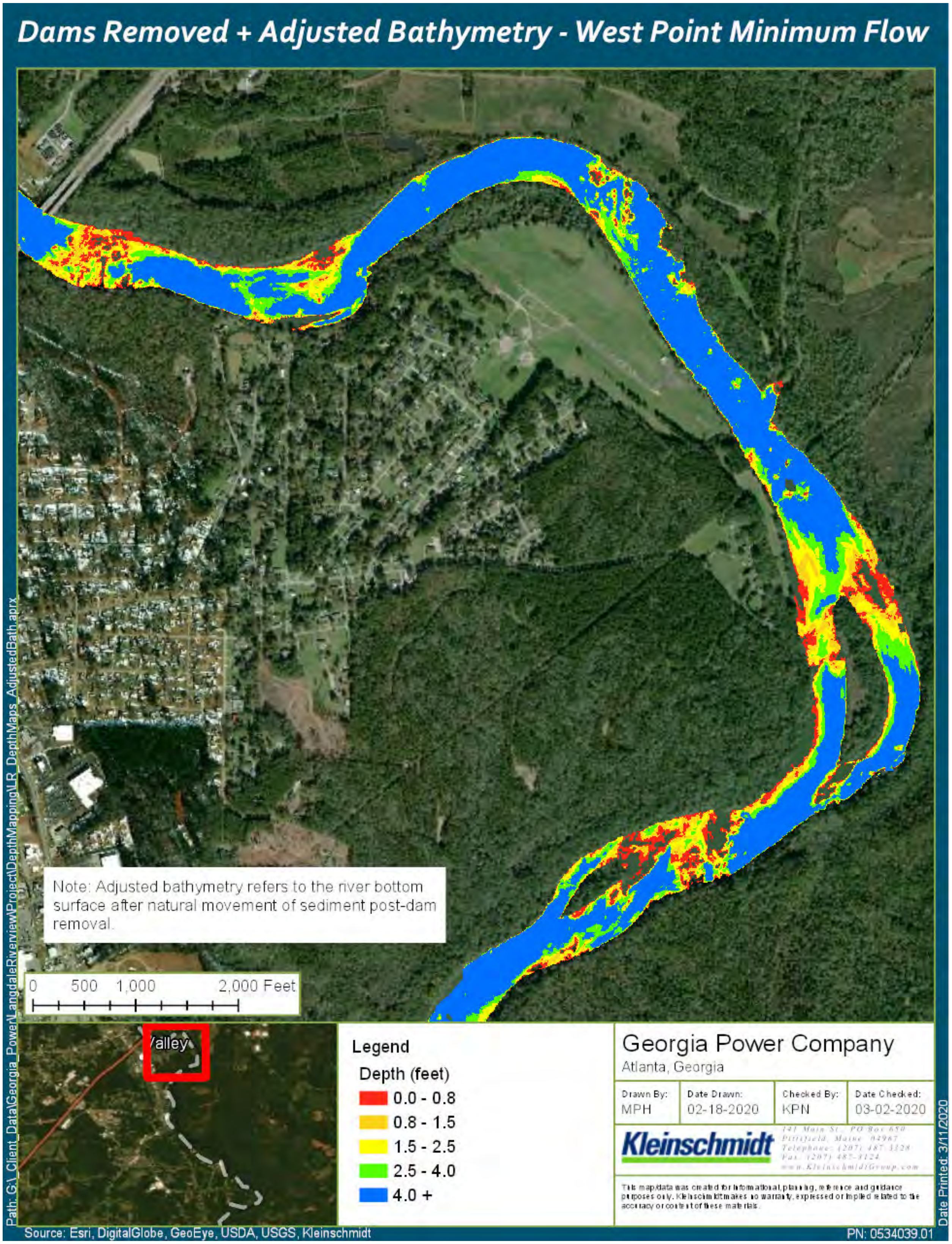

FIGURE 7–42 DAMS REMOVAL, ADJUSTED BATHYMETRY – WEST POINT MINIMUM FLOW – UPPER REACH

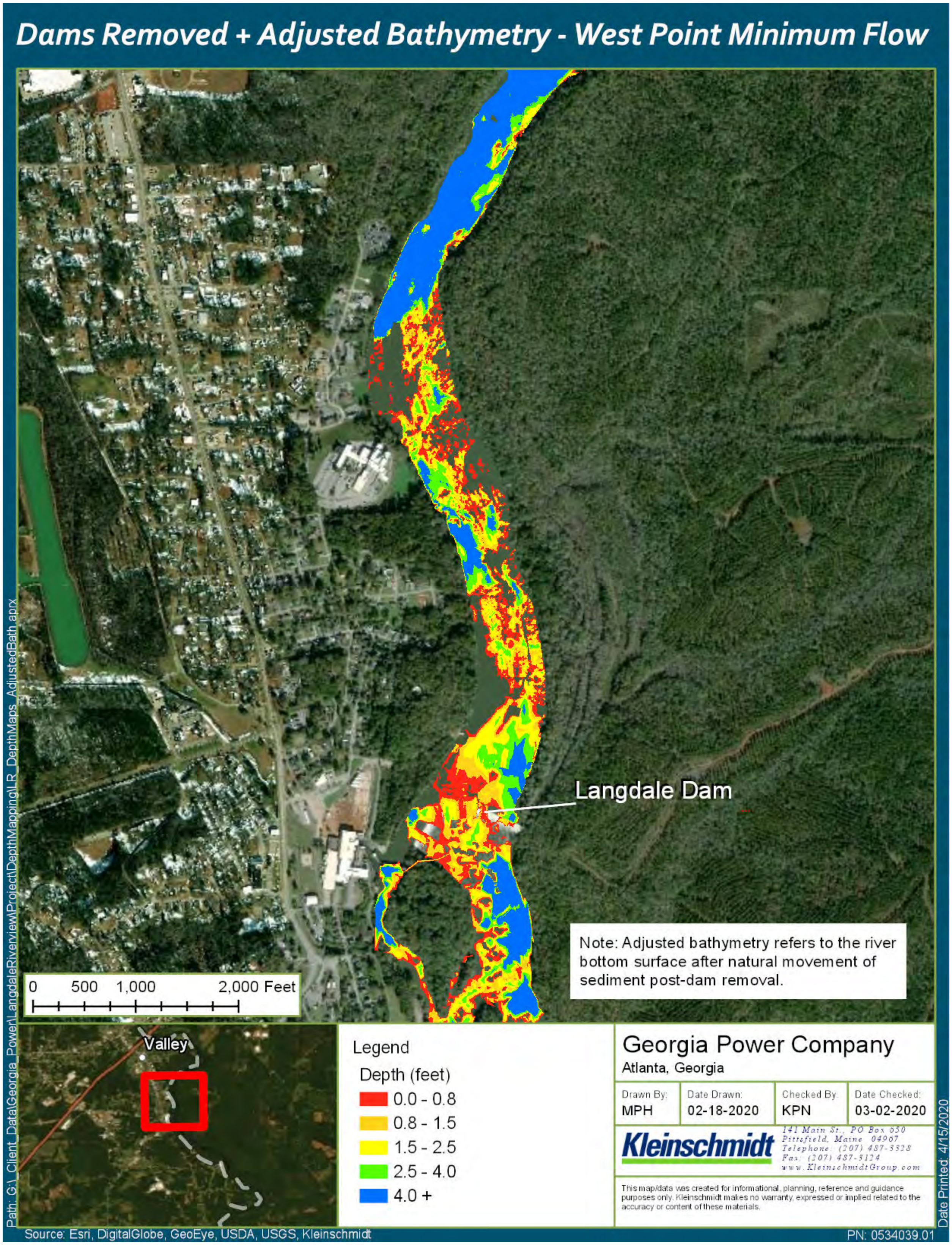

FIGURE 7–43 DAMS REMOVAL, ADJUSTED BATHYMETRY – WEST POINT MINIMUM FLOW – MIDDLE REACH

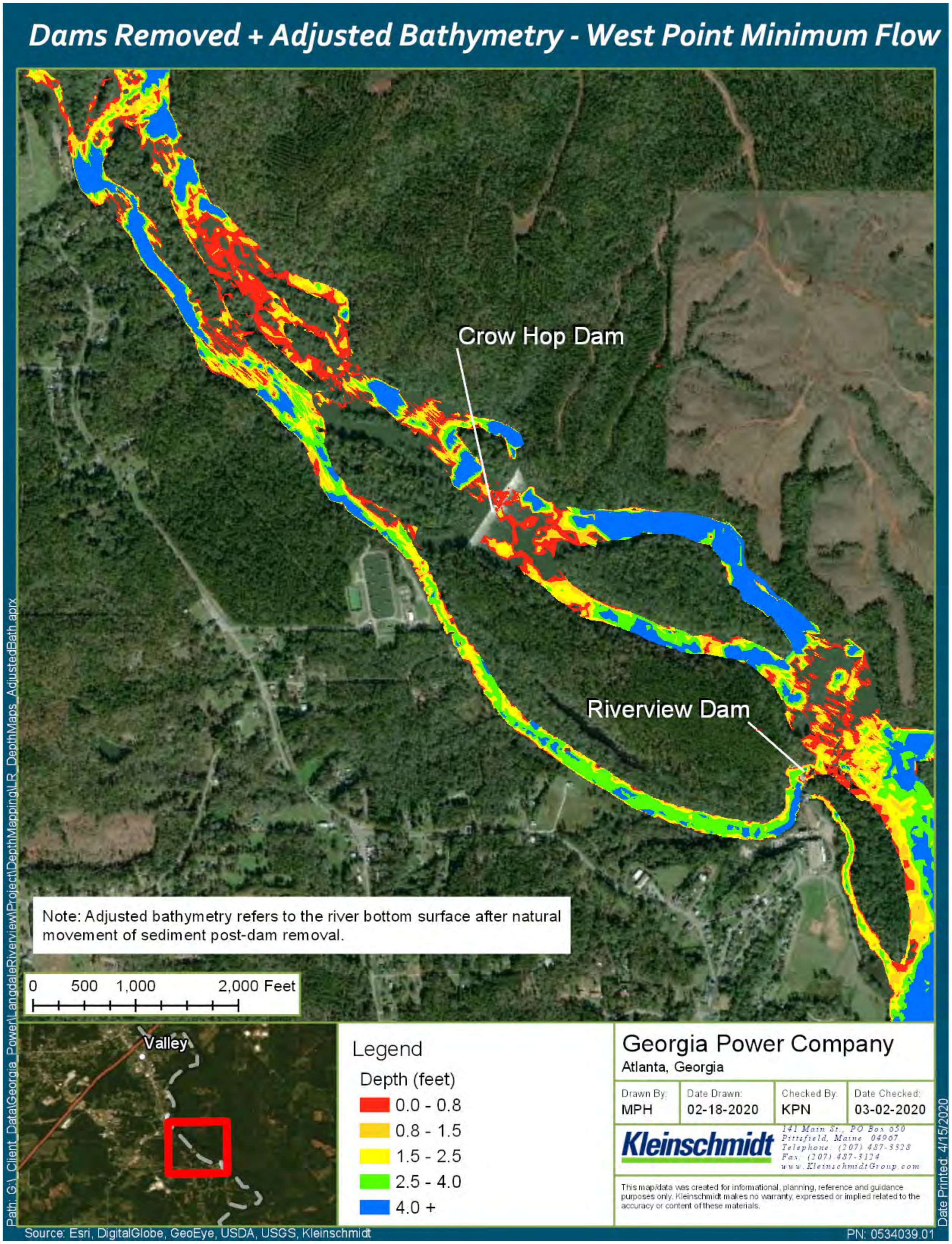

FIGURE 7–44 DAMS REMOVAL, ADJUSTED BATHYMETRY – WEST POINT MINIMUM FLOW – LOWER REACH

8.0 SUMMARY OF MODEL RESULTS

The two sets of simulations (existing and adjusted bathymetry) bracket the possible effects of the Projects' dam decommissioning and removal, given the assumptions discussed in this report. The final conditions will likely fall somewhere in between, and the two sets of simulations generally agree on the following post-dam removal outcomes.

1. The wetted areas upstream of the dams will be reduced.
2. The flow distribution in the various channels will change, but there will be no substantial change in flows downstream of the junction of the Riverview tailrace with the main channel.
3. Removal of the dams will provide un-impounded river conditions with suitable low velocity areas for fish passage and fish refuge areas under all flow conditions from West Point Dam. The figures in Section 7.4 provide velocity cross sections along the removed portions of each dam, and while there are locations that exceed the velocity passable by fish, there are areas along each section (particularly away from the centers of the breaches) with low, passable velocities.
4. Some of the sediment stored behind the Project's dams will be mobilized by the proposed dam removals, as post-removal velocities are anticipated to be high enough to mobilize sand size particles upstream of the existing dams.
5. Sediment that naturally evacuates out of the Riverview Channel is likely to increase the amount of flow that is drawn into the channel (since Rock Weir 3 remains unchanged), which would benefit the WWTP outfall on its banks. However, despite the increase in flow the water surface elevation in the channel will still decrease due to the Riverview Dam removal.
6. Infrastructure downstream of the Interstate 85 bridges and upstream of the Riverview powerhouse will be affected by lower water surface elevations associated with a naturally free-flowing channel instead of an impoundment
7. The natural shoal that exists just downstream of the Interstate 85 bridges will prevent substantial effects to water surface elevations upstream of the bridge, including water supply intakes, boat ramps and the West Point Dam tailrace.
8. The peak 100-year flood elevations and flood extent upstream of the dams will be reduced by approximately 40 acres at the Projects.
9. The entire river is currently not navigable by all boat types due to the presence of shoals and the dams. Removal of the dams will change what portions of the river are navigable by different types of vessels. Generally, navigability by kayaks and canoes will remain the same or increase, while navigability by jon boats and bass boats will decrease.

9.0 REFERENCES

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Waters, Matthew and B. Webster. 2019. Identifying sediment characteristics through time and the biogeochemical impacts of Hydrilla for five reservoirs in the Columbus area of the Chattahoochee River System. Department of Crop, Soil, and Environmental Sciences, Auburn University, Auburn, Alabama.

Appendix A

Acronyms and Abbreviations

Commonly Used Acronyms and Abbreviations

A

ACF	Apalachicola-Chattahoochee-Flint (River Basin)
ADCNR	Alabama Department of Conservation and Natural Resources
ADEM	Alabama Department of Environmental Management
AHC	Alabama Historical Commission
APE	Area of Potential Effects

B

BOD	Biological Oxygen Demand

C

°C	Degrees Celsius or Centrigrade
CEII	Critical Energy Infrastructure Information
CFR	Code of Federal Regulation
cfs	Cubic Feet per Second
CPUE	Catch-per-unit-effort
CRK	Chattahoochee River Keeper
CWA	Clean Water Act

D

DEM	Digital Elevation Model
DO	Dissolved Oxygen
dsf	day-second-feet

E

EAWSFPD	East Alabama Water, Sewer, and Fire Protection Division
EAP	Emergency Action Plan
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act

F

°F	Degrees Fahrenheit
ft	Feet
F&W	Fish and Wildlife
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FPA	Federal Power Act

G

Georgia Power	Georgia Power Company
GDNR	Georgia Department of Natural Resources
GDNR-EPD	Georgia Department of Natural Resources-Environmental Protection Division
GDNR-HPD	Georgia Department of Natural Resources-Historic Preservation Division
GDNR-WRD	Georgia Department of Natural Resources-Wildlife Resources Division
GIS	Geographic Information System
GPS	Global Positioning Systems

H

HEC	Hydrologic Engineering Center
HEC-DSSVue	HEC-Data Storage System and Viewer
HEC-FFA	HEC-Flood Frequency Analysis
HEC-RAS	HEC-River Analysis System
HEC-SSP	HEC-Statistical Software Package
HDSS	High Definition Stream Survey
hp	Horsepower

I

J

K

kV	Kilovolt
kva	Kilovolt-amp
kHz	Kilohertz

L

LIDAR	Light Detection and Ranging

M

m	Meter
m^3	Cubic Meter
M&I	Municipal and Industrial
mg/L	Milligrams per liter
ml	Milliliter
mgd	Million Gallons per Day
mi^2	Square Miles

MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
msl	Mean Sea Level
MW	Megawatt
MWh	Megawatt Hour

N

NEPA	National Environmental Policy Act
NGO	Non-governmental Organization
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory

O

P

PDF	Portable Document Format
Projects	Langdale and Riverview Hydroelectric Projects
PWC	Personal Watercraft
PWS	Public Water Supply

Q

R

RM	River Mile

S

SHPO	State Historic Preservation Office

T

TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy

U

USGS	U.S. Geological Survey
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

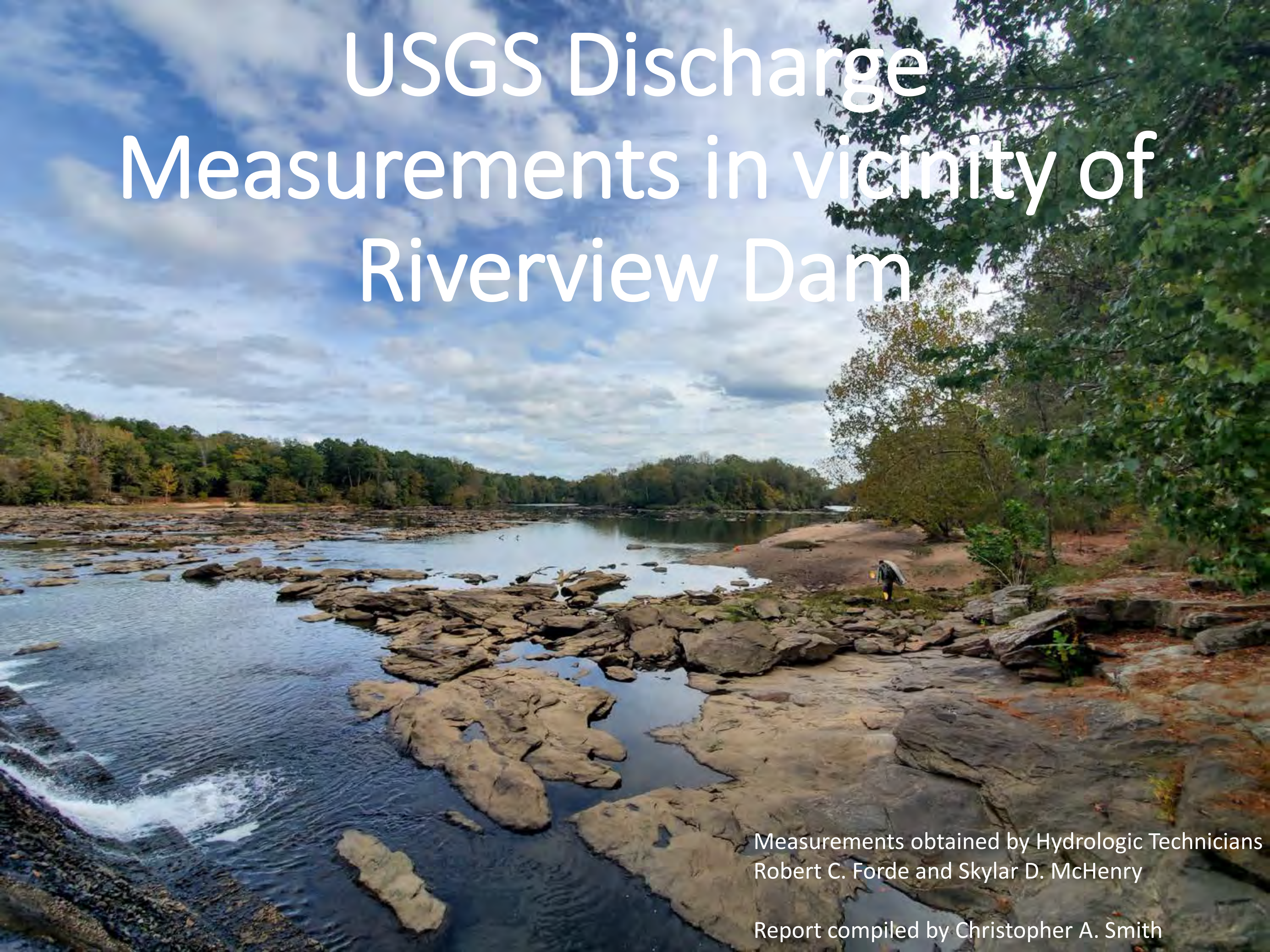
W

WQC	Water Quality Certification

Appendix B

USGS Flow Measurements

USGS Discharge Measurements in vicinity of Riverview Dam

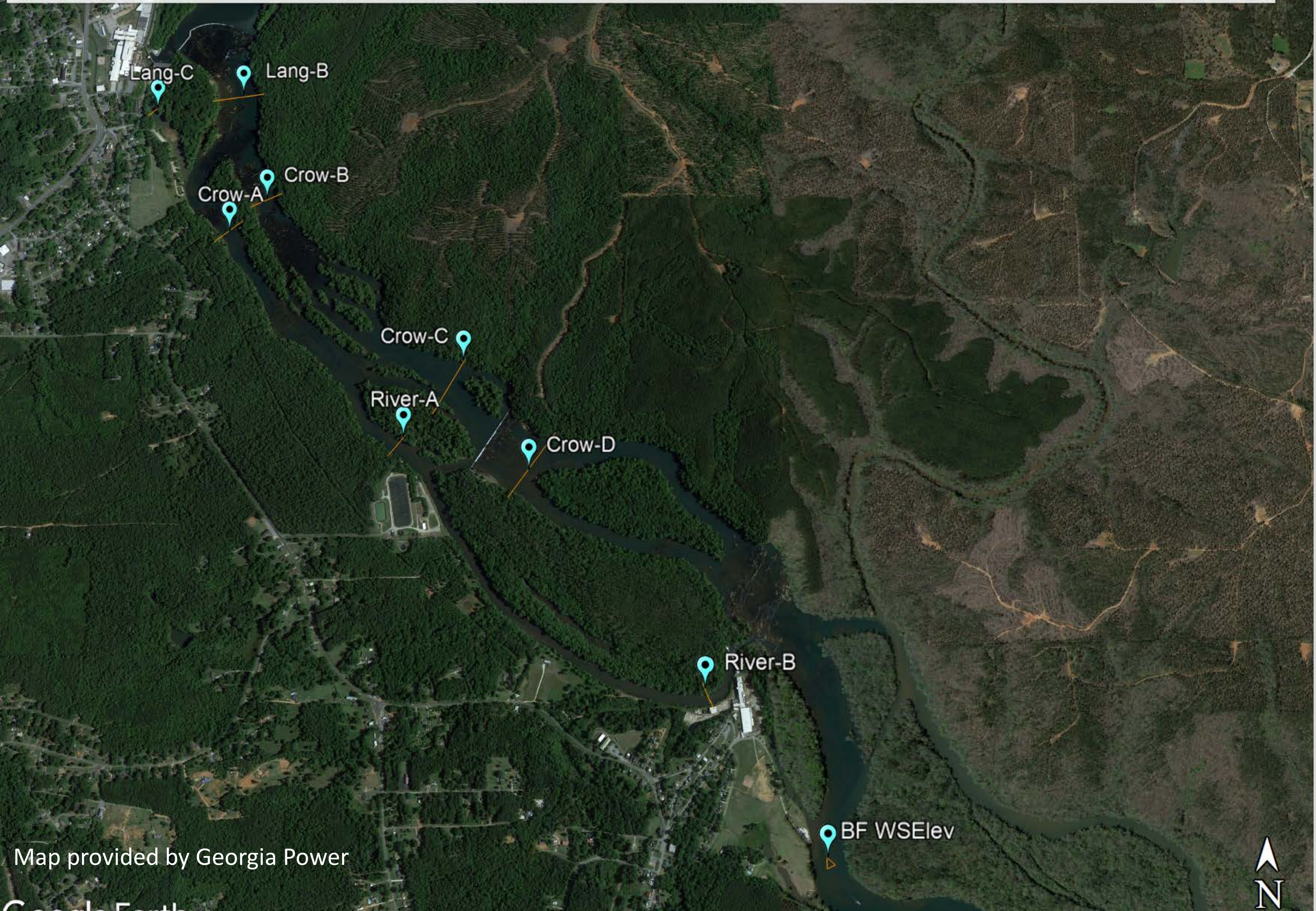


Measurements obtained by Hydrologic Technicians
Robert C. Forde and Skylar D. McHenry

Report compiled by Christopher A. Smith

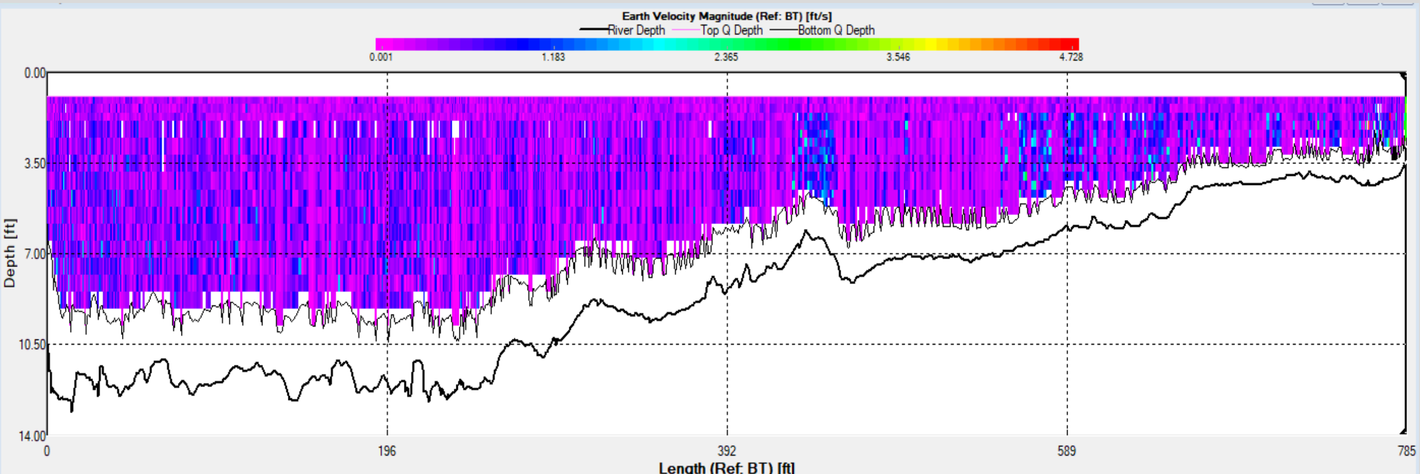
Langdale and Riverview

Flow measurements and water surface elevation measurements at all locations except BF WSElev, which is just a water surface elevation measurement.



Discharge measurement above Langdale Dam

- Location of cross-section identified as **Lang-A** on map provided.
- Discharge measurement made above the influence of the dam on the cross section. This location chosen due to channel conditions.
- Velocity in this section was low but fairly uniform throughout the cross section.
- W/S = 550.4 feet. GPS accuracy of +/- 0.30 feet.

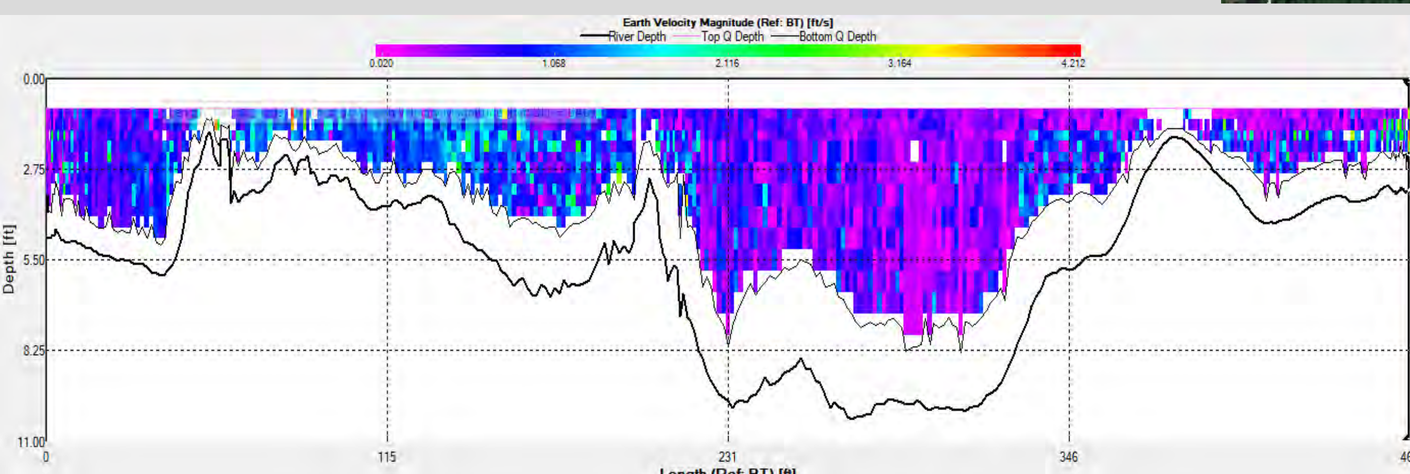


Channel Characteristics

- 800 feet wide
- 0.15 ft/s mean velocity
- 6,300 ft^2 area
- ***Total Q = 859 ft^3/s***
- Sandy, rocky bottom

Discharge measurement below Langdale Dam

- Location of cross-section identified as **Lang-B** on map provided.
- Discharge measurement made below the influence of the dam on the cross section. This location is between two large shoals.
- Velocity in this section was low and not uniform throughout the majority of the cross section.
- W/S = 534.6 feet. GPS accuracy of +/- 0.30 feet.

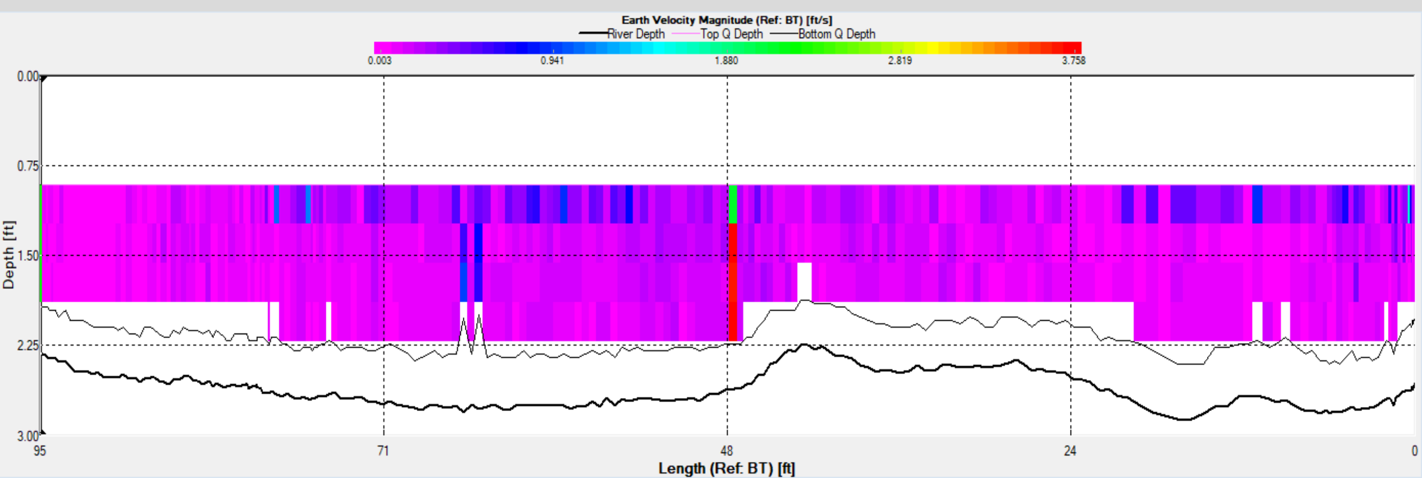


<u>Channel Characteristics</u>

- 610 feet wide
- 0.31 ft/s mean velocity
- 2,720 ft² area
- ***Total Q = 840 ft³/s***
- Sandy and rock boulder bottom

Discharge measurement below Langdale Dam

- Location of cross-section identified as **Lang-C** on map provided.
- Discharge measurement made below the influence of the dam on the cross section. This location is downstream of suggested location but provided best channel conditions for measurement.
- Velocity in this section was extremely low fairly uniform throughout the cross section.
- W/S = 534.6 feet. GPS accuracy of +/- 0.30 feet.

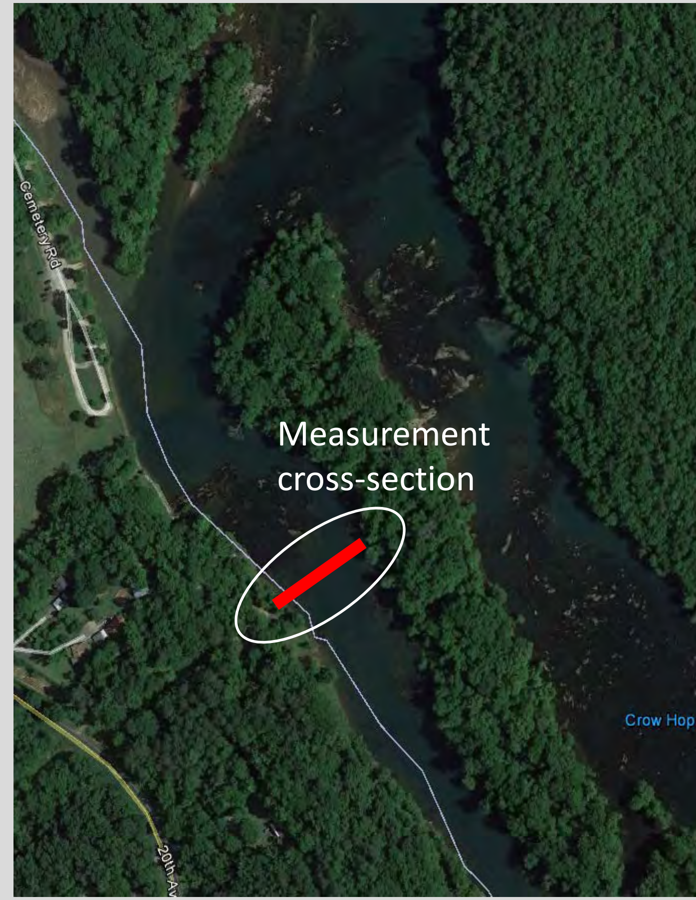


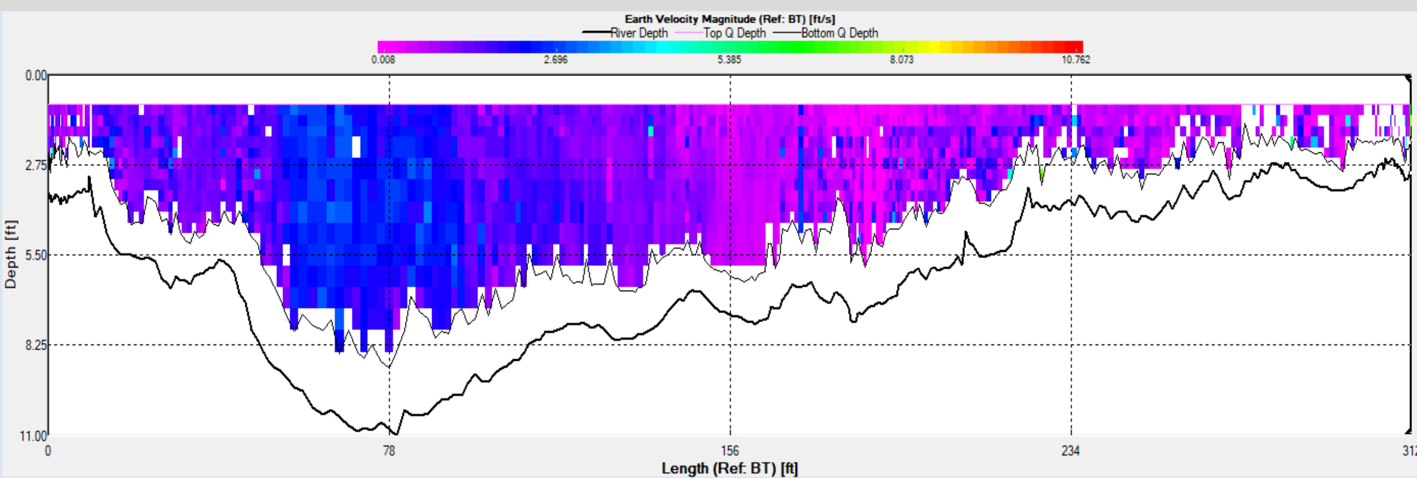
<u>Channel Characteristics</u>

- 126 feet wide
- 0.10 ft/s mean velocity
- 255 ft^2 area
- ***Total Q = 16 ft^3/s***
- Measurement quality is POOR.

Discharge measurement above Crow Hop Dam

- Location of cross-section identified as **Crow-A** on map provided.
- Discharge measurement location is at suggested location.
- Velocity in this section was fairly uniform throughout the cross section.
- Channel bottom is composed of sand and large boulders.
- W/S = 534.3 feet. GPS accuracy of +/- 0.30 feet.



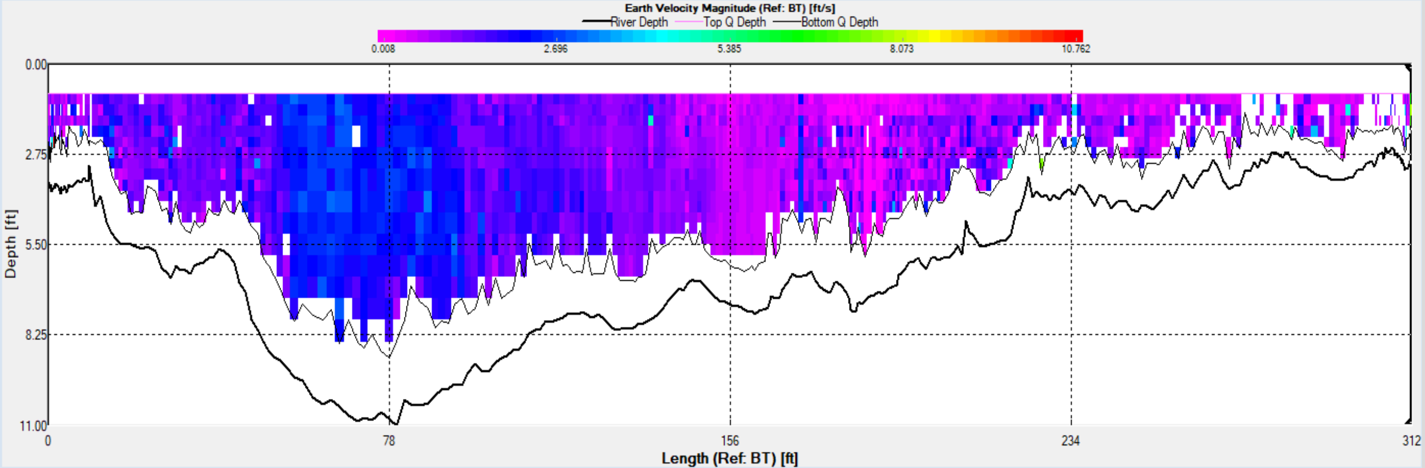


<u>Channel Characteristics</u>

- 322 feet wide
- 0.71 ft/s mean velocity
- 1,730 ft^2 area
- ***Total Q = 838 ft^3/s***
- Measurement quality is POOR.

Discharge measurement above Crow Hop Dam

- Location of cross-section identified as **Crow-B** on map provided.
- Discharge measurement location is upstream of suggested location but provided best channel conditions for measurement.
- Velocity in this section was fairly uniform throughout the cross section.
- Channel bottom is composed of sand and large boulders.

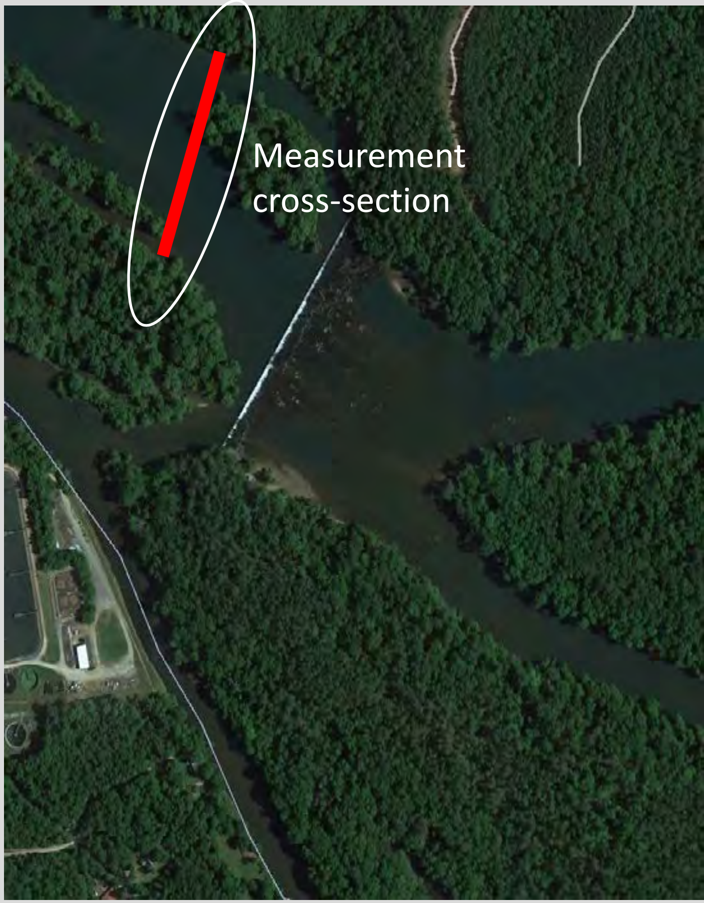


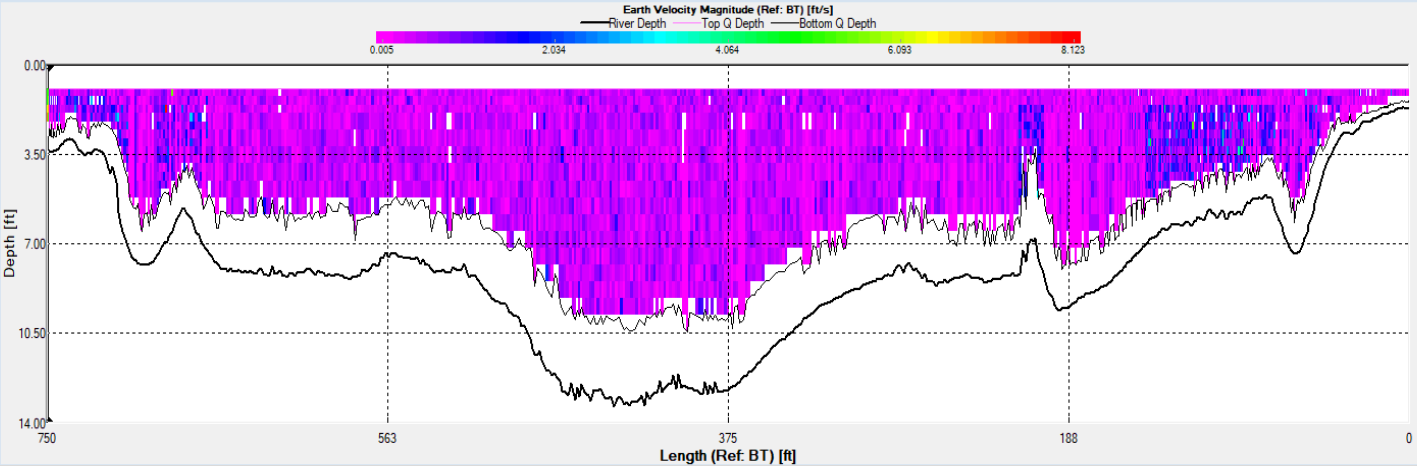
Channel Characteristics

- 353 feet wide
- 0.03 ft/s mean velocity
- 1,730 ft^2 area
- ***Total Q = 39 ft^3/s***
- Measurement quality is POOR.

Discharge measurement above Crow Hop Dam

- Location of cross-section identified as **Crow-C** on map provided.
- Discharge measurement location is near suggested location.
- Velocity in this section was extremely sluggish but uniform throughout the cross section.
- Channel bottom is composed of sand.



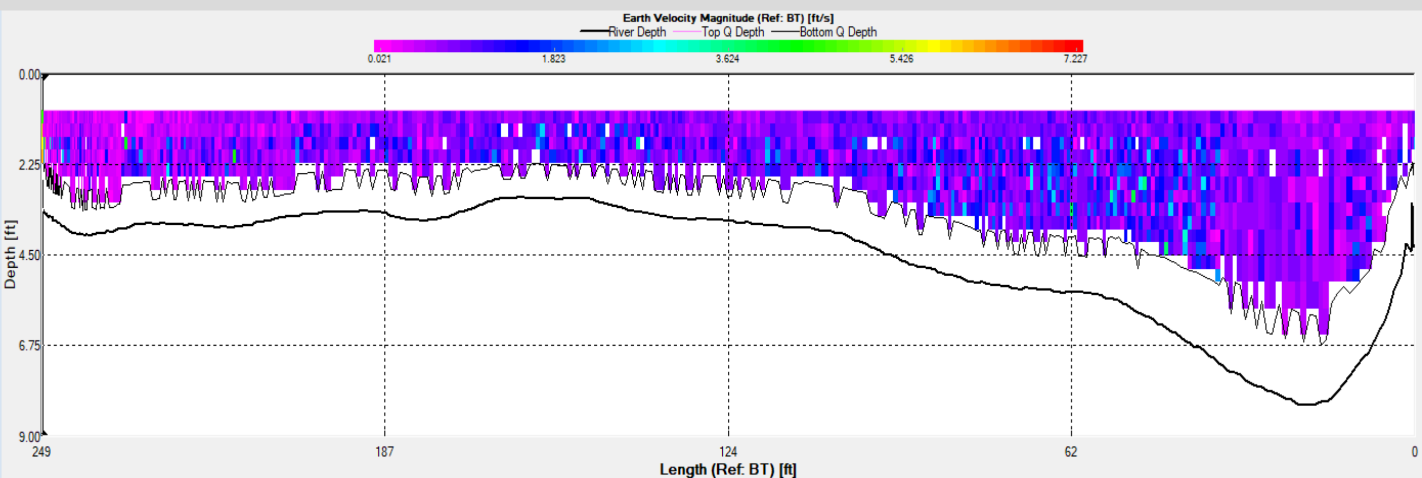


<u>Channel Characteristics</u>

- 808 feet wide
- 0.08 ft/s mean vel.
- 5,880 ft² area
- ***Total Q = 233 ft³/s***
- Measurement quality is extremely POOR.

Discharge measurement above Crow Hop Dam

- Location of cross-section identified as **River-A** on map provided.
- Discharge measurement location is near suggested location.
- Velocity in this section was good and fairly uniform throughout the cross section.
- Channel bottom is composed of sand and boulders. There was also some small amounts of scattered debris within the section.



<u>Channel Characteristics</u>

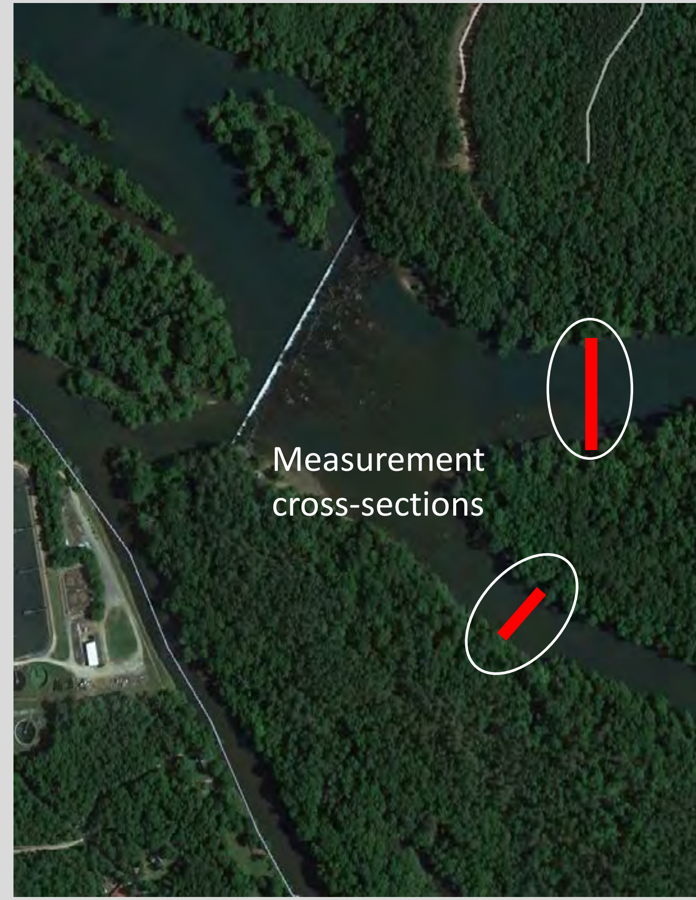
- 260 feet wide
- 0.56 ft/s mean vel.
- 1,090 ft^2 area
- ***Total Q = 612 ft^3/s***
- Measurement quality is FAIR.

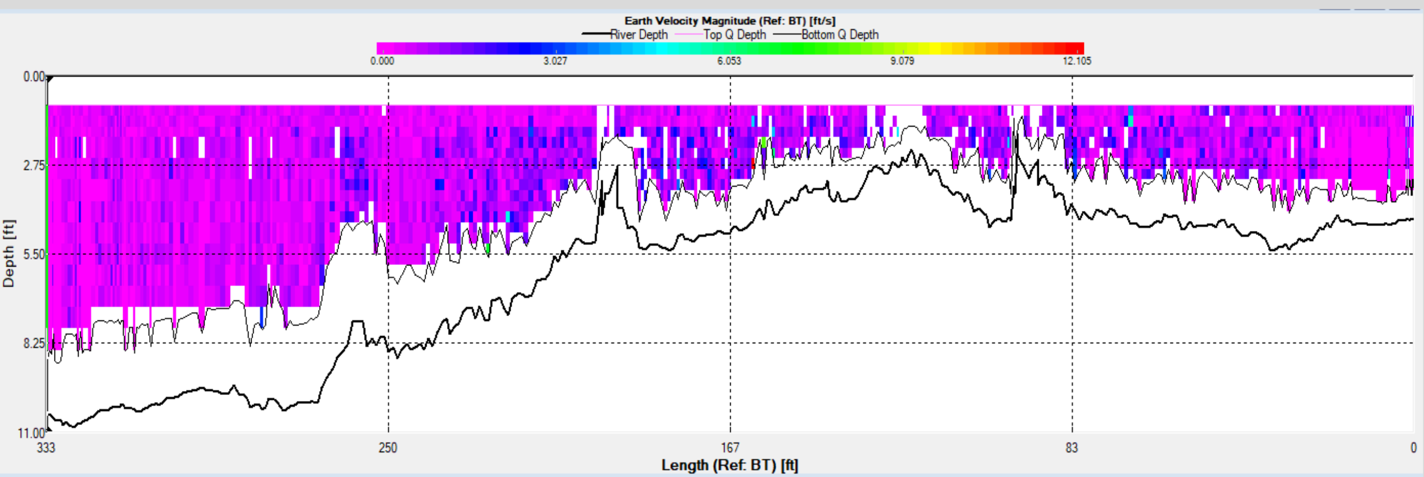
Discharge measurement below Crow Hop Dam

- Location of cross-section identified as **Crow-D** on map provided.

- Discharge measurement location is downstream of suggested section. River divides into two channels upstream. Cross-section included both channels. Channel characteristics listed are sum of two channels.

- Numerous sections were attempted as it was difficult to obtain a measurement in the right branch of the divided channel. The total flow for this branch measured 71 ft^3/s. Based on the observations of the Technicians this is likely too much flow.



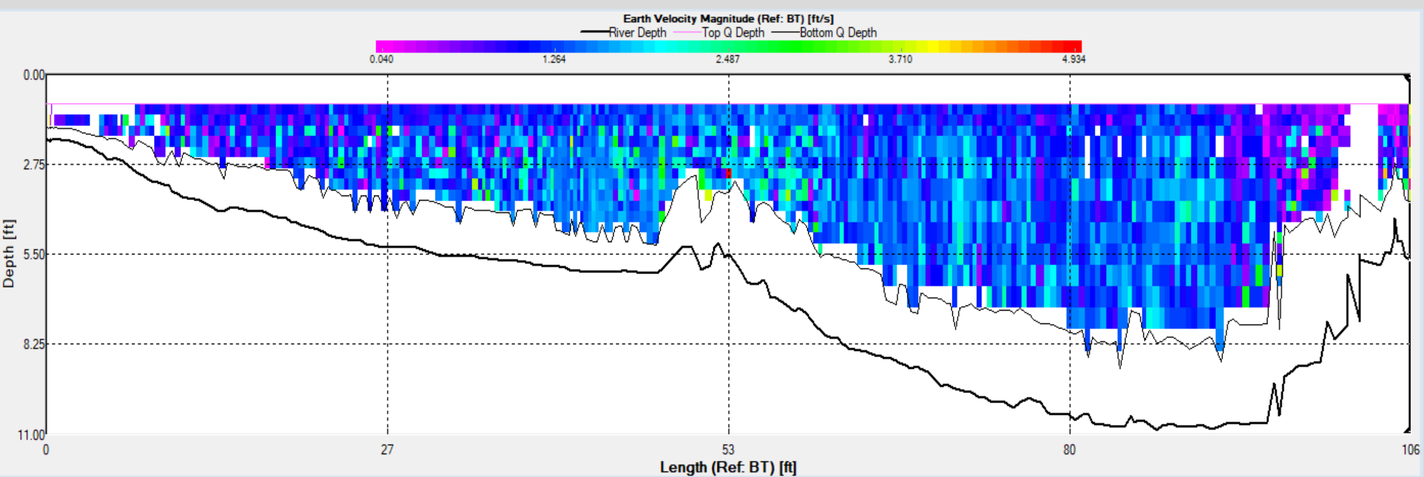


<u>Channel Characteristics</u>

- 635 feet wide
- 0.08 ft/s mean vel.
- 2,680 ft^2 area
- ***Total Q = 189 ft^3/s***
- Measurement quality is extremely POOR.

Discharge measurement above Riverview Dam

- Location of cross-section identified as **River-B** on map provided.
- Discharge measurement location is near suggested location.
- Velocity in this section was good and fairly uniform throughout the cross section.
- Channel bottom is composed of sand. There was some small amounts of scattered debris near the right bank.
- W/S = 533.6 feet. GPS accuracy of +/- 0.30 feet.



<u>Channel Characteristics</u>

- 160 feet wide
- 1.13 ft/s mean vel.
- 735 ft^2 area
- ***Total Q = 717 ft^3/s***
- Measurement quality is GOOD.

Water-level measurement below Riverview Dam

- Location of cross-section identified as **BF-WSElev** on map provided.
- No discharge measurement was obtained at this location.
- W/S = 515.2 feet. GPS accuracy of +/- 0.30 feet.

General Observations

- The USGS crew is thankful for the opportunity to explore the area requested by Georgia Power.
- Obtaining discharge measurements near the three dams is extremely challenging. The USGS crew spent considerable time scouting measurement sections. The area below Crow Hop in the natural river channel is particularly difficult and it was necessary to split the measurement into two channels, as noted.
- Due to the channel conditions several of the measurements were rated as POOR by the USGS Technicians. This designation denotes the quality of the measurement and is an indication of the channel conditions and/or available cross-sections. This is not a qualitative assessment the work of the Technicians. However measurements rated POOR should be considered +/- 10% of the measured discharge.
- The water surface elevations were acquired using a GPS and the eGPS Real-time network (RTN). This network adjusts the GPS elevation data in real time. This network was used in the interest of celerity as releases from West Point Dam were imminent. Elevations obtained using this network should be considered USGS Level III survey and are considered within +/- 0.30 feet. Heavy tree cover affected most GPS observations and degraded the quality of the GPS data.

APPENDIX C

GEC BORING INFORMATION

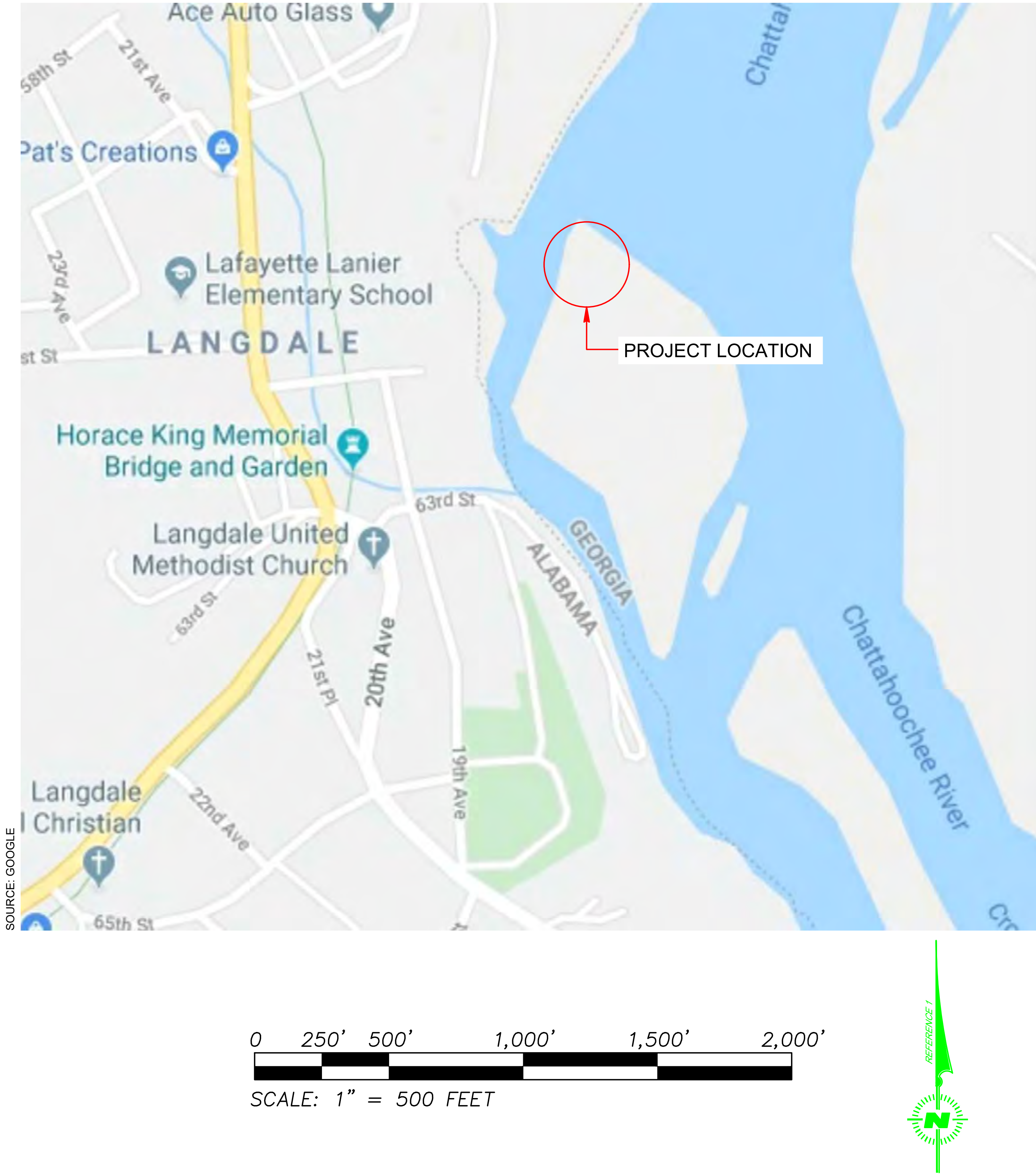


FIGURE 1
SITE LOCATION MAP
LANGDALE ISLAND
ROCK EXPLORATION
VALLEY, ALABAMA
GEC PROJECT NO. HP195770

GEC
GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

5031 MILGEN COURT
COLUMBUS, GEORGIA 31907
706-569-0008 (Fax) 706-569-0940
WWW.GECONSULTANTS.COM

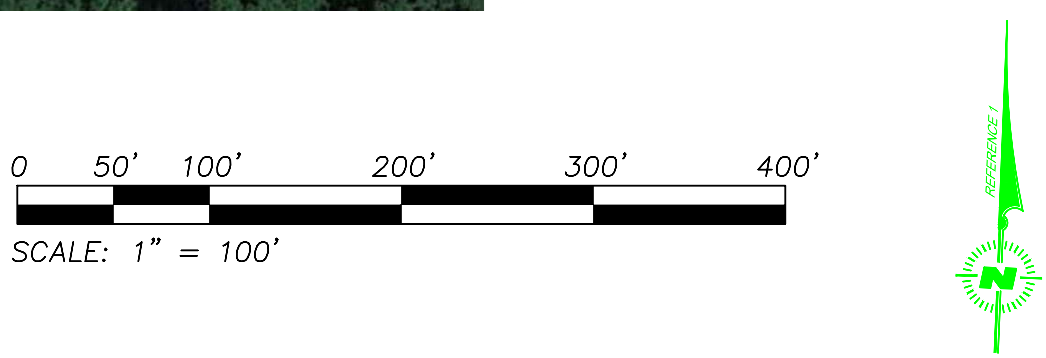


FIGURE 2: BORING LOCATION PLAN
WITH AERIAL PHOTOGRAPH
LANGDALE ISLAND
ROCK EXPLORATION
VALLEY, ALABAMA
GEC PROJECT NO. HP195770

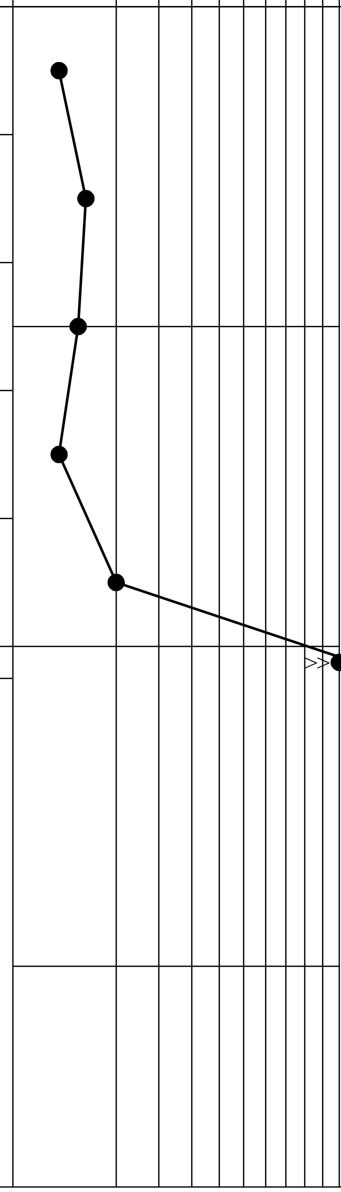
GEC
GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS, INC.

5031 MILGEN COURT
COLUMBUS, GEORGIA 31907
706-569-0008 (Fax) 706-569-0940
WWW.GECONSULTANTS.COM

SOIL BORING RECORD

Project: **Langdale Island Rock Exploration** Valley, Al	Boring No: **B-1** Project No: HP195770
Location: **See Figure 2**	GS Elevation: 546.9 ft
Driller/Equipment: Amdrill/ BR2500	Drilling Date: November 20, 2019
Water Level: 8.0 ft at time of boring	Engineer/Geologist:

Elevation (ft)	Water Level (ft)	Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft)	N-Value
				ALLUVIUM tan, silty, fine to coarse **SAND (SM)**	SS-1		2
					SS-2		5
541.9		5			SS-3		4
				brown, silty, fine to medium **SAND (SM)**	SS-4		2
	∇			grey, micaceous silty, fine **SAND (SM)**	SS-5		10
536.9		10		grey, silty, fine to coarse **SAND (SM)**	SS-6	>>	50/1
				ROCK Approximate rock elevation begins at 536.4 feet.			
531.9		15					
				BORING TERMINATED AT 15.5ft			



- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Percent Recovery: 77%
RQD: 72.5
Elevation determined by provided LIDAR from client.
Rock Type: Gneiss

514 Hillcrest Industrial Blvd., Macon, GA 31204
5031 Milgen Court, Columbus, GA 31907

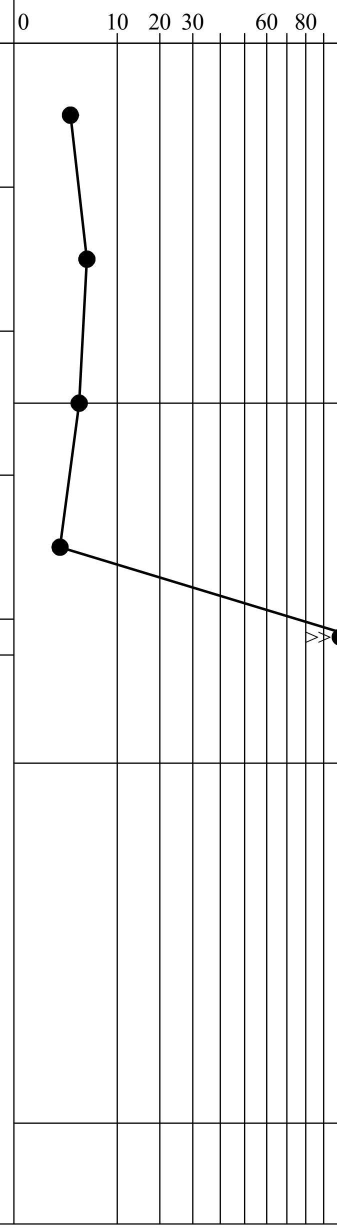
GEC
GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

SOIL BORING RECORD

Project: **Langdale Island Rock Exploration** Valley, Al	Boring No: **B-2**
	Project No: HP195770
Location: **See Figure 2**	GS Elevation: 544.5 ft
Driller/Equipment: Amdrill/ BR2500	Drilling Date: November 21, 2019
Water Level: 8.0 ft at time of boring	Engineer/Geologist:

Elevation (ft)	Water Level (ft)	Depth (ft)	Soil Symbol	Soil Description	Sample Type	N-Value
				ALLUVIUM brown, silty, fine to coarse **SAND (SM)**	SS-1	3
				tan, silty, fine to medium **SAND (SM)**	SS-2	5
539.5		5			SS-3	4
					SS-4	2
	▽			grey, micaceous silty, fine **SAND (SM)**	SS-5	50/1
				ROCK Approximate rock elevation begins at 536.0 feet.		
534.5		10				
				BORING TERMINATED AT 13.5ft		
529.5		15				

Standard Penetration Test Data (blows/ft)



· Boring and sampling performed in accordance with ASTM D 1586.
· Depths are measured from existing ground surface at time of drilling.
· Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
· Do not use depths for determinations of quantities or distances.

NOTES: Percent Recovery: 87%
RQD: 52.4
Elevation determined by provided LIDAR from client.
Rock Type: Biotite Gneiss

SOIL BORING RECORD

Project: **Langdale Island Rock Exploration** Valley, Al	Boring No: **P-1**
	Project No: HP195770
Location: **See Figure 2**	GS Elevation: 540.7 ft
Driller/Equipment: GEC/ Hand Auger	Drilling Date: November 5, 2019
Water Level: 3.5 ft at time of boring	Engineer/Geologist:

Elevation (ft)	Water Level (ft)	Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
				ALLUVIUM tan, silty, fine to coarse **SAND (SM)**			
	▽			brown, silty, fine to coarse **SAND (SM)**			
				AUGER REFUSAL ENCOUNTERED AT 3.8ft			
535.7		5					
530.7		10					

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Hand Auger refusal due to loose sands and water infiltration.
Elevation determined by provided LIDAR from client.

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SOIL BORING RECORD

Project: **Langdale Island Rock Exploration** Valley, Al	Boring No: **P-2**
	Project No: HP195770
Location: **See Figure 2**	GS Elevation: 546.8 ft
Driller/Equipment: GEC/ Hand Auger	Drilling Date: November 5, 2019
Water Level: ---	Engineer/Geologist:

Elevation (ft)	Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
			ALLUVIUM tan, silty, fine to coarse **SAND (SM)**			
541.8	5					
			grey, silty, fine to medium **SAND (SM)**			
			AUGER REFUSAL ENCOUNTERED AT 8.0ft			
536.8	10					
531.8	15					

· Boring and sampling performed in accordance with ASTM D 1586.
· Depths are measured from existing ground surface at time of drilling.
· Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
· Do not use depths for determinations of quantities or distances.

NOTES: Elevation determined by provided LIDAR from client.

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SOIL BORING RECORD

Project: **Langdale Island Rock Exploration** Valley, Al	Boring No: **P-3**
	Project No: HP195770
Location: **See Figure 2**	GS Elevation: 538.6 ft
Driller/Equipment: GEC/ Hand Auger	Drilling Date: November 5, 2019
Water Level: 0.5 ft at time of boring	Engineer/Geologist:

Elevation (ft)	Water Level (ft)	Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
	∇			**ALLUVIUM** tan, silty, fine to medium **SAND (SM)**			
				AUGER REFUSAL ENCOUNTERED AT 0.5ft			
533.6		5					
528.6		10					

· Boring and sampling performed in accordance with ASTM D 1586.
· Depths are measured from existing ground surface at time of drilling.
· Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
· Do not use depths for determinations of quantities or distances.

NOTES: Elevation determined by provided LIDAR from client.

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SOIL BORING RECORD

Project: **Langdale Island Rock Exploration** Valley, Al	Boring No: **P-4**
	Project No: HP195770
Location: **See Figure 2**	GS Elevation: 533.1 ft
Driller/Equipment: GEC/ Hand Auger	Drilling Date: November 5, 2019
Water Level: ---	Engineer/Geologist:

Elevation (ft)	Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
			ROCK Surficial rock encountered			
			AUGER REFUSAL ENCOUNTERED AT 0.3ft			
528.1	5					

· Boring and sampling performed in accordance with ASTM D 1586.
· Depths are measured from existing ground surface at time of drilling.
· Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
· Do not use depths for determinations of quantities or distances.

NOTES: Surficial rock was encountered at the hand auger location. During the morning, the location was approximately 2-3 feet under water.
Elevation determined by provided LIDAR from client.

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SOIL BORING RECORD

Project: **Langdale Island Rock Exploration** Valley, Al	Boring No: **P-5** Project No: HP195770
Location: **See Figure 2**	GS Elevation: 545.5 ft
Driller/Equipment: GEC/ Hand Auger	Drilling Date: November 5, 2019
Water Level: ---	Engineer/Geologist:

Elevation (ft)	Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
			ALLUVIUM tan, silty, fine to coarse **SAND (SM)**			
			brown, silty, fine **SAND (SM)**			
			tan, silty, fine to medium **SAND (SM)**			
540.5	5					
			grey, silty, fine to medium **SAND (SM)**			
			AUGER REFUSAL ENCOUNTERED AT 7.5ft			
535.5	10					
530.5	15					

- Boring and sampling performed in accordance with ASTM D 1586.
- Depths are measured from existing ground surface at time of drilling.
- Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
- Do not use depths for determinations of quantities or distances.

NOTES: Elevation determined by provided LIDAR from client.

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SOIL BORING RECORD

Project: **Langdale Island Rock Exploration** Valley, Al	Boring No: **P-6**
	Project No: HP195770
Location: **See Figure 2**	GS Elevation: 547.6 ft
Driller/Equipment: GEC/ Hand Auger	Drilling Date: November 5, 2019
Water Level: ---	Engineer/Geologist:

Elevation (ft)	Depth (ft)	Soil Symbol	Soil Description	Sample Type	Standard Penetration Test Data (blows/ft) 0 10 20 30 60 80	N-Value
			ALLUVIUM			
			brown, silty, fine to coarse **SAND (SM)**			
			tan, silty, fine **SAND (SM)**			
542.6	5					
537.6	10		grey, silty, fine **SAND (SM)**			
			AUGER REFUSAL ENCOUNTERED AT 11.0ft			
532.6	15					

· Boring and sampling performed in accordance with ASTM D 1586.
· Depths are measured from existing ground surface at time of drilling.
· Depths are shown to illustrate general arrangements of the strata encountered at the boring location.
· Do not use depths for determinations of quantities or distances.

NOTES: Elevation determined by provided LIDAR from client.

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Probe/Boring Name	**LIDAR Surface Elevation** (feet)	**Approximate Boring Depth to 532.0’** (feet, rounded up to the nearest foot)
Probe 1	540.66	9
Probe 2	546.8	15
Probe 3	538.56	7
Probe 4	533.11	2
Probe 5	545.47	14
Probe 6	547.61	16
Langdale Boring #1 to EL 532'	546.91	15
Langdale Boring #2 to EL 532'	544.5	13

Elevation table provided by Melissa Crabbe

APPENDIX D

GEORGIA POWER TECHNICAL MEMORANDUM ON SEDIMENT CALCULATIONS

Georgia Power Company – Technical Memorandum on Methods for Calculating Reservoir Sediment Volume

Appendix D - Section 1

How Sediment Volume is Calculated

Sediment volumes may be calculated a number of different ways utilizing survey data. Hydrographic (also known as bathymetric survey data is the ground profile beneath a water surface. For the HEC-RAS modelling efforts described in this report, Georgia Power hired Lowe Engineers to collect submerged ground elevation points (assumed to be top of sediment/channel bottom) to create a digital terrain model of the existing submerged river bottom extending from West Point Dam downstream past Riverview Dam. The digital elevation data sources are summarized in Section 4.1.1 of this report.

A graphed cross-sectional comparison of the existing submerged ground—the bathymetry—to an estimated original, pre-impoundment) riverbed results in a cross sectional area representative of the potential sediment accumulated at that one cross section. If the area of two adjacent cross sections and the distance between them are known, an estimated volume may be calculated for the reach between the two cross sections; this is known as the average end area method. A greater number of cross sections with shorter distances between cross sections results in a more accurate estimate. Georgia Power estimated potential sediment volume accumulated in the Langdale and Riverview Project impoundments using the average end area method. Figures are included at the end of this technical memorandum. To estimate the volume of sediment impounded by Langdale and Riverview Projects, Georgia Power divided the impounded river into four reaches as follows: 1) Riverview Powerhouse to Langdale Powerhouse (consisting of the headrace at Riverview Dam and the tailrace of Langdale Dam, along the western side of the river); 2) Crow Hop Dam to Langdale Dam; 3) Lower Langdale Impoundment (within approximately 1,200’ of the dam), and 4) Upper Langdale Impoundment (from the Lower Langdale Impoundment to I-85). Figure D-1 depicts the four river reaches.

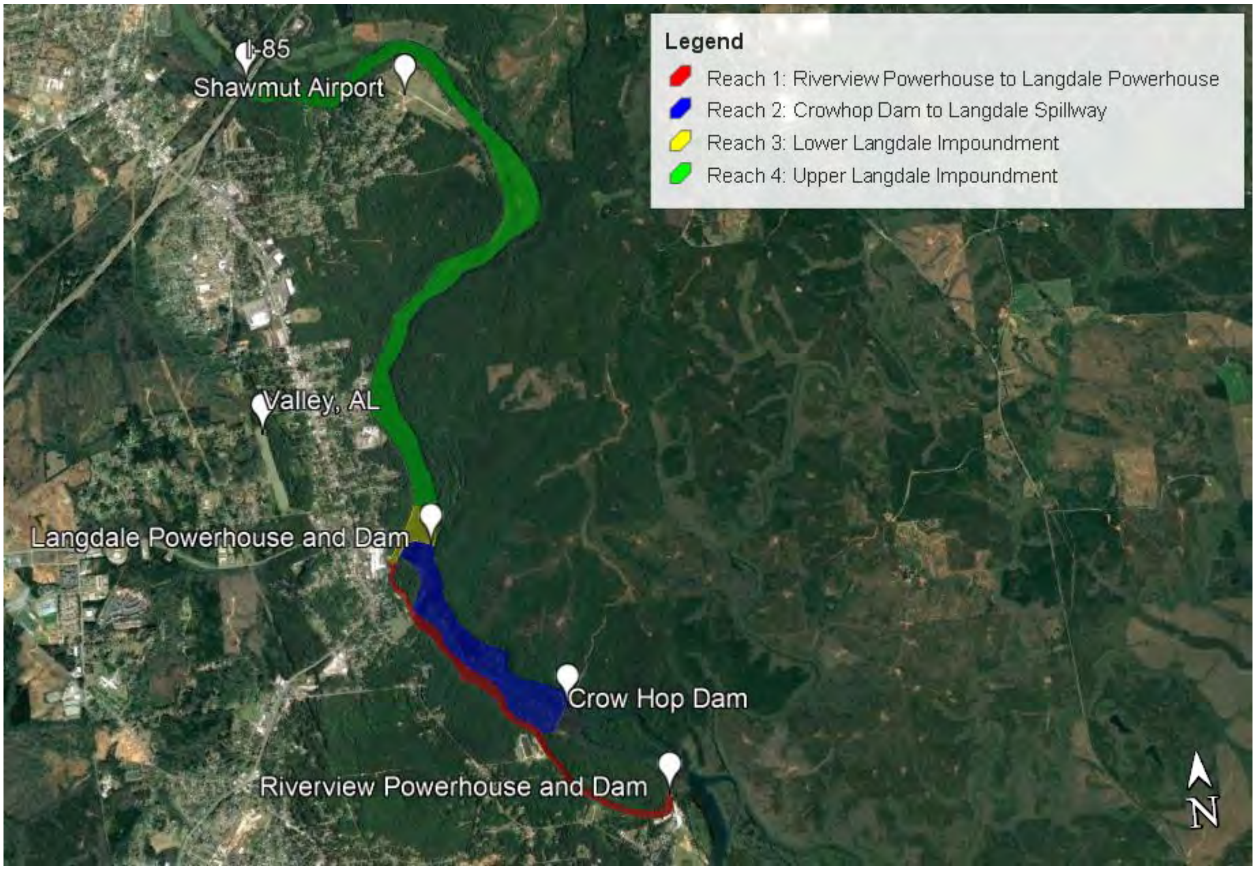


FIGURE D-1: REACH DELINEATION

APPENDIX D - SECTION 2

RIVERBED PROFILES

PROFILE OF THE EXISTING RIVERBED

The bathymetry for each reach was mapped and a longitudinal profile was created in AutoCAD along the river thalweg (low point in a cross section), except for Reach 4: Upper Langdale Impoundment, in which a longitudinal profile was generated in the HEC-RAS model along the river thalweg. The longitudinal profiles depict an elevation profile of the existing bathymetry based on hydrographic surveys conducted in 2019.

ESTIMATING THE PROFILE OF THE ORIGINAL RIVERBED

The existing bathymetry collected by hydrographic survey methods represents the current river bottom elevations. To represent the original, pre-impoundment river bottom profile, Georgia Power created a profile for each reach which extended between two known points where channel substrate was generally resistant to erosion (e.g., bedrock). These elevations came from dam base elevations, refusal depths field verified through geotechnical borings, and shoals where bedrock was visually apparent. This method generated a smooth, linear riverbed, which is an approximation of the original riverbed. Historic bathymetry with more detailed information containing known riverbed variability in bed elevations is not available. For this reason, and as discussed in more detail below, the volumes calculated herein are a conservatively high estimate of the sediment within the impoundments and it is likely that less sediment exists in the impoundments than is presented.

Georgia Power used the known base elevations of Riverview and Crow Hop Dams, the downstream base of Langdale Powerhouse, and bathymetric elevations of the shoal complexes in the Langdale Dam spillway tailrace and just south of I-85, as presented in Table D-1, to estimate original riverbed slopes.[6] Where bedrock was not apparent, base elevations of dam and powerhouse structures are assumed to be representative of the original riverbed at the time of dam construction as the dam base would have been keyed into the exposed bedrock of the river. In most cases, the estimated original riverbed slope predicted original riverbed elevations consistent with the refusal depths measured by geotechnical borings discussed in Figure 6.1 of this report. If the estimated original riverbed elevation differed from the refusal depth measured by the geotechnical borings, the estimated original riverbed profile was then adjusted based on boring depths. Once adjustments were made based on the geotechnical borings, an estimated original riverbed profile was finalized.

As provided in Figure 7-32 of this report, the hydraulic modelling indicated that the approximate upstream limit of the impoundment behind Langdale Dam extends to Interstate 85 (I-85 corresponds to Station 268+50 of the Upper Langdale Impoundment, Page D4-4). A visually apparent shoal complex exists in the Chattahoochee River just south of I-85. The low point of a cross section through the shoal complex at Station 266+50 was used as the upper extent of the estimated original riverbed slope.

[6] All known pre-impoundment elevation points referenced were converted to the survey datum NAVD88.

TABLE D-1: KNOWN ORIGINAL RIVERBED ELEVATIONS

Known Pre-impoundment Elevation Points	NAVD-88 Elevation (ft)
Low-Point on Cross section Through Shoals South of I-85	546.53
Langdale Dam: Average Elevation of Tailrace Downstream of Langdale Dam[7]	537.0
Langdale Powerhouse Upstream Base	538.51
Langdale Powerhouse Downstream Base	524.51
Crow Hop Upstream Base	521.74
Crow Hop Downstream Base	521.74
Riverview Powerhouse Upstream Base	522.08

The profiles for each reach are shown in plan and profile views on pages as referenced in Table D-2:

TABLE D-2: PAGE REFERENCES FOR PLAN AND PROFILE VIEWS

Figure	Page Range
Reach 1 Plan and Profile	D1-1 to D1-13
Reach 2 Plan and Profile	D2-1 to D2-8
Reach 3 Plan and Profile	D3-1 to D3-3
Reach 4 Plan and Profile	D4-1 to D4-6

APPENDIX D – SECTION 3

[7] Elevations downstream of Langdale Dam range from 538.7’ to 534.4’. Scour is suspected at the low point based on the concentrated pattern of the topography; thus an average elevation of the tailrace bathymetry cross section was used to estimate the pre-impoundment elevation at Langdale Dam.

QUANTITATIVE ANALYSIS: DETERMINING AREAS OF POTENTIAL SEDIMENT ACCUMULATION AND CUTTING CROSS SECTIONS

In order to determine locations of potential sediment accumulation, the estimated original riverbed is compared to the existing riverbed in each reach. Sediment is assumed to have accumulated in areas where the existing riverbed profile is at a higher elevation than the estimated original riverbed profile. Cross section locations were determined by choosing major inflection points in the bathymetry profiles and at boring locations and then cut across the channel widthwise, perpendicular to the flow of water in the river. Cross section locations are labeled on the profiles.

The cross sections contain the existing riverbed elevations from recent survey data, the estimated original riverbed elevations interpolated from the estimated original riverbed profiles, and the water surface elevation at West Point minimum flow[8]. The estimated original riverbed elevation shown on the cross section is interpolated from the corresponding station on the profiles and is represented on the cross section as a straight horizontal line across the width of the channel with near-vertical original side slopes. This method was used due to the limited availability of information on the river's pre-impoundment condition. Approximating original channel bottom and side slopes over-estimates the sediment that would potentially move in a decommissioned condition, particularly in the sides of the channel where an original riverbed elevation would likely have sloped up from the thalweg to the side. In a decommissioned condition, it is likely that less sediment movement would occur from the bottom near the sides of the channel.

There were 65 cross sections which were cut in the four river reaches, extending from Riverview Dam to approximately 5 miles upstream of the Langdale Dam (near the Shawmut Airport) as depicted on Figure D-5 in Section 4 below. The cross sections are shown on the pages listed in Table D-3:

TABLE D-3: PAGE REFERENCES FOR CROSS SECTIONS

Figure	Page Range
Reach 1 Cross sections	D1-14 to D1-15

[8] The U.S. Geological Survey took water surface elevation measurements on November 4 & 5, 2019. The measurements were taken when the U.S. Army Corps of Engineers was releasing base flow from West Point Dam and on a clear day. These water surface elevations are representative of the base flow elevation.

Reach 2 Cross sections	D2-9 to D2-13
Reach 3 Cross sections	D3-4 to D3-11
Reach 4 Cross sections	D4-7 to D4-16

When looking at each cross section, if the estimated original riverbed elevation was similar to or greater than existing riverbed bathymetry, it was assumed that no sediment accumulation had occurred in that area. cross section

APPENDIX D – SECTION 4

QUANTITATIVE SEDIMENT VOLUME ESTIMATE

An average end area volume estimate calculation table is presented at the end of the figures for each river reach. A row for each cross section records the cross section number, the elevation of the estimated original riverbed at that location, the cross sectional area of the estimated sediment at that cross section, the longitudinal distance from the adjacent cross section and the resulting volume between the adjacent cross sections. At the bottom of each table the total volume estimate is calculated in cubic feet (cf) and acre-feet (ac-ft).

APPENDIX D – SECTION 5

QUALITATIVE ASSESSMENT: SEDIMENT VOLUME ADJUSTMENTS AND EXCLUSIONS

The sediment volume estimates described in Section 3 are a conservatively high estimate of the sediment within the impoundments. A supplemental qualitative assessment was performed to make adjustments to refine the estimate based on which areas of sediment are likely to move downstream or remain in place following dam removal. Aerial imagery, post-dam removal velocities, and engineering judgement were used to make these adjustments. The qualitative review found that the quantitative method may have overestimated the potential sediment load in some areas and, additionally, underestimated the sediment load in the upper reach of Langdale. Adjustments made are discussed below.

SHOALS

Section 3 explained that cross section locations were determined by choosing major inflection points in the bathymetry profiles. The high points used to locate cross sections for the average end area method are not verified sediment deposits and may be natural submerged shoals that are not erodible. For the qualitative assessment, if shoals exist at a cross section location, evident by comparison to aerial imagery, the quantitative sediment volume estimated at that location was removed from the total. The quantitative sediment volume estimate was adjusted for the presence of shoals at cross sections 4-7 in the Upper Langdale Impoundment as shown in Figures D-2 and 3 below. Pages D4-17 and 18 show the sediment volume calculations at these cross sections, but notes the volumes calculated at these cross sections are not included in the total.

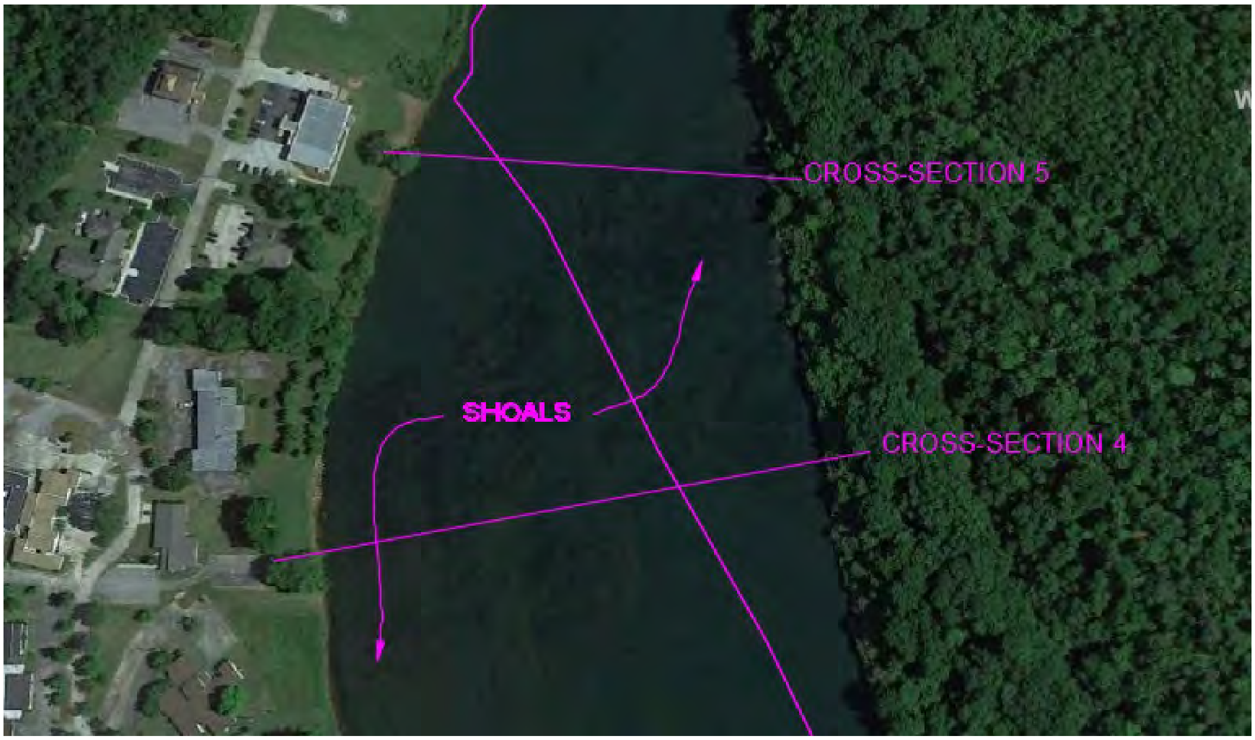


FIGURE D-2: SHOALS NEAR CROSS SECTIONS 4 AND 5 IN REACH 4 (UPPER LANGDALE)

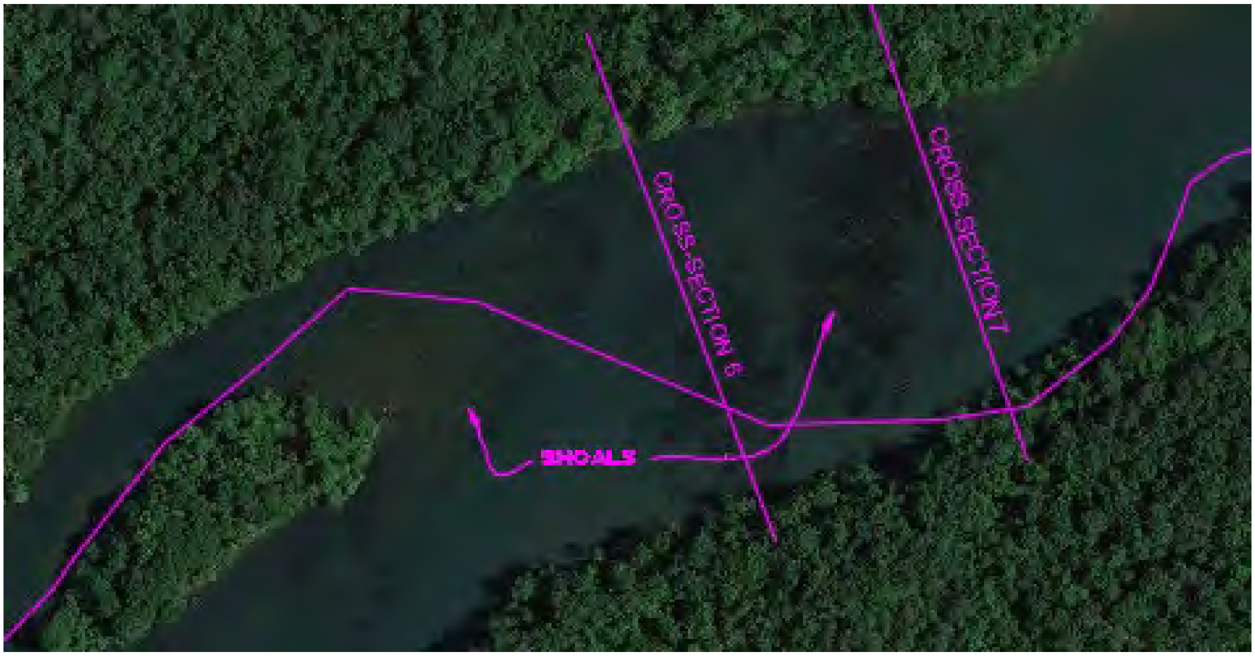


FIGURE D-3: SHOALS NEAR CROSS SECTIONS 6 & 7 IN REACH 4 (UPPER LANGDALE)

SEDIMENT

Section 2 explains the original river bottom was approximated by extending a profile between two known points where channel substrate was generally resistant to erosion (e.g., bedrock). The original river bottom was the basis for estimating locations of sediment accumulation. Where this method indicated no sediment accumulation, but sediment is evident by comparison to aerial imagery, the quantitative sediment volume required adjustment. This occurs in the upper reach of the Langdale Impoundment between stations 227+50 and 242+50. In this reach surveyors collected sediment depth probes to refusal to measure the depth to bedrock. The depth measurements (page D4-5) were used to create Cross Section 10, located at station 234+30 in the Upper Langdale Impoundment. This cross section is plotted on page D4-16, and the resulting calculated area was used to develop a sediment volume estimate between stations 227+50 and 242+50. This area is included in the sediment volume estimation calculation on page D4-18.

SEDIMENT DEPOSITS NOT LIKELY TO MOVE FOLLOWING DAM REMOVAL

NATURALLY OCCURRING SEDIMENT DEPOSITS

It is natural for sediment to deposit on the inside bend of a river's curve, or at the upstream head of an island in the river. These locations typically experience decreased velocities and sediment transported by the river settles to the riverbed. Following the removal of the dam, sediment in these locations is not likely to be transported downstream. Naturally occurring sediment deposits exist in the Upper Langdale Impoundment near cross sections 8 and 9, as shown in Figure D-4, and quantified in the sediment volume estimate between Stations 130+00 and 160+00. Page D4-18 shows the sediment volume estimate at cross sections 8 and 9, but notes the volumes estimated are not included in the total.

FIGURE D-4: SHOALS AND NATURALLY OCCURRING SEDIMENT NEAR CROSS SECTIONS 8 & 9 IN SECTION 4 (UPPER LANGDALE)

SEDIMENT DEPOSITS NOT LIKELY TO BE TRANSPORTED DOWNSTREAM

The quantitative method described in Section 4 does not capture the potential for sediment to settle out in the pools below the original riverbed profile line, although sediment settling in deeper pools of a river is likely to occur regardless of the existence of a dam and less likely to move downstream as a direct result of a dam removal.

SEDIMENT EXPECTED TO REMAIN DUE TO ENGINEERING MEASURES

Sheet D2-1 shows the location of a proposed rock ramp just upstream and west of the western abutment of Crowhop Dam. The purpose of this rock ramp is to maintain the integrity of the Rock Weir No. 3 that ensures flow to the Riverview channel. This is discussed in further detail of Section 3 of this report. Limited erosion may occur from this area as Crowhop Dam is removed, but the majority of the sediment accumulated in this area is not expected to move downstream following dam removal.

SEDIMENT EXPECTED TO REMAIN DUE TO LOW VELOCITY

Upstream of Station 111+00 of Reach 1 (Page D1-12) the bathymetry profile becomes flat again indicating a potential accumulation of sediment; however, this area was excluded from the sediment volume because the reach is entirely contained in the Langdale Powerhouse tailrace canal (Page D1-4). In this area, velocities in the decommissioned condition are anticipated to be less than 1.5 feet per second (fps) in maximum normal flow conditions of West Point minimum plus two-unit flow. The flow in this reach will be much less than when the Langdale Powerhouse was operating, thereby limiting the amount of anticipated sediment transport. Even during 100-YR flood flows, the model predicts velocities less than 3 fps through this portion of the reach and the likelihood of sediment transport from this area remains low. Limited localized erosion may occur in this reach as the channel adjusts to changed downstream conditions (the removal of Crow Hop Dam and lowering of water levels downstream by approximately 6 inches), but it is not anticipated to be substantial given the overall reduction in flow in this reach.

QUANTITATIVE METHOD ADJUSTMENTS BASED ON ENGINEERING JUDGEMENT

In the Reach 1 from the Riverview Powerhouse to Langdale Powerhouse, no sediment was estimated between Stations 61+80 (near Rock Weir #2) (Page D1-9) and Station 111+00 (Page D1-12). The existing bathymetry profile upstream of this station hovers around the estimated original riverbed elevation and becomes more indicative of a natural channel profile (with more irregularity) than the flat river bottom profile downstream of this station.

LOCATIONS OF SEDIMENT DEPOSITS, NO MOVEMENT AND NO SEDIMENT

Figure D-5 below illustrates locations of sediment deposits, locations where sediment is predicted to remain, and locations where no sediment is predicted. There were 65 cross sections which were cut in the four river reaches, extending from Riverview Dam to approximately 5 miles upstream of the Langdale Dam (near the Shawmut Airport) as depicted on Figure D-5 below. Cross section. Volume estimates are listed on the pages indicated in Table D-3.

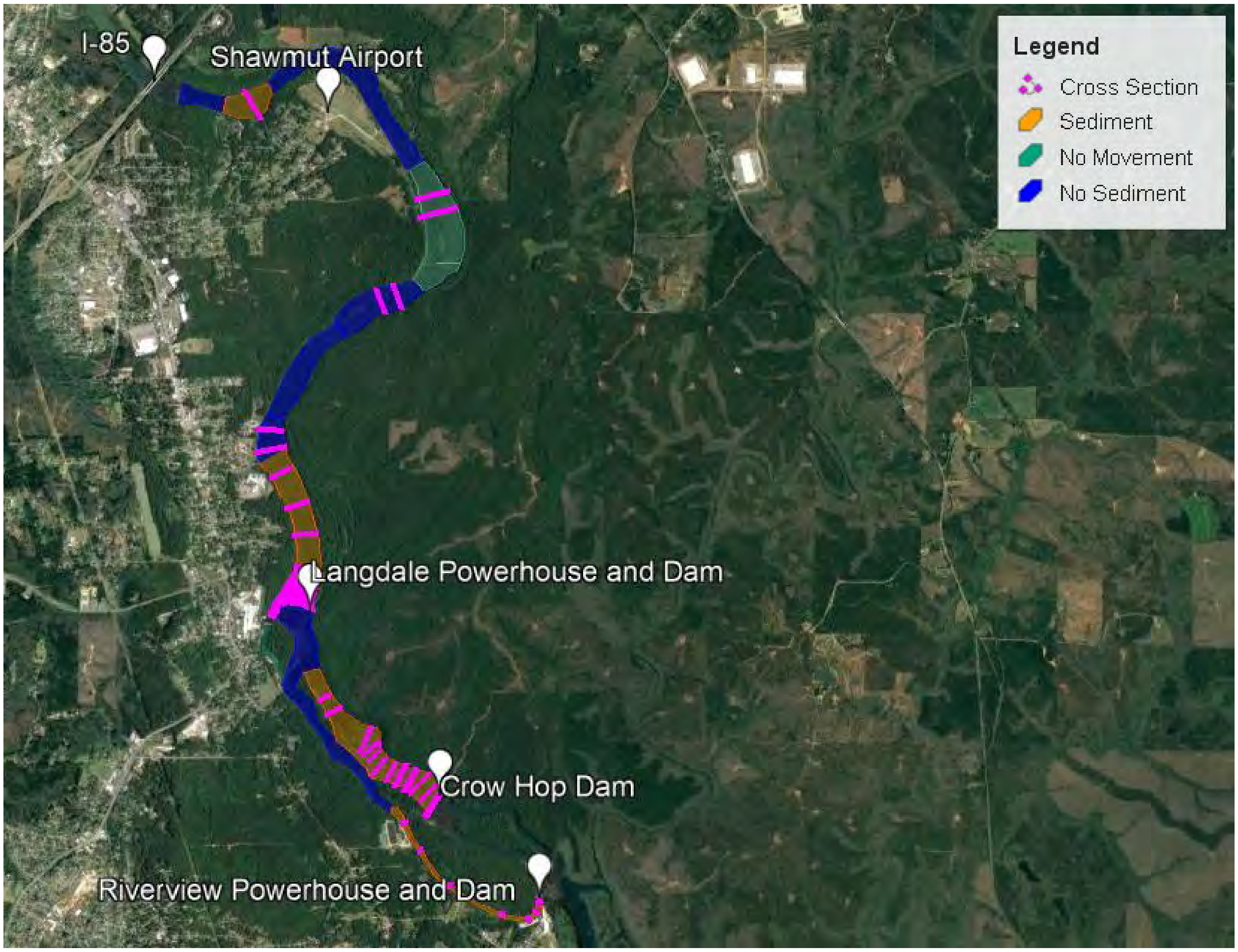


FIGURE D-5: ASSUMED LOCATIONS OF SEDIMENT ACCUMULATION

TABLE D-4: PAGE REFERENCES FOR VOLUME ESTIMATES

	Page Range
Reach 1 Volume Calculation	D1-16
Reach 2 Volume Calculation	D2-14
Reach 3 Volume Calculation	D3-12
Reach 4 Volume Calculation	D4-17 & 18

APPENDIX D – SECTION 6: SEDIMENT VOLUME SUMMARY

Based on this sediment volume estimate, the maximum volume of sediment anticipated to naturally evacuate as part of the proposed dam decommissioning is 516 acre-feet (Table D-5). The method utilized the area between existing riverbed and an estimated original riverbed elevation at 64 cross sections to produce an average end area volume estimate. The original riverbed is represented on each cross section as a uniform elevation across the channel width with near-vertical original side slopes. This method was used due to the limited availability of information on the river's pre-impoundment condition. Although qualitative, reason-based adjustments were applied to the estimate, including one additional cross section volume added in the Upper Langdale reach, our analysis indicates that this assessment produced an abundantly conservative estimate of the sediment that would move under the decommission proposal.

TABLE D-5: SEDIMENT ESTIMATE BY IMPOUNDED RIVER SECTION

Reach Number	Reach Name	Cross sections	Volume (ac-ft)
1	Riverview Powerhouse to Langdale Powerhouse	8	219
2	Crow Hop Dam to Langdale Dam	16	112
3	Lower Langdale Impoundment	31	64
4	Upper Langdale Impoundment	10	121
	TOTALS	65	516

Riverview Powerhouse to Langdale Powerhouse

Sheet D1-1

Riverview Powerhouse to Langdale Powerhouse

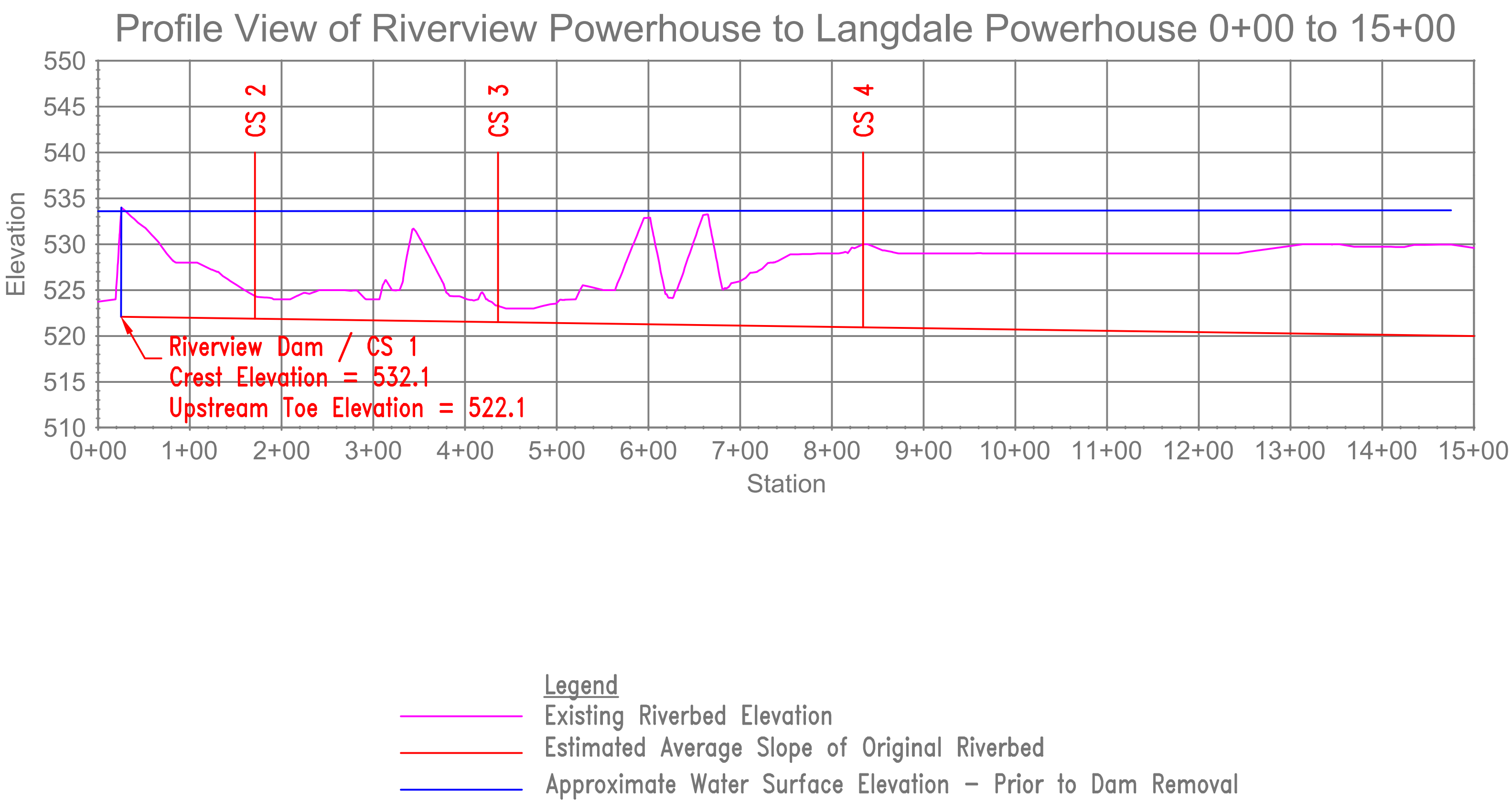
Sheet D1-2

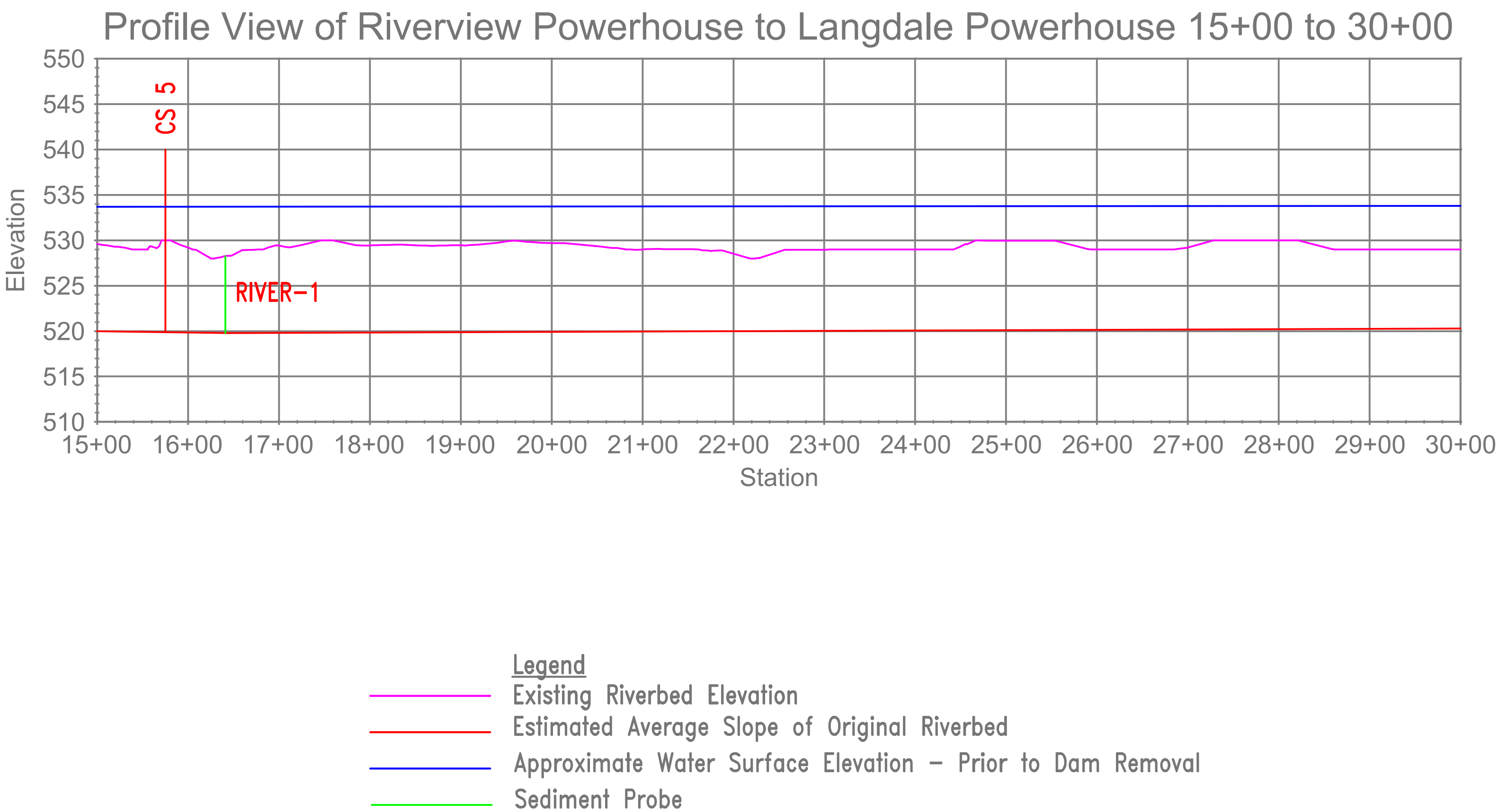
Riverview Powerhouse to Langdale Powerhouse

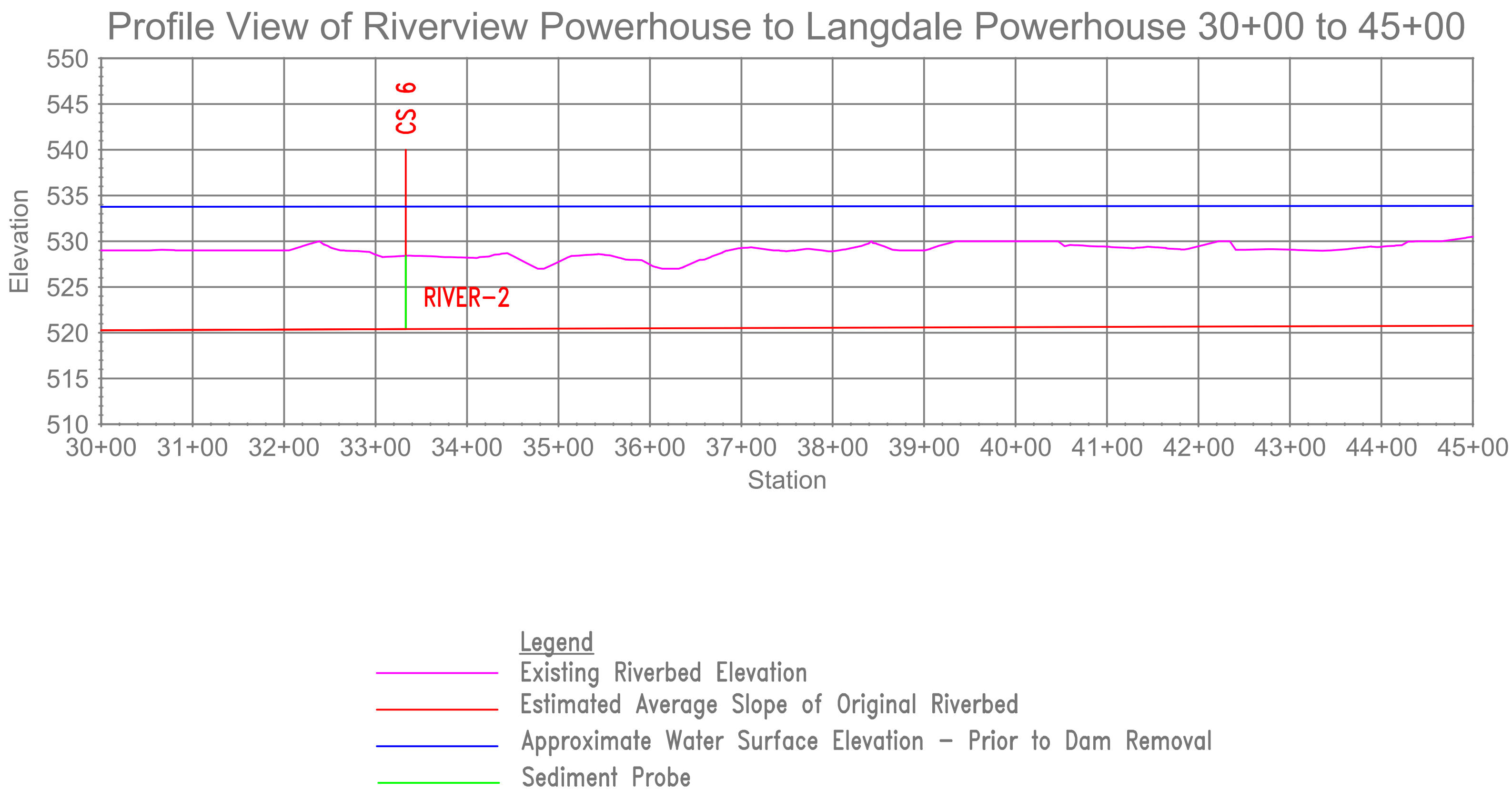
Sheet D1-3

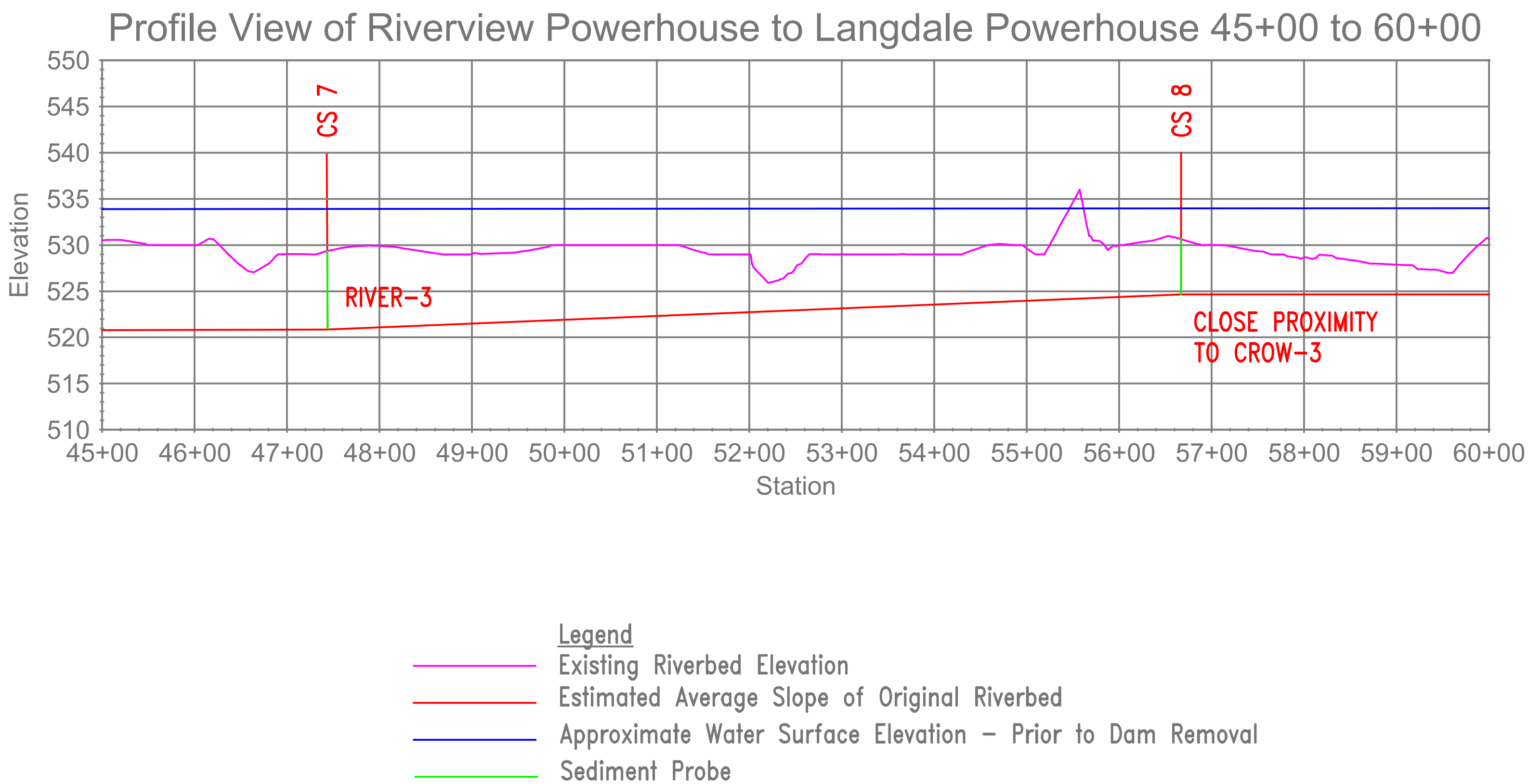
Riverview Powerhouse to Langdale Powerhouse

Sheet D1-4

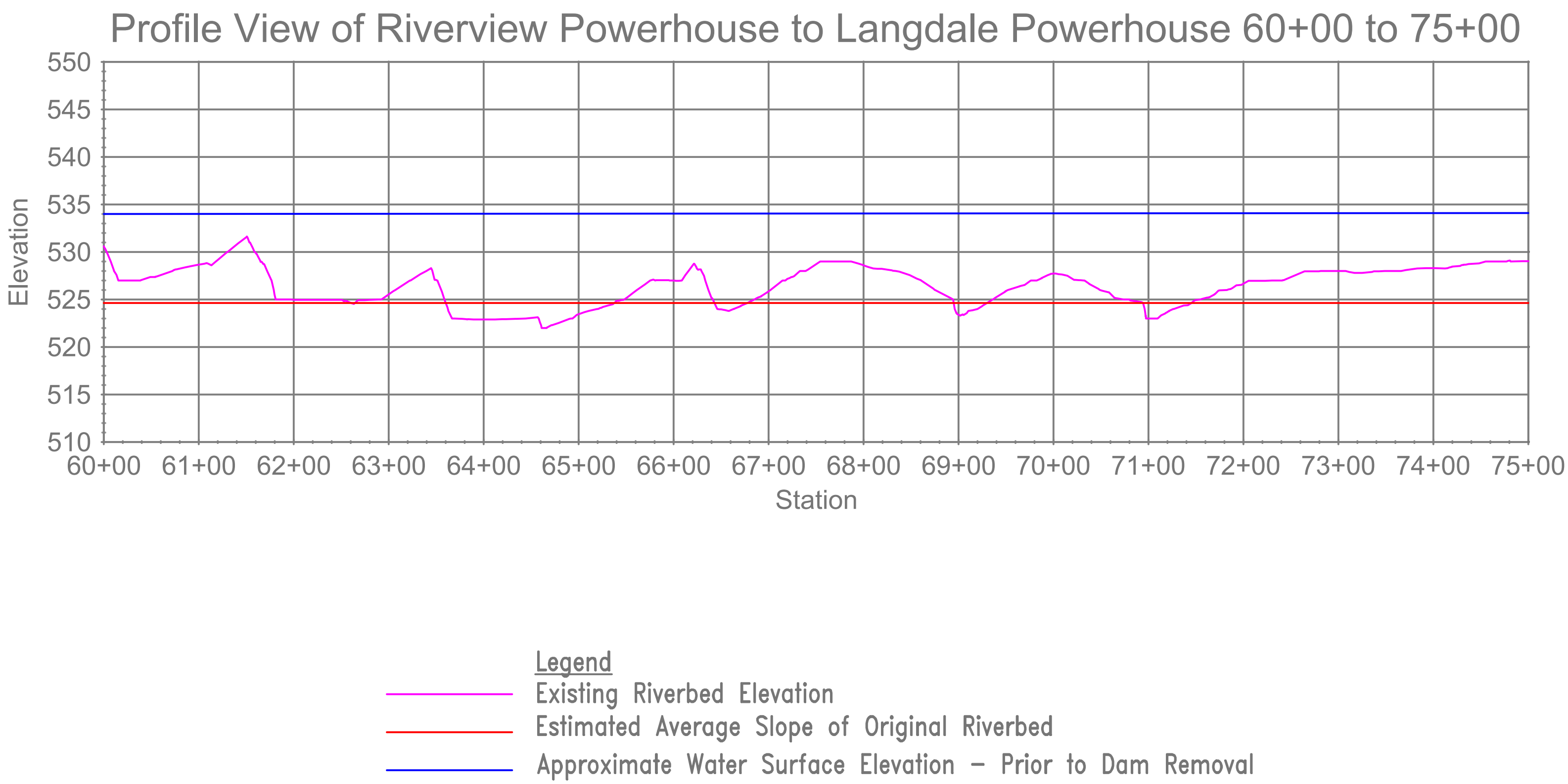

Profile View of Riverview Powerhouse to Langdale Powerhouse 0+00 to 15+00
Elevation
550
545
540
535
530
525
520
515
510
0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
10+00
11+00
12+00
13+00
14+00
15+00
Station
CS 2
CS 3
CS 4
Riverview Dam / CS 1
Crest Elevation = 532.1
Upstream Toe Elevation = 522.1
Legend
Existing Riverbed Elevation
Estimated Average Slope of Original Riverbed
Approximate Water Surface Elevation - Prior to Dam Removal

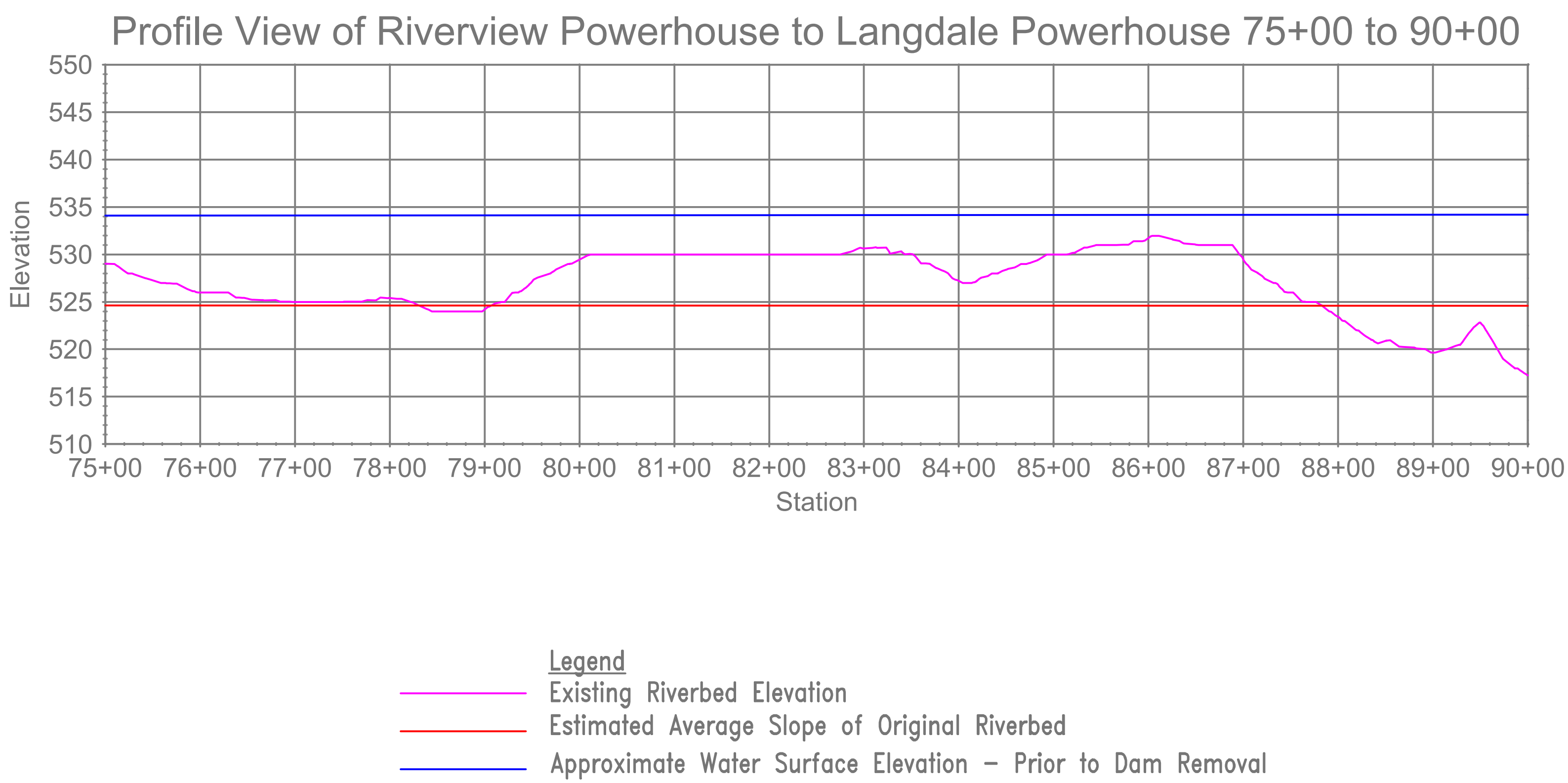

Profile View of Riverview Powerhouse to Langdale Powerhouse 15+00 to 30+00
Elevation
550
545
540
535
530
525
520
515
510
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00
23+00
24+00
25+00
26+00
27+00
28+00
29+00
30+00
Station
CS 5
RIVER-1
Legend
Existing Riverbed Elevation
Estimated Average Slope of Original Riverbed
Approximate Water Surface Elevation - Prior to Dam Removal
Sediment Probe

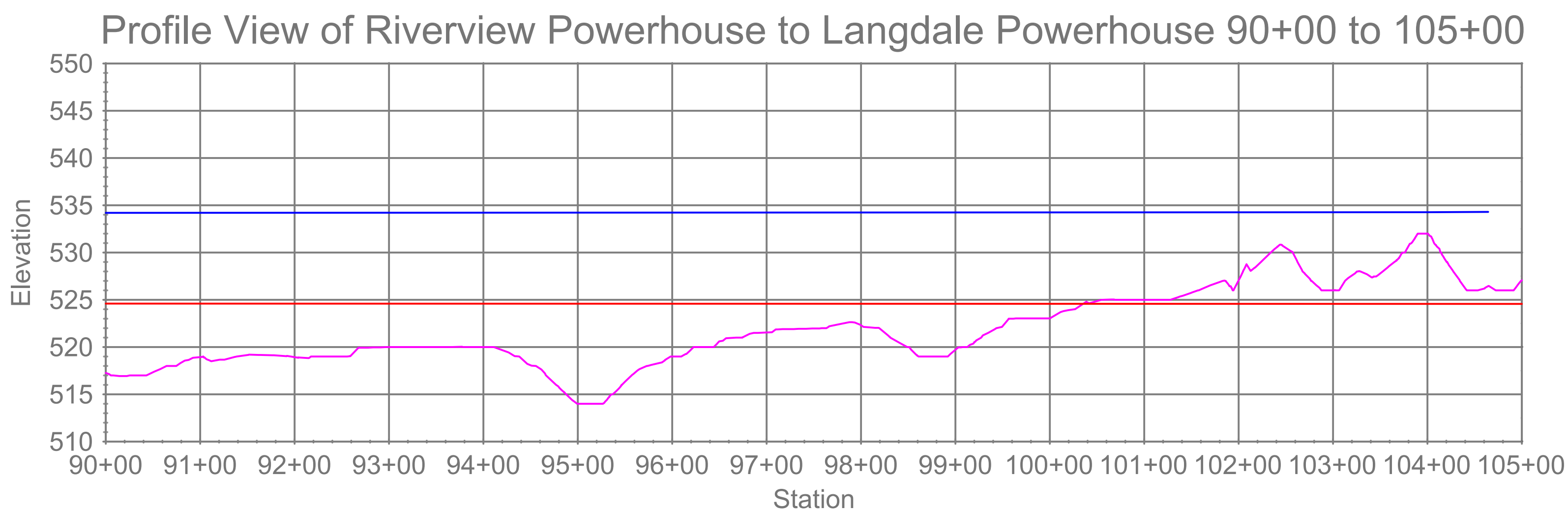

Profile View of Riverview Powerhouse to Langdale Powerhouse 30+00 to 45+00
550
545
540
535
530
525
520
515
510
Elevation
30+00
31+00
32+00
33+00
34+00
35+00
36+00
37+00
38+00
39+00
40+00
41+00
42+00
43+00
44+00
45+00
Station
CS 6
RIVER-2
Legend
Existing Riverbed Elevation
Estimated Average Slope of Original Riverbed
Approximate Water Surface Elevation - Prior to Dam Removal
Sediment Probe



Profile View of Riverview Powerhouse to Langdale Powerhouse 45+00 to 60+00
550
545
540
535
530
525
520
515
510
Elevation
45+00
46+00
47+00
48+00
49+00
50+00
51+00
52+00
53+00
54+00
55+00
56+00
57+00
58+00
59+00
60+00
Station
CS 7
CS 8
RIVER-3
CLOSE PROXIMITY
TO CROW-3
Legend
Existing Riverbed Elevation
Estimated Average Slope of Original Riverbed
Approximate Water Surface Elevation - Prior to Dam Removal
Sediment Probe


Profile View of Riverview Powerhouse to Langdale Powerhouse 60+00 to 75+00
550
545
540
535
530
525
520
515
510
Elevation
60+00
61+00
62+00
63+00
64+00
65+00
66+00
67+00
68+00
69+00
70+00
71+00
72+00
73+00
74+00
75+00
Station
Legend
Existing Riverbed Elevation
Estimated Average Slope of Original Riverbed
Approximate Water Surface Elevation - Prior to Dam Removal


Profile View of Riverview Powerhouse to Langdale Powerhouse 75+00 to 90+00
550
545
540
535
530
525
520
515
510
Elevation
75+00
76+00
77+00
78+00
79+00
80+00
81+00
82+00
83+00
84+00
85+00
86+00
87+00
88+00
89+00
90+00
Station
Legend
Existing Riverbed Elevation
Estimated Average Slope of Original Riverbed
Approximate Water Surface Elevation – Prior to Dam Removal

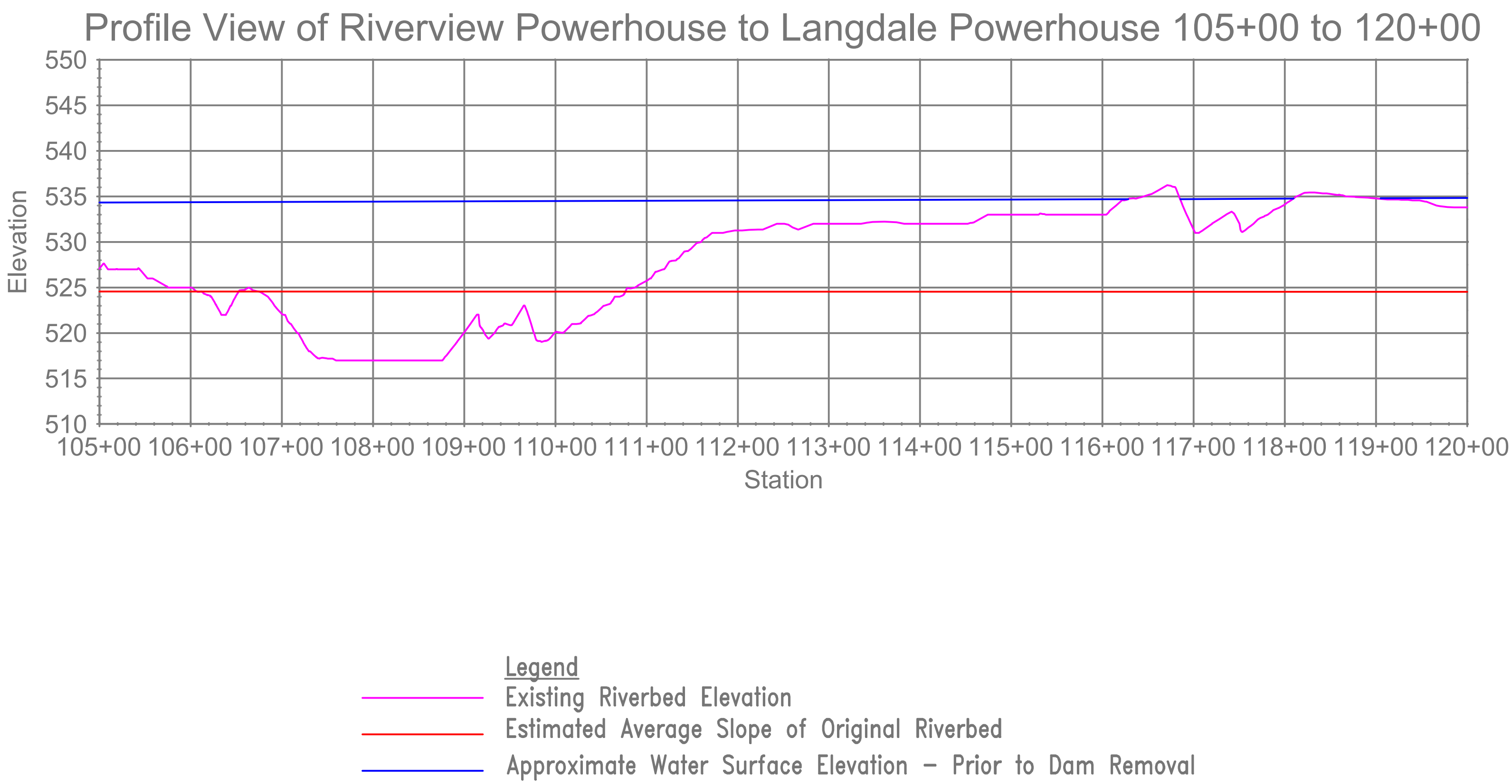


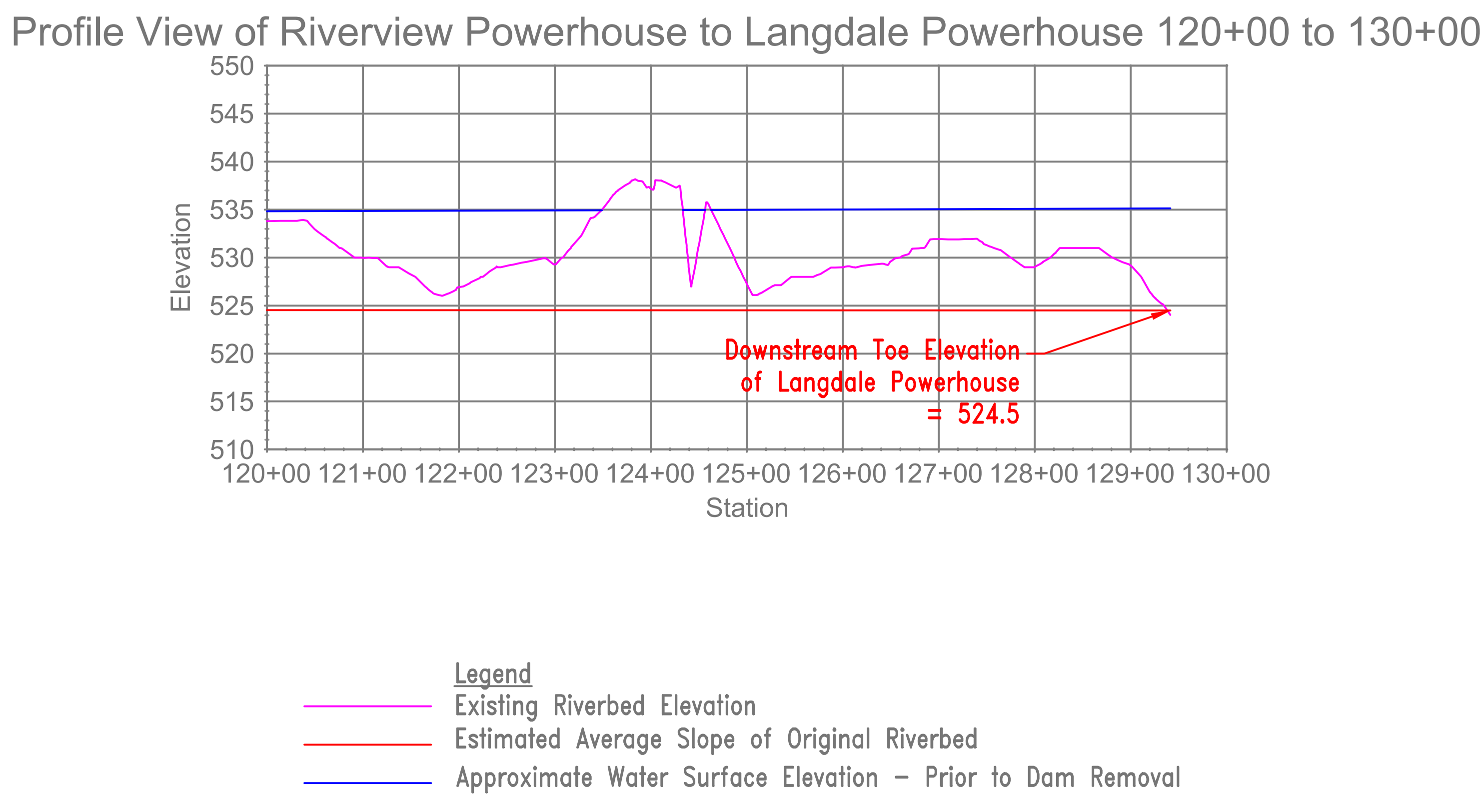
Legend

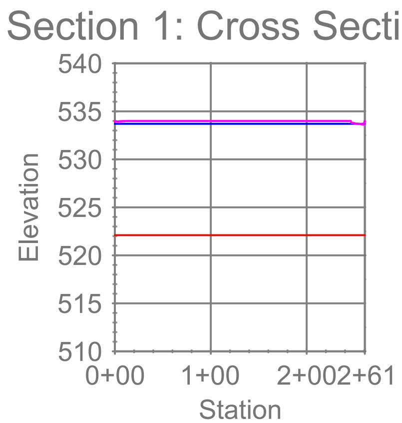
Existing Riverbed Elevation

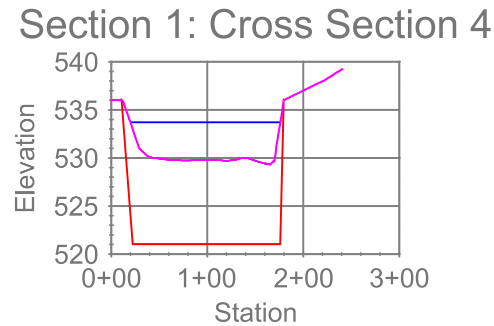
Estimated Average Slope of Original Riverbed

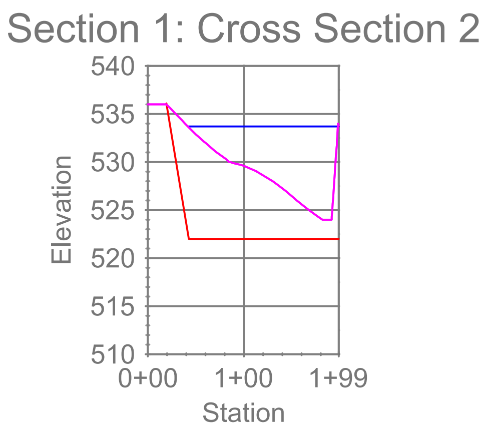
Approximate Water Surface Elevation – Prior to Dam Removal

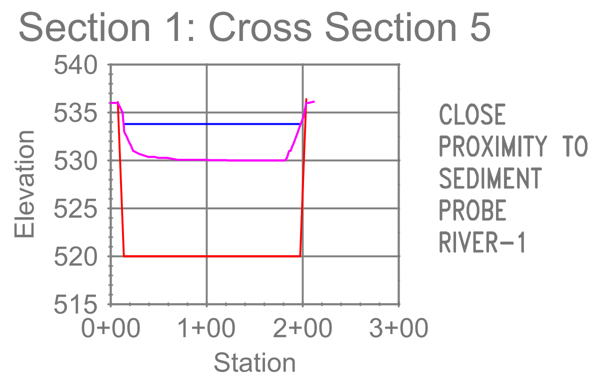

Profile View of Riverview Powerhouse to Langdale Powerhouse 105+00 to 120+00
550
545
540
535
530
525
520
515
510
Elevation
105+00 106+00 107+00 108+00 109+00 110+00 111+00 112+00 113+00 114+00 115+00 116+00 117+00 118+00 119+00 120+00
Station
Legend
Existing Riverbed Elevation
Estimated Average Slope of Original Riverbed
Approximate Water Surface Elevation – Prior to Dam Removal

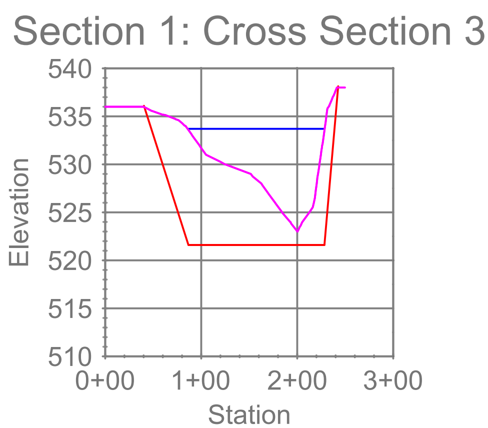

Profile View of Riverview Powerhouse to Langdale Powerhouse 120+00 to 130+00
550
545
540
535
530
525
520
515
510
Elevation
120+00 121+00 122+00 123+00 124+00 125+00 126+00 127+00 128+00 129+00 130+00
Station
Downstream Toe Elevation
of Langdale Powerhouse
= 524.5
Legend
Existing Riverbed Elevation
Estimated Average Slope of Original Riverbed
Approximate Water Surface Elevation - Prior to Dam Removal

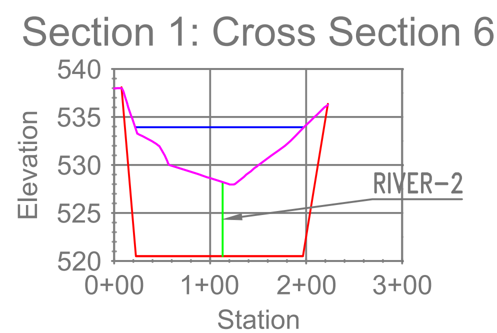












<u>Legend</u>

Existing Riverbed Elevation

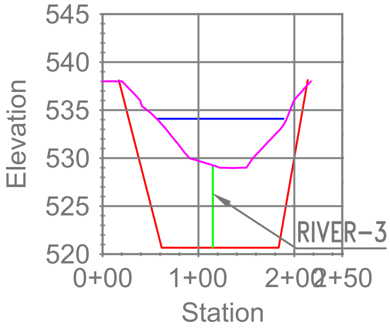
Sediment Probe

Estimated Average Slope of Original Riverbed

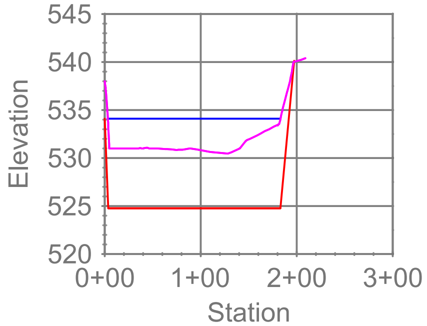
Approximate Water Surface Elevation at Base Flow Prior to Dam Removal

Cross-sections are plotted facing downstream (from east to west).

Section 1: Cross Section 7



Section 1: Cross Section 8

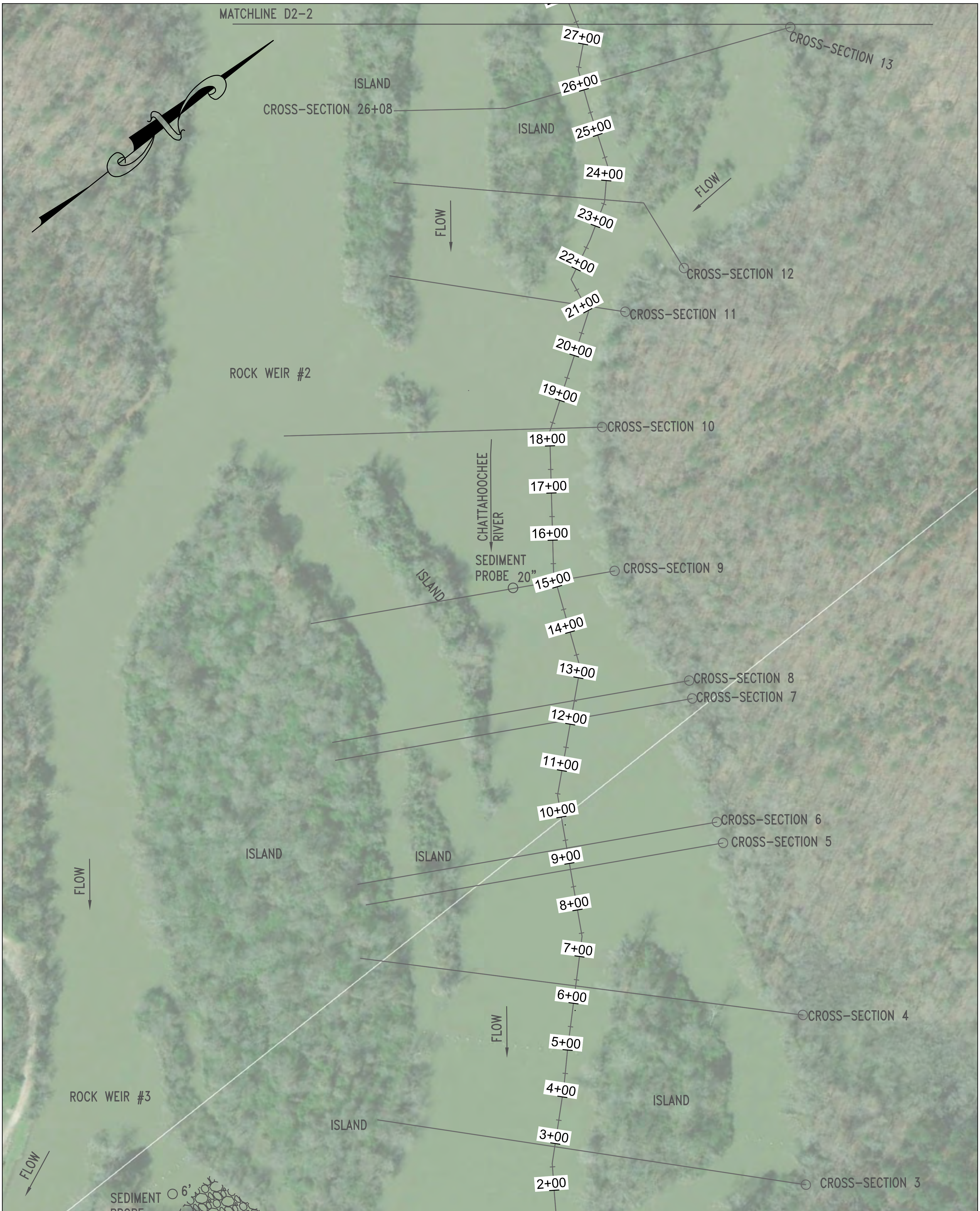


CLOSE
PROXIMITY TO
SEDIMENT
PROBE
CROW-3

Legend
Existing Riverbed Elevation
Sediment Probe
Estimated Average Slope of Original Riverbed
Approximate Water Surface Elevation at Base Flow Prior to Dam Removal

Cross-sections are plotted facing downstream (from east to west).

Area and Volume Estimates for Riverview Powerhouse to Langdale Powerhouse Comparison of 2019 Bathymetry and Estimated Original Riverbed Elevation				
Cross-section	Elev of Estimated Original Riverbed (ft)	Area of Cross-section (sq ft)	Distance (ft)	Volume (cf)
1	522.1	3121		
2	521.9	1164	123	263540
3	521.5	1343	244	305854
4	520.9	1488	290	410539
5	519.9	2011	720	1259856
6	520.4	2009	1665	3347233
7	523.3	1659	1277	2342273
8	524.6	1275	877	1286603
9		0	514	327701
Total Sediment Estimate (cf)				9543598
Total Sediment Estimate (ac-ft)				219



Crowhop Dam to Langdale Spillway

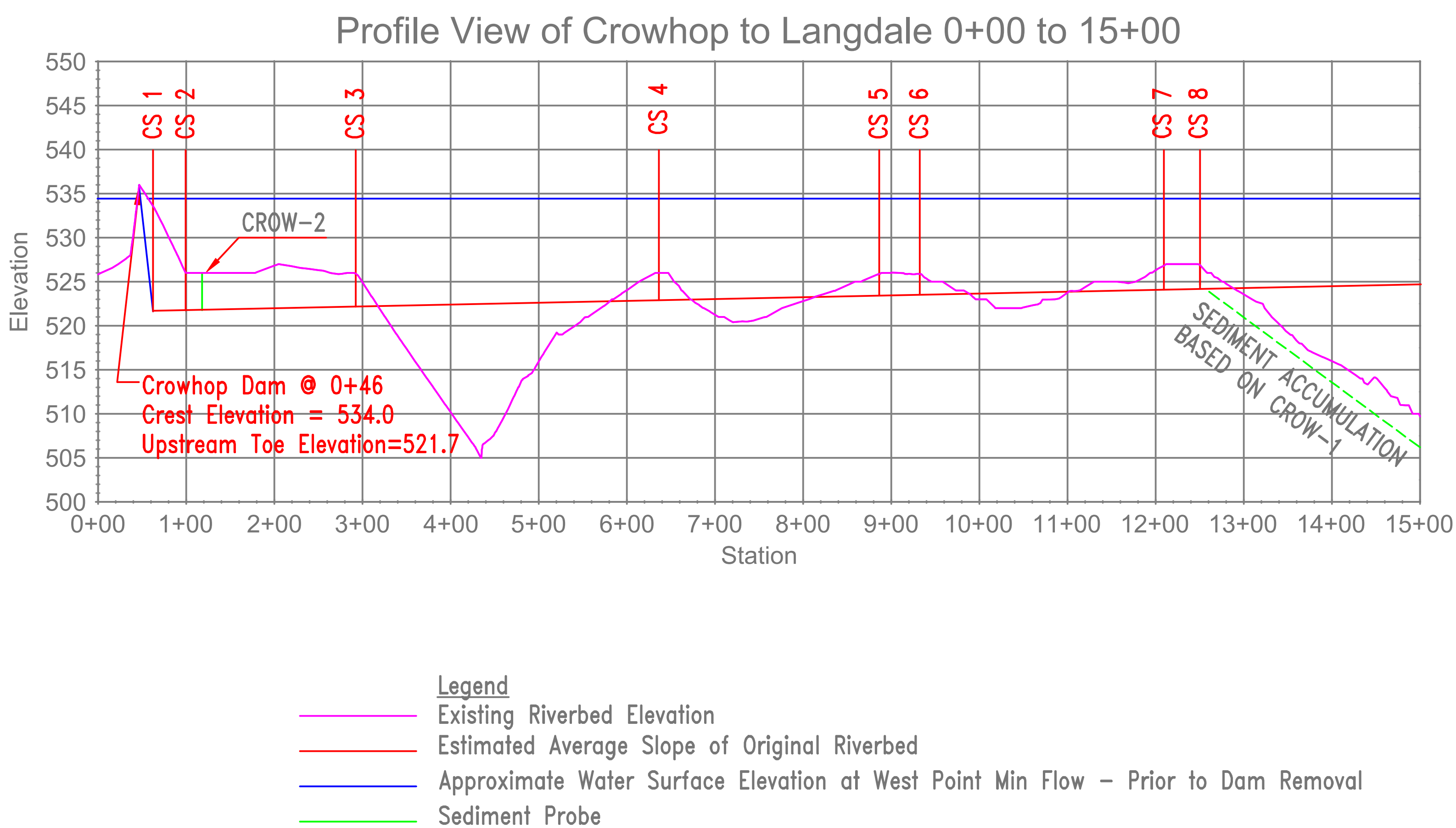
Sheet D2-1

Crowhop Dam to Langdale Spillway

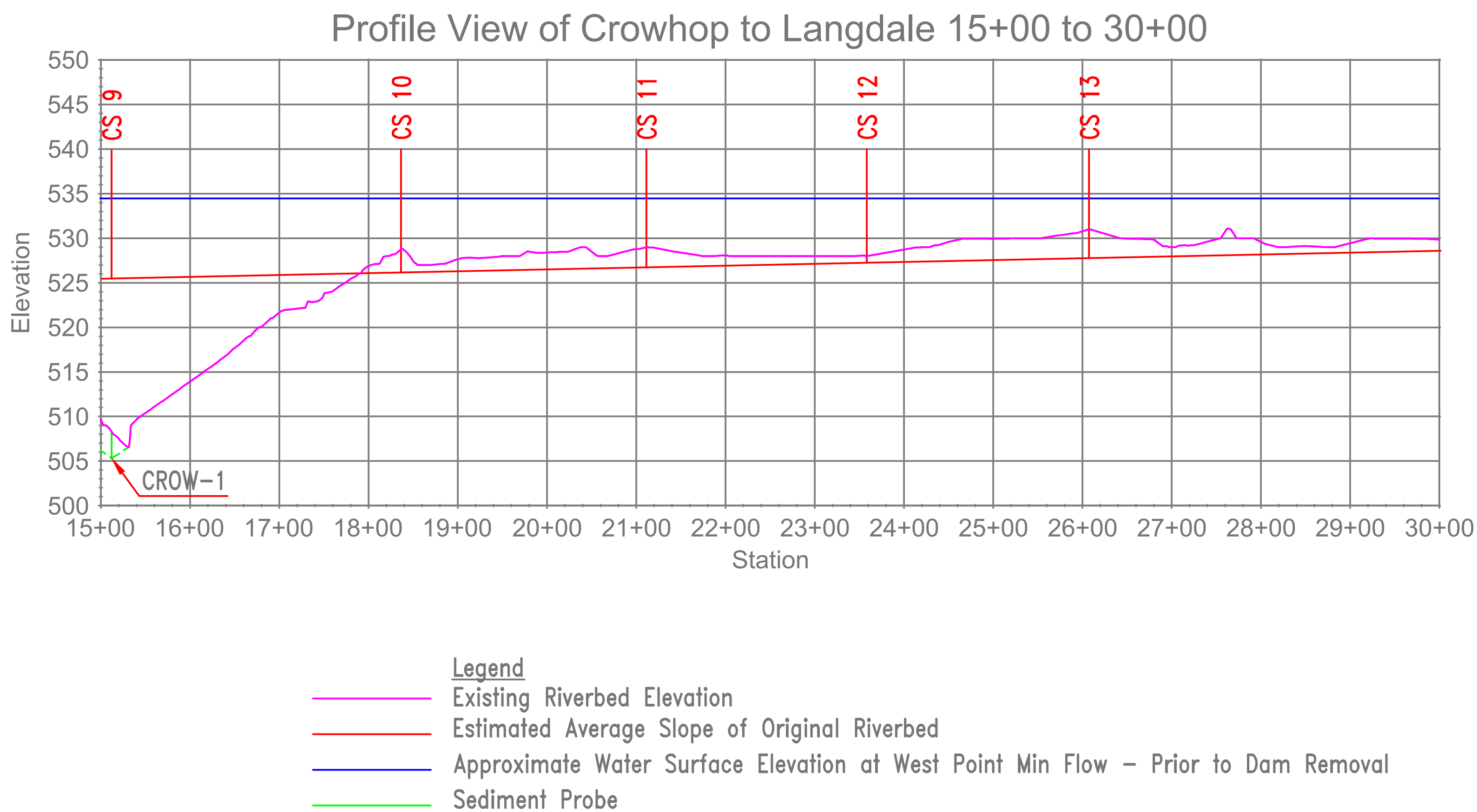
Sheet D2-2

Crowhop Dam to Langdale Spillway

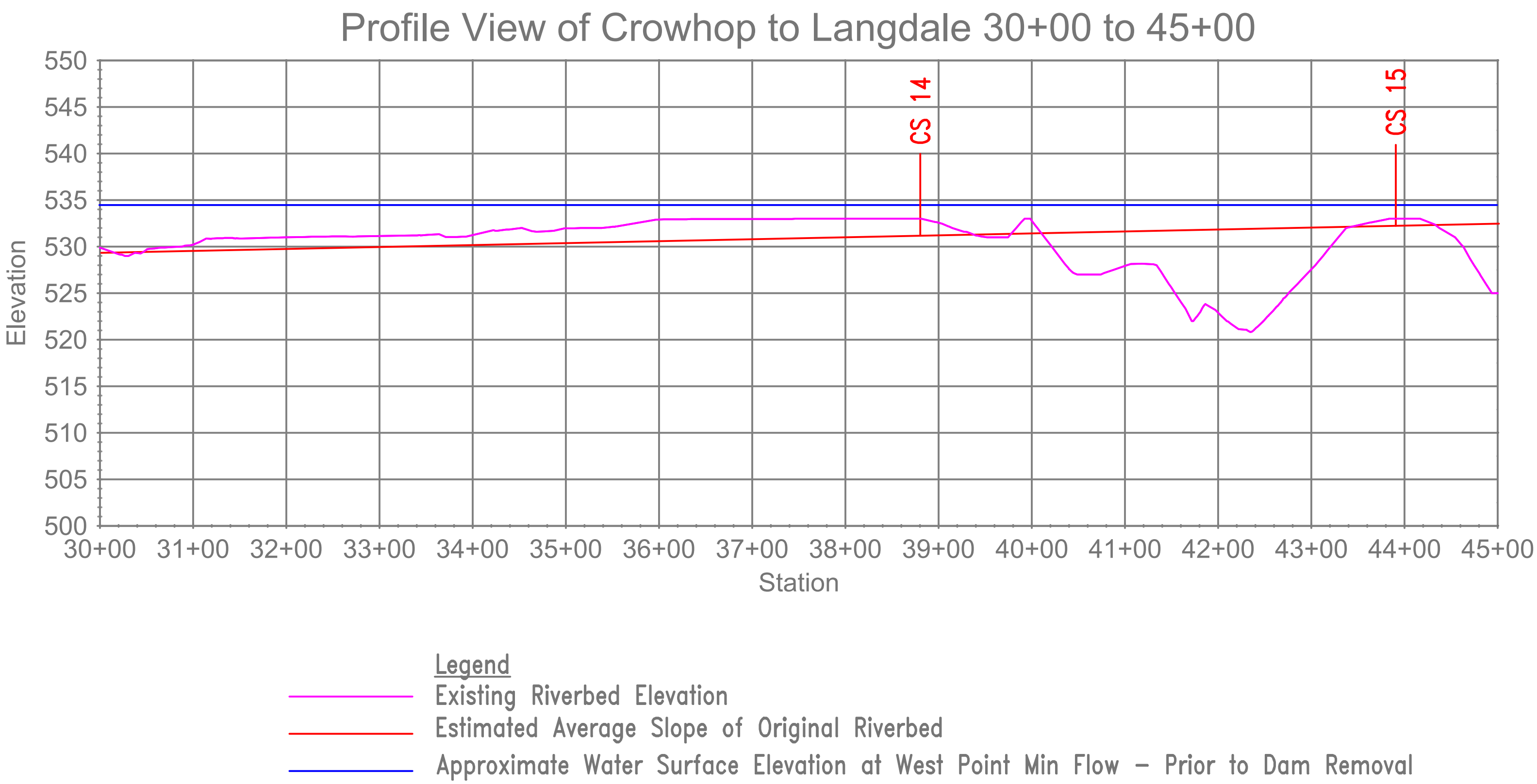
Sheet D2-3

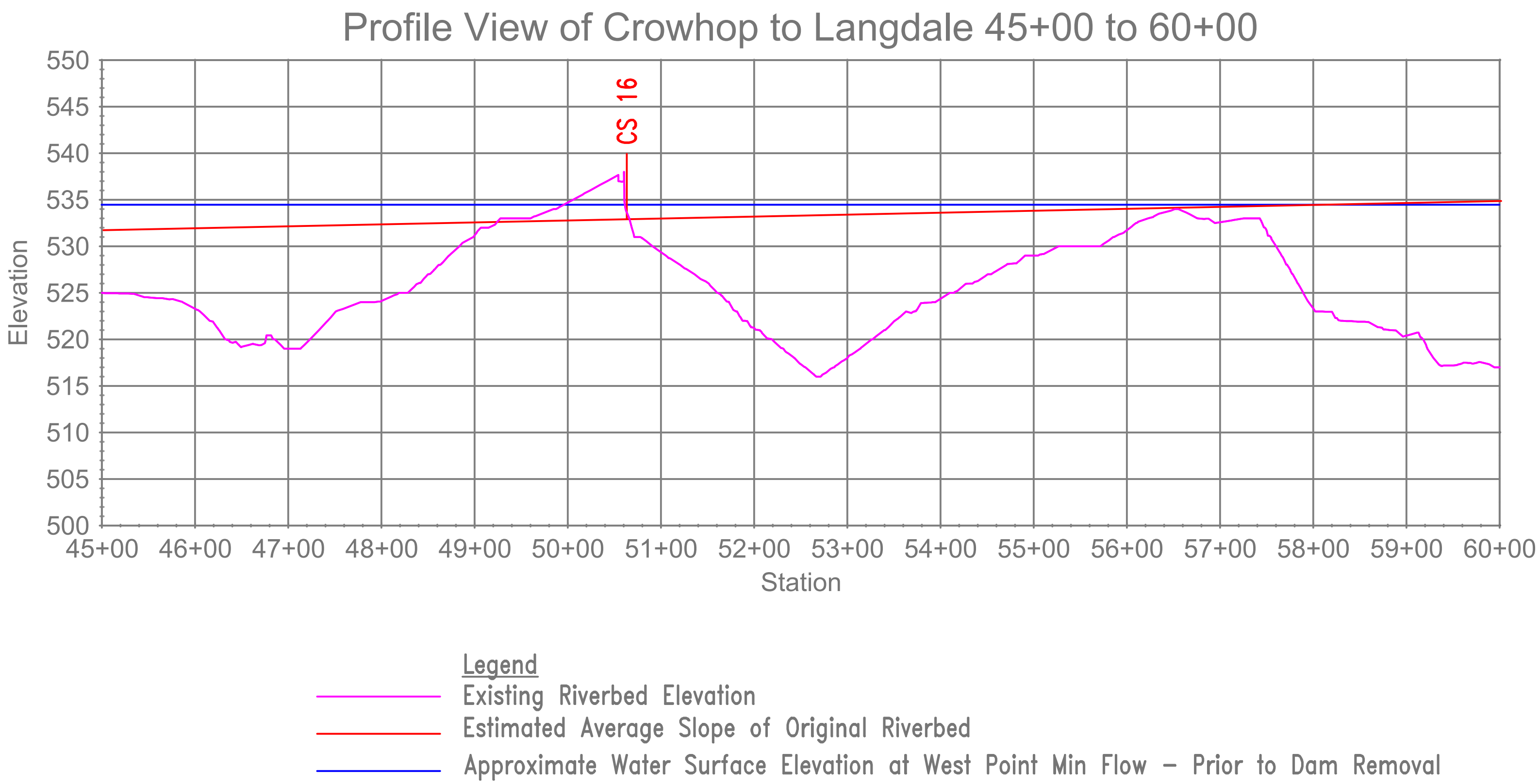


Profile View of Crowhop to Langdale 0+00 to 15+00
Elevation
550
545
540
535
530
525
520
515
510
505
500
0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
10+00
11+00
12+00
13+00
14+00
15+00
Station
CS 1
CS 2
CS 3
CS 4
CS 5
CS 6
CS 7
CS 8
CROW-2
Crowhop Dam @ 0+46
Crest Elevation = 534.0
Upstream Toe Elevation=521.7
SEDIMENT ACCUMULATION
BASED ON CROW-1
Legend
Existing Riverbed Elevation
Estimated Average Slope of Original Riverbed
Approximate Water Surface Elevation at West Point Min Flow - Prior to Dam Removal
Sediment Probe

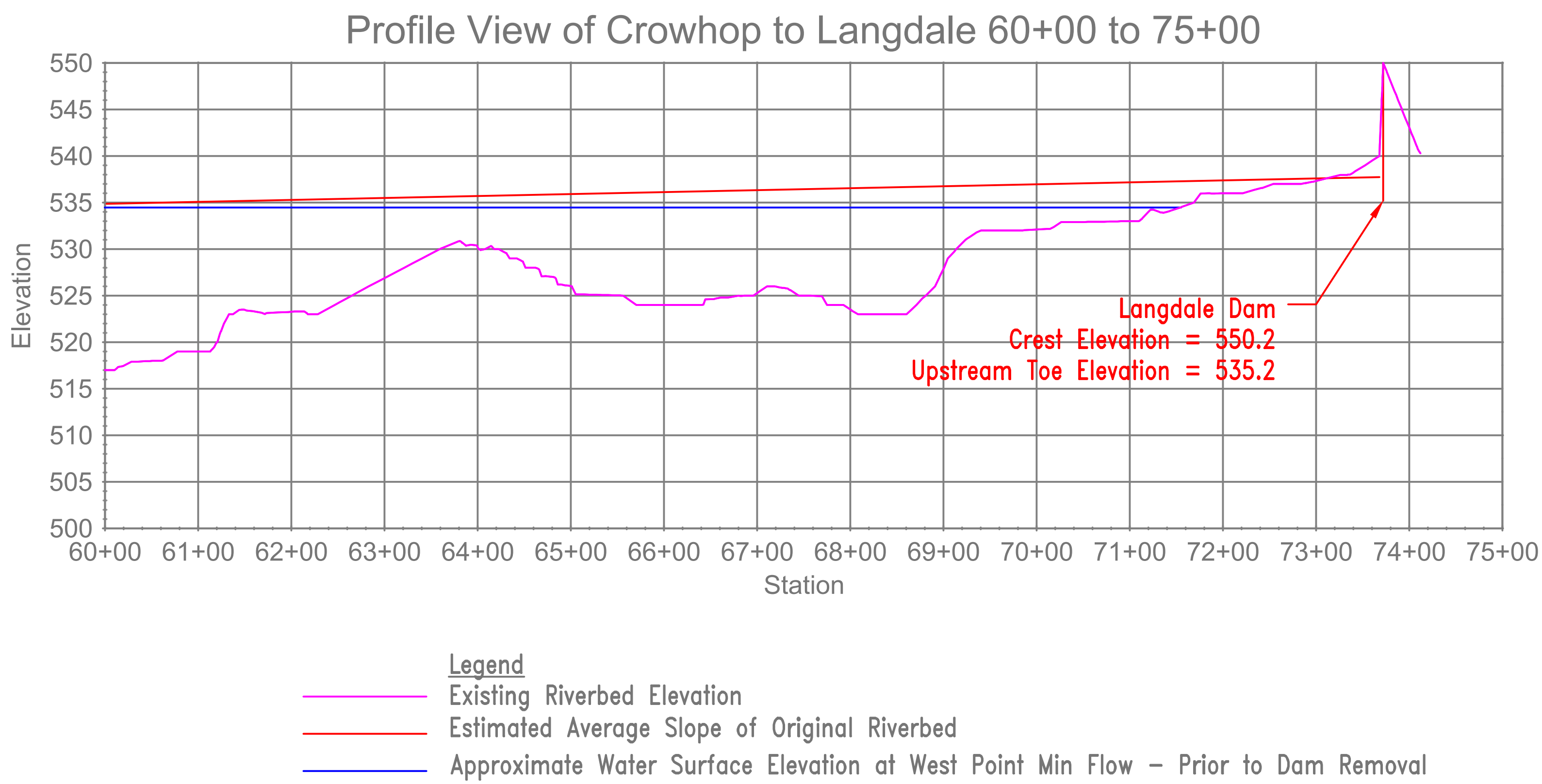


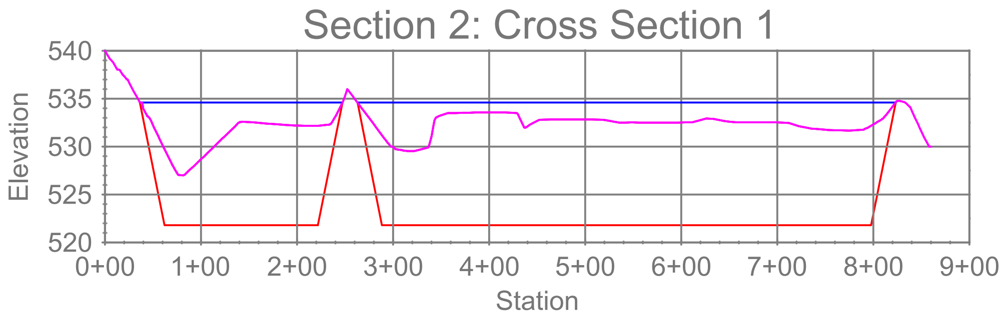
Profile View of Crowhop to Langdale 15+00 to 30+00
Elevation
550
545
540
535
530
525
520
515
510
505
500
CS 9
CS 10
CS 11
CS 12
CS 13
CROW-1
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00
23+00
24+00
25+00
26+00
27+00
28+00
29+00
30+00
Station
Legend
Existing Riverbed Elevation
Estimated Average Slope of Original Riverbed
Approximate Water Surface Elevation at West Point Min Flow – Prior to Dam Removal
Sediment Probe

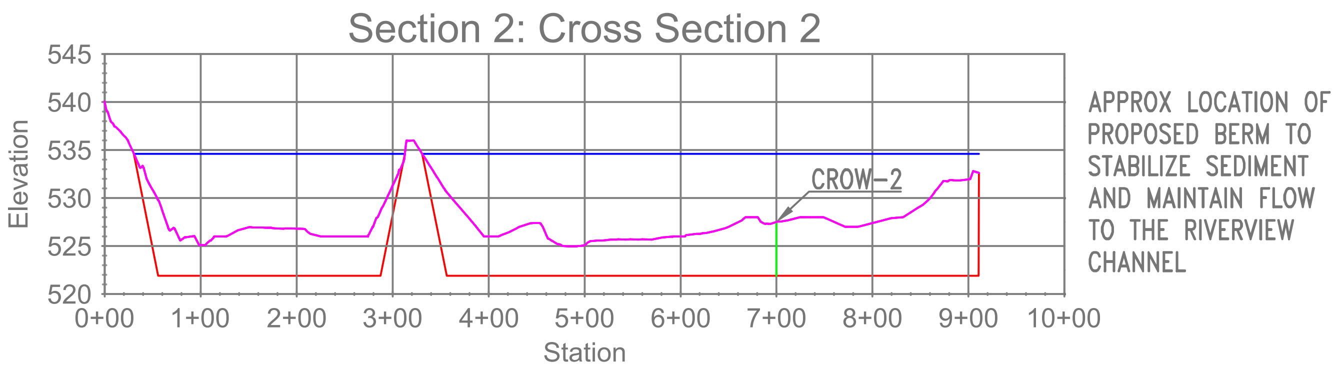

Profile View of Crowhop to Langdale 30+00 to 45+00
550
545
540
535
530
525
520
515
510
505
500
Elevation
30+00
31+00
32+00
33+00
34+00
35+00
36+00
37+00
38+00
39+00
40+00
41+00
42+00
43+00
44+00
45+00
Station
CS 14
CS 15
Legend
Existing Riverbed Elevation
Estimated Average Slope of Original Riverbed
Approximate Water Surface Elevation at West Point Min Flow – Prior to Dam Removal

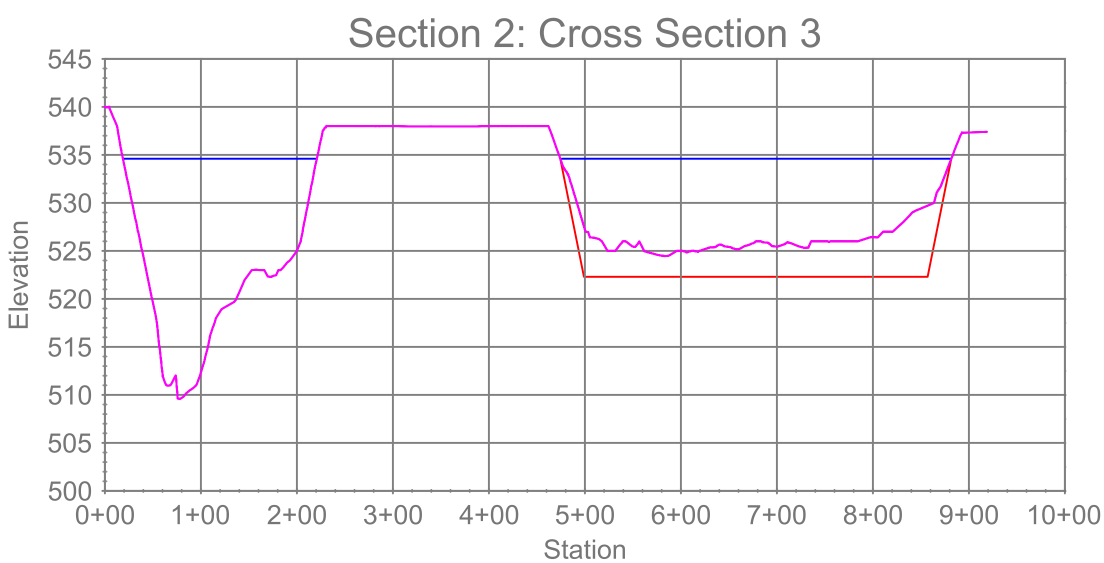


Profile View of Crowhop to Langdale 45+00 to 60+00
550
545
540
535
530
525
520
515
510
505
500
Elevation
CS 16
45+00
46+00
47+00
48+00
49+00
50+00
51+00
52+00
53+00
54+00
55+00
56+00
57+00
58+00
59+00
60+00
Station
Legend
Existing Riverbed Elevation
Estimated Average Slope of Original Riverbed
Approximate Water Surface Elevation at West Point Min Flow – Prior to Dam Removal


Profile View of Crowhop to Langdale 60+00 to 75+00
550
545
540
535
530
525
520
515
510
505
500
Elevation
60+00
61+00
62+00
63+00
64+00
65+00
66+00
67+00
68+00
69+00
70+00
71+00
72+00
73+00
74+00
75+00
Station
Langdale Dam
Crest Elevation = 550.2
Upstream Toe Elevation = 535.2
Legend
Existing Riverbed Elevation
Estimated Average Slope of Original Riverbed
Approximate Water Surface Elevation at West Point Min Flow - Prior to Dam Removal



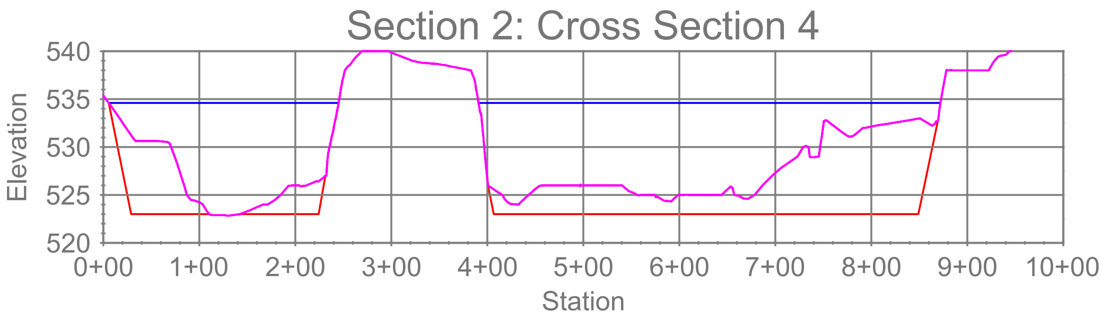


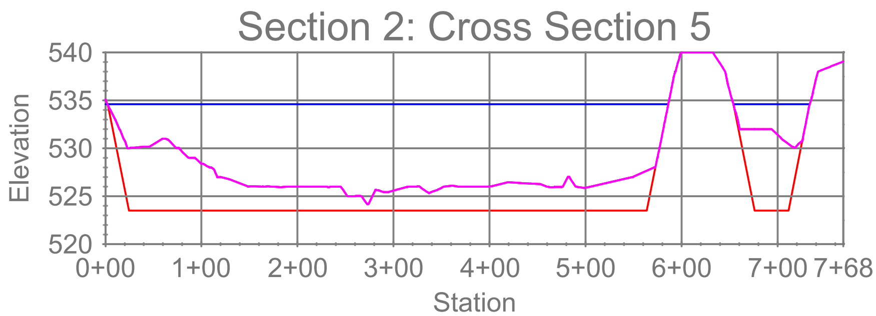


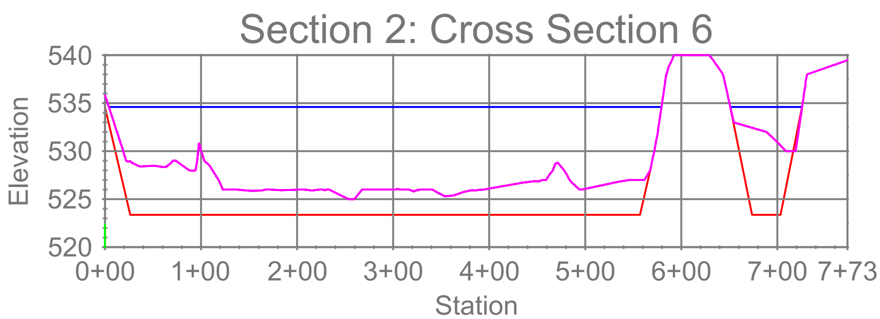
Legend

- Existing Riverbed Elevation
- Estimated Average Slope of Original Riverbed
- Approximate Water Surface Elevation at West Point Min Flow – Prior to Dam Removal
- Sediment Probe

Cross-sections are plotted facing downstream (from east to west)



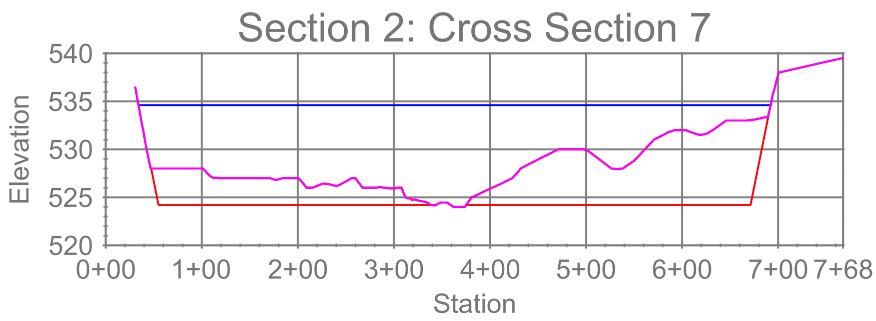


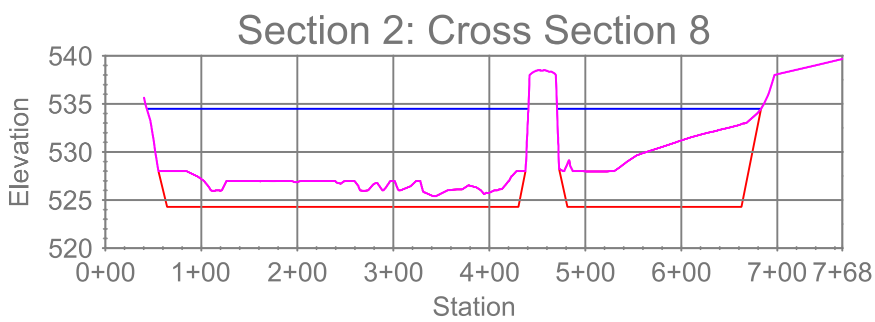


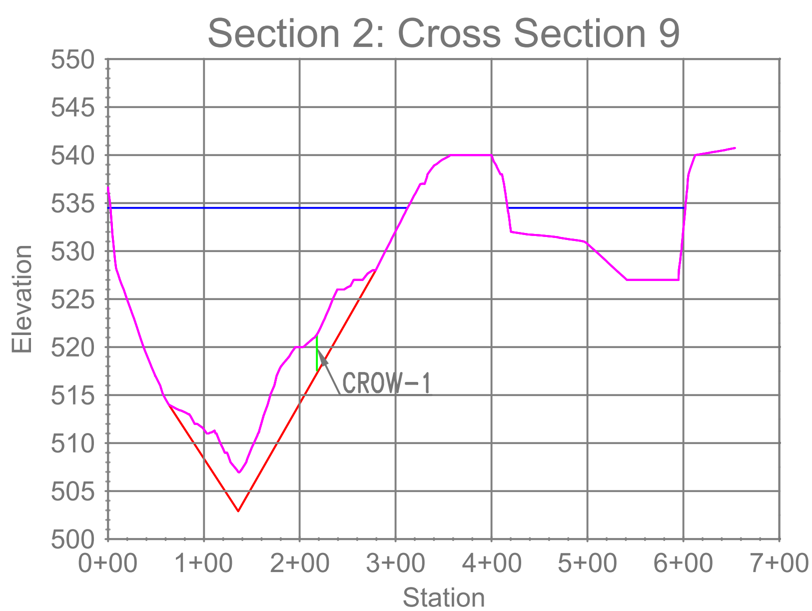
Legend

- Existing Riverbed Elevation
- Estimated Average Slope of Original Riverbed
- Approximate Water Surface Elevation at West Point Min Flow – Prior to Dam Removal
- Sediment Probe

Cross-sections are plotted facing downstream (from east to west)







Legend

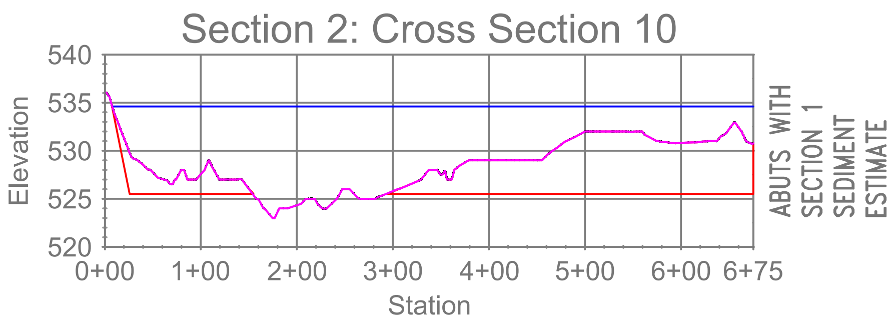
Existing Riverbed Elevation

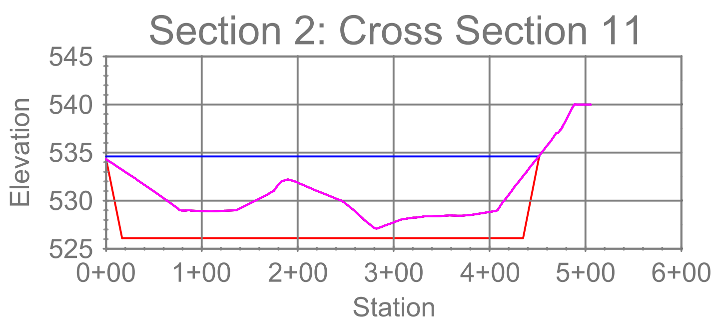
Estimated Average Slope of Original Riverbed

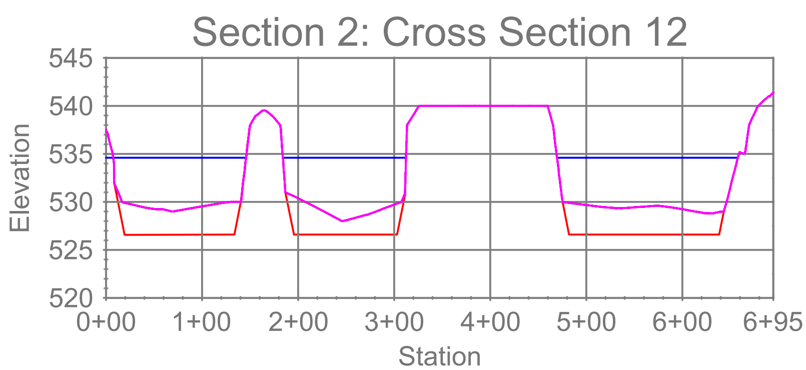
Approximate Water Surface Elevation at West Point Min Flow – Prior to Dam Removal

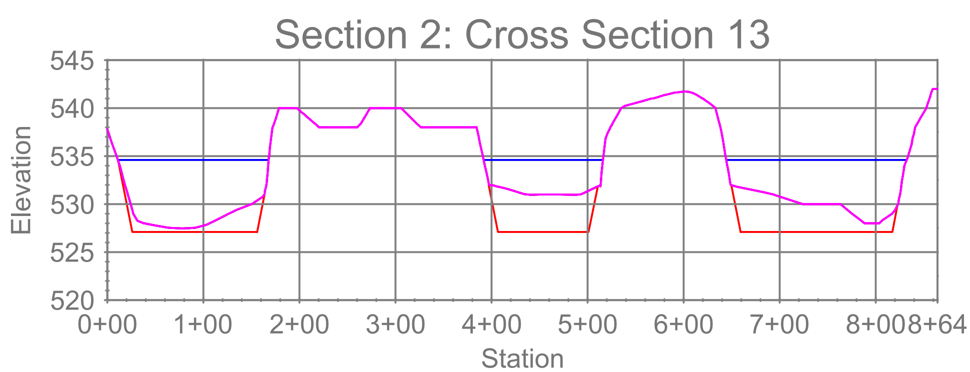
Sediment Probe

Cross-sections are plotted facing downstream (from east to west)



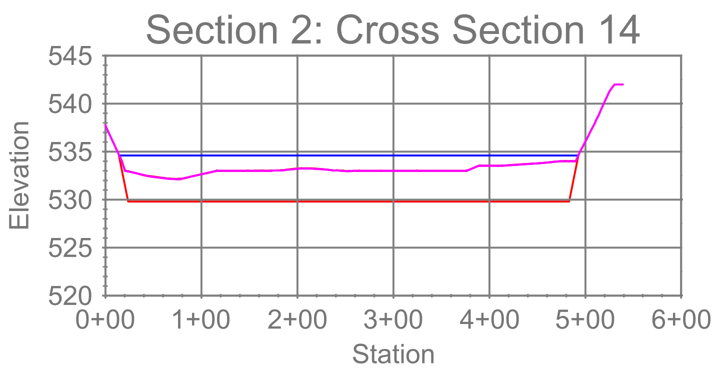


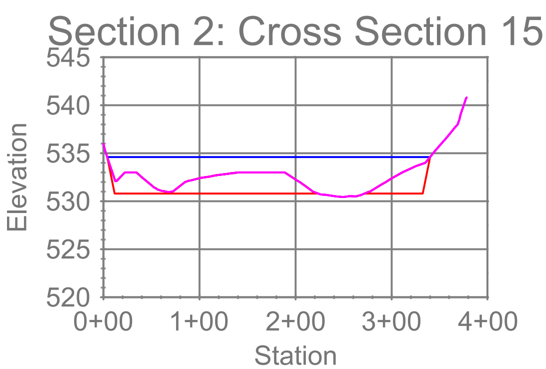


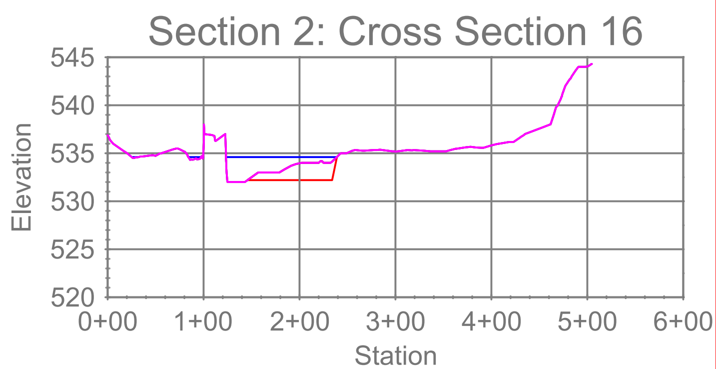


Legend
Existing Riverbed Elevation
Estimated Average Slope of Original Riverbed
Approximate Water Surface Elevation at West Point Min Flow – Prior to Dam Removal

Cross–sections are plotted facing downstream (from east to west)







Legend

Existing Riverbed Elevation

Estimated Average Slope of Original Riverbed

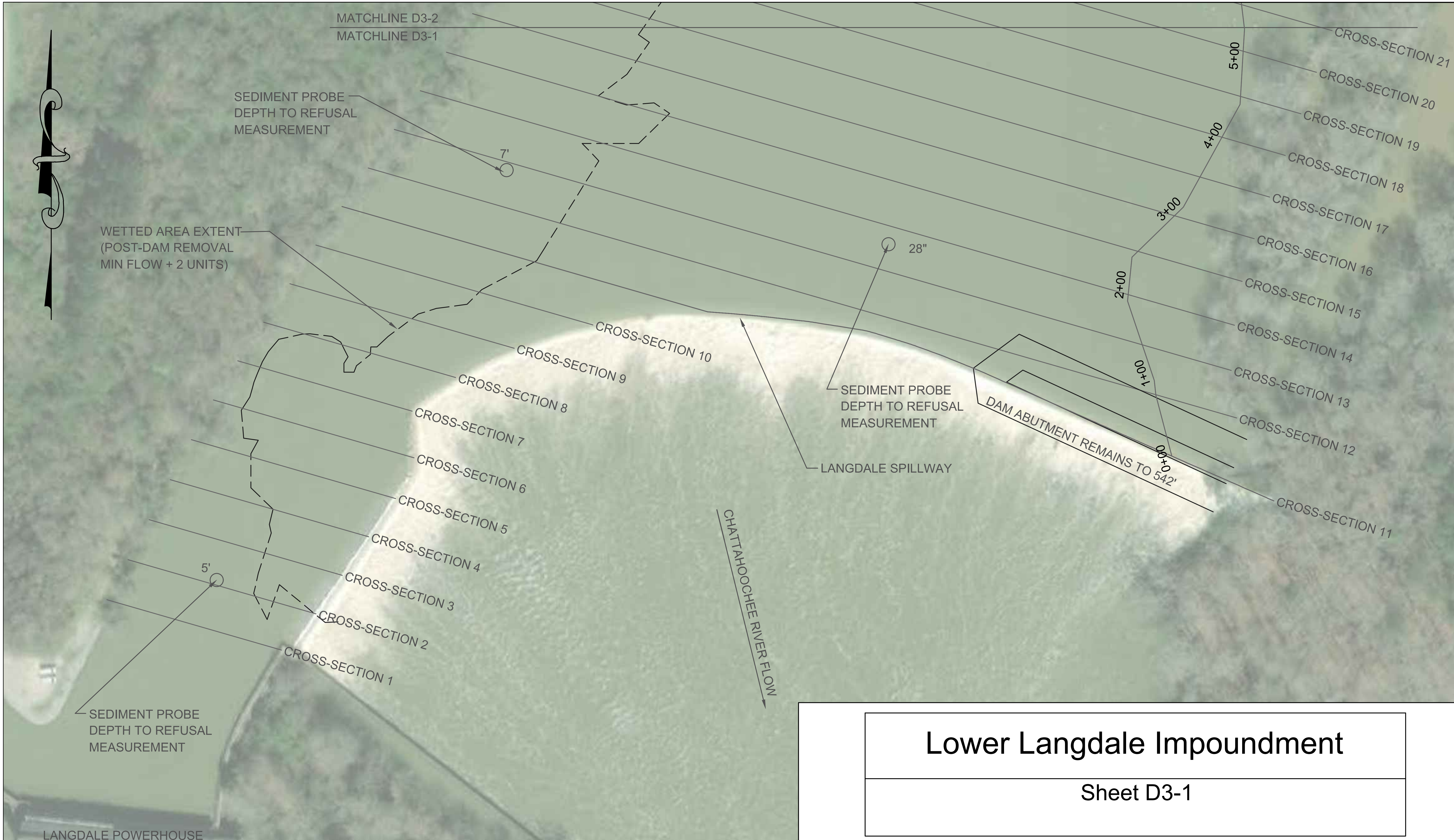
Approximate Water Surface Elevation at West Point Min Flow – Prior to Dam Removal

Cross–sections are plotted facing downstream (from east to west)

Area and Volume Estimates for Crowhop Dam to Langdale Spillway Comparison of 2019 Bathymetry and Estimated Original Riverbed Elevation				
Cross-section	Estimated Elevation Original Riverbed (ft)	Area of Cross-section (sq ft)	Distance (ft)	Volume (cf)
		0		
1	521.8	7293	17	61991
2	521.9	4371	37	215784
3	522.3	1459	193	562595
		0	24	17508
*				
		0		
4	523.0	2684	57	76494
		0	35	46970
*				
		0		
5	523.5	2197	62	68107
6	523.6	2199	46	101108
		0	56	61572
*				
		0		
7	524.2	1853	108	100062
8	524.3	2066	41	80340
9**		841	261	379364
*				
		0		
10	525.5	1989	46	45747
11	526.1	1587	275	491700
12	526.6	1101	247	331968
13	527.1	1085	249	272157
		0	407	220798
*				
14	529.8	1530	1227	1604303
		0	148	113220
*				
		0		
15	530.8	443	73	16170
		0	75	16613
*				
		0		
16	532.2	117	139	8132
Total Sediment Estimate (cf)				4892699
Total Sediment Estimate (ac-ft)				112

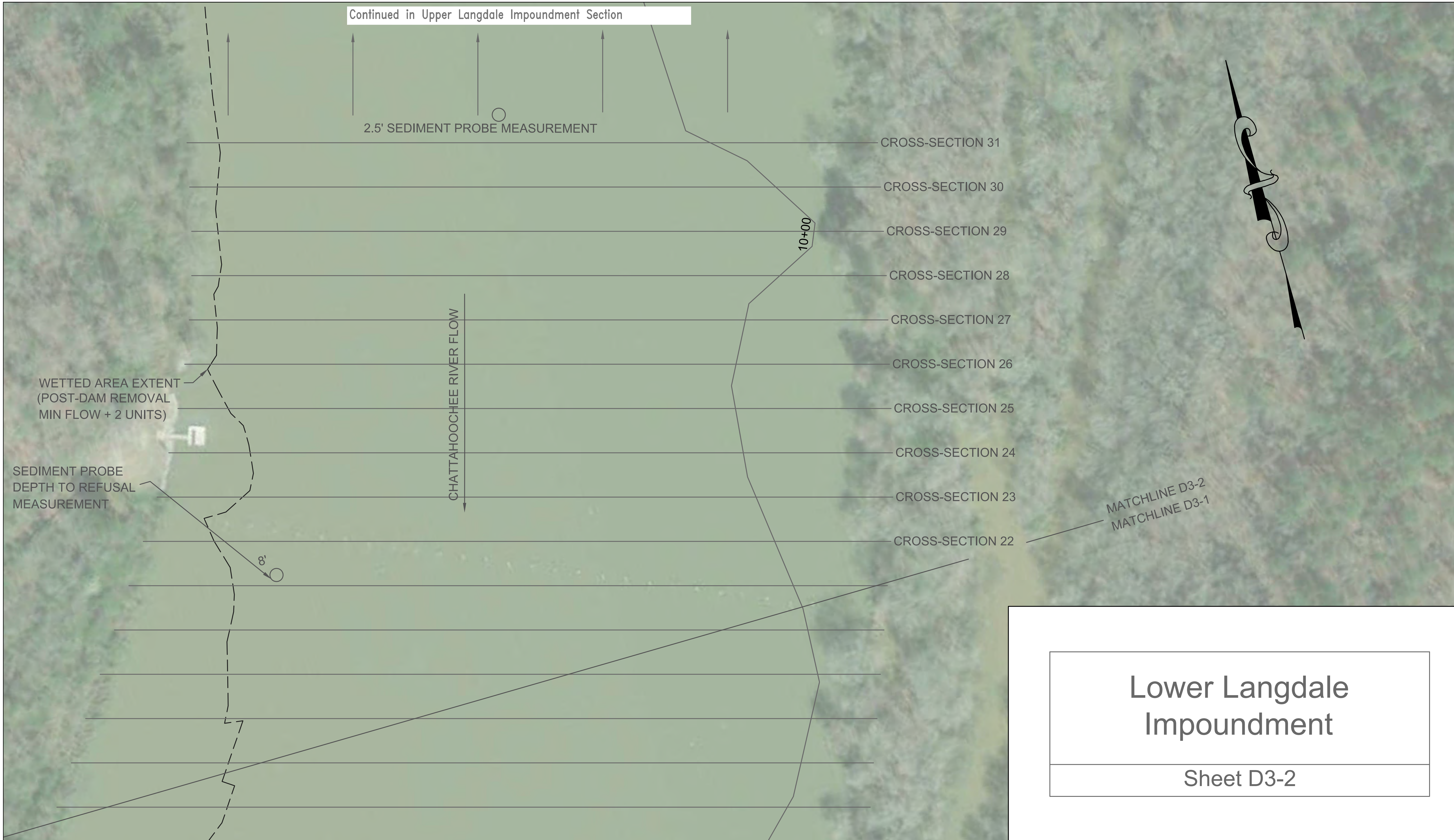
*In some locations along the alignment the existing riverbed elevation is below the estimated average slope of the original riverbed. In these locations, no sediment volume is calculated.

** STA 15+12 sediment depth is based on CROW-1 sediment probe.

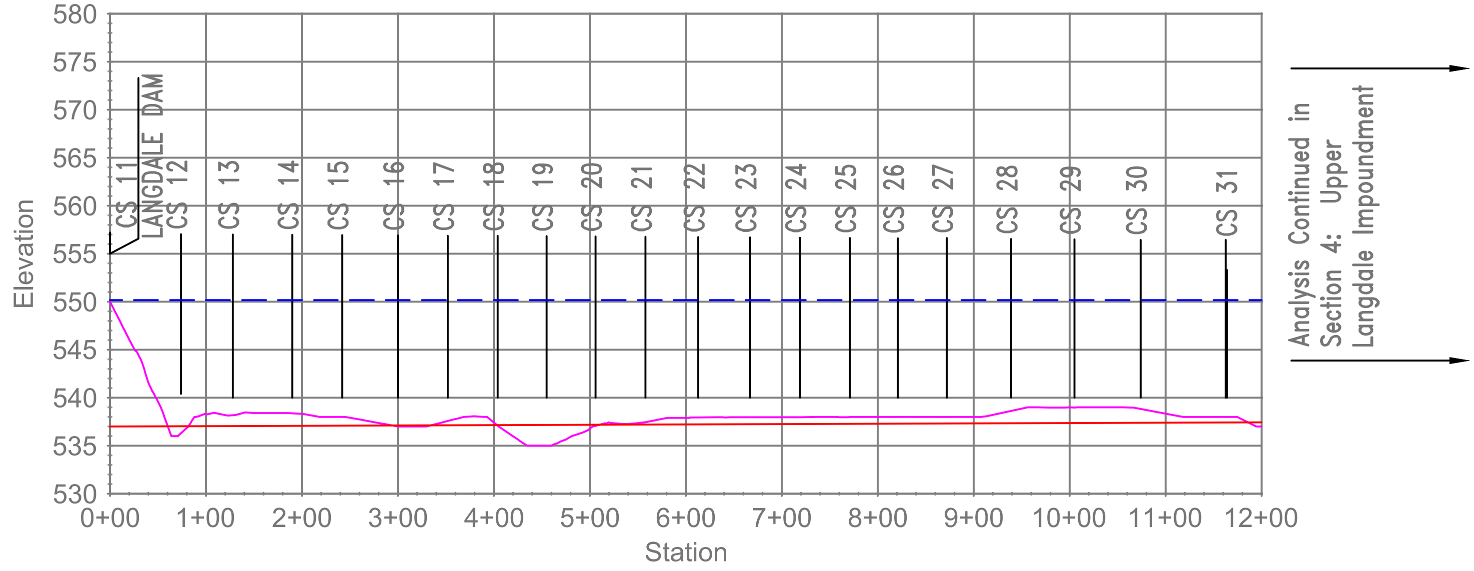


Lower Langdale Impoundment

Sheet D3-1


Continued in Upper Langdale Impoundment Section
2.5' SEDIMENT PROBE MEASUREMENT
CROSS-SECTION 31
CROSS-SECTION 30
CROSS-SECTION 29
10+00
CROSS-SECTION 28
CROSS-SECTION 27
CHATTAHOOCHEE RIVER FLOW
CROSS-SECTION 26
WETTED AREA EXTENT
(POST-DAM REMOVAL
MIN FLOW + 2 UNITS)
CROSS-SECTION 25
CROSS-SECTION 24
SEDIMENT PROBE
DEPTH TO REFUSAL
MEASUREMENT
CROSS-SECTION 23
MATCHLINE D3-2
MATCHLINE D3-1
CROSS-SECTION 22
8'
Lower Langdale
Impoundment
Sheet D3-2

Profile Lower Langdale Impoundment



Legend

Existing Riverbed Elevation

Estimated Average Slope of Original Riverbed

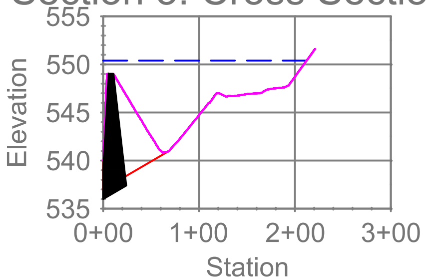
Approximate Water Surface Elevation at West Point Min Flow – Prior to Dam Removal

Extent of Wetted Area With Dam Removed During West Point Min Flow + 2 Unit Flow Scenario

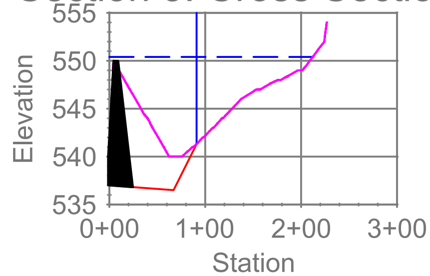
Cross Section 1

COMPLETELY OUTSIDE OF THE EXTENT OF WEST POINT MIN FLOW + 2 GEN UNITS FLOW WITH DAM REMOVED

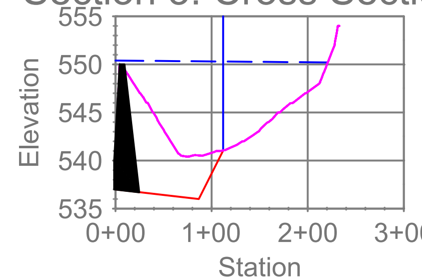
Section 3: Cross Section 2



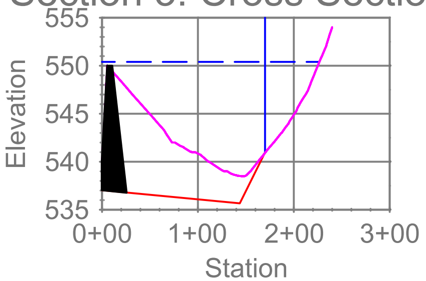
Section 3: Cross Section 3



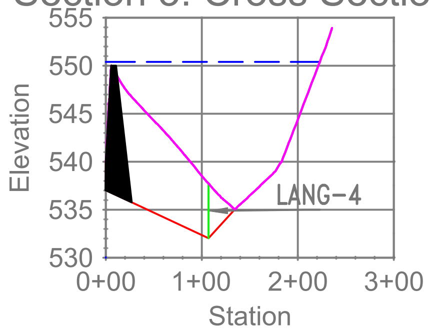
Section 3: Cross Section 4



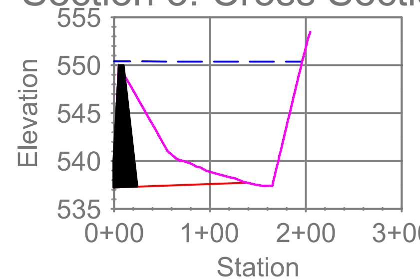
Section 3: Cross Section 5



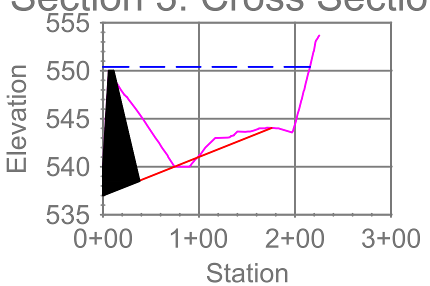
Section 3: Cross Section 6



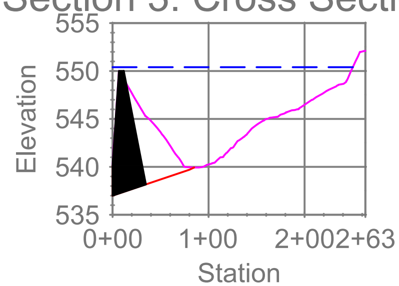
Section 3: Cross Section 7



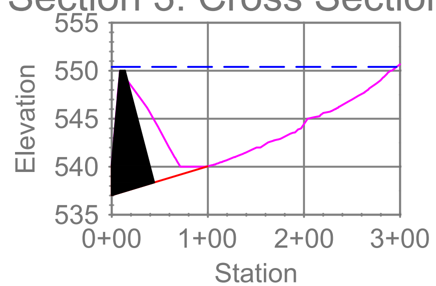
Section 3: Cross Section 8



Section 3: Cross Section 9



Section 3: Cross Section 10

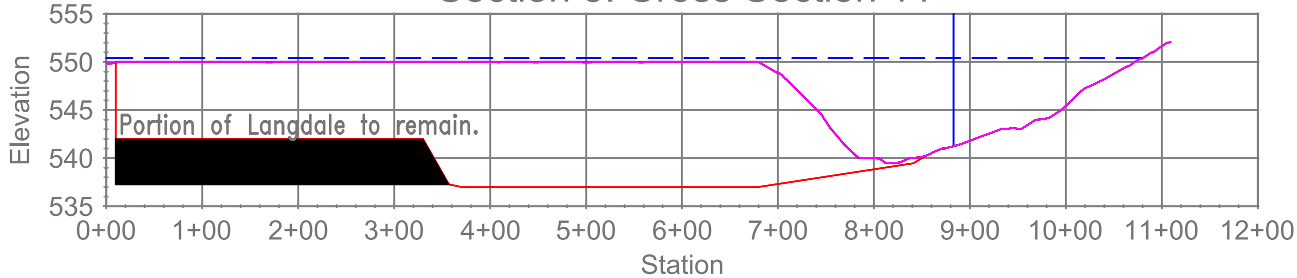


Legend

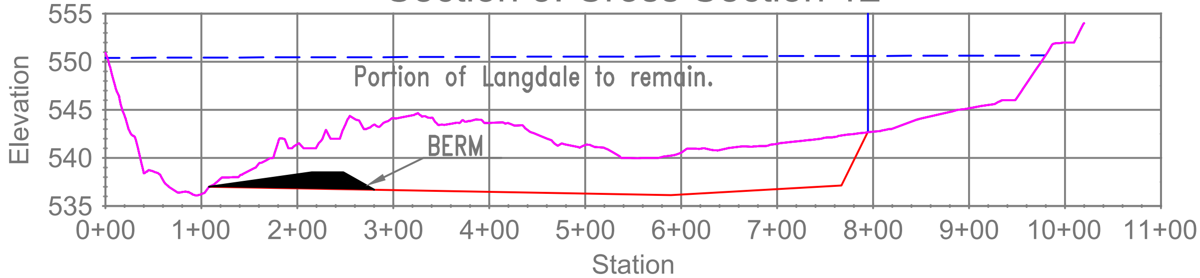
- Existing Riverbed Elevation
- Estimated Average Slope of Original Riverbed
- Approximate Water Surface Elevation at West Point Min Flow – Prior to Dam Removal
- Extent of Wetted Area With Dam Removed During West Point Min Flow + 2 Unit Flow Scenario
- SEDIMENT PROBE

Cross-sections are plotted facing downstream (from east to west).

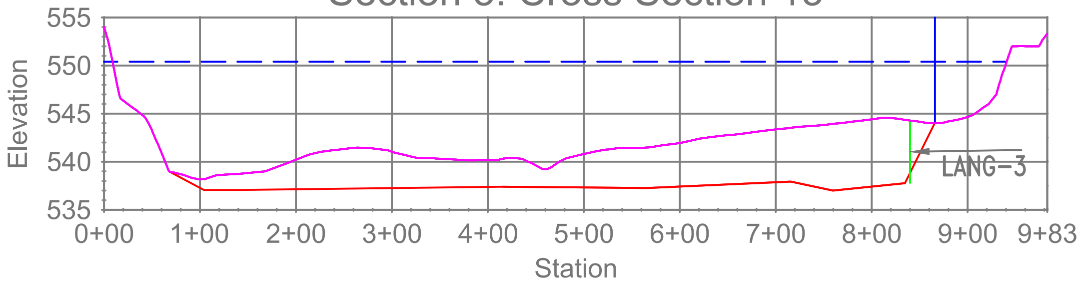
Section 3: Cross Section 11



Section 3: Cross Section 12



Section 3: Cross Section 13



Legend

Existing Riverbed Elevation

Estimated Average Slope of Original Riverbed

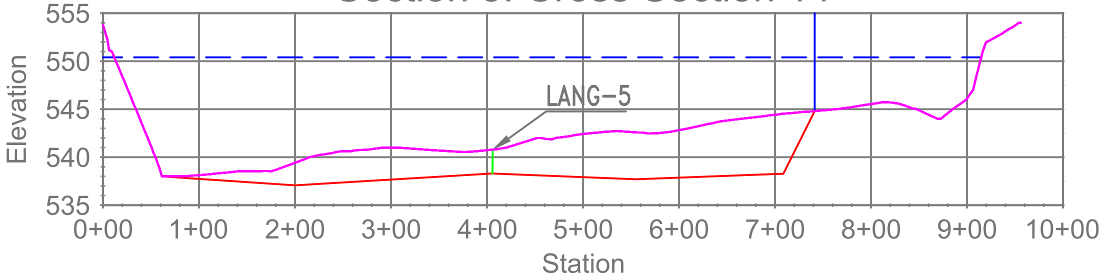
Approximate Water Surface Elevation at Base Flow - Prior to Dam Removal

Extent of Wetted Area With Dam Removed During West Point Base Flow + 2 Unit Flow Scenario

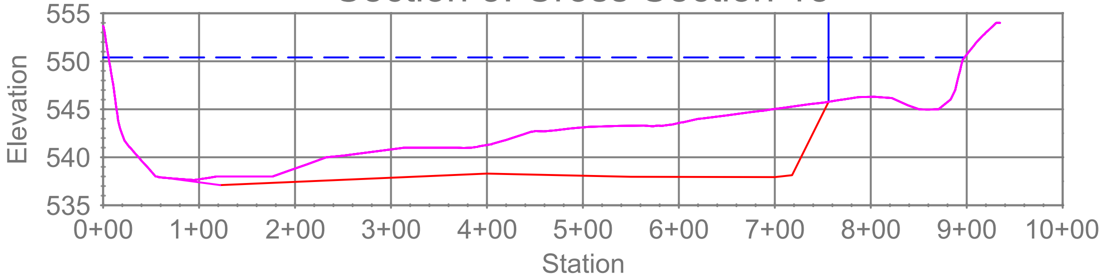
SEDIMENT PROBE

Cross-sections are plotted facing downstream (from east to west).

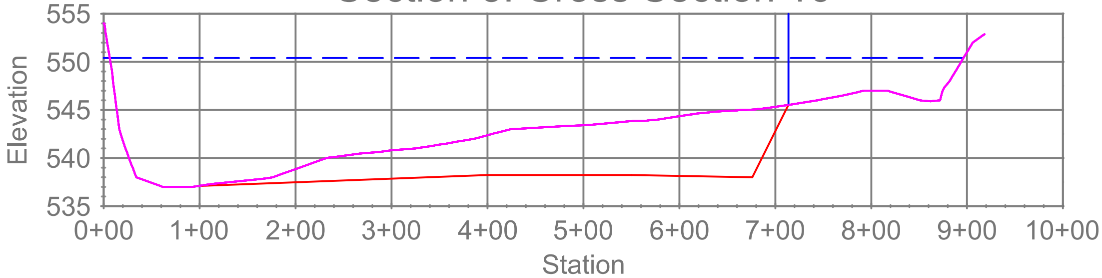
Section 3: Cross Section 14



Section 3: Cross Section 15



Section 3: Cross Section 16



Legend

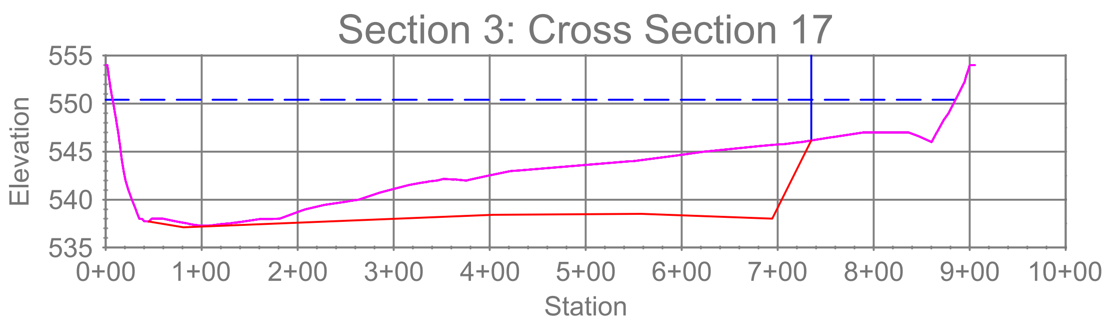
Existing Riverbed Elevation

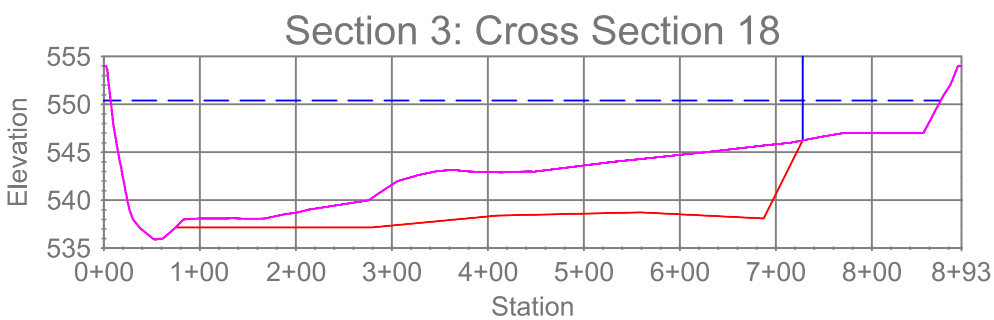
Estimated Average Slope of Original Riverbed

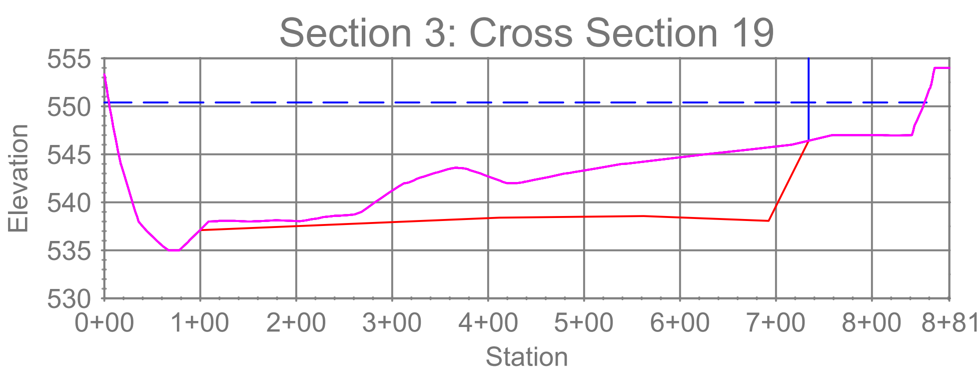
Approximate Water Surface Elevation at West Point Min Flow – Prior to Dam Removal

Extent of Wetted Area With Dam Removed During West Point Min Flow + 2 Unit Flow Scenario

Cross–sections are plotted facing downstream (from east to west).







Legend

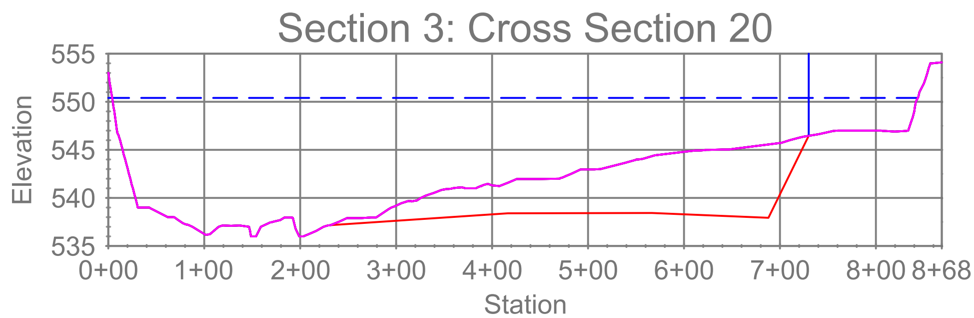
Existing Riverbed Elevation

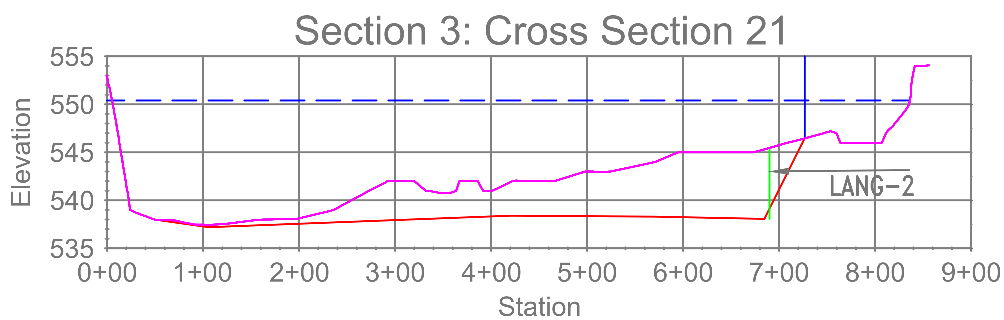
Estimated Average Slope of Original Riverbed

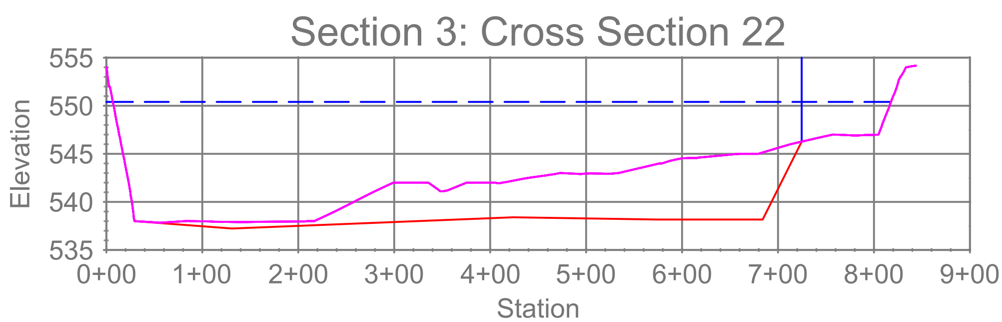
Approximate Water Surface Elevation at West Point Min Flow – Prior to Dam Removal

Extent of Wetted Area With Dam Removed During West Point Min Flow + 2 Unit Flow Scenario

Cross–sections are plotted facing downstream (from east to west).







Legend

Existing Riverbed Elevation

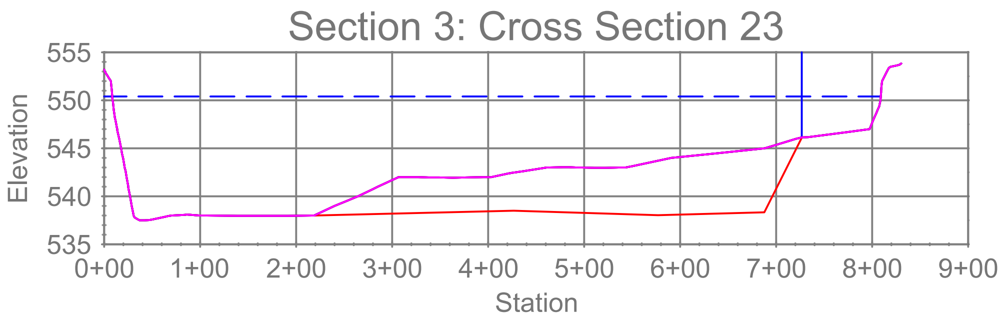
Estimated Average Slope of Original Riverbed

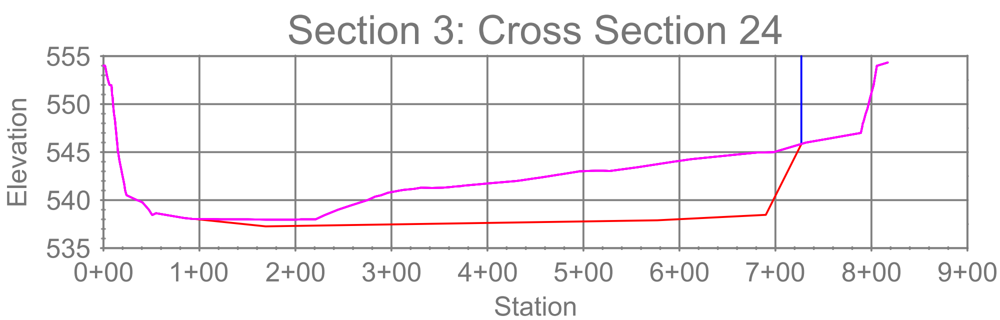
Approximate Water Surface Elevation at West Point Min Flow – Prior to Dam Removal

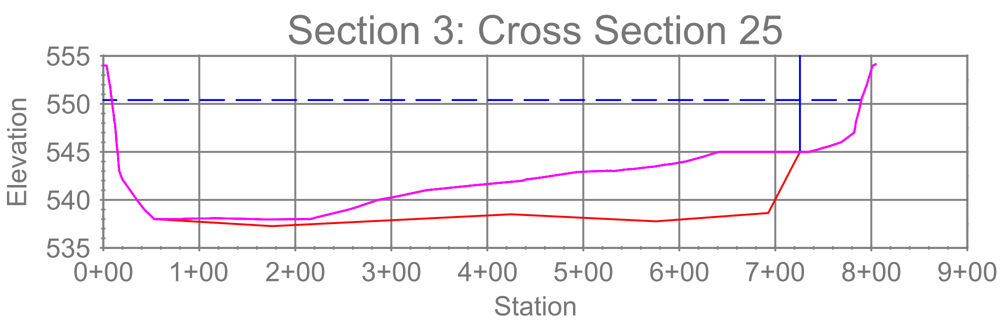
Extent of Wetted Area With Dam Removed During West Point Min Flow + 2 Unit Flow Scenario

SEDIMENT PROBE

Cross-sections are plotted facing downstream (from east to west).







Legend

Existing Riverbed Elevation

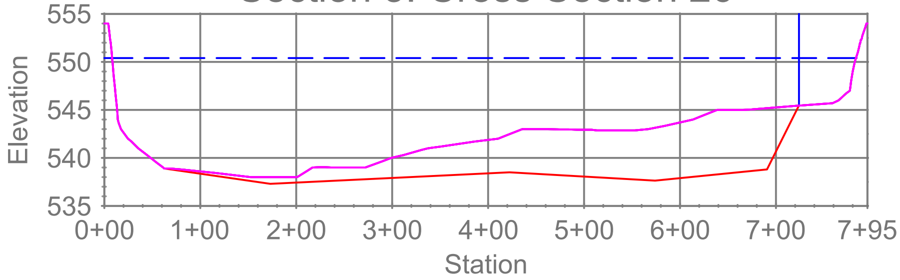
Estimated Average Slope of Original Riverbed

Approximate Water Surface Elevation at West Point Min Flow – Prior to Dam Removal

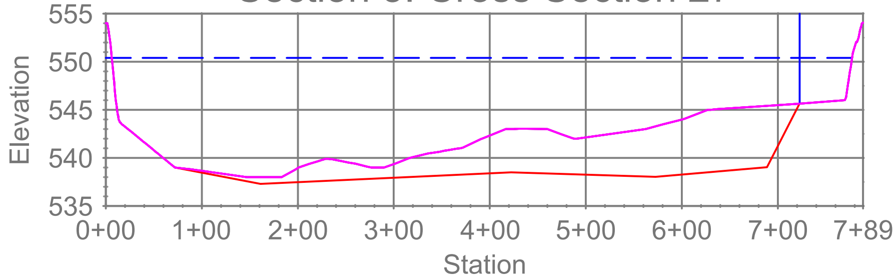
Extent of Wetted Area With Dam Removed During West Point Min Flow + 2 Unit Flow Scenario

Cross sections are platted facing downstream (from east to west).

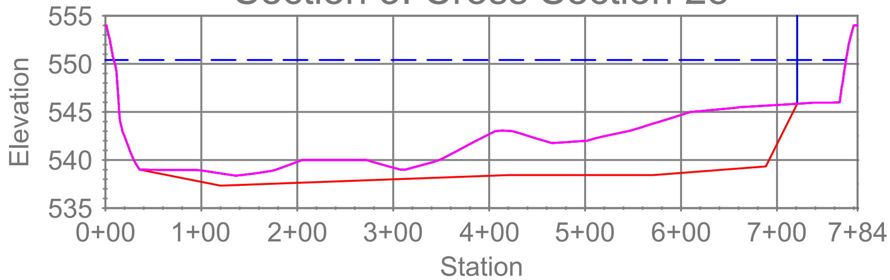
Section 3: Cross Section 26



Section 3: Cross Section 27



Section 3: Cross Section 28



Legend

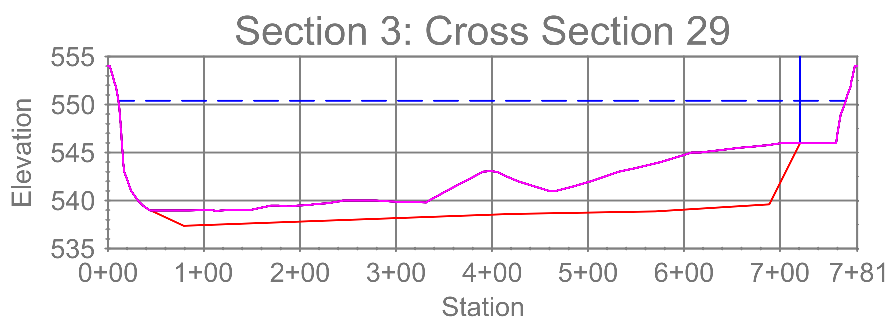
Existing Riverbed Elevation

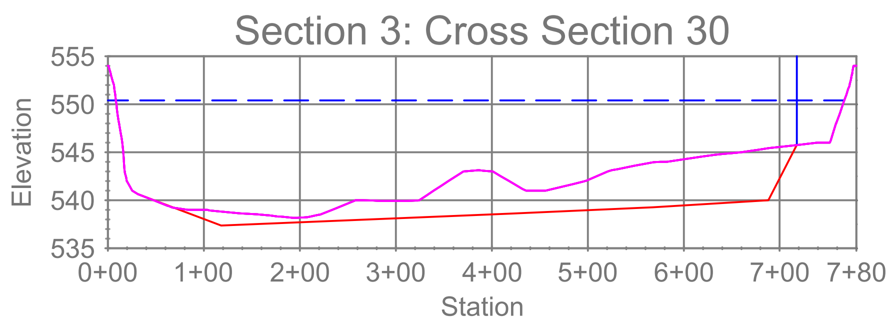
Estimated Average Slope of Original Riverbed

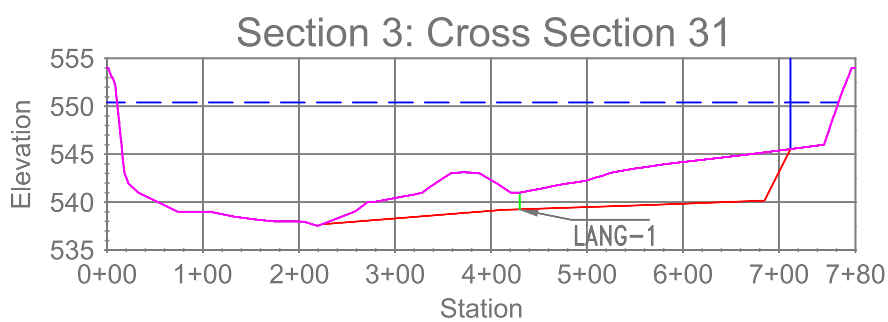
Approximate Water Surface Elevation at West Point Min Flow – Prior to Dam Removal

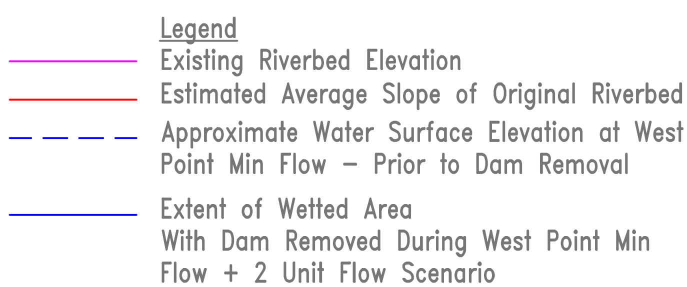
Extent of Wetted Area With Dam Removed During West Point Min Flow + 2 Unit Flow Scenario

Cross–sections are plotted facing downstream (from east to west).



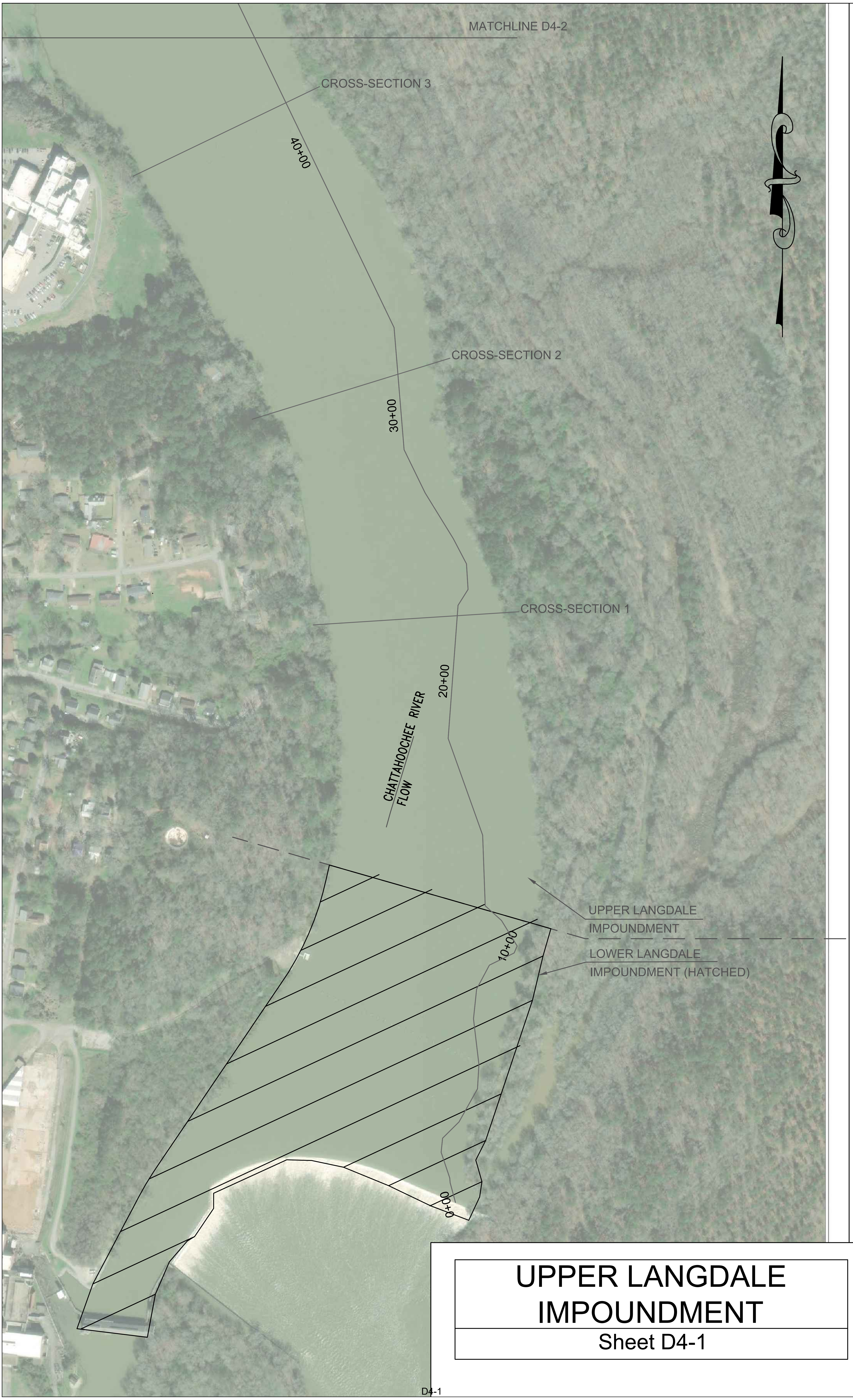






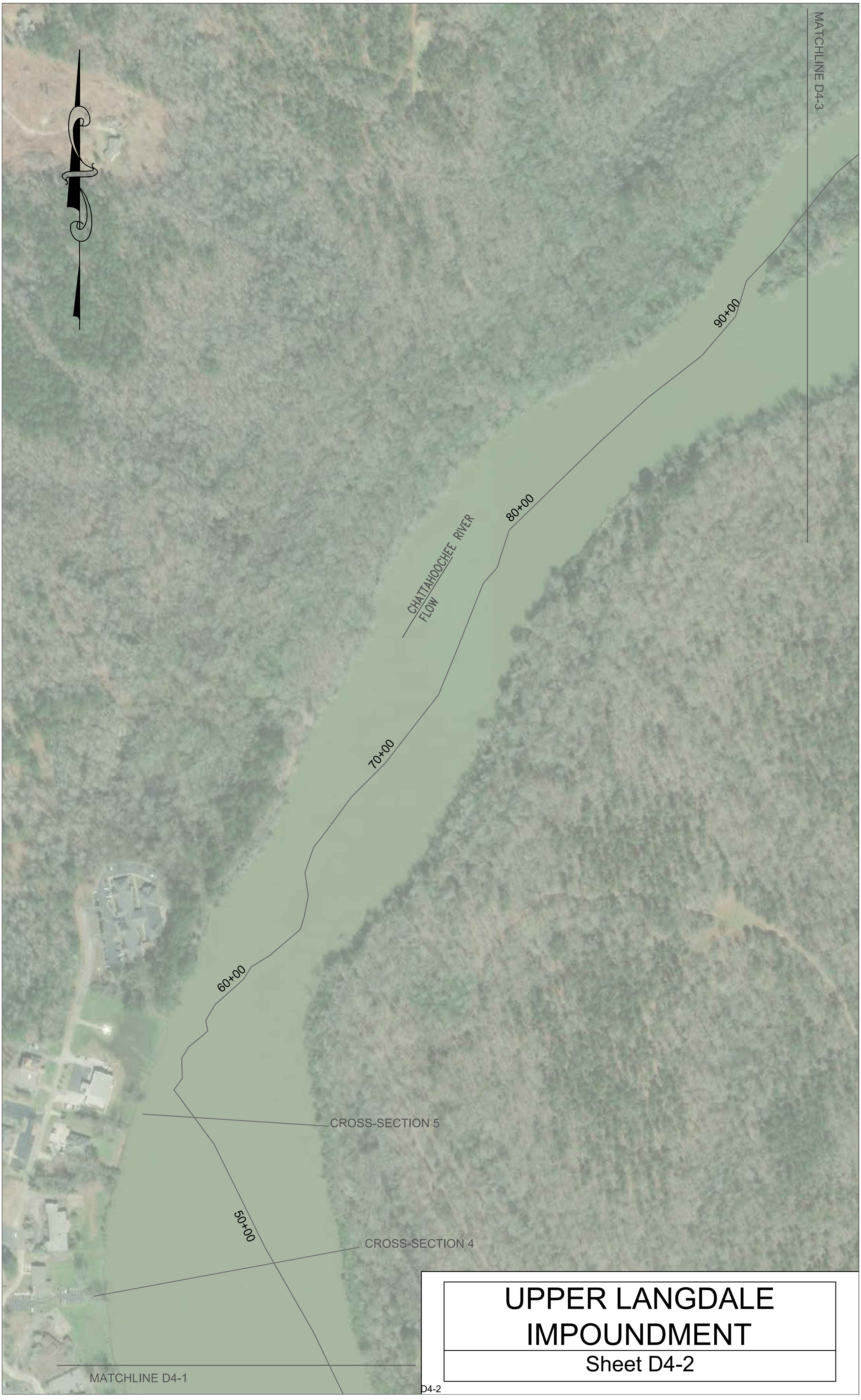
Cross sections are platted facing downstream (from east to west).

Area and Volume Estimates for Lower Langdale Impoundment Comparison of 2019 Bathymetry and Estimated Original Riverbed Elevation					
Cross-Section	Elev of Estimated Original Riverbed (ft)	Elev of Future Engineered Riverbed (ft)	Area of Cross-section (sq ft)	Distance (ft)	Volume (cf)
1	537.0		0	50	
2	537.0		207	50	5,175
3	537.0		352	50	13,975
4	537.0		516	50	21,700
5	537.0		800	50	32,900
6	537.0		834	50	40,850
7	537.0		380	50	30,350
8	537.0		290	50	16,750
9	537.0		236	50	13,150
10	537.0		204	50	11,000
11		542.0	7,886	50	202,250
12		537.0	3,432	50	282,950
13	537.0		3,079	50	162,775
14	537.1		2,218	50	132,425
15	537.1		2,510	50	118,200
16	537.1		2,317	50	120,675
17	537.1		2,506	50	120,575
18	537.1		2,646	50	128,800
19	537.2		2,428	50	126,850
20	537.2		1,984	50	110,300
21	537.2		2,239	50	105,575
22	537.2		2,291	50	113,250
23	537.2		2,143	50	110,850
24	537.3		2,311	50	106,550
25	537.3		2,119	50	106,325
26	537.3		2,134	50	104,775
27	537.3		2,057	50	104,475
28	537.3		2,122	50	104,925
29	537.4		2,075	50	97,375
30	537.4		1,820	50	83,025
31	537.4		1,501	50	37,525
Total Sediment Estimate (cf)					2,766,300
Total Sediment Estimate (ac-ft)					64



UPPER LANGDALE IMPOUNDMENT

Sheet D4-1



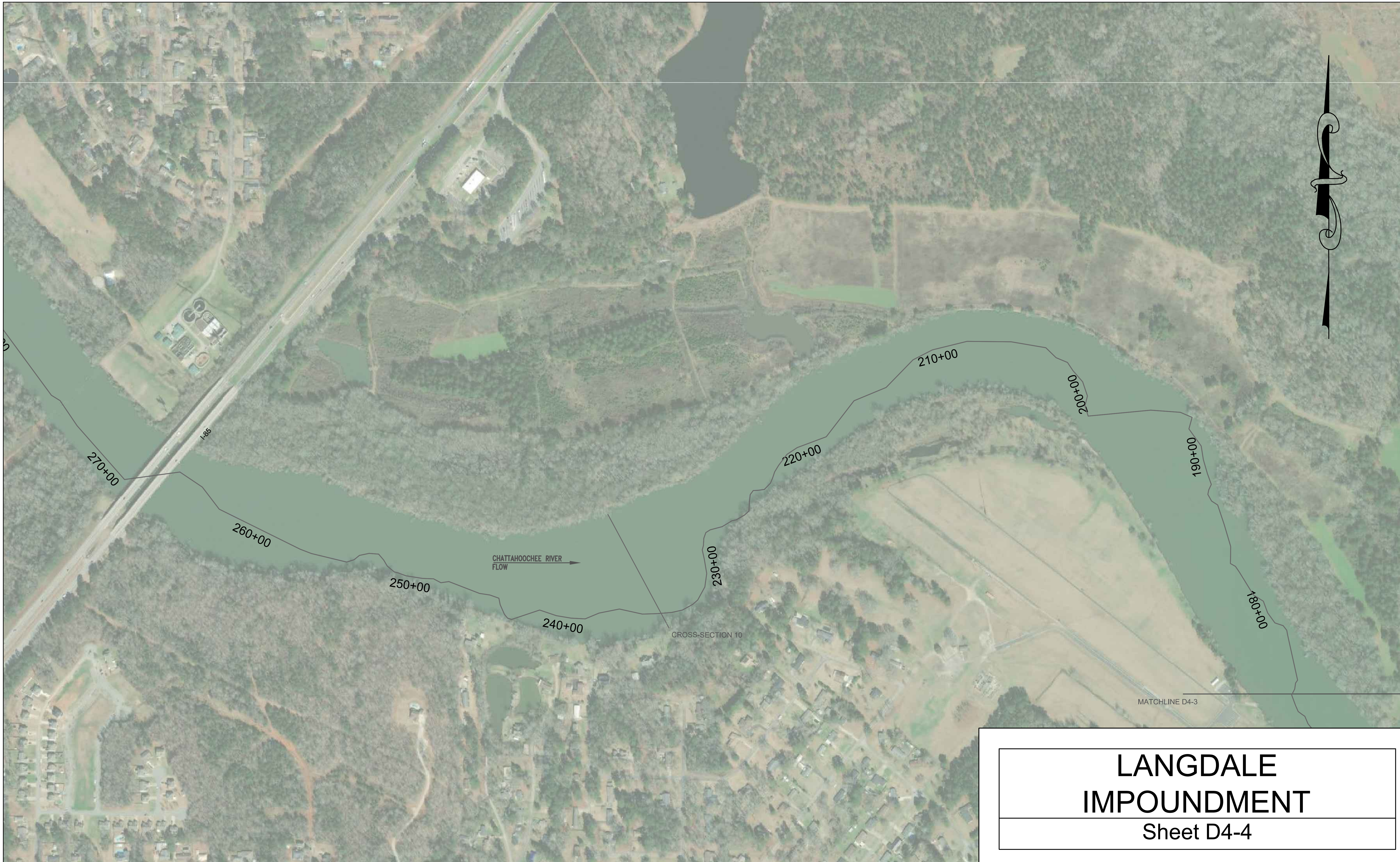
UPPER LANGDALE IMPOUNDMENT

Sheet D4-2

D4-2

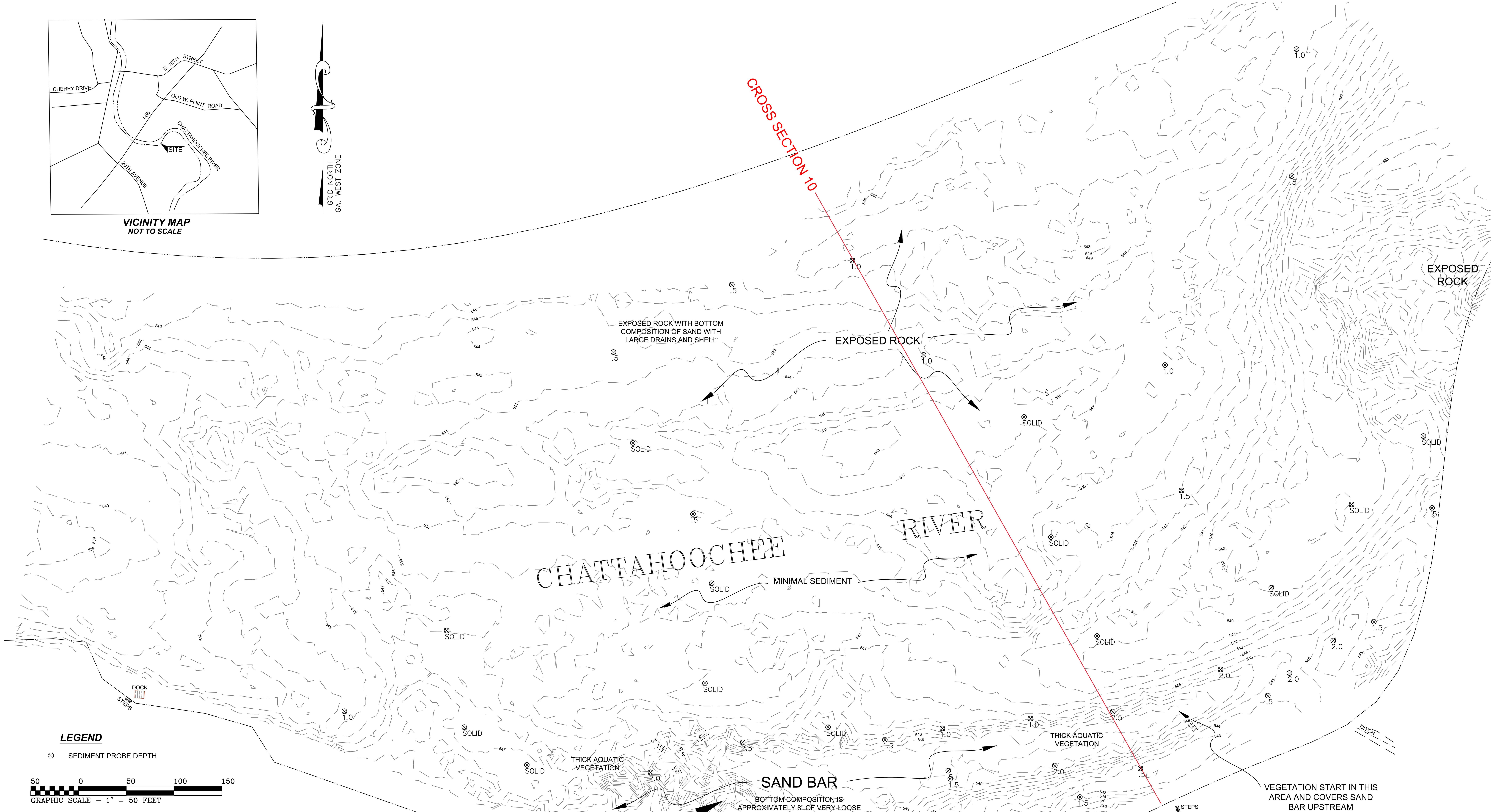
UPPER LANGDALE IMPOUNDMENT

Sheet D4-3



LANGDALE IMPOUNDMENT

Sheet D4-4



LEGEND

⊗ SEDIMENT PROBE DEPTH

GRAPHIC SCALE – 1" = 50 FEET (50 0 50 100 150)

NOTES:
1. SOLID DEPTH EQUALS LESS THAN 2" OF SEDIMENT TO REFUSAL.
2. SEDIMENT DEPTH READINGS ESTABLISHED WITH 12' 2" DIAMETER METAL PROBE ROD FROM A BOAT TO REFUSAL COLLECTED ON 8–18–2020.
3. WATER SURFACE ELEVATION – 550.75 AT TIME OF SURVEY.
4. CONTOURS SHOWN BASED ON MULTI–BEAM SONAR DATA COLLECTED AUGUST 2019 BY THIS FIRM

EQUIPMENT USED:
LEICA GS 16 GNSS
12' 2" DIAMETER METAL PROBE

DATE OF SURVEY: AUGUST 18, 2020

NO.	DATE	REVISIONS
1		
2		
3		
4		
5		
6		
7		

HYDROGRAPHIC SURVEY PREPARED FOR
GEORGIA POWER

LOCATED IN
HARRIS COUNTY, GEORGIA AND
CHAMBERS COUNTY, ALABAMA

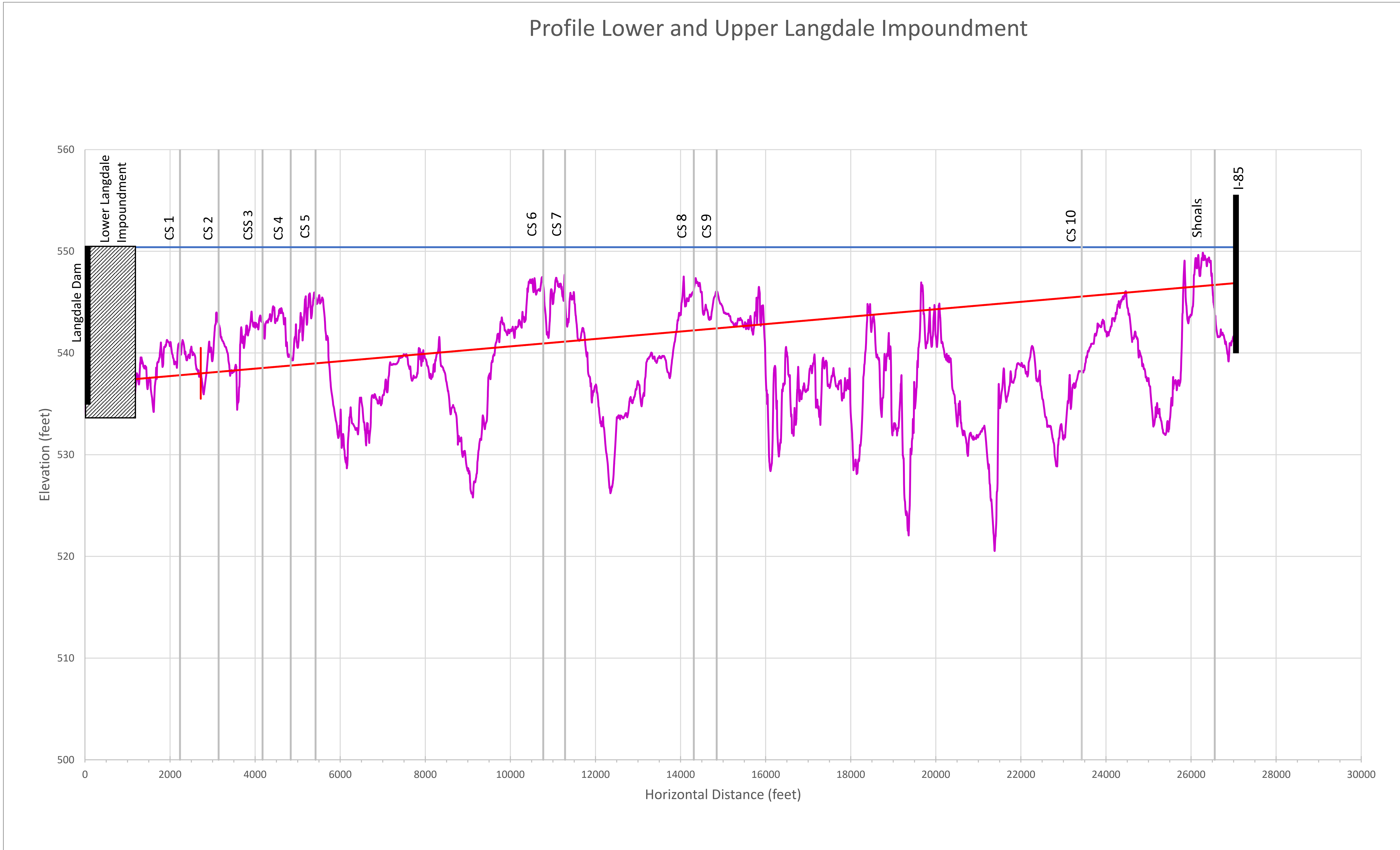
DATE: 9/16/2020

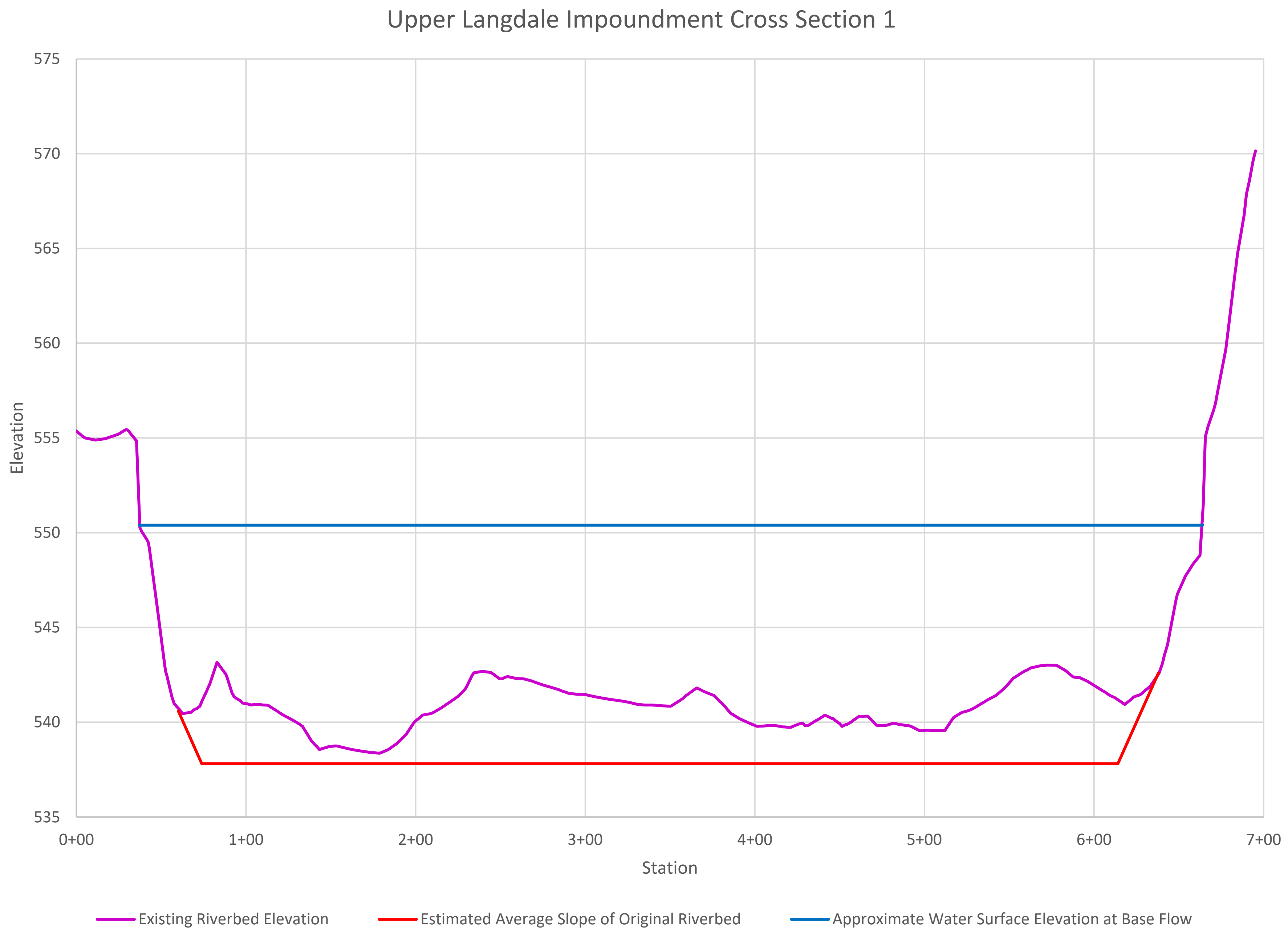
PROJECT#: 20–0052
DRAWN BY: BRC
CHECKED BY: TW

LOWE ENGINEERS
990 HAMMOND DRIVE
SUITE 900
ATLANTA, GEORGIA 30328
TEL.: 770–857–8400
FAX: 770–857–8401

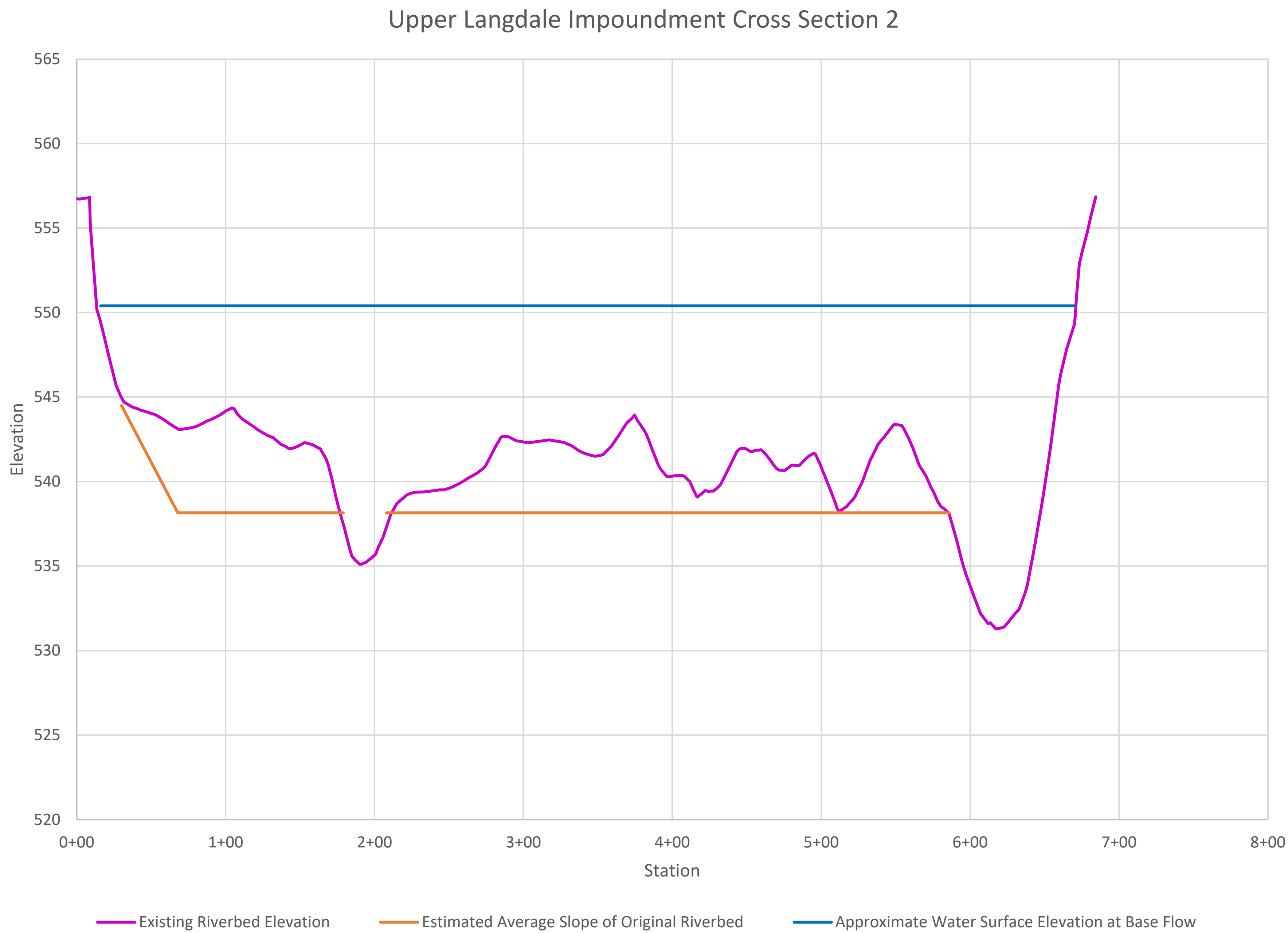
SHEET

NOT ISSUED FOR CONSTRUCTION

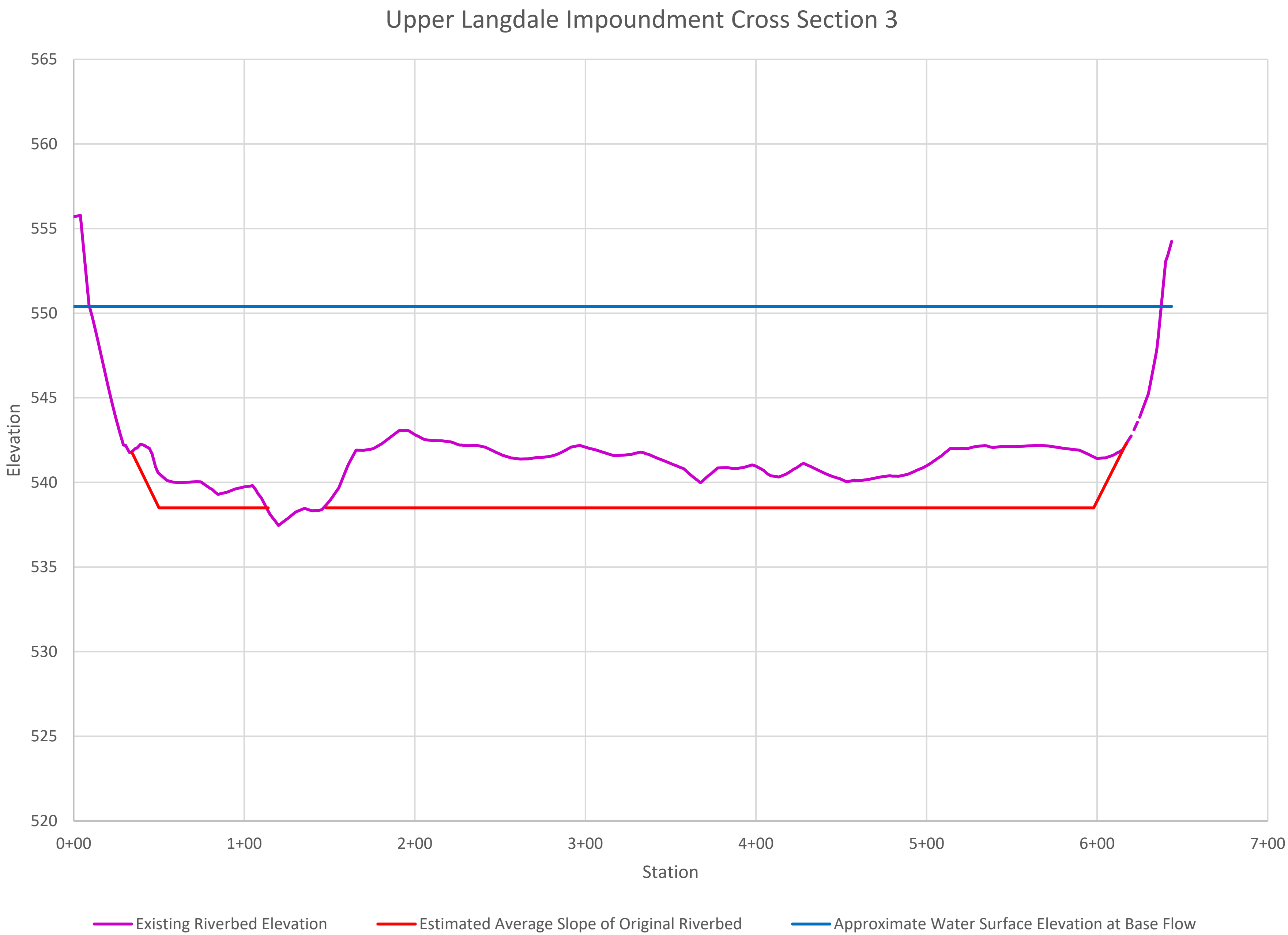

Profile Lower and Upper Langdale Impoundment
Elevation (feet)
Horizontal Distance (feet)
Langdale Dam
Lower Langdale Impoundment
CS 1
CS 2
CSS 3
CS 4
CS 5
CS 6
CS 7
CS 8
CS 9
CS 10
Shoals
I-85
560
550
540
530
520
510
500
0
2000
4000
6000
8000
10000
12000
14000
16000
18000
20000
22000
24000
26000
28000
30000



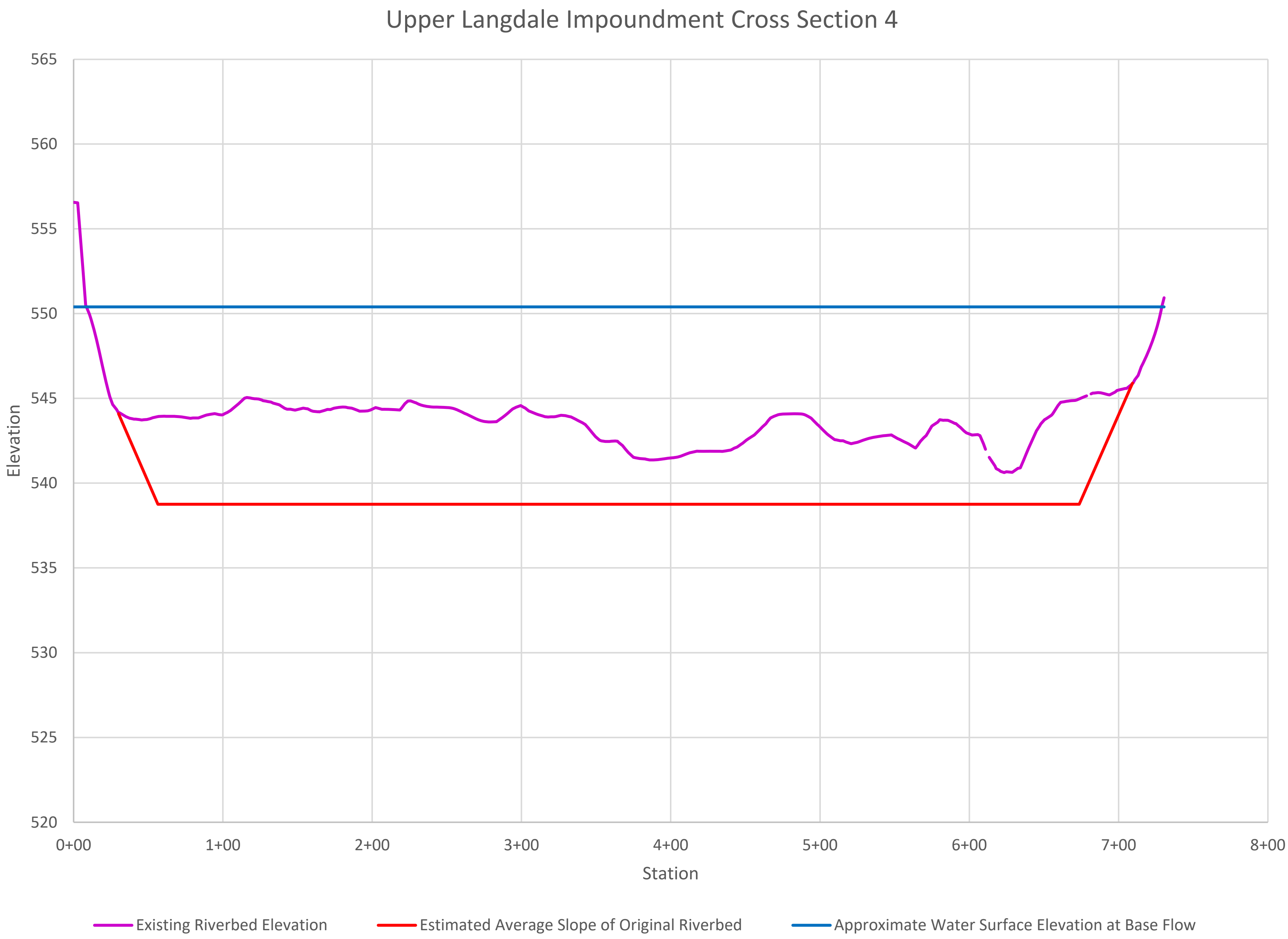
Cross sections are plotted facing downstream.



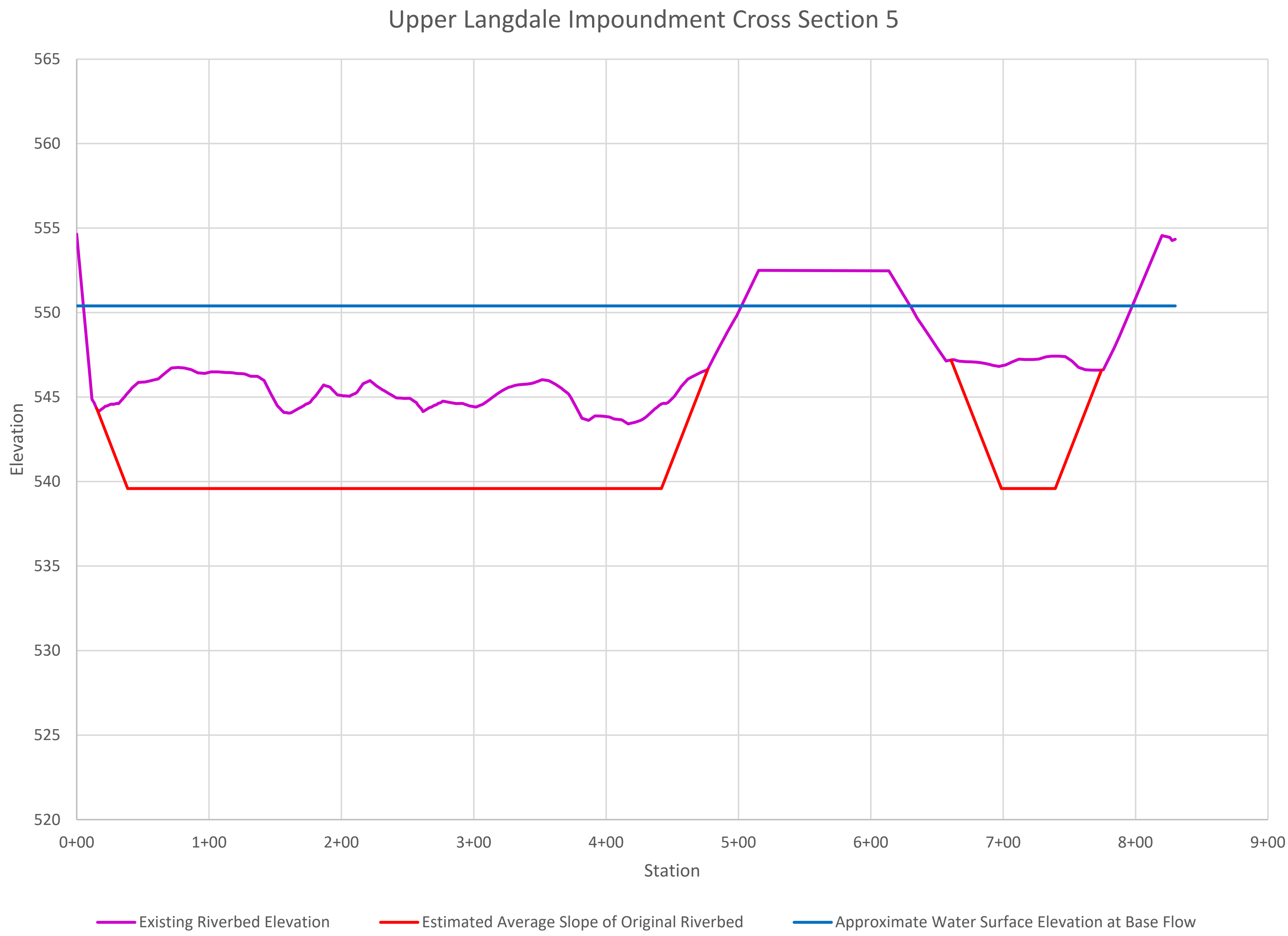
Cross sections are plotted facing downstream.



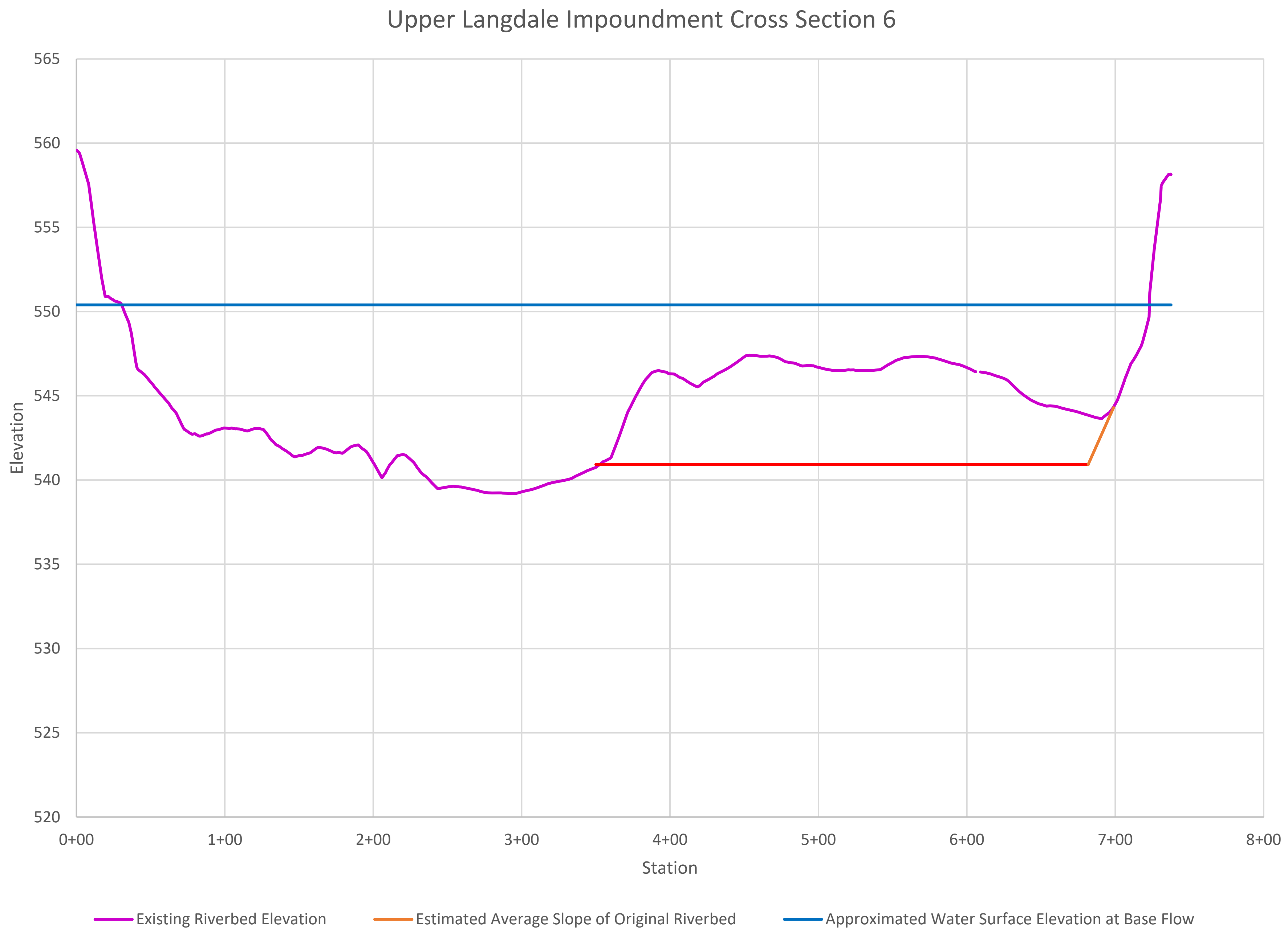
Cross sections are plotted facing downstream.



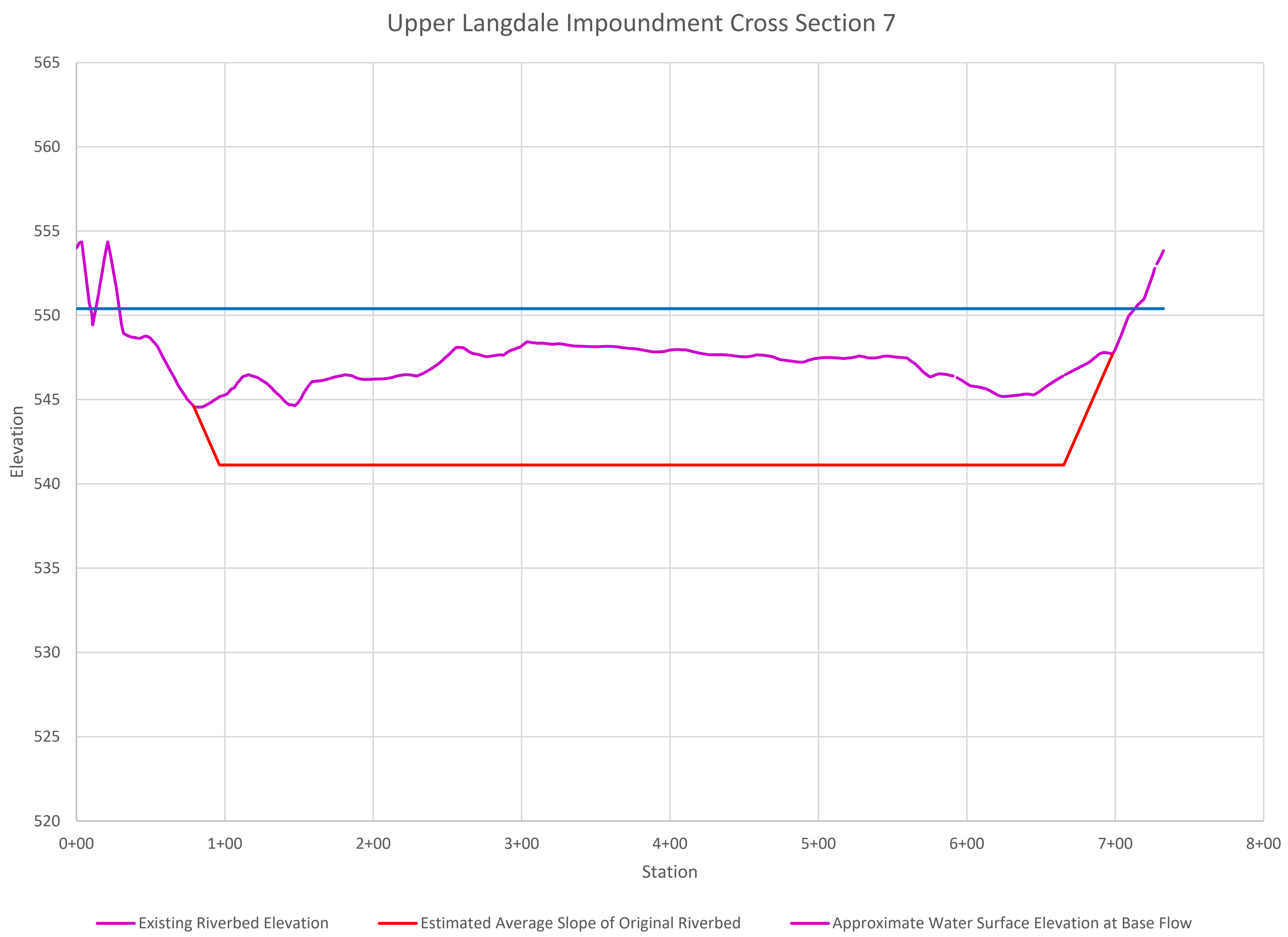
Cross sections are plotted facing downstream.



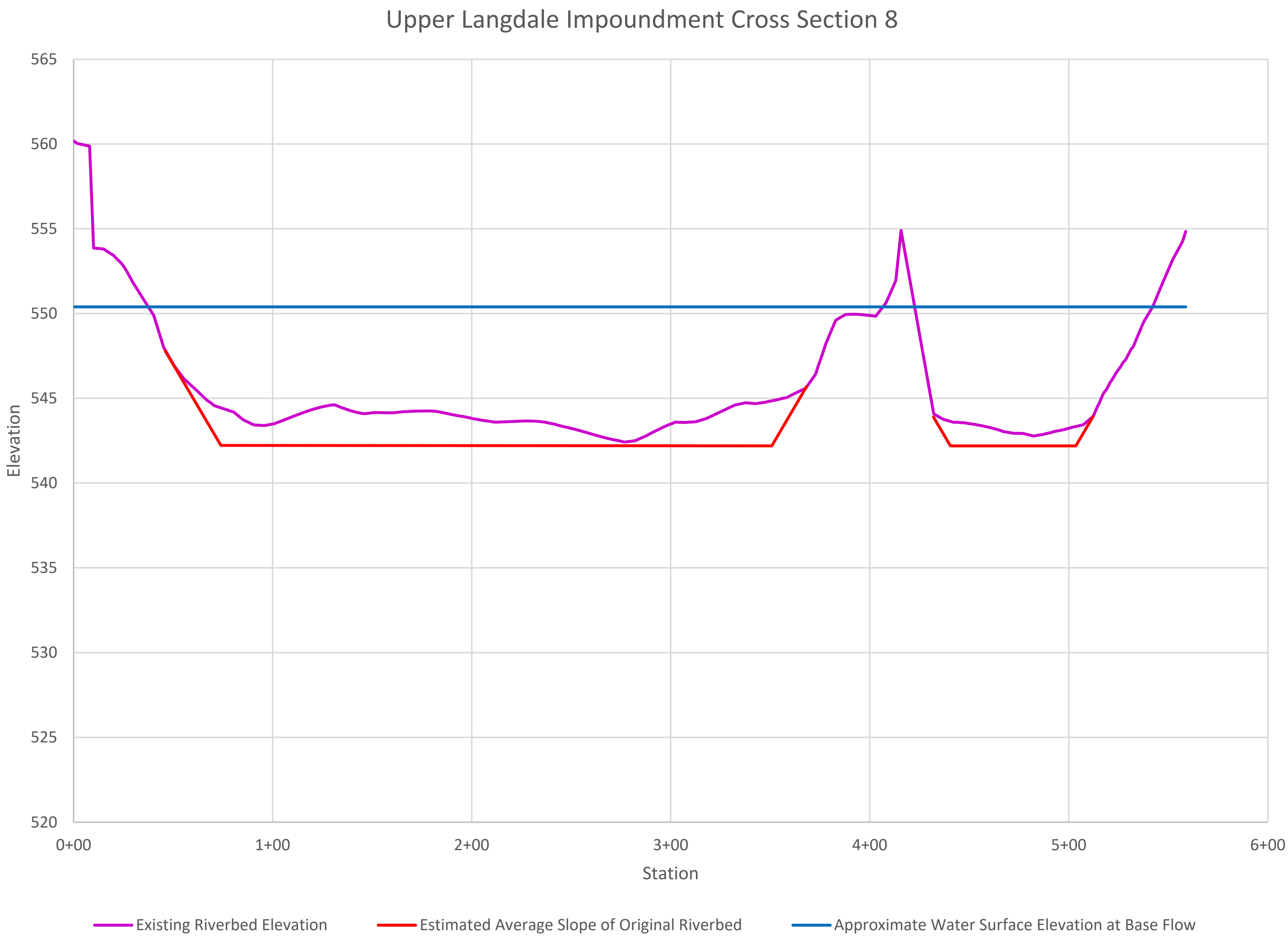
Cross sections are plotted facing downstream.



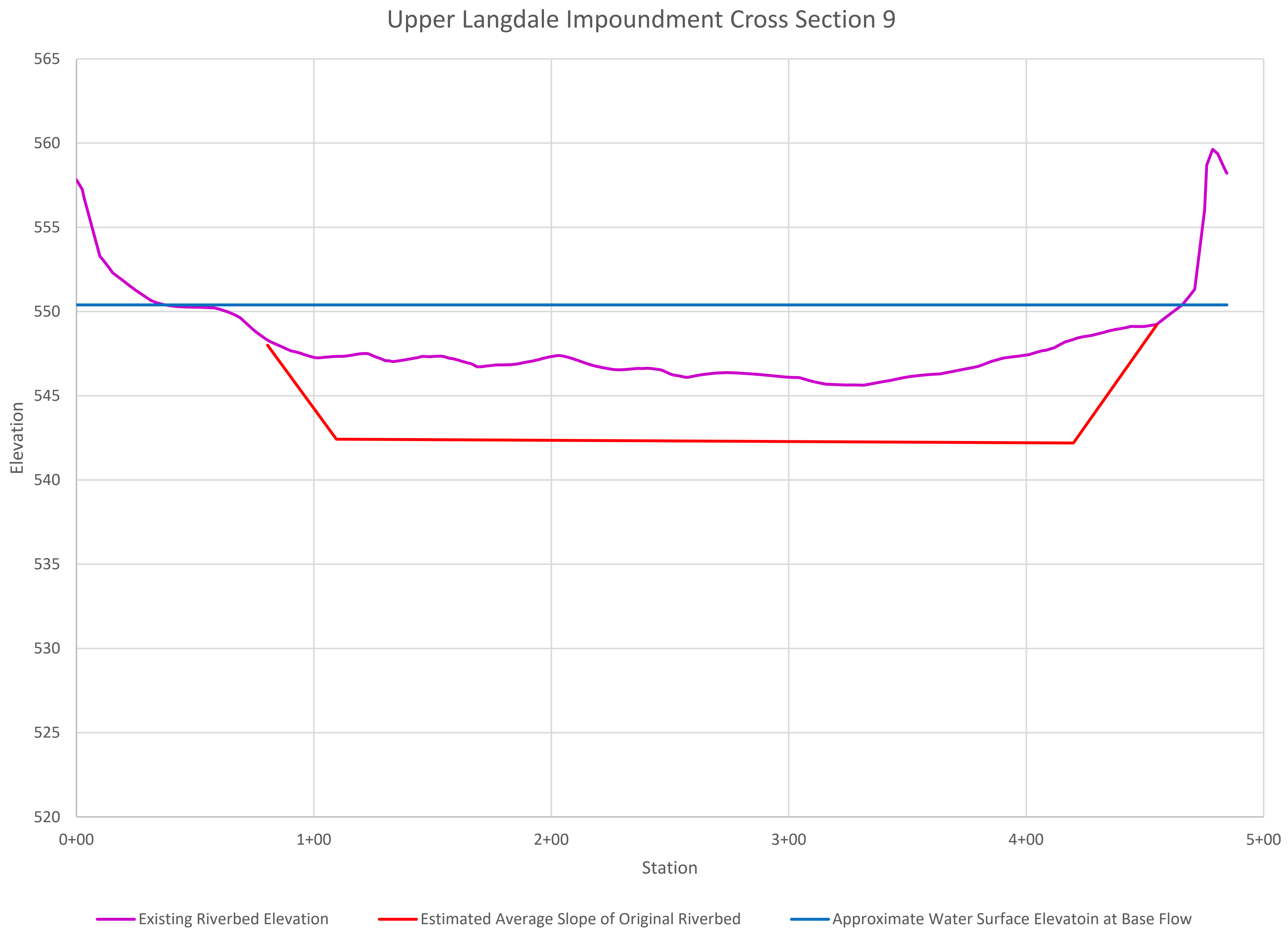
Cross sections are plotted facing downstream.



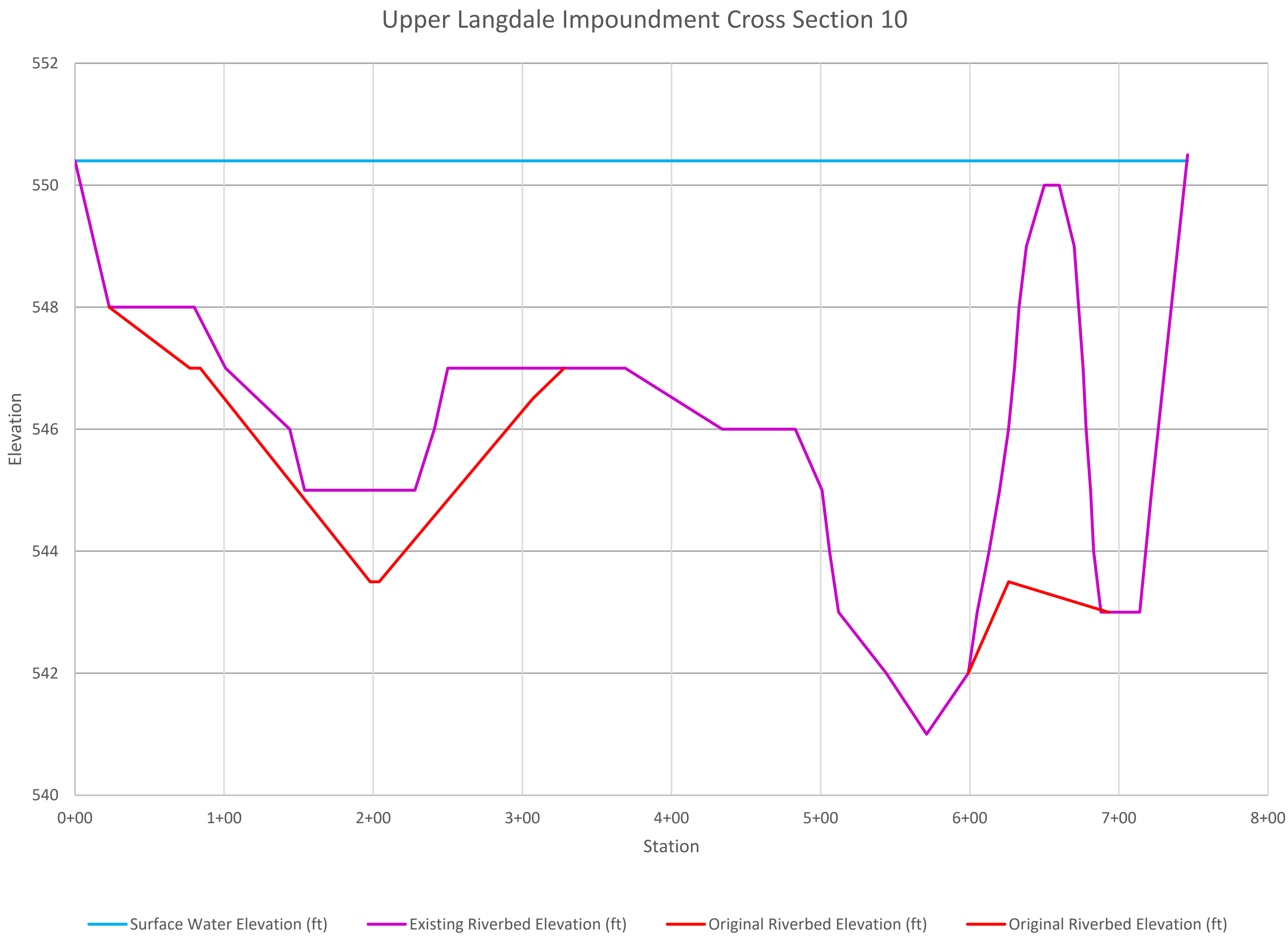
Cross sections are plotted facing downstream.



Cross sections are plotted facing downstream.



Cross sections are plotted facing downstream.



Cross sections are plotted facing downstream.

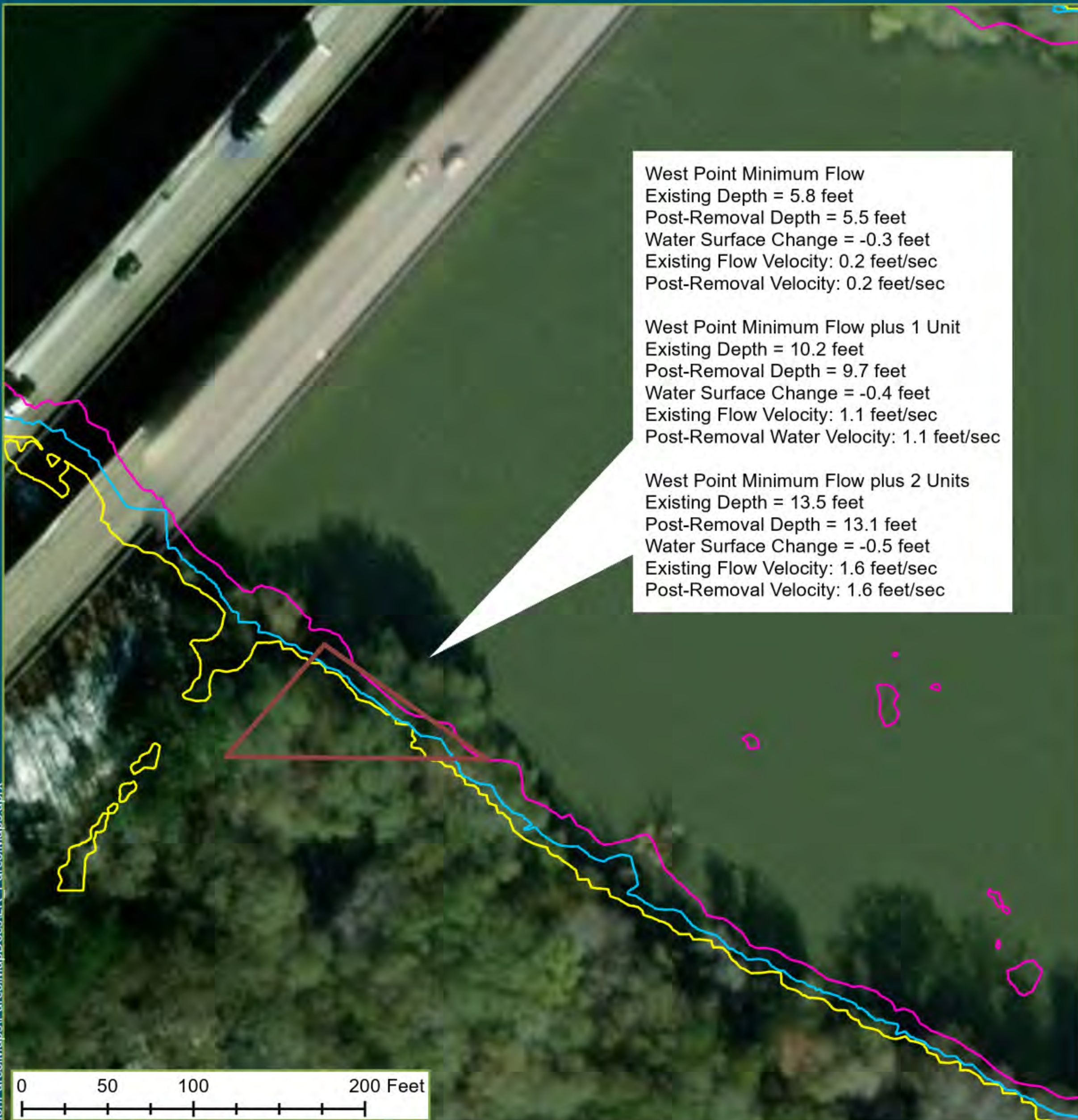
Area and Volume Estimates for Upper Langdale Impoundment Comparison of 2019 Bathymetry and Estimated Original Riverbed Elevation					
	Elev of Estimated Original Riverbed (ft)	Area of Cross-section (sq ft)	Distance (ft)	Volume (cf)	Notes
*	537.4	1572			
1	537.8	2125	1070	1977895	
	538.0	0	487	517438	
**					
	538.1	0			
2	538.1	1344	226	151872	
	538.2	0	259	174048	
3	538.5	1438	775	557225	
4	538.8	2813	661	1404956	Aerial Imagery indicates shoals between stations 48+00 and 53+75. Shoals potentially contribute to an artifically high sediment estimate. Volume calculated between cross-sections 4 and 5 removed from the sediment estimate total.
5	539.0	2641	585	1595295	
	539.1	0	372	491226	
**					
	540.5	0			
6	540.9	1625	1245	1011563	Aerial Imagery indicates shoals between stations 99+00 and 113+00. Shoals potentially contribute to an artifically high sediment estimate. Volume calculated between cross-sections 6 and 7 removed from the sediment estimate total.
7	541.1	3406	513	1290452	
	541.3	0	542	923026	
**					
	542.0	0			

8	542.2	891	511	227651	Aerial Imagery indicates sedimentation in the bend of the river and at the head of the island between stations 122+00 and 160+21. This sediment is likely naturally occuring and will remain after dam removal. Not included in total.
9	542.4	2000	538	777679	
	542.8	0	1171	1171000	
**					
		0			
10	From Depth Probe	625	669	209063	Aerial Imagery indicates sediment accumulation at the upper reach of the Langdale Impoundment. Estimated original riverbed elevation did not indicate sediment in this location. Depth probes were taken to measure depth.
		0	816	255000	
Total Sediment Estimate (cf)				5256792	
Total Sediment Estimate (ac-ft)				121	
*See Cross-section 31 of Lower Langdale Impoundment					
**In some locations along the alignment the existing riverbed elevation is below the estimated average slope of the original riverbed. In these locations, no sediment volume is calculated.					

APPENDIX E

PROPERTY OWNERS PARCEL MAPS FROM JANUARY 23, 2020 MEETING

Parcel 001



Legend

Property Parcels

- Parcel 001

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

Kleinschmidt

141 Main St., PO Box 650
Pittsfield, Maine 04967
Telephone: (207) 487-3328
Fax: (207) 487-3124
www.KleinschmidtGroup.com

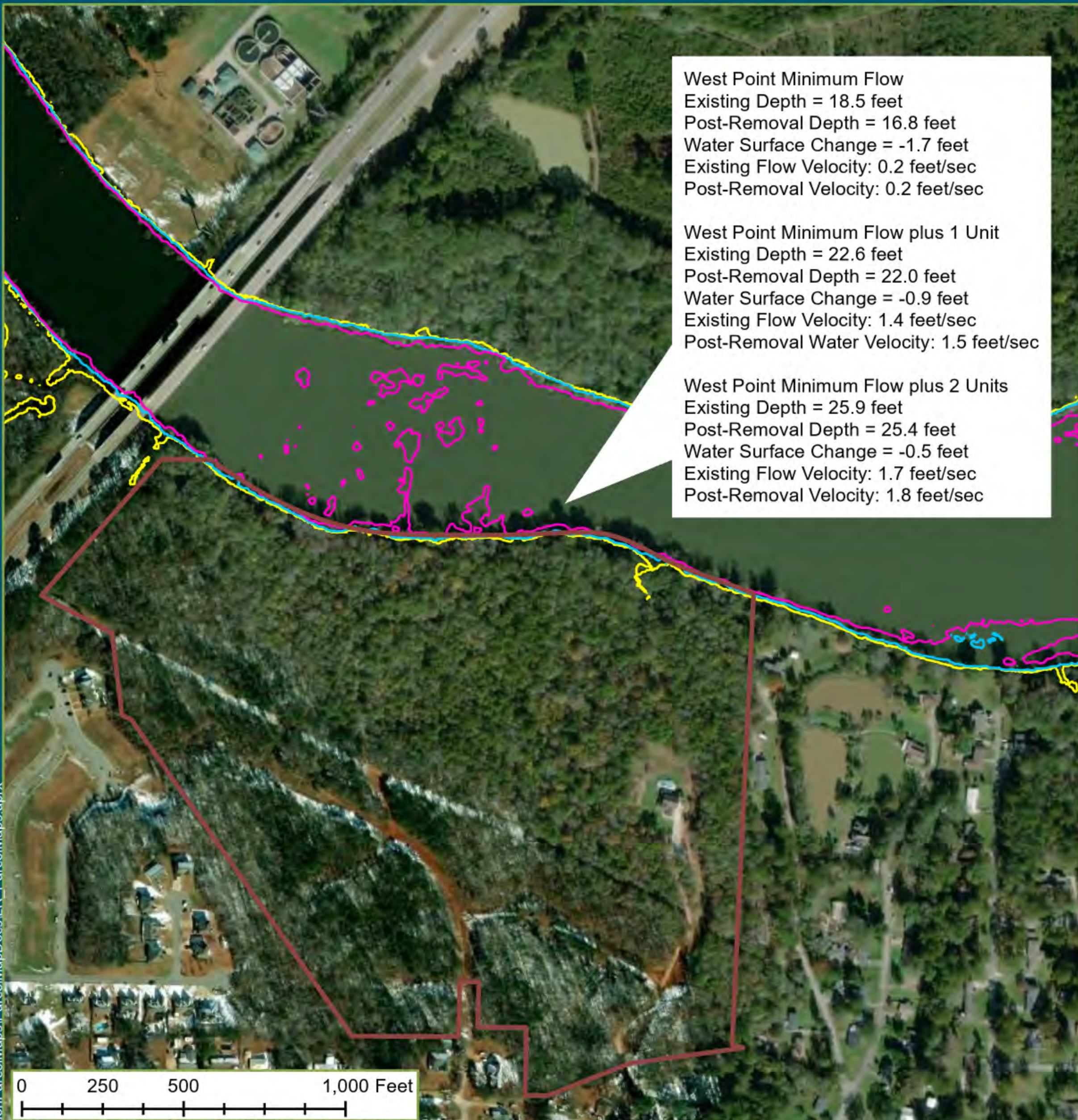
Path: F:\KA\LangdaleRiverview\InundationParcelMaps\ParcelMapDocs\LR_ParcelMaps.aprx

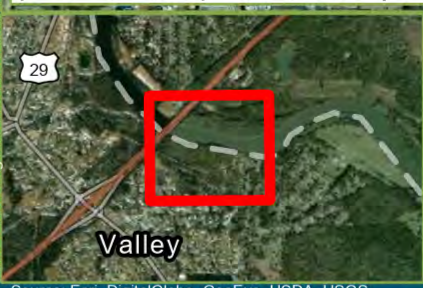
Date Printed: 4/17/2020

Source: Esri, DigitalGlobe, GeoEye, USDA, USGS

PN: 0534039.01

Parcel 002





Legend

Property Parcels

- Parcel 002

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

Kleinschmidt
141 Main St., PO Box 650
Pittsfield, Maine 04967
Telephone: (207) 487-3328
Fax: (207) 487-3124
www.KleinschmidtGroup.com

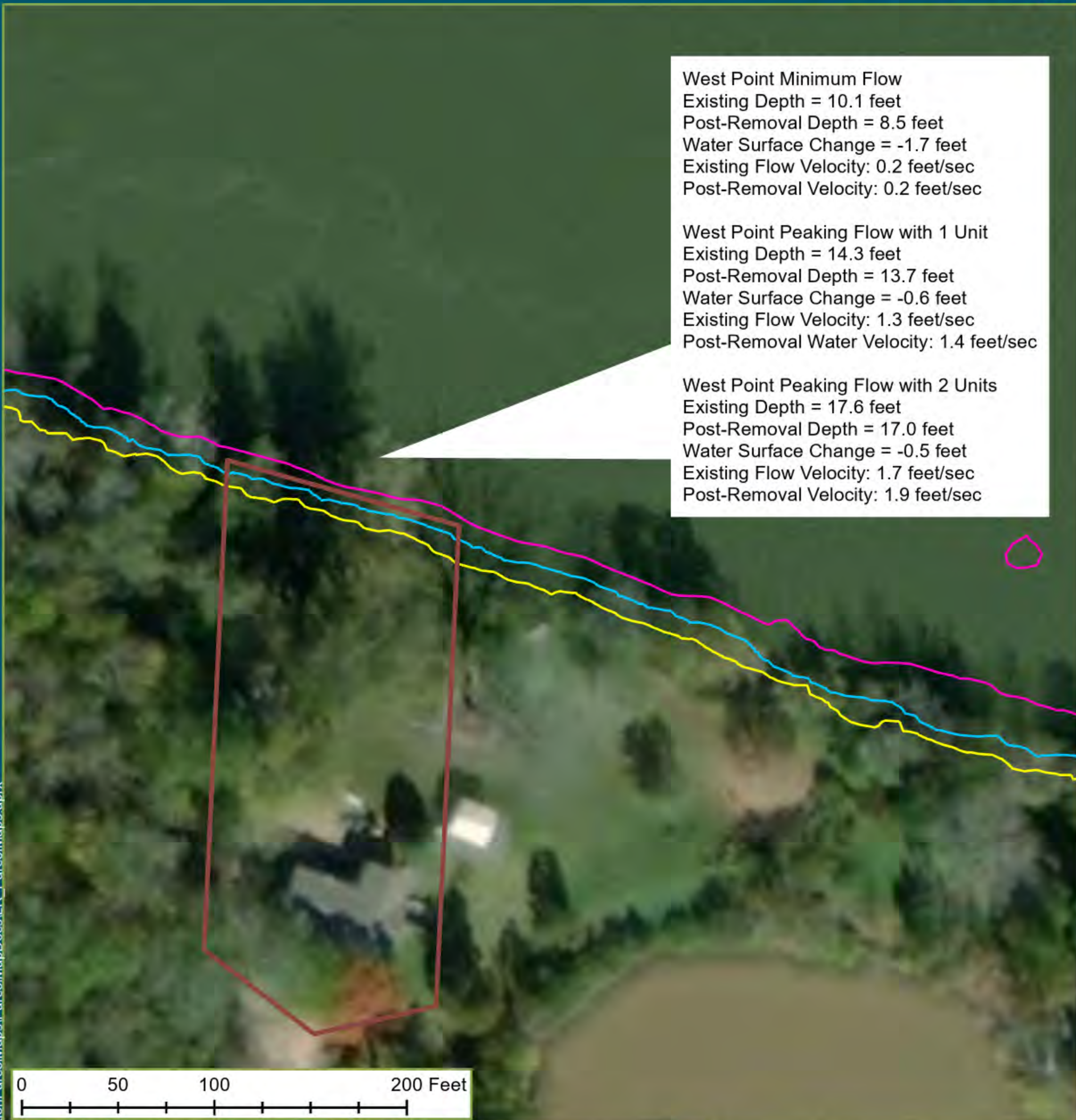
Path: F:\KA\LangdaleRiverview\InundationParcelMaps\ParcelMapDocs\LR_ParcelMaps.aprx

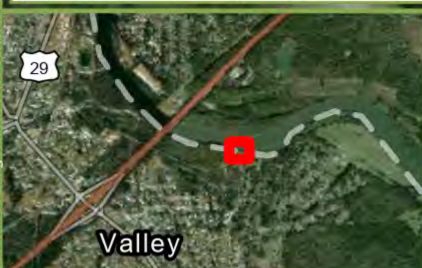
Date Printed: 4/17/2020

Source: Esri, DigitalGlobe, GeoEye, USDA, USGS

PN: 0534039.01

Parcel 003





Legend

Property Parcels

Parcel 003

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
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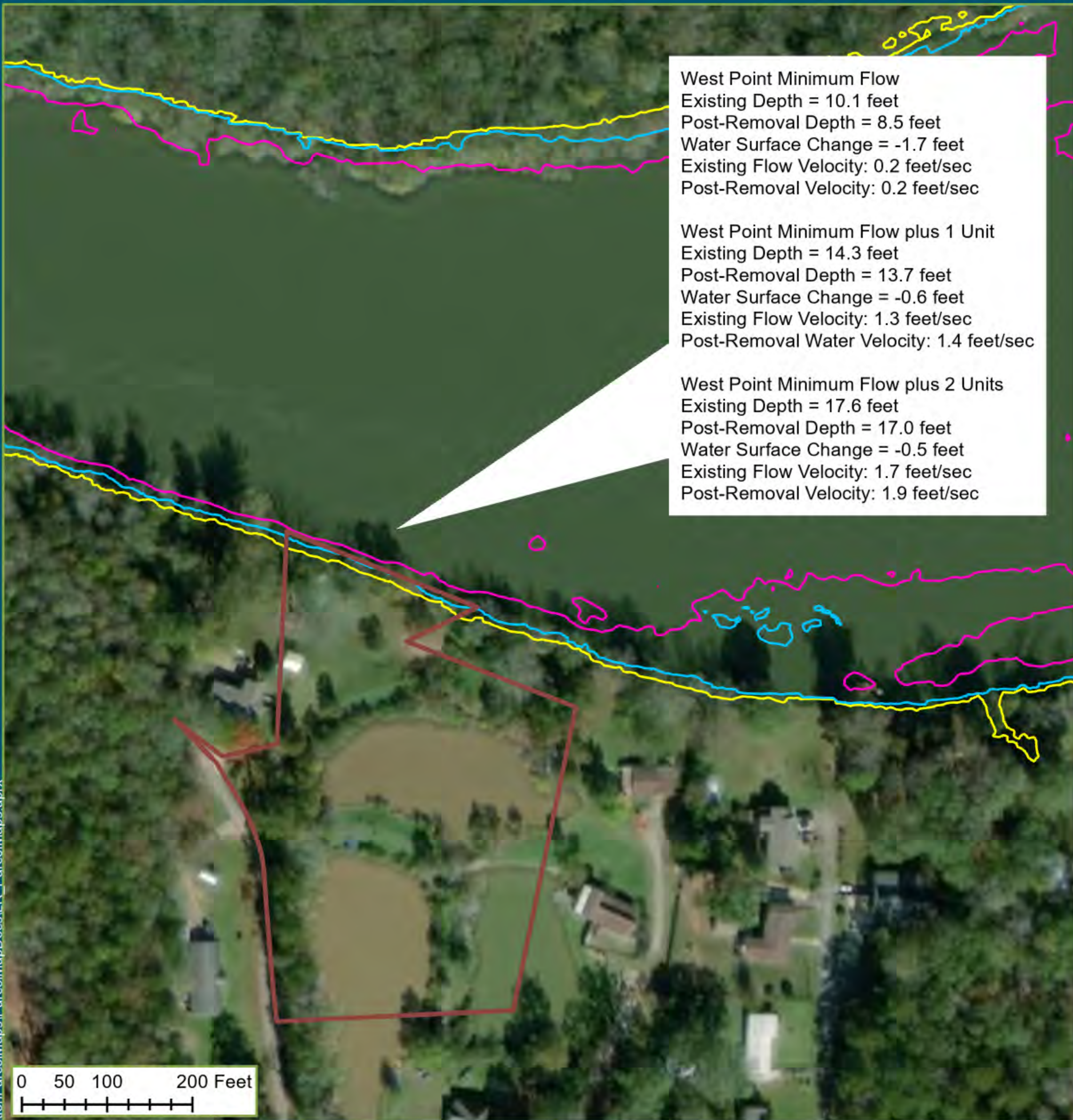
PN: 0534039.01

Parcel 004



Legend

Property Parcels

Parcel 004

Post-Dam Removal

West Point Minimum Flow

West Point Minimum Flow plus 1 Unit

West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

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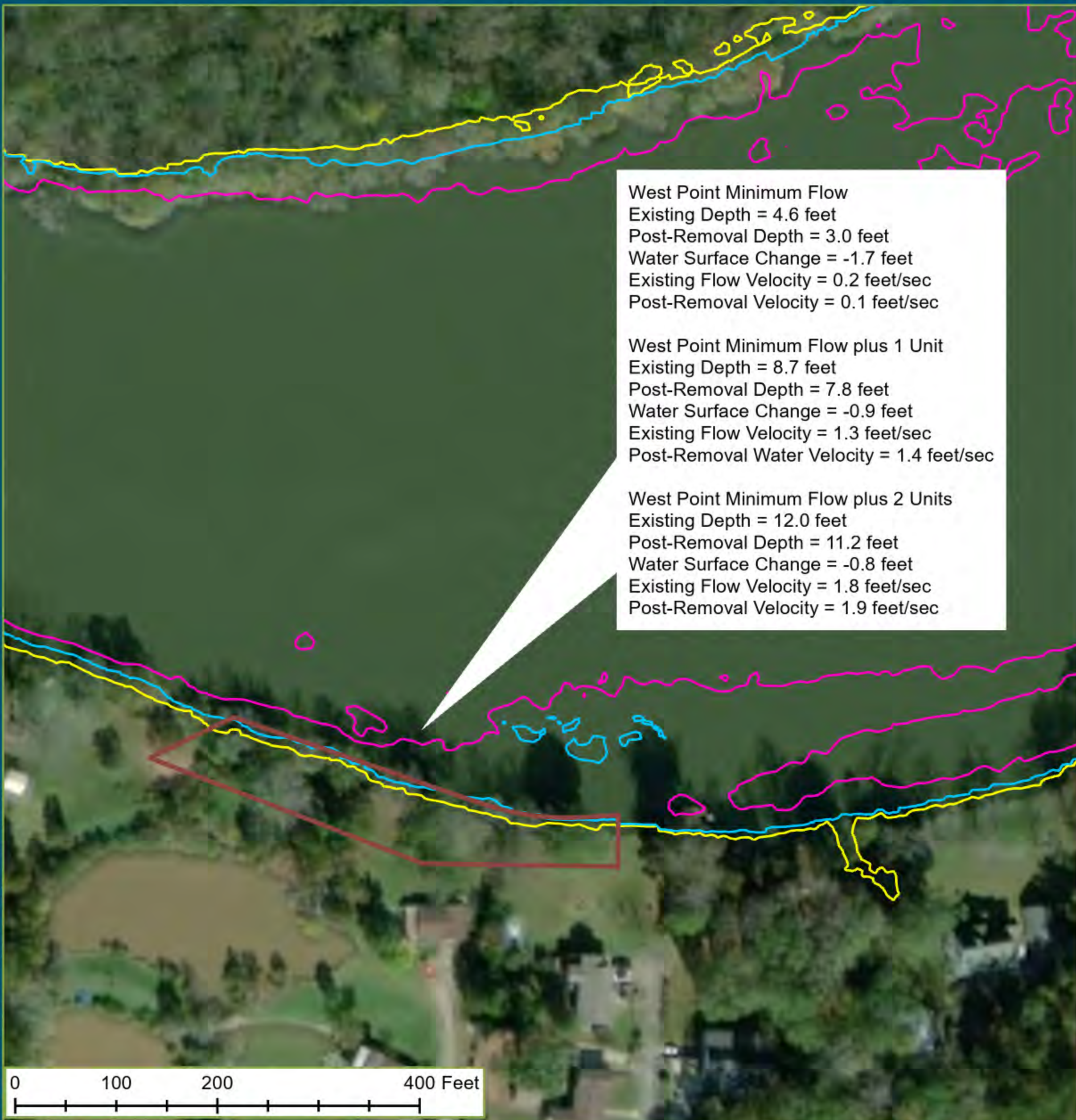
PN: 0534039.01

Parcel 005



Legend

Property Parcels

- Parcel 005

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

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PN: 0534039.01

Parcel 006

Legend

Property Parcels

- Parcel 006

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

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PN: 0534039.01

Parcel 007

Legend

Property Parcels

Parcel 007

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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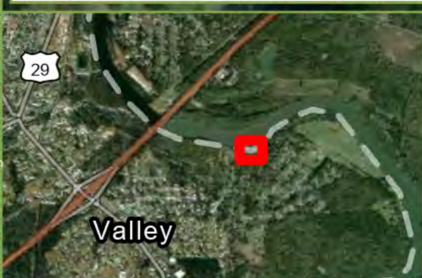
PN: 0534039.01

Parcel 008



Legend

Property Parcels

Parcel 008

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
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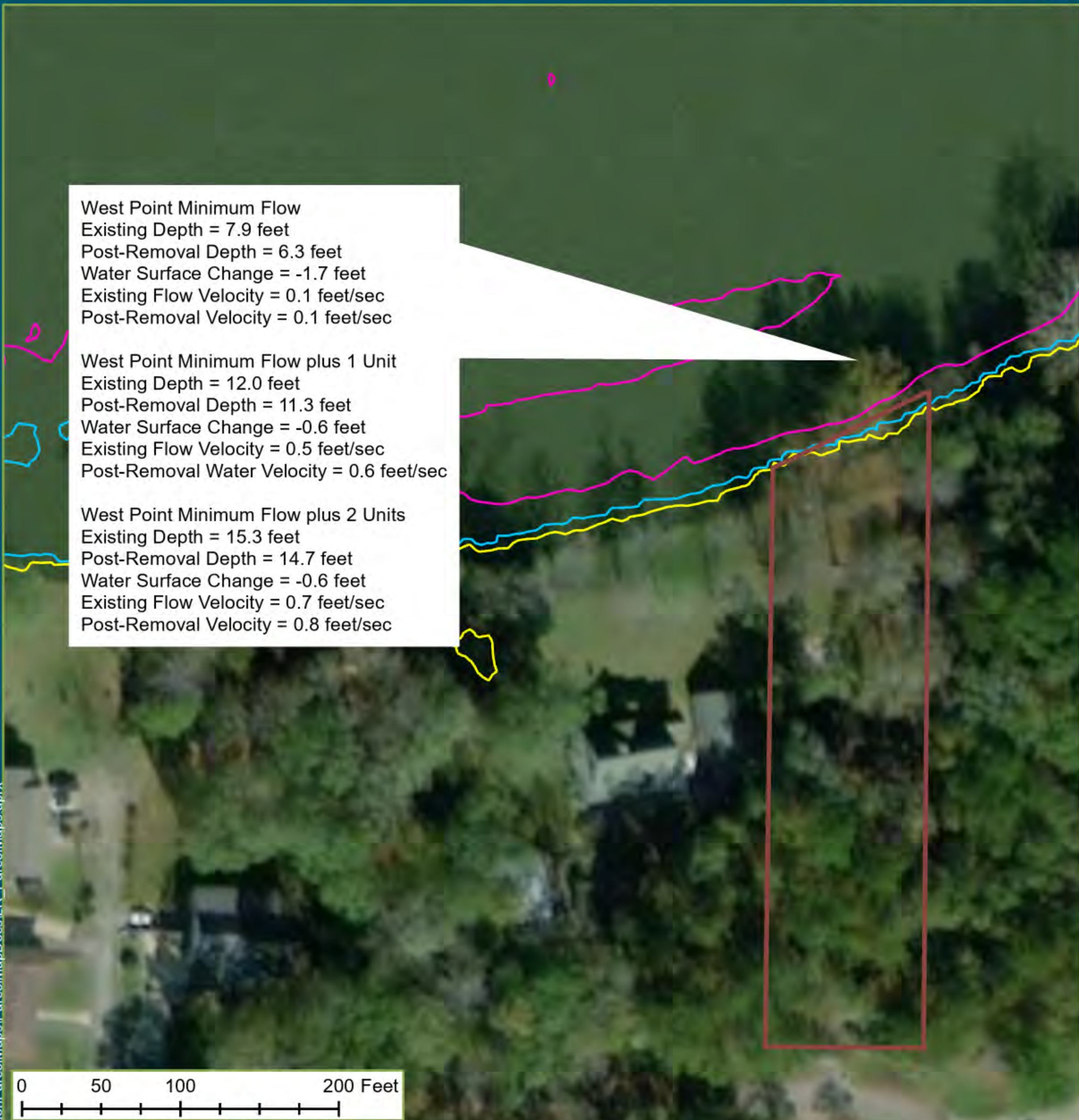
Parcel 009



Legend

Property Parcels

Parcel 009

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

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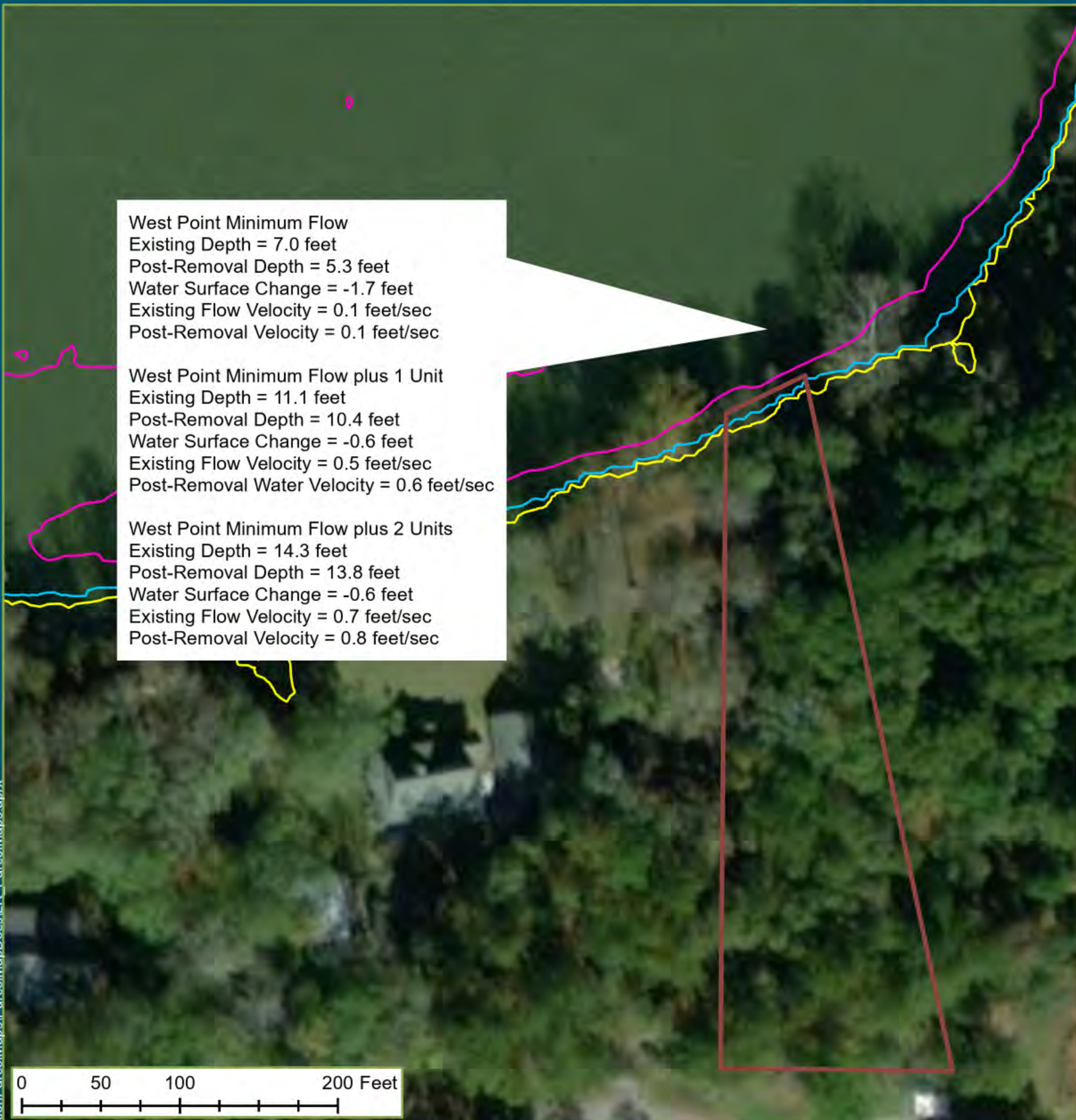
Parcel 010



Legend

Property Parcels

- Parcel 010

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

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Atlanta, Georgia

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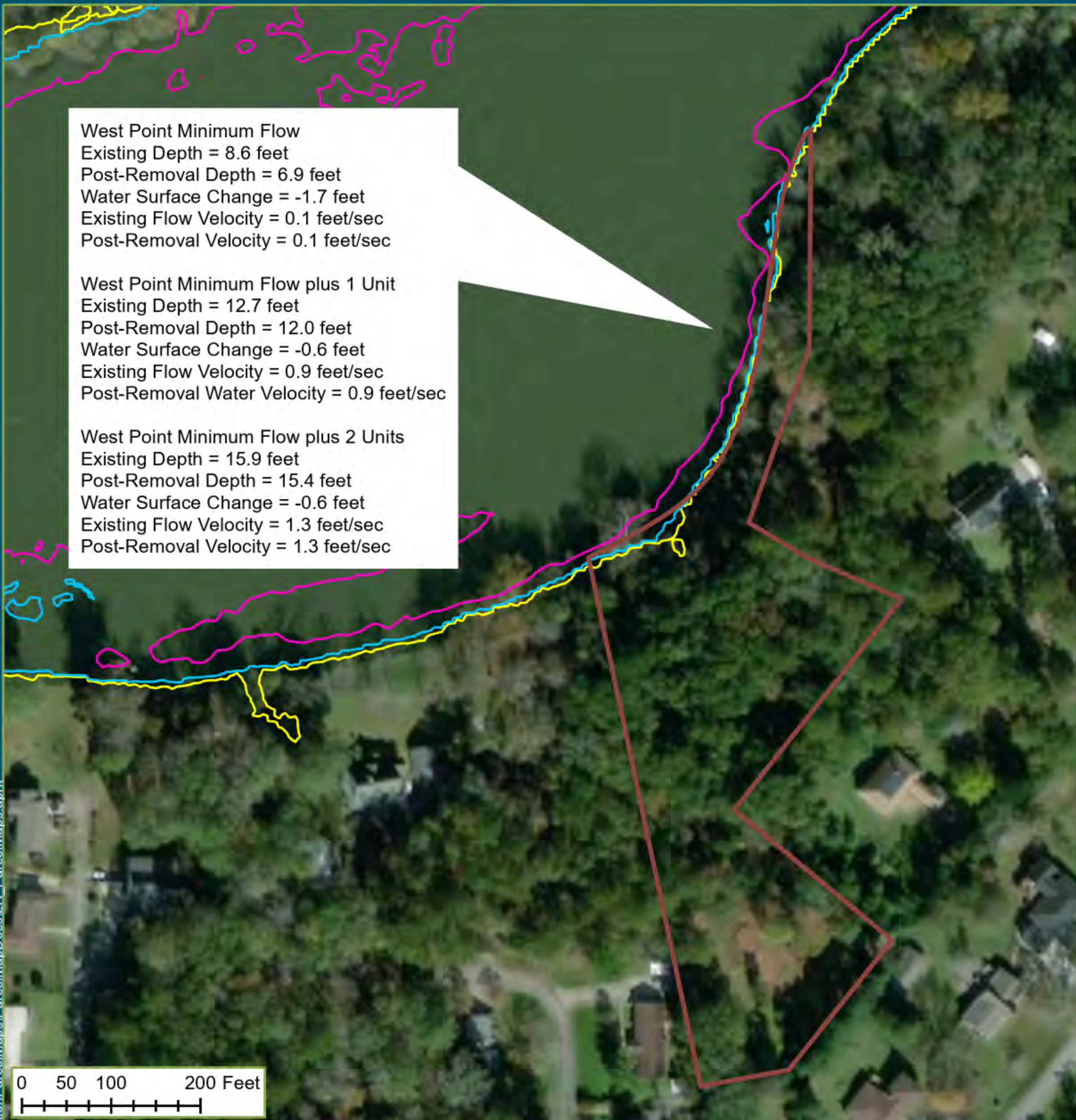
Parcel 011



Legend

Property Parcels

- Parcel 011

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

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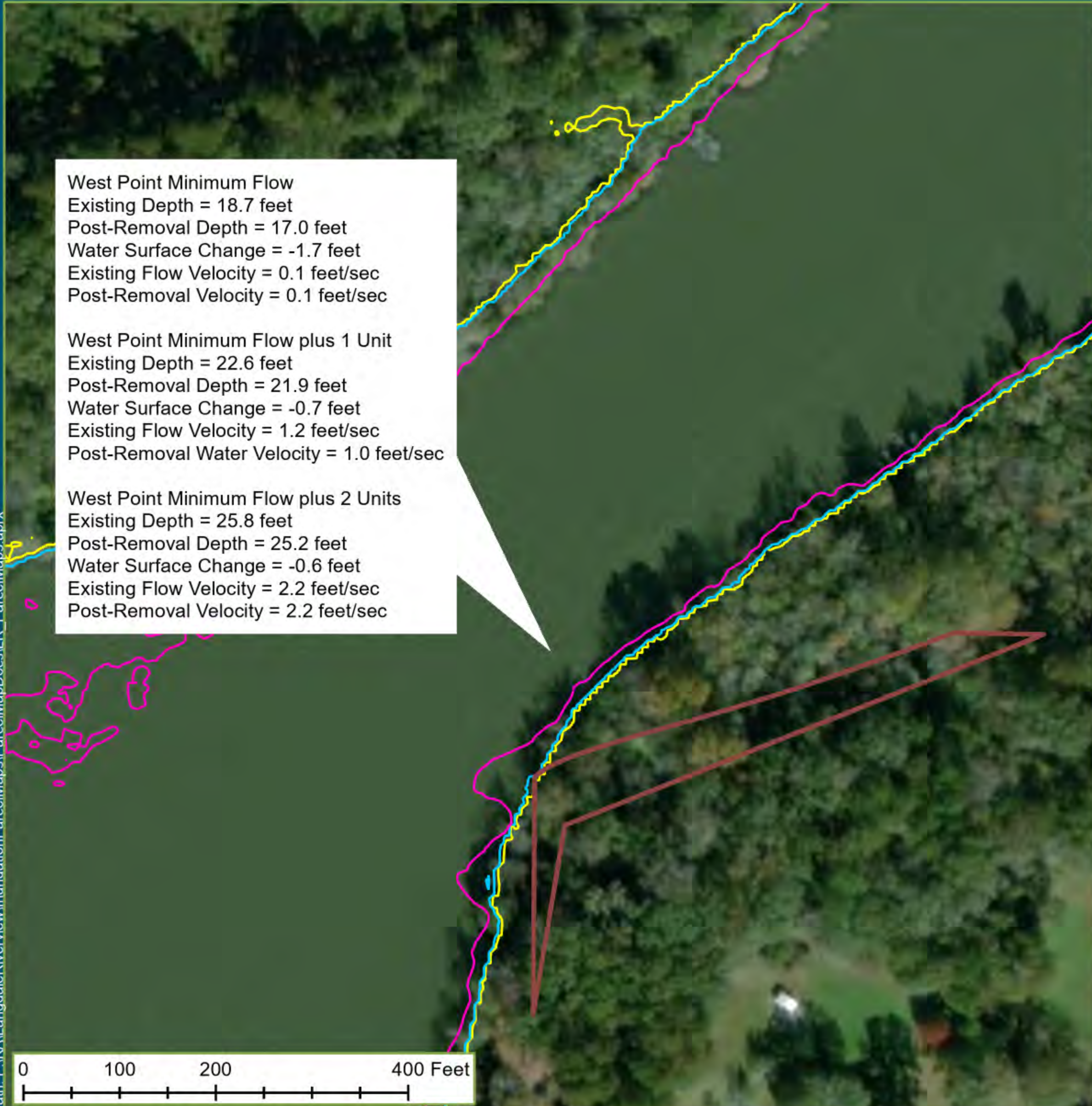

Parcel 012

Legend

Property Parcels

- Parcel 012

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

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Atlanta, Georgia

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Parcel 013

Legend

Property Parcels

Parcel 013

Post-Dam Removal

West Point Minimum Flow

West Point Minimum Flow plus 1 Unit

West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

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PN: 0534039.01

Parcel 014

Legend

Property Parcels

- Parcel 014

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

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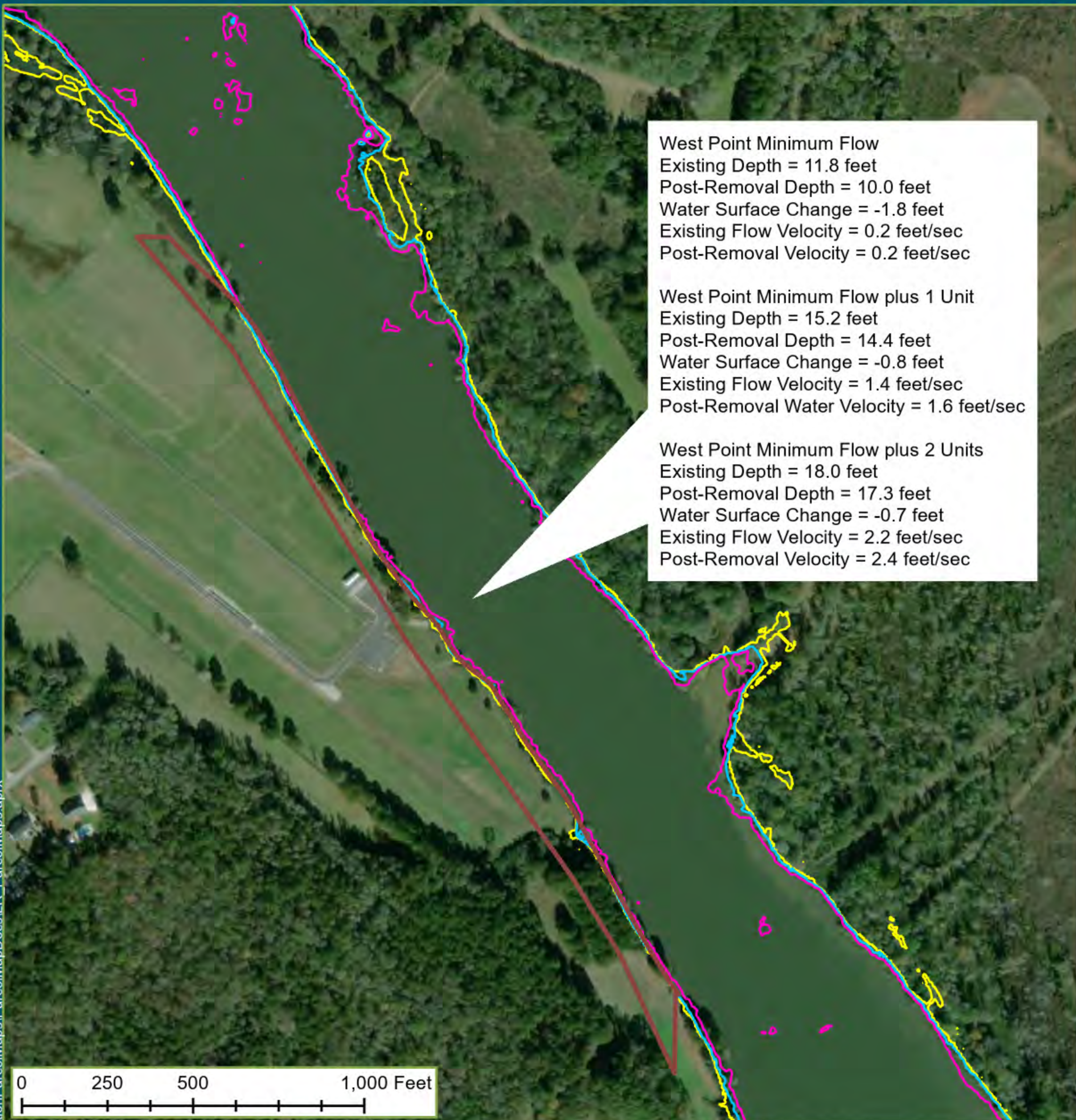
Parcel 015



Legend

Property Parcels

- Parcel 015

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

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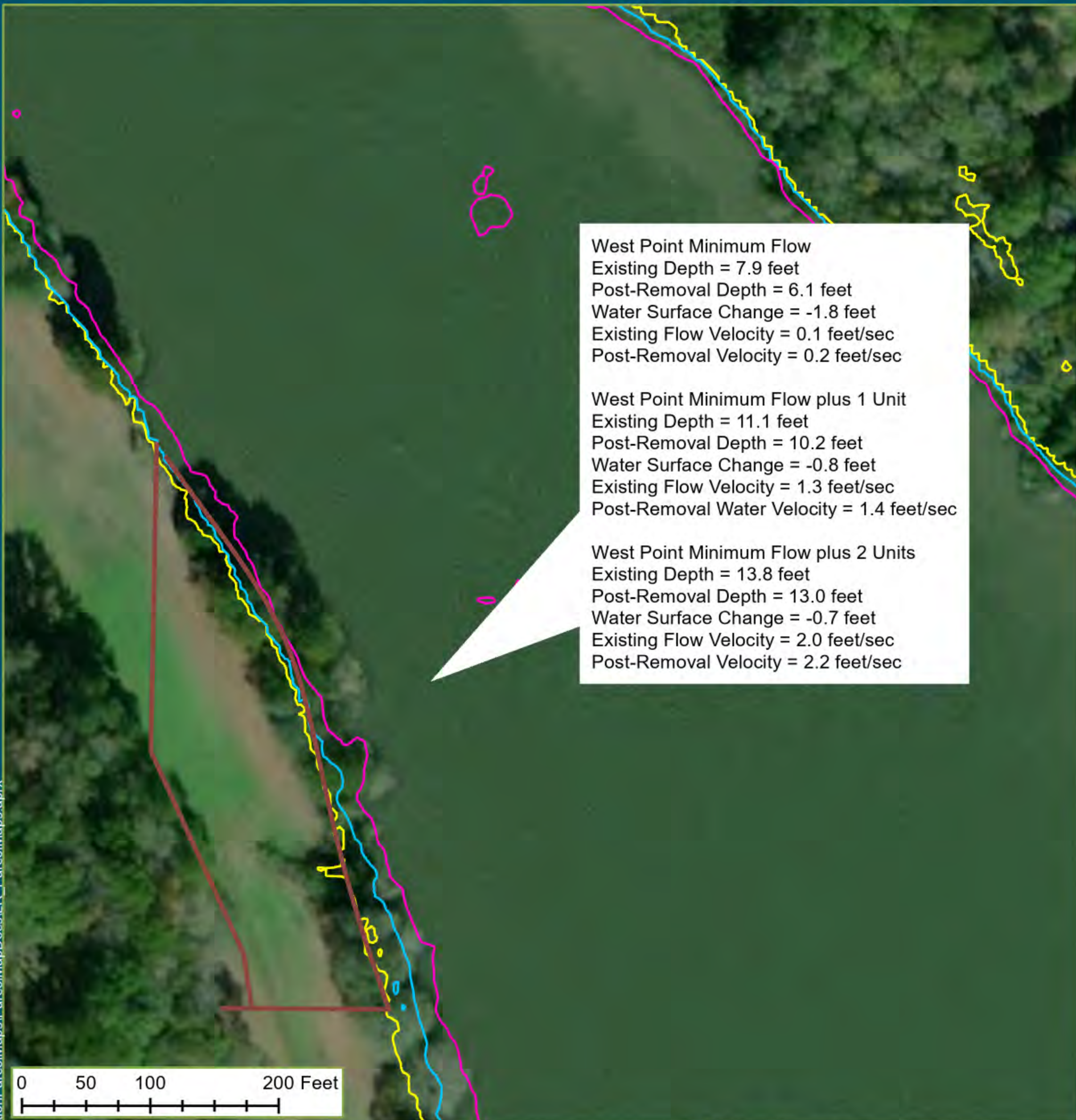
Parcel 016



Legend

Property Parcels

Parcel 016

Post-Dam Removal

West Point Minimum Flow

West Point Minimum Flow plus 1 Unit

West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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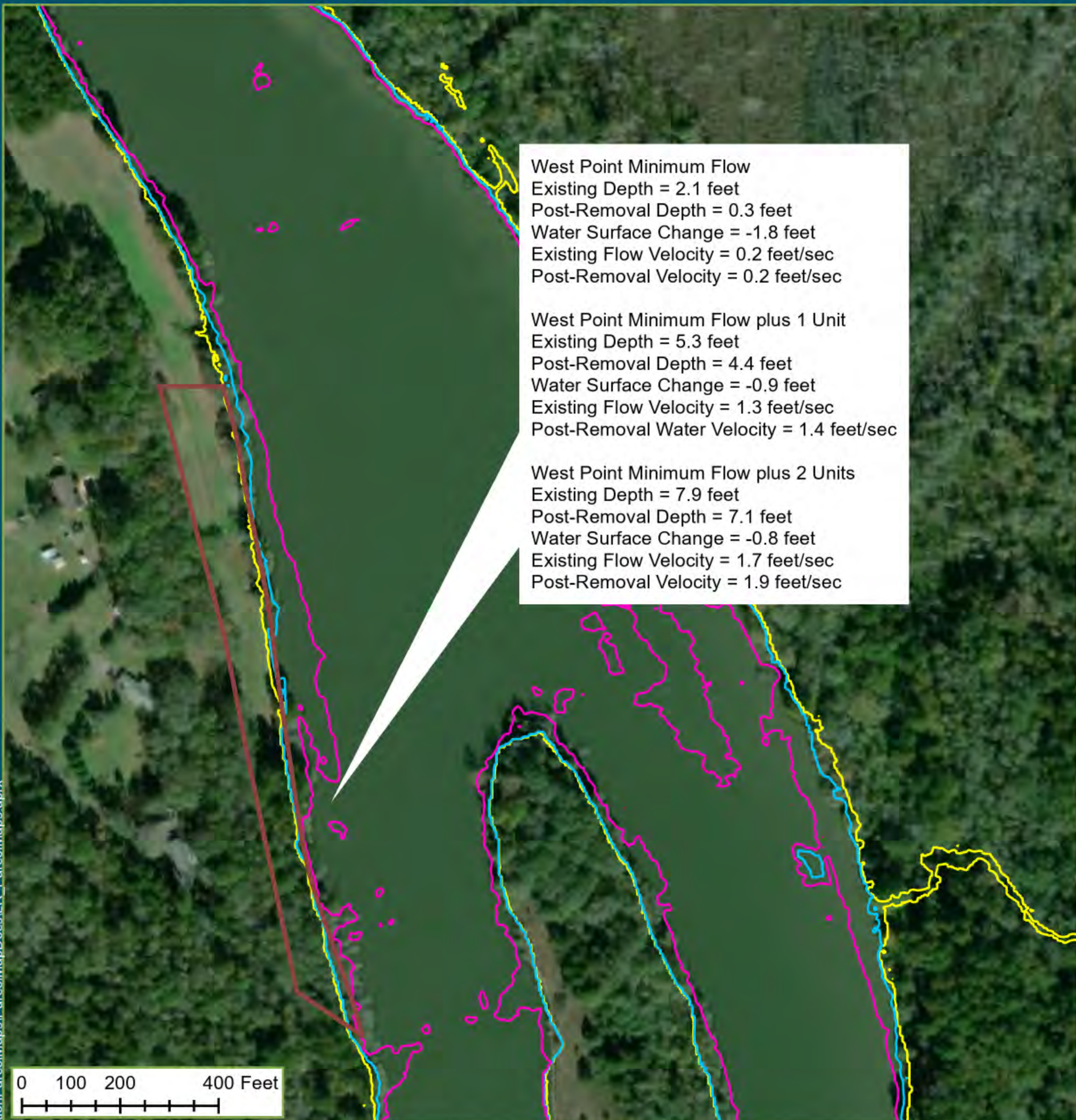
Parcel 017



Legend

Property Parcels

- Parcel 017

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
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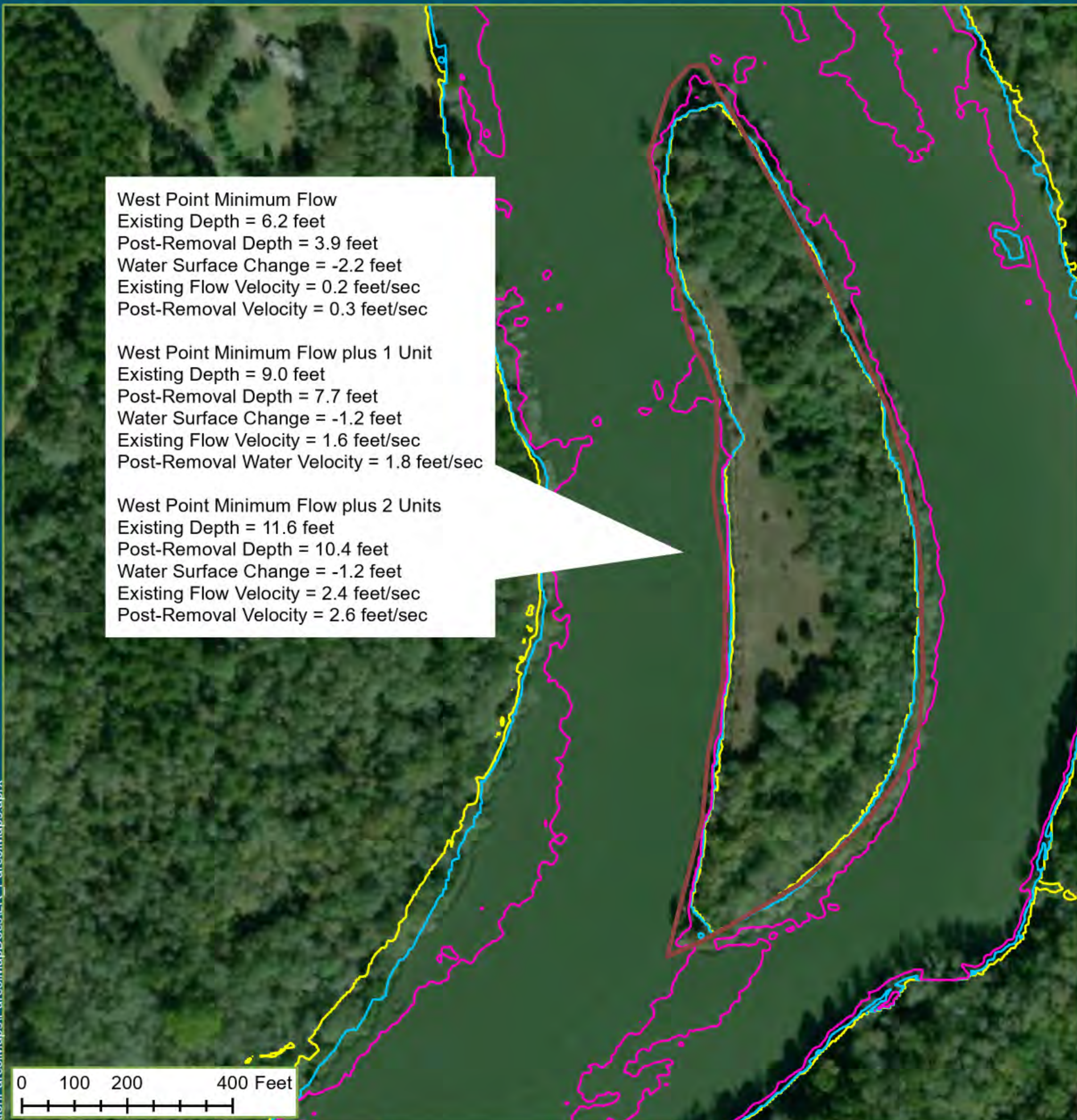
Parcel 018



Legend

Property Parcels

- Parcel 018

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
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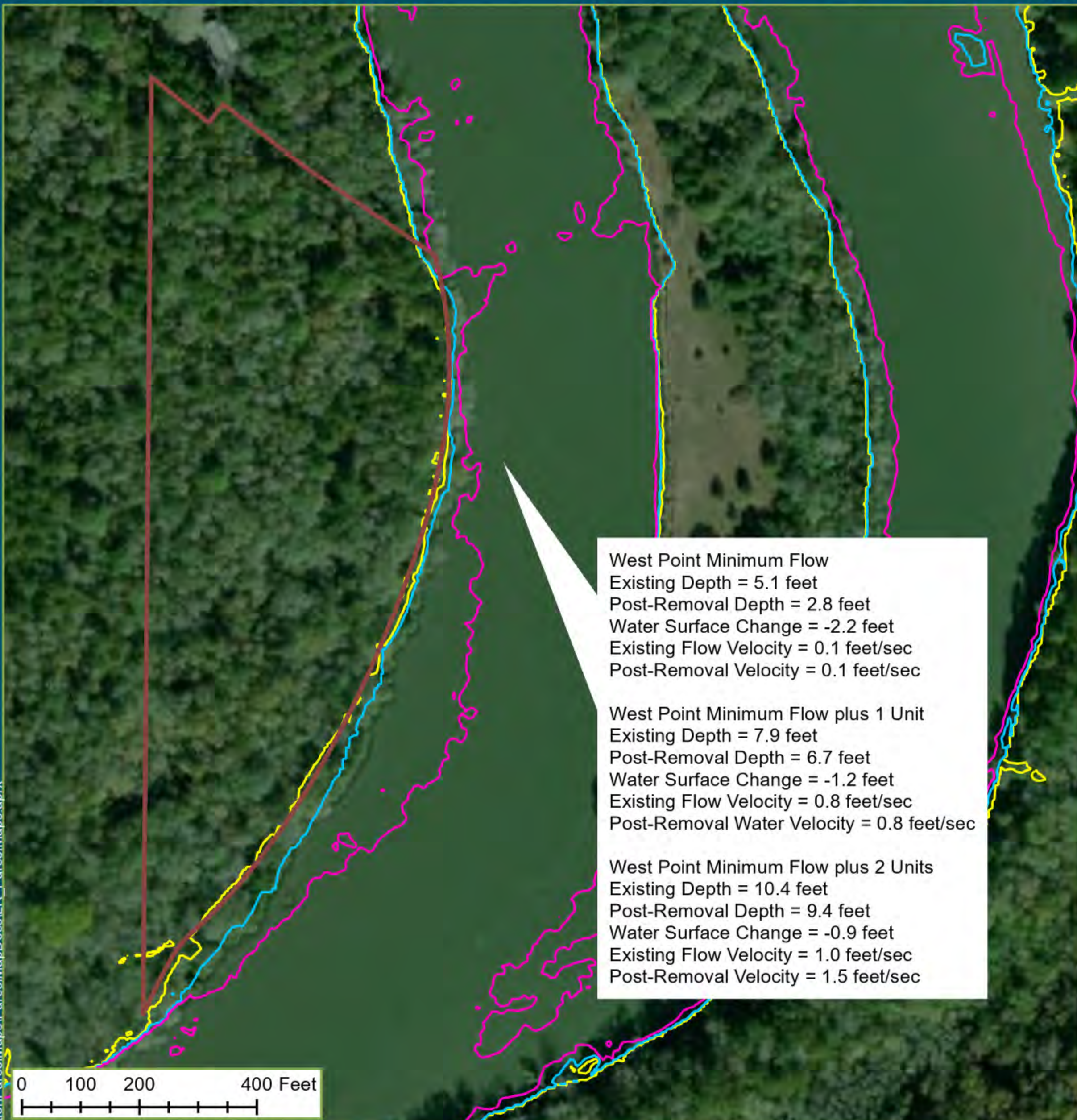
Parcel 019



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Legend

Property Parcels

Parcel 019

Post-Dam Removal

West Point Minimum Flow

West Point Minimum Flow plus 1 Unit

West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

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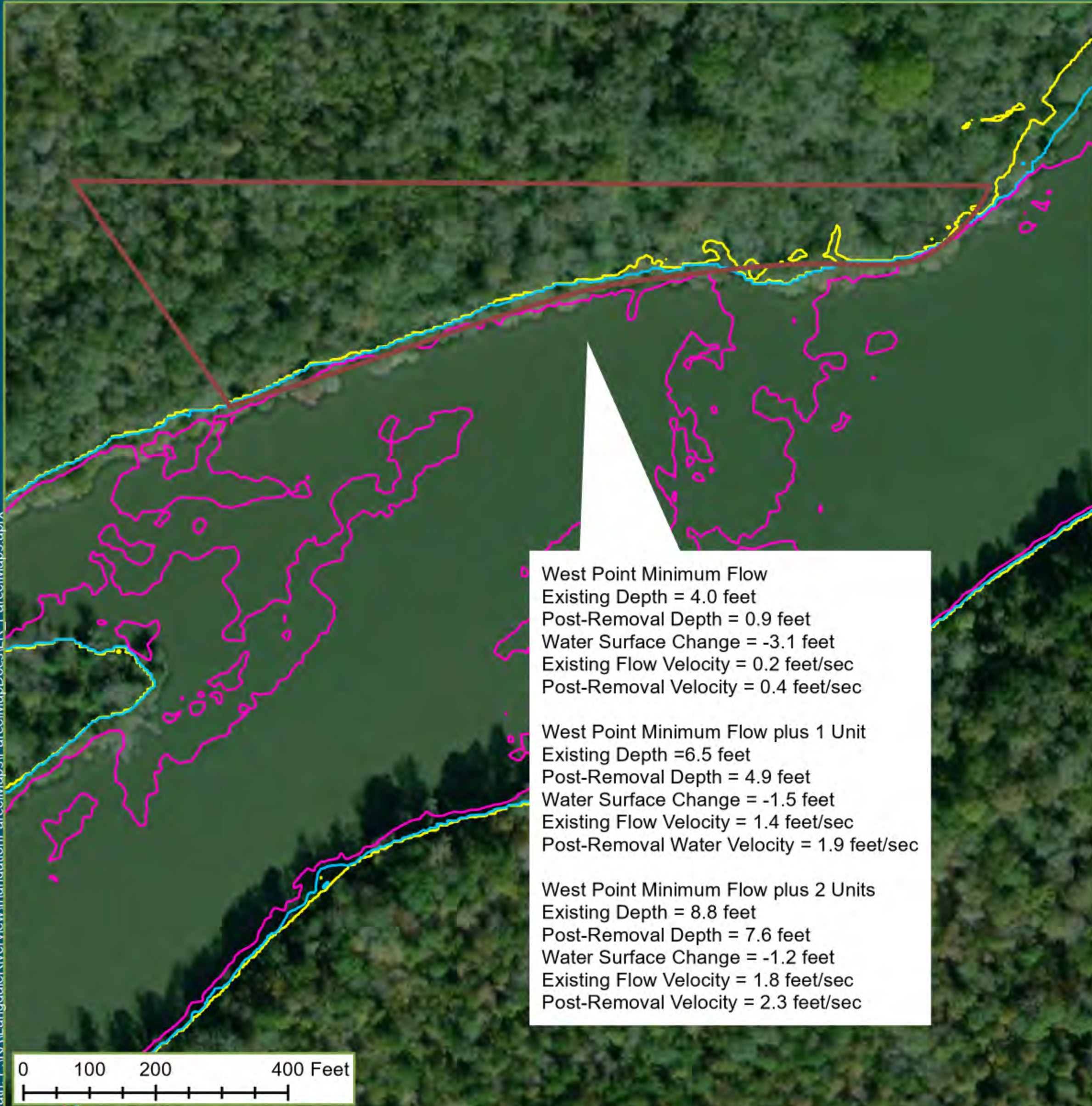
Parcel 020



Legend

Property Parcels

- Parcel 020

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

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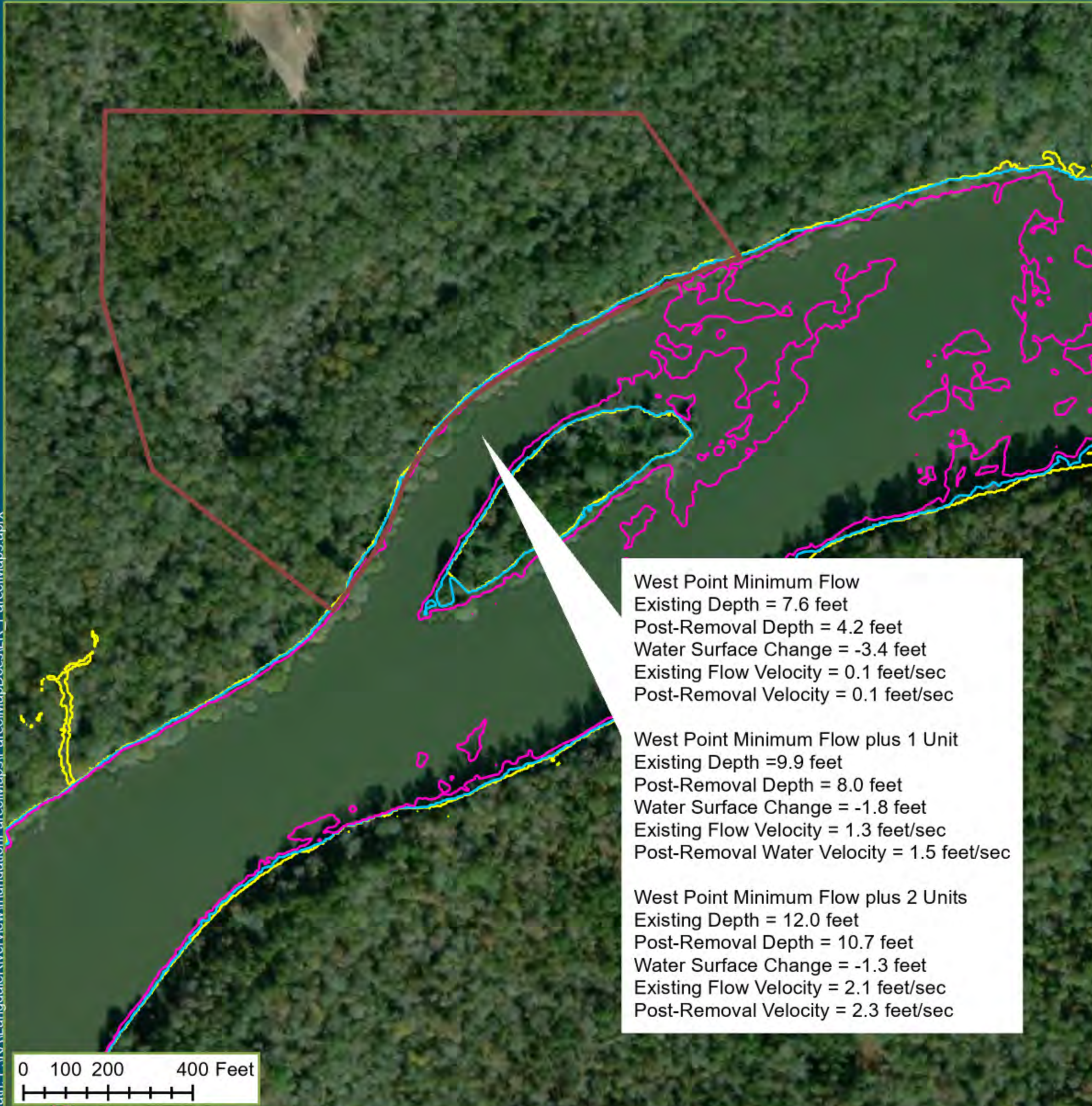
PN: 0534039.01



Parcel 021

Legend

Property Parcels

- Parcel 021

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

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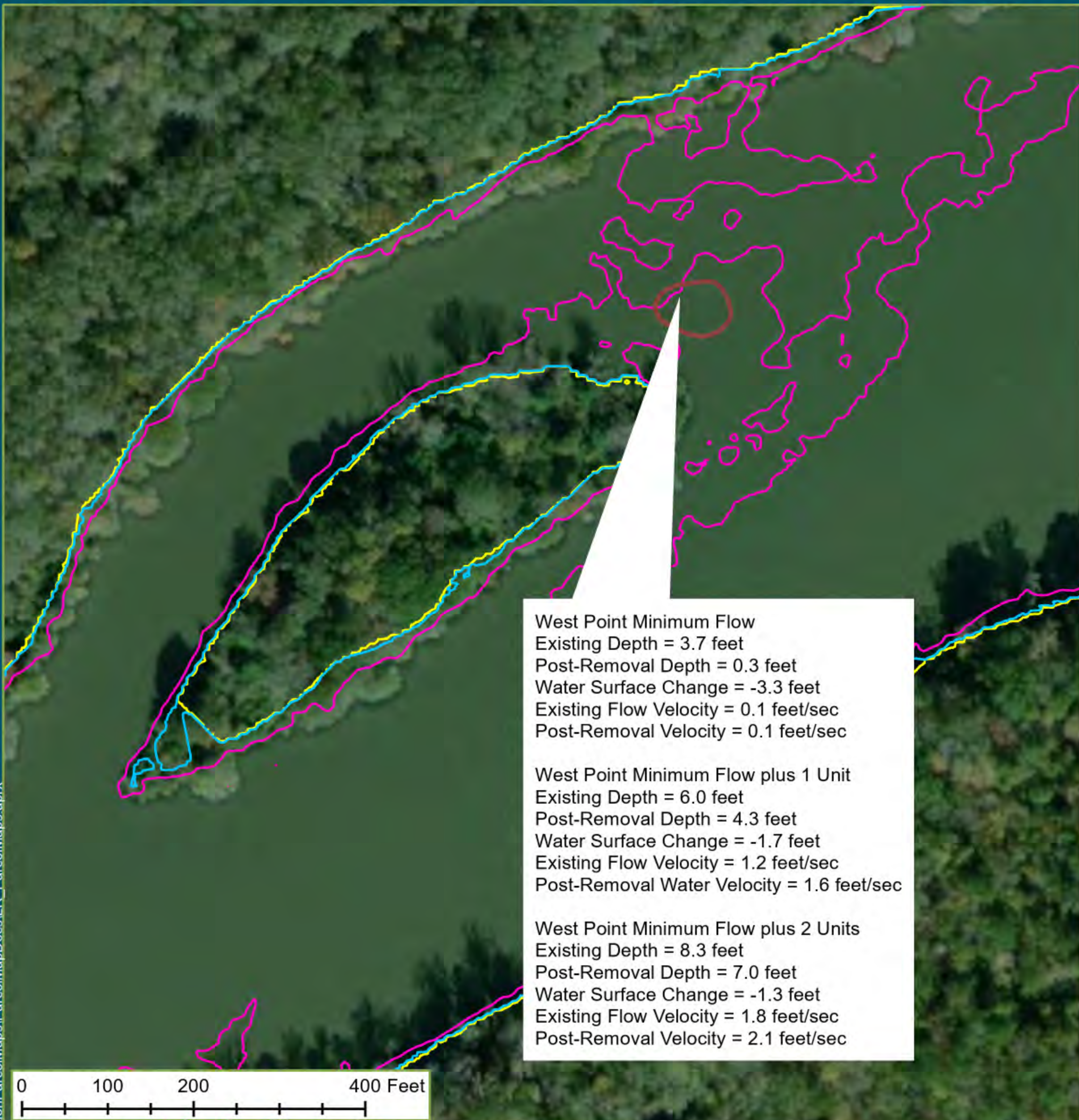
PN: 0534039.01

Parcel 022



Legend

Property Parcels

- Parcel 022

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
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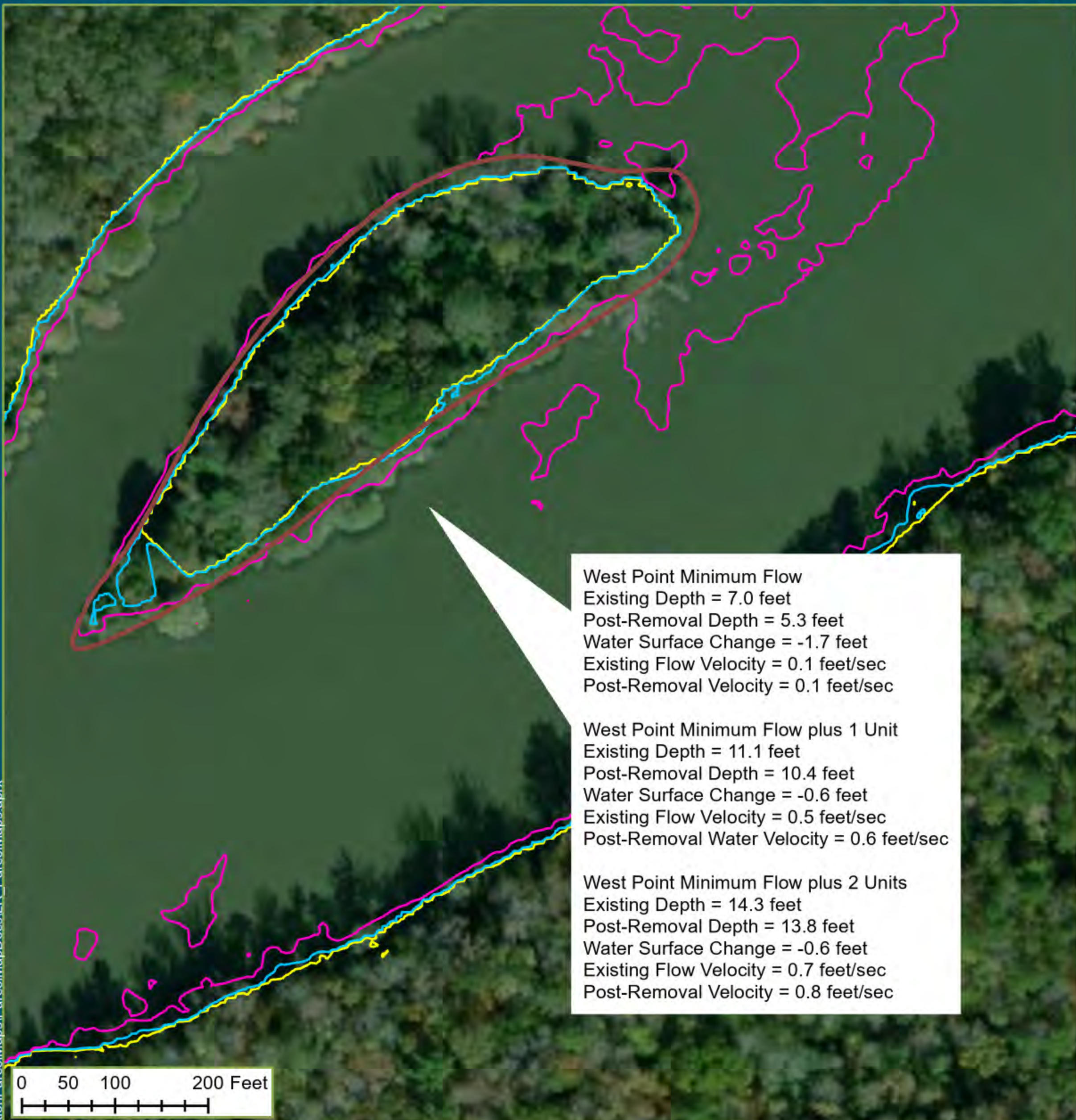
PN: 0534039.01

Parcel 023



Legend

Property Parcels

- Parcel 023

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
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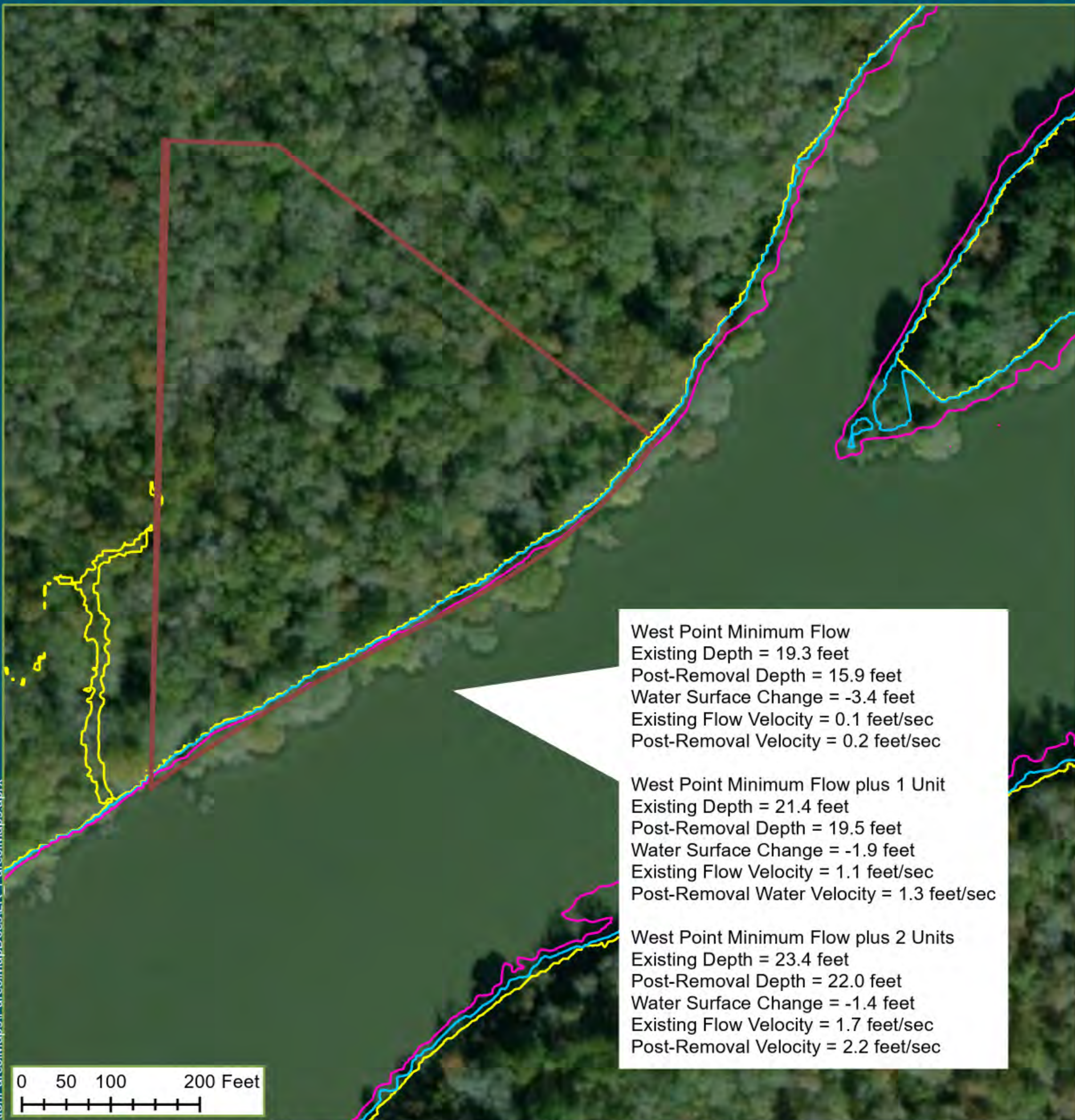
Parcel 024



Legend

Property Parcels

Parcel 024

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
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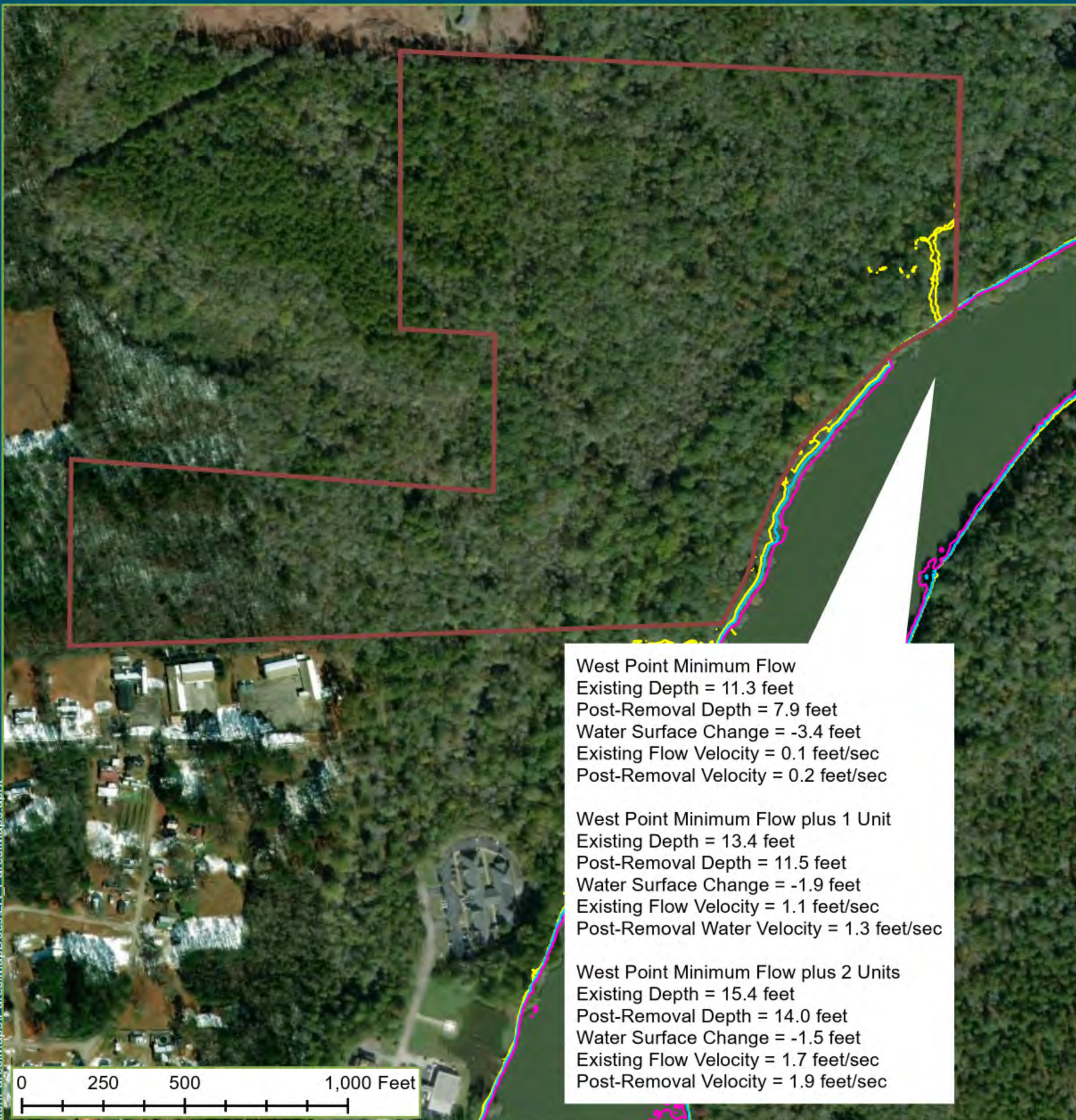
Parcel 025



Legend

Property Parcels

Parcel 025

Post-Dam Removal

West Point Minimum Flow

West Point Minimum Flow plus 1 Unit

West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
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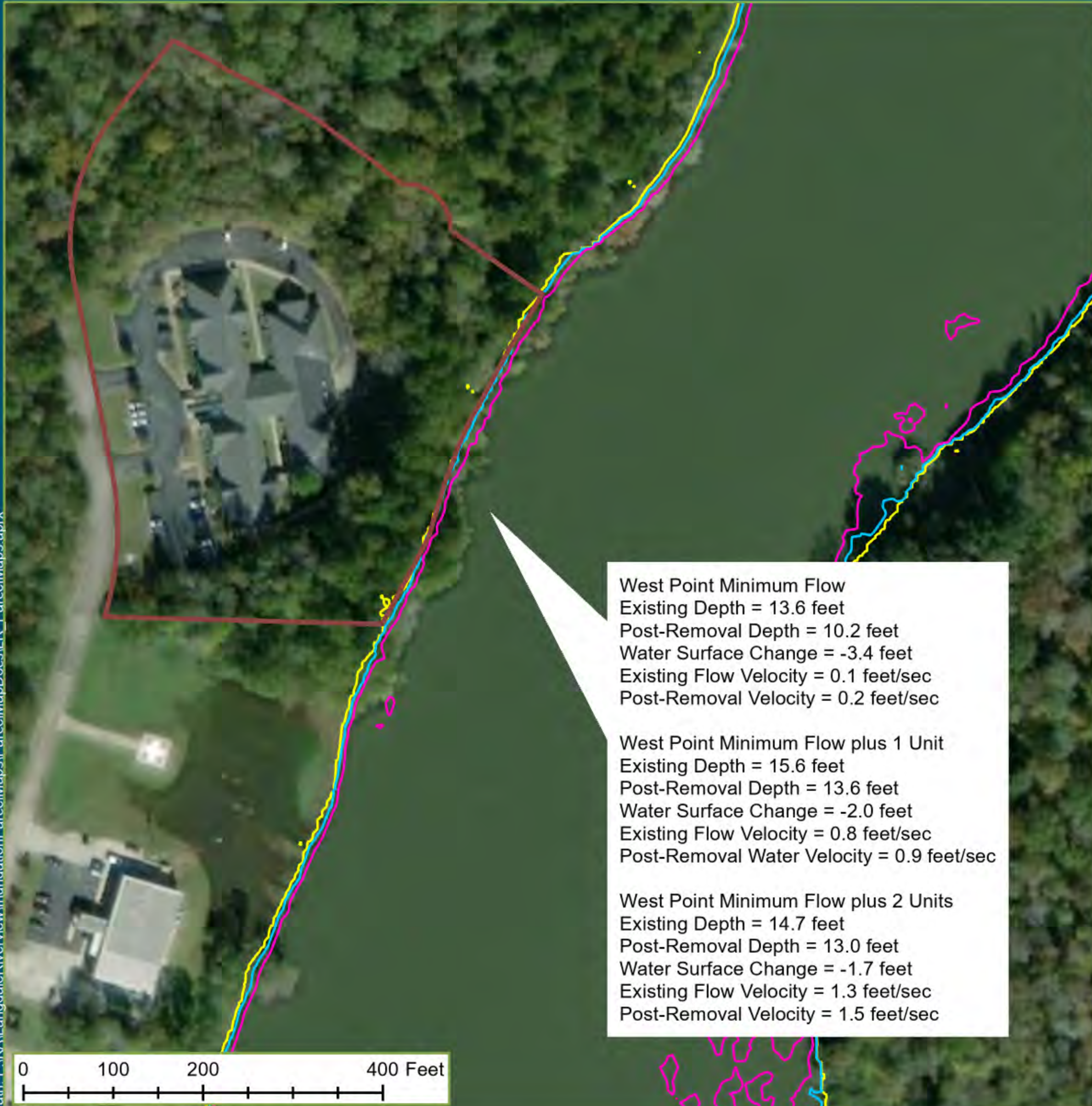

Parcel 027

Legend

Property Parcels

- Parcel 027

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

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PN: 0534039.01

Parcel 028

Legend

Property Parcels

- Parcel 026

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

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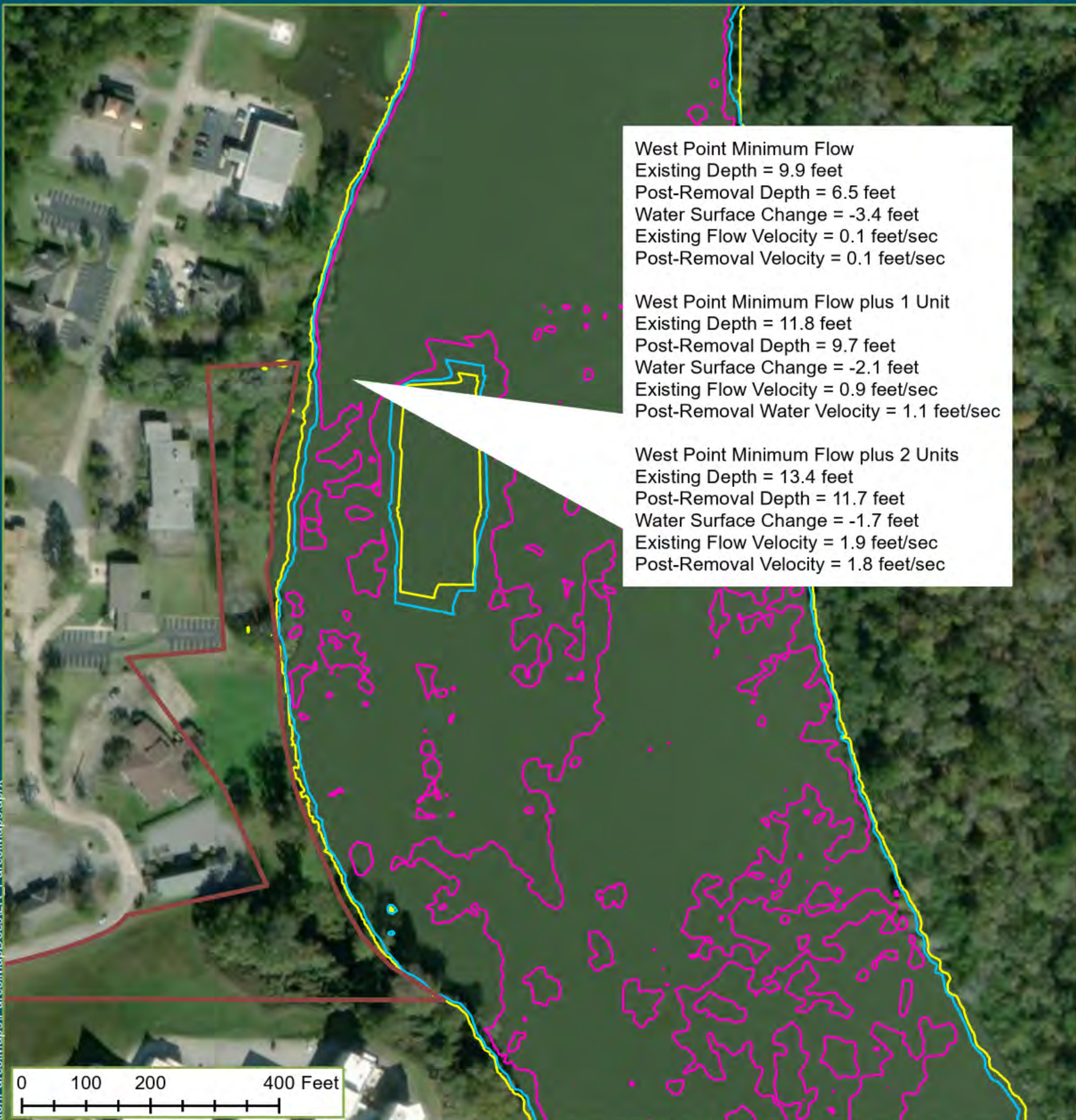
Source: Esri, DigitalGlobe, GeoEye, USDA, USGS

PN: 0534039.01

Parcel 029



Legend

Property Parcels

Parcel 028

Post-Dam Removal

West Point Minimum Flow

West Point Minimum Flow plus 1 Unit

West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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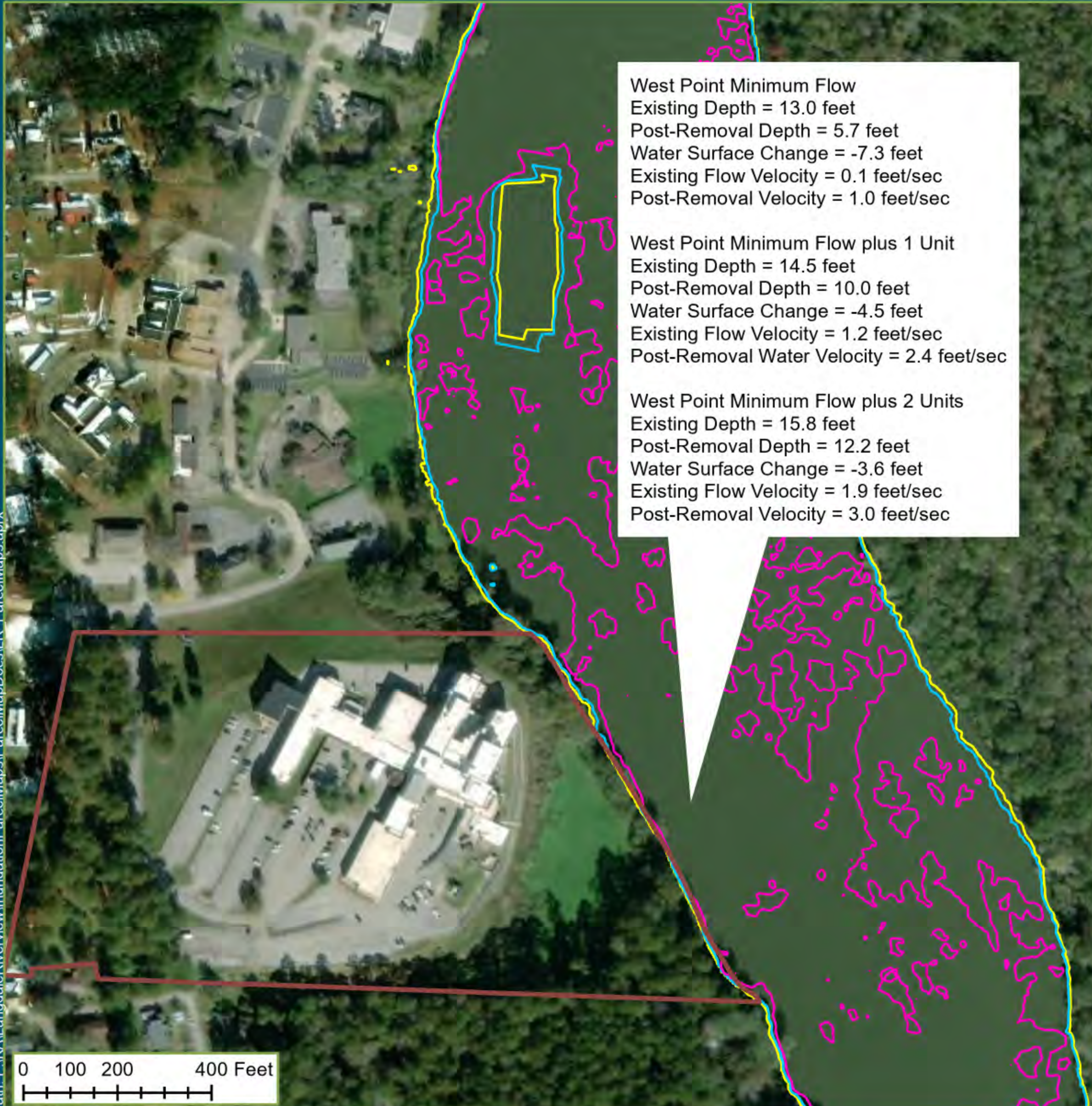

Parcel 030

Legend

Property Parcels

- Parcel 030

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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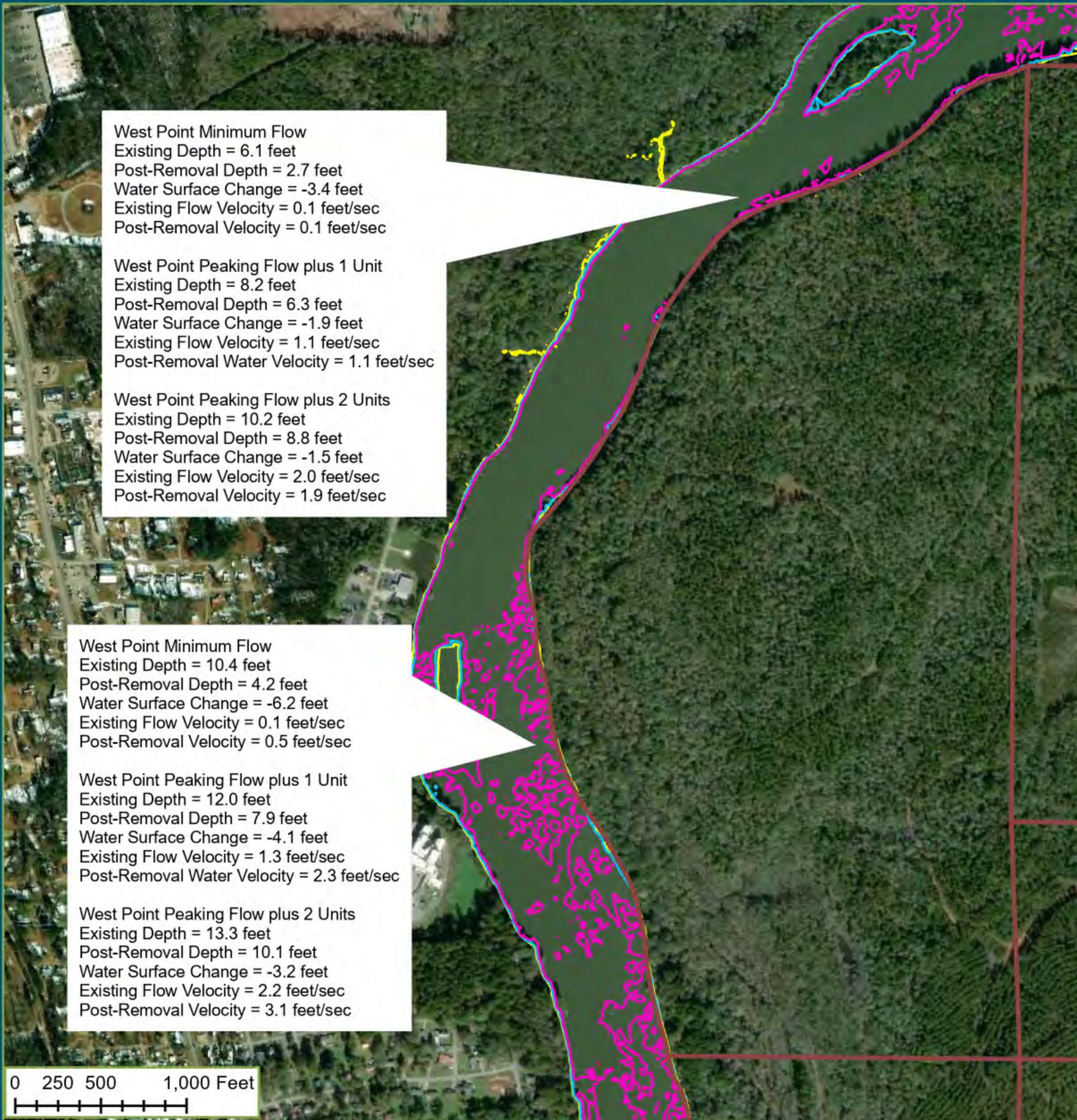
PN: 0534039.01

Parcel 031A



Legend

Property Parcels

Parcel 031

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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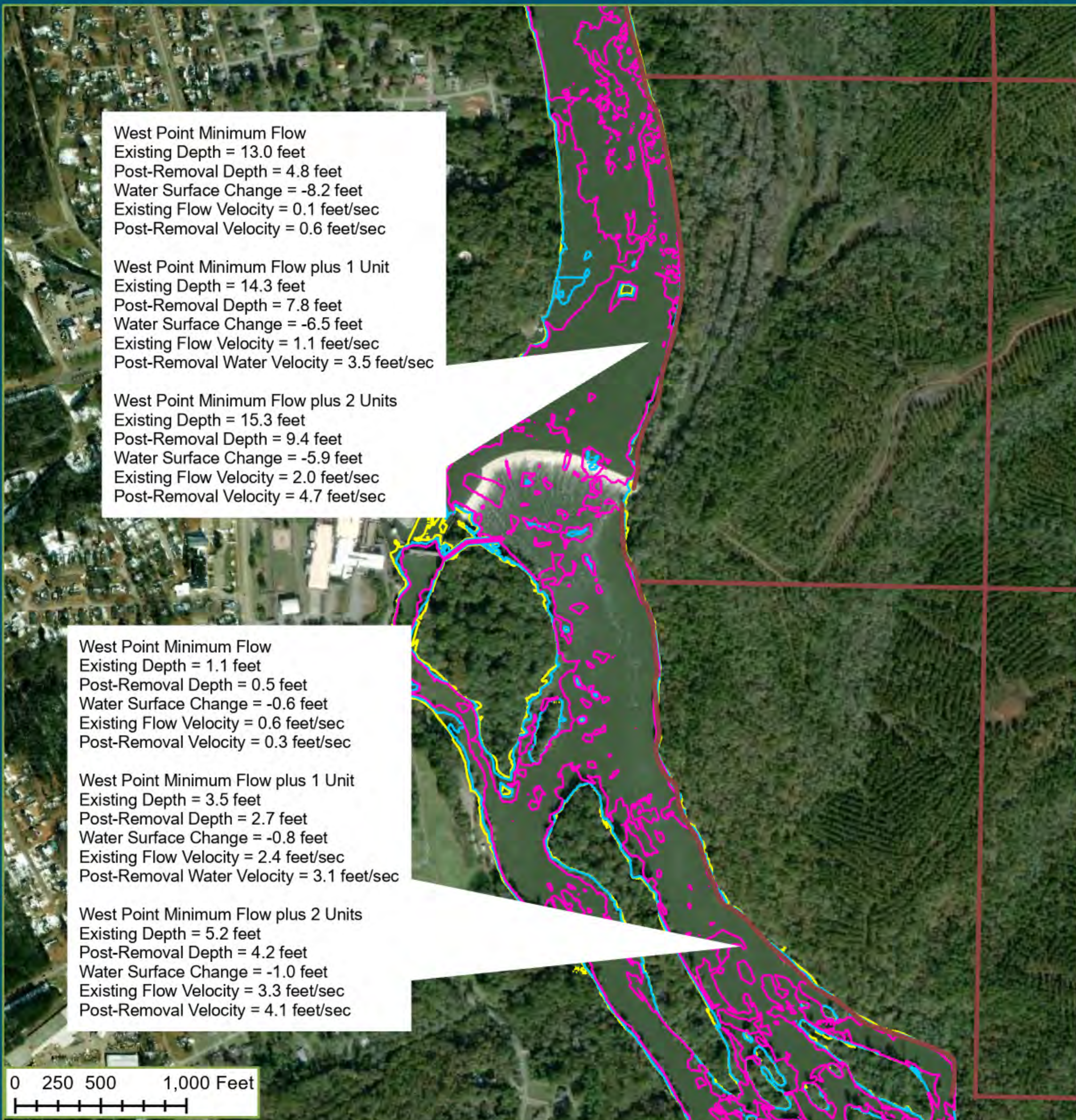
PN: 0534039.01

Parcel 031B



Legend

Property Parcels

Parcel 031

Post-Dam Removal

West Point Minimum Flow

West Point Minimum Flow plus 1 Unit

West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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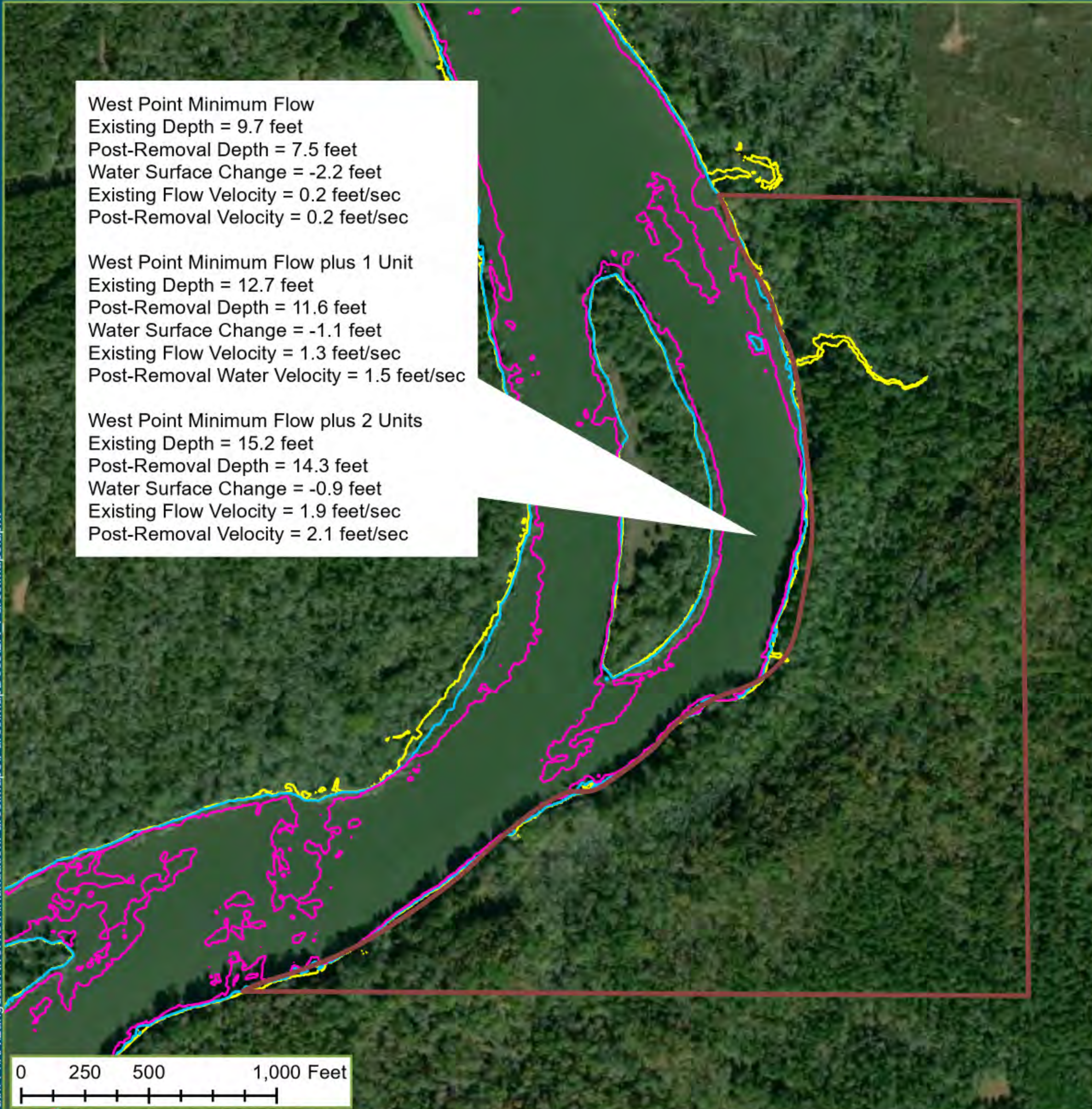

Parcel 032

Legend

Property Parcels

- Parcel 032

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-17-2020	MPH	04-17-2020

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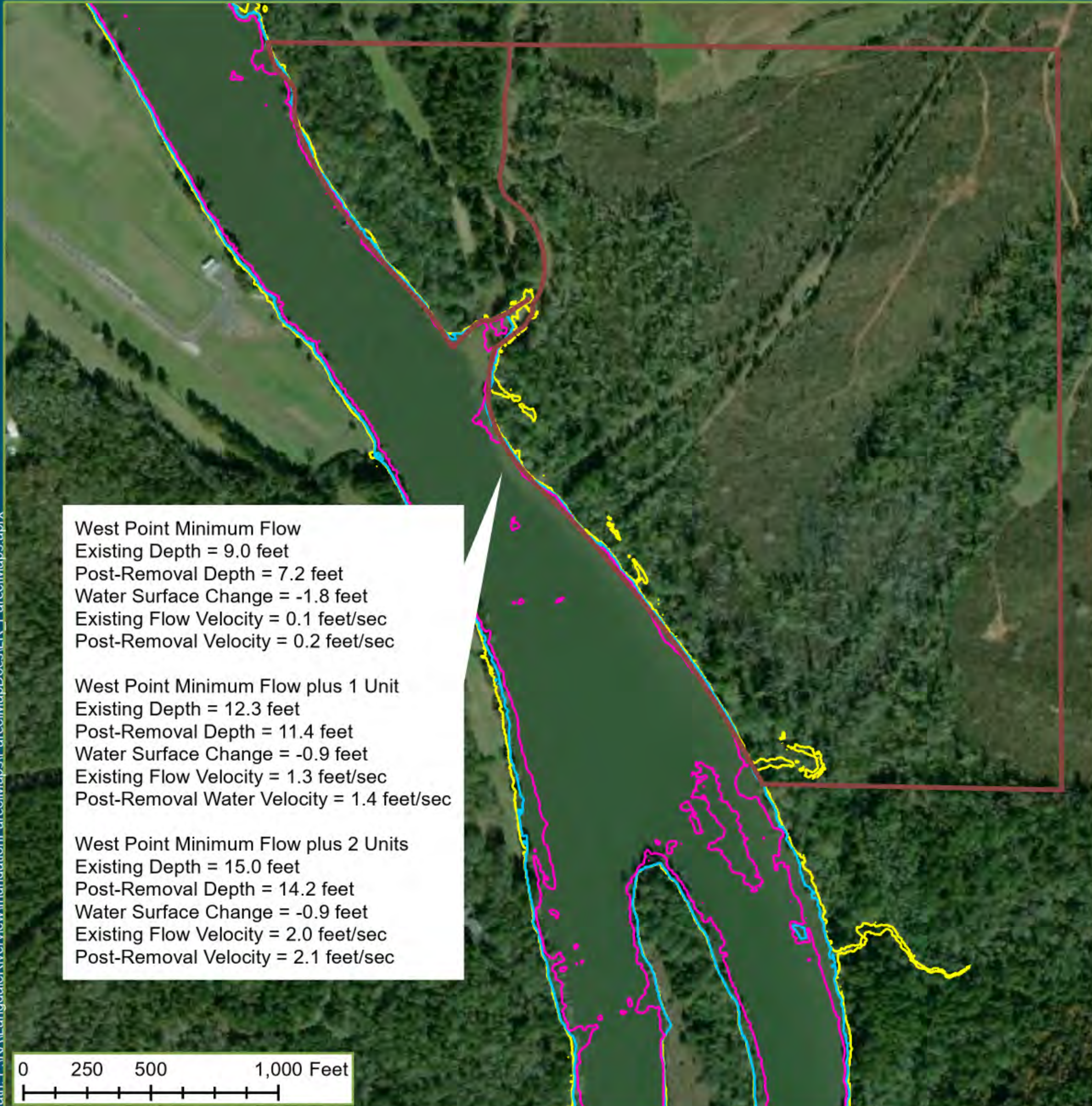
Source: Esri, DigitalGlobe, GeoEye, USDA, USGS



Parcel 033

Legend

Property Parcels

Parcel 033

Post-Dam Removal

West Point Minimum Flow
West Point Minimum Flow plus 1 Unit
West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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Date Printed: 4/17/2020

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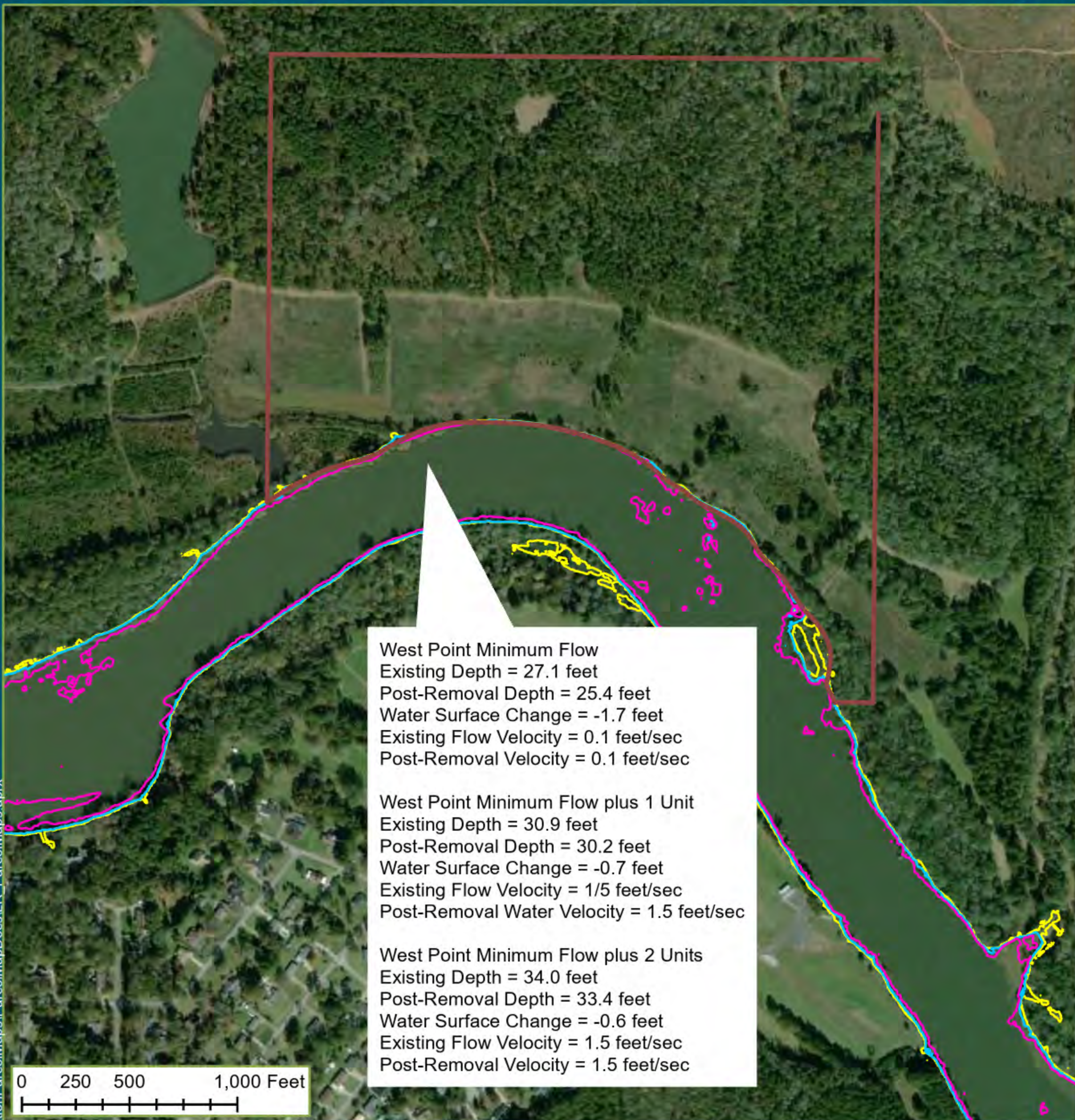
PN: 0534039.01

Parcel 034



Legend

Property Parcels

Parcel 034

Post-Dam Removal

West Point Minimum Flow
West Point Minimum Flow plus 1 Unit
West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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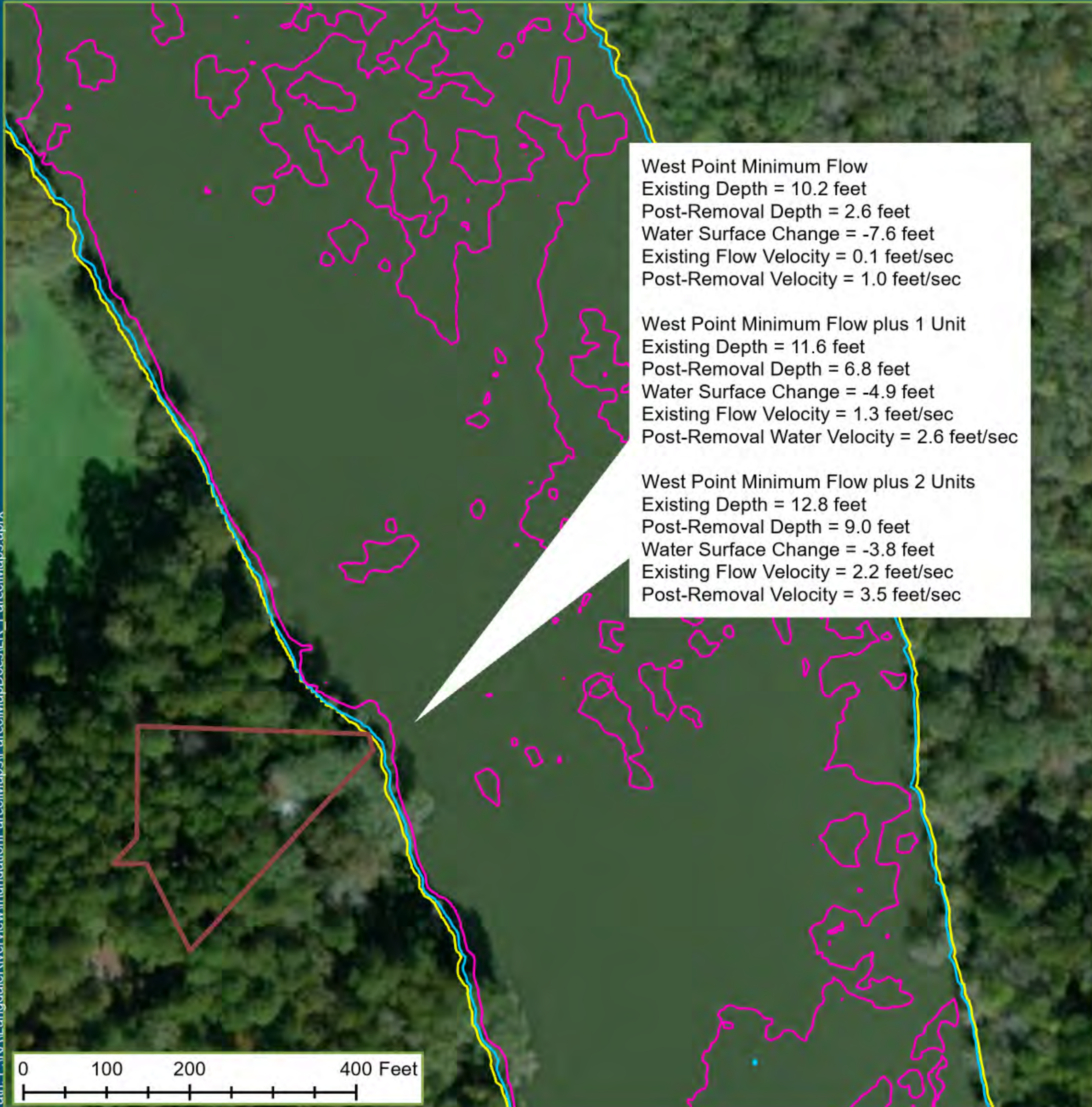

Parcel 035

Legend

Property Parcels

Parcel 035

Post-Dam Removal

West Point Minimum Flow
West Point Minimum Flow plus 1 Unit
West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-17-2020	MPH	04-17-2020

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PN: 0534039.01

Parcel 036

Legend

Property Parcels

Parcel 036

Post-Dam Removal

West Point Minimum Flow
West Point Minimum Flow plus 1 Unit
West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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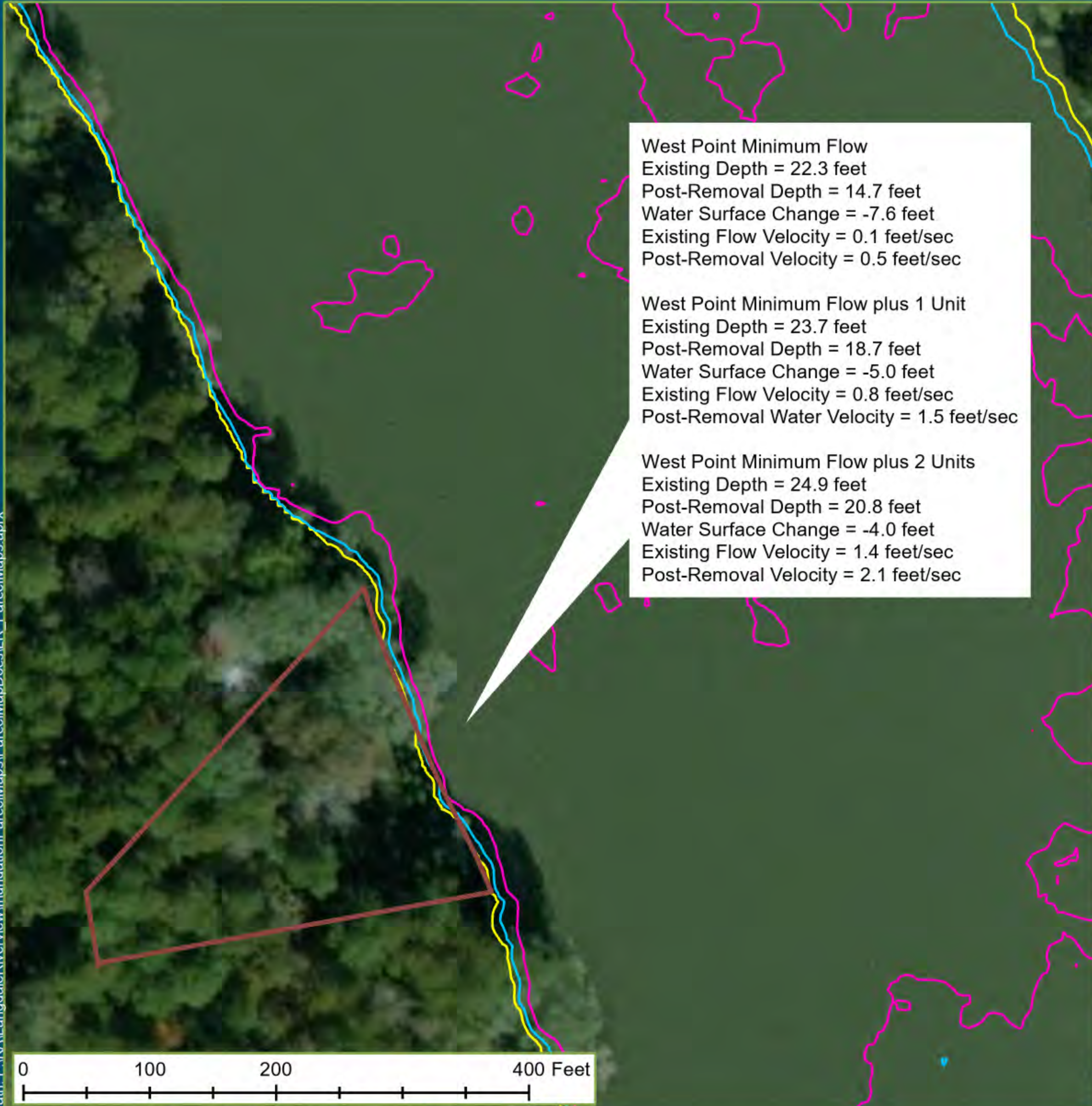
Source: Esri, DigitalGlobe, GeoEye, USDA, USGS

PN: 0534039.01



Parcel 037

Legend

Property Parcels

Parcel 037

Post-Dam Removal

West Point Minimum Flow
West Point Minimum Flow plus 1 Unit
West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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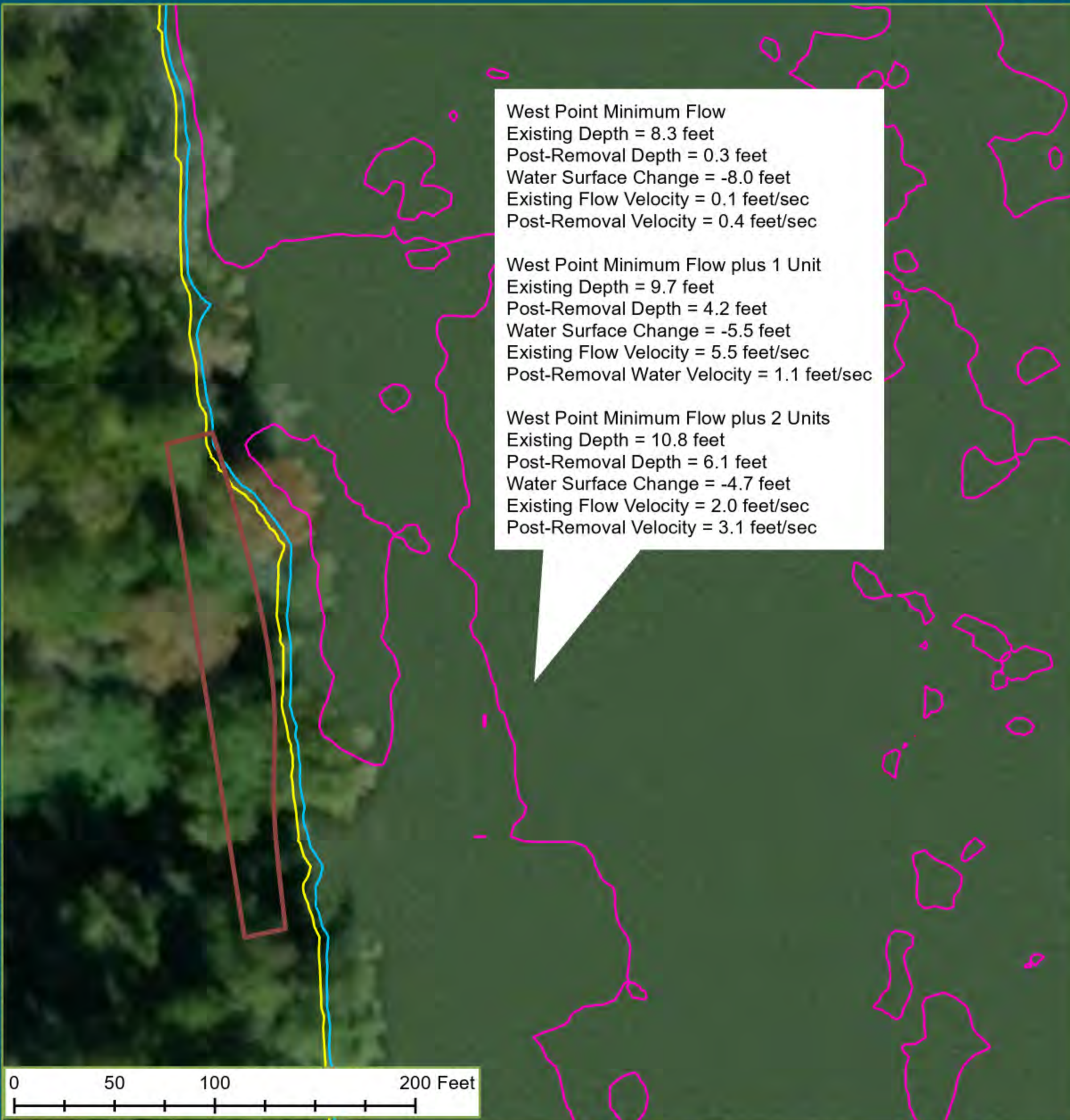
Date Printed: 4/17/2020

PN: 0534039.01

Parcel 039



Legend

Property Parcels

- Parcel 039

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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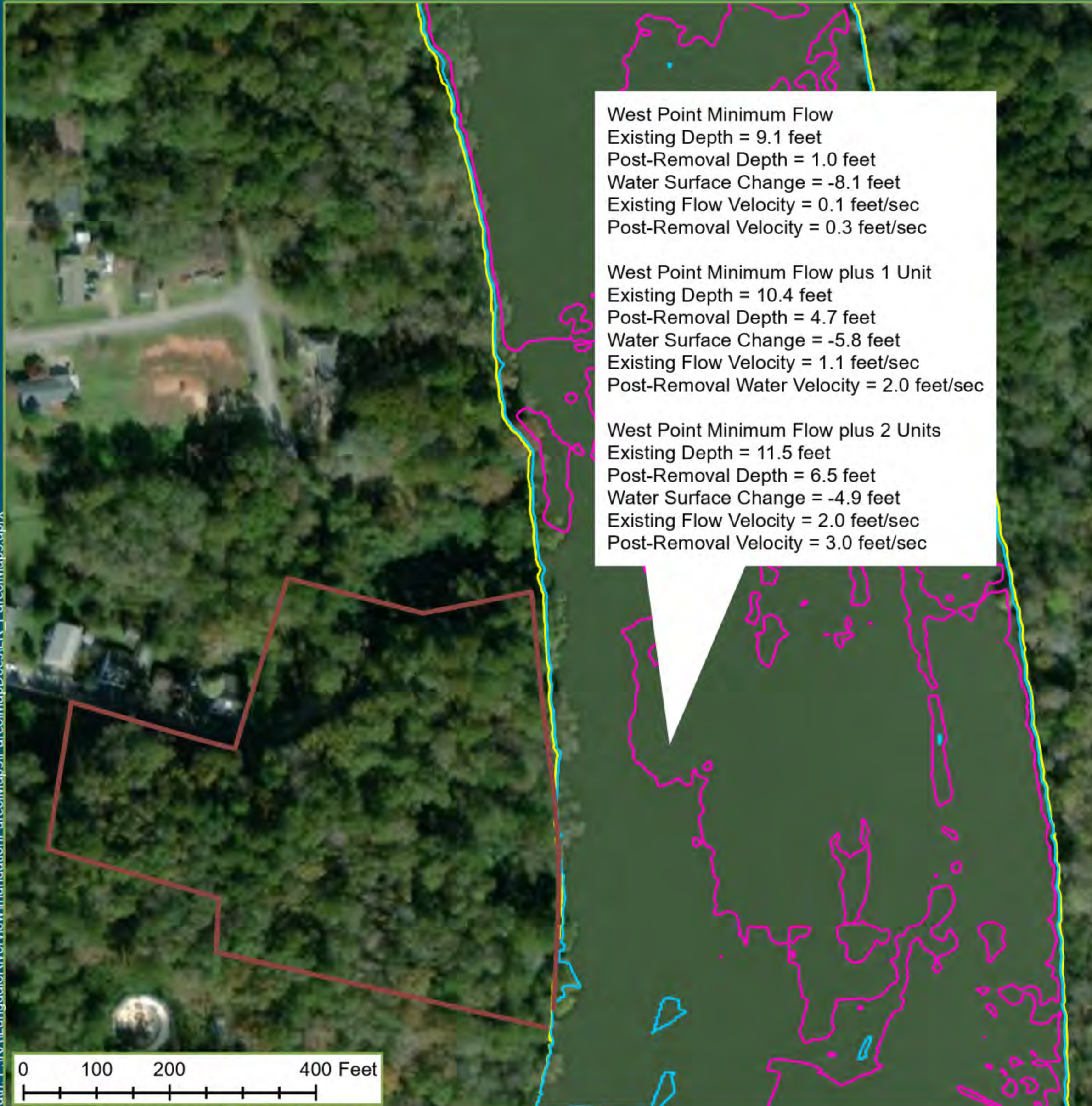
PN: 0534039.01



Parcel 040

Legend

Property Parcels

- Parcel 040

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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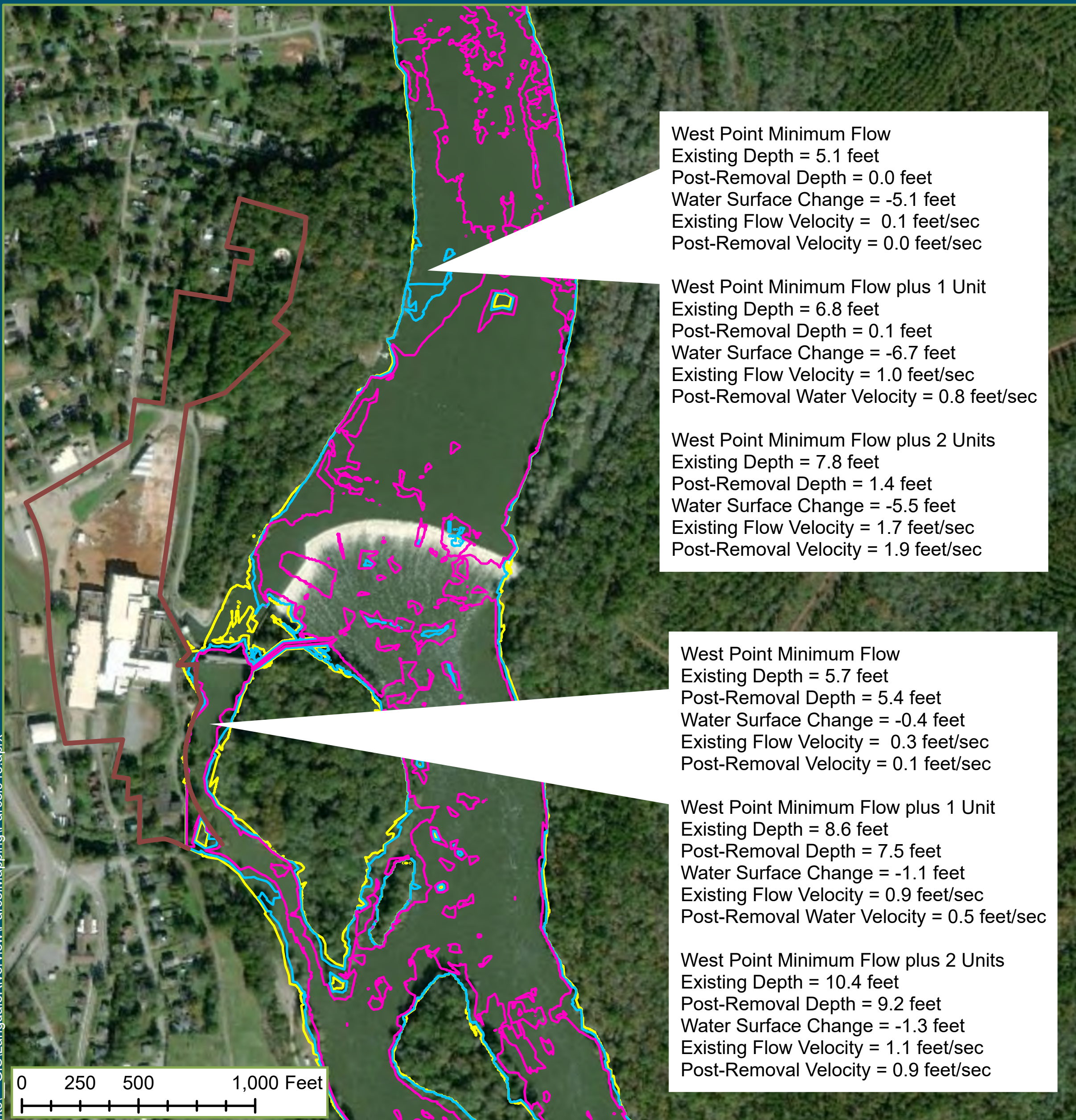
Date Printed: 4/17/2020

Source: Esri, DigitalGlobe, GeoEye, USDA, USGS

Parcel 043



Legend

Property Parcels

Parcel 043

Post-Dam Removal

West Point Minimum Flow

West Point Minimum Flow plus 1 Unit

West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
MPH	01-16-2020	ADY	01-16-2020

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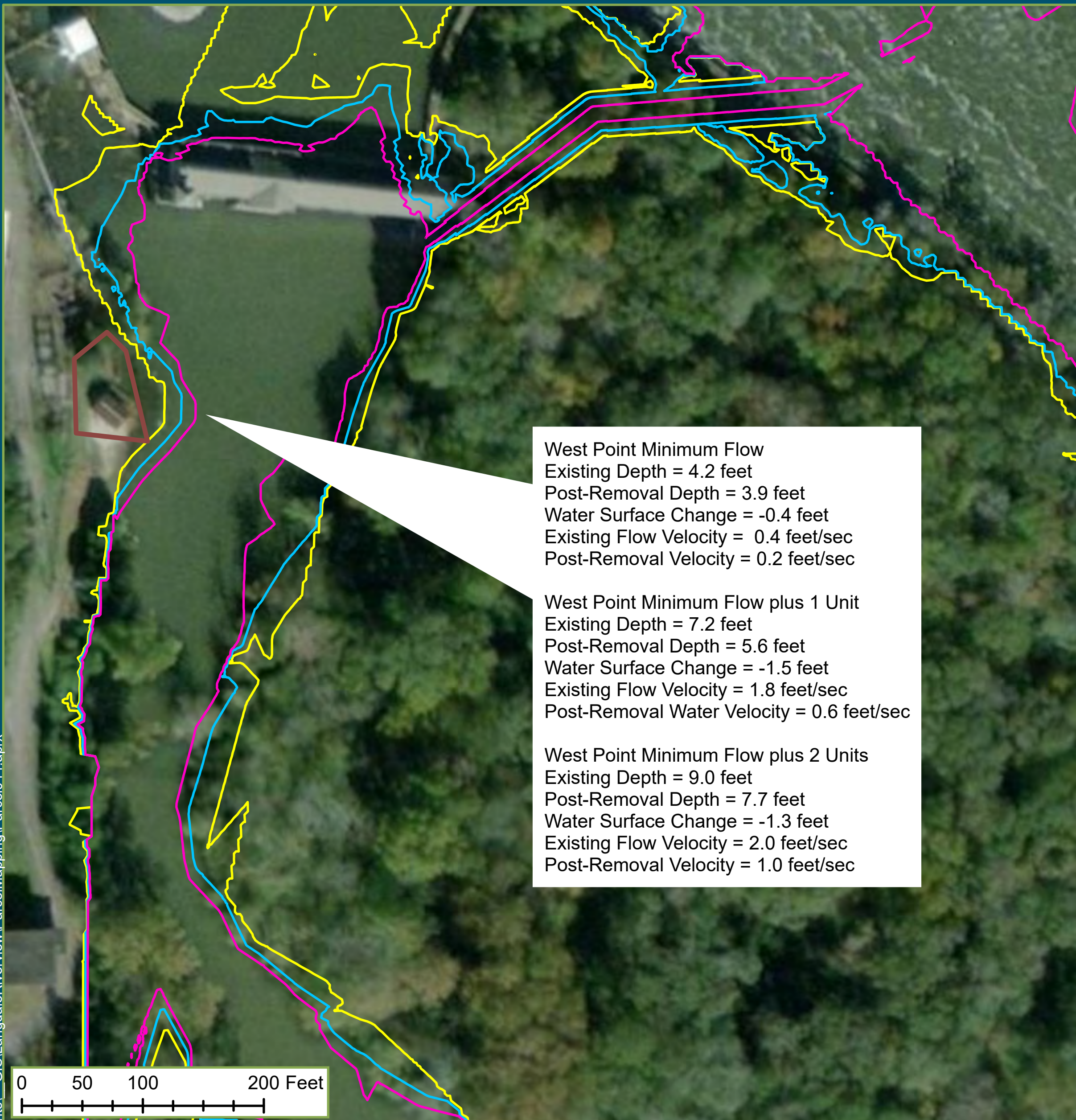
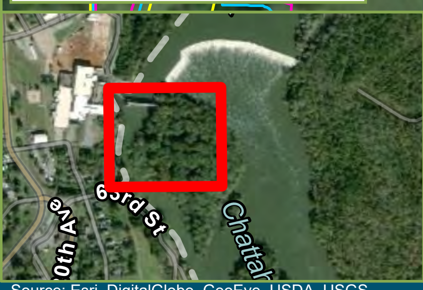
Date Printed: 4/9/2020

Source: Esri, DigitalGlobe, GeoEye, USDA, USGS

PN: 0534039.01

Parcel 044





Legend

Property Parcels

Parcel 044

Post-Dam Removal

West Point Minimum Flow

West Point Minimum Flow plus 1 Unit

West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
MPH	03-21-2020	ADY	03-30-2020

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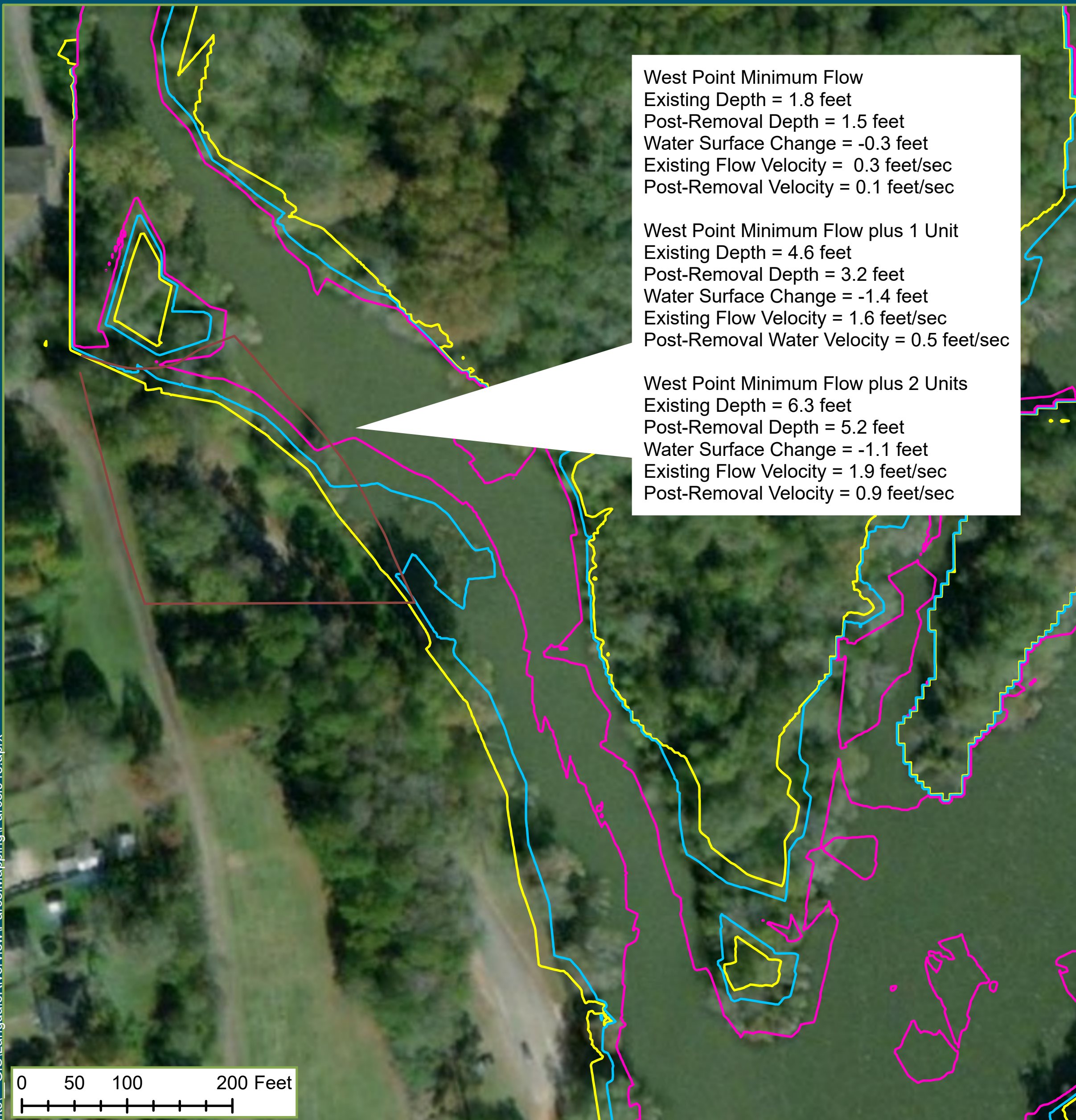
Date Printed: 4/9/2020

Source: Esri, DigitalGlobe, GeoEye, USDA, USGS

PN: 0534039.01

Parcel 045



Legend

Property Parcels

Parcel 045

Post-Dam Removal

West Point Minimum Flow

West Point Minimum Flow plus 1 Unit

West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
MPH	03-21-2020	ADY	03-30-2020

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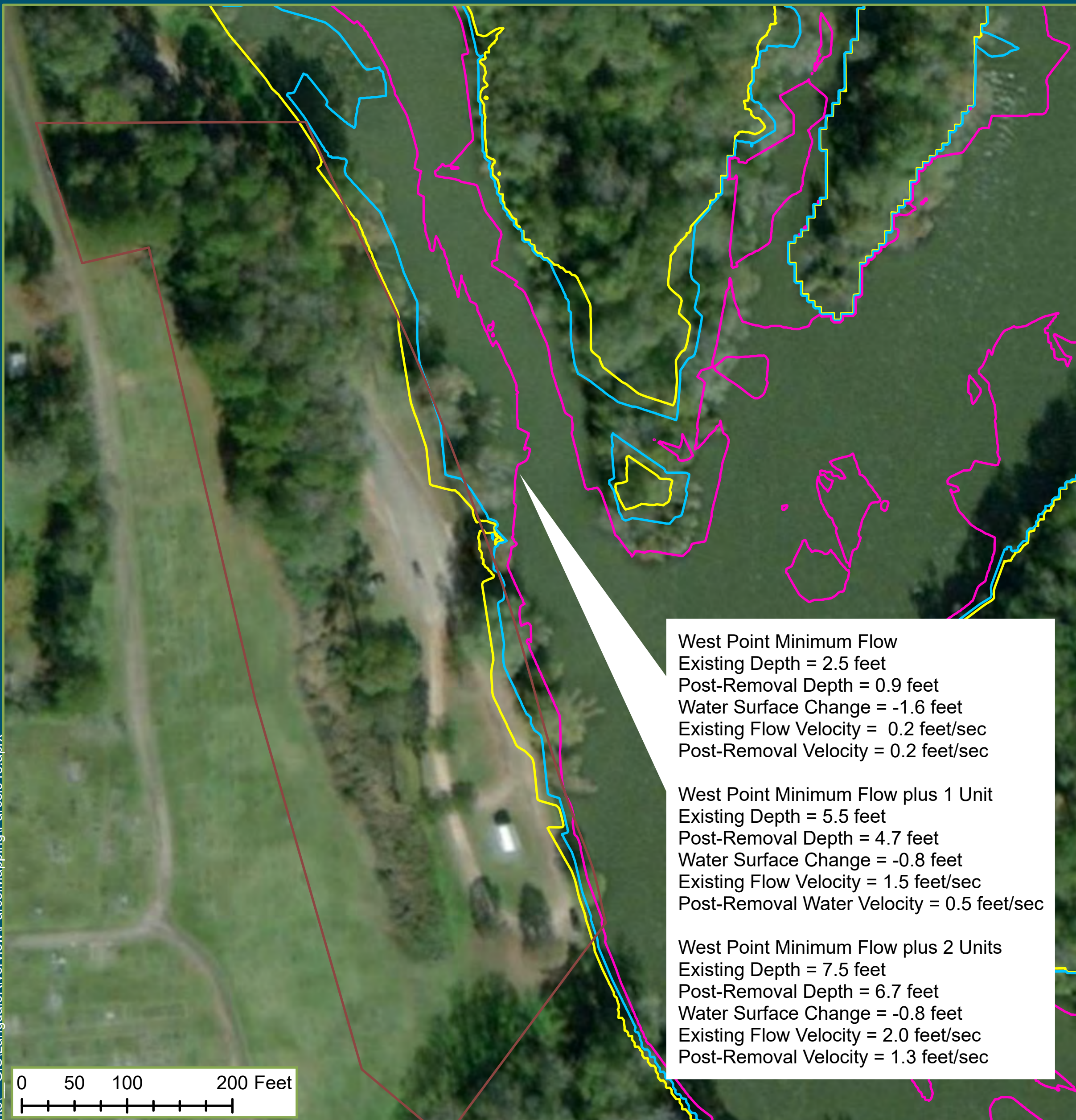
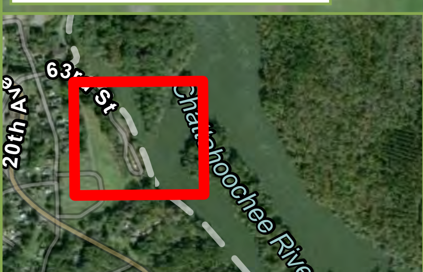
Date Printed: 4/9/2020

Source: Esri, DigitalGlobe, GeoEye, USDA, USGS

PN: 0534039.01

Parcel 048





Legend

Property Parcels

Parcel 048

Post-Dam Removal

West Point Minimum Flow

West Point Minimum Flow plus 1 Unit

West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
MPH	03-21-2020	ADY	03-30-2020

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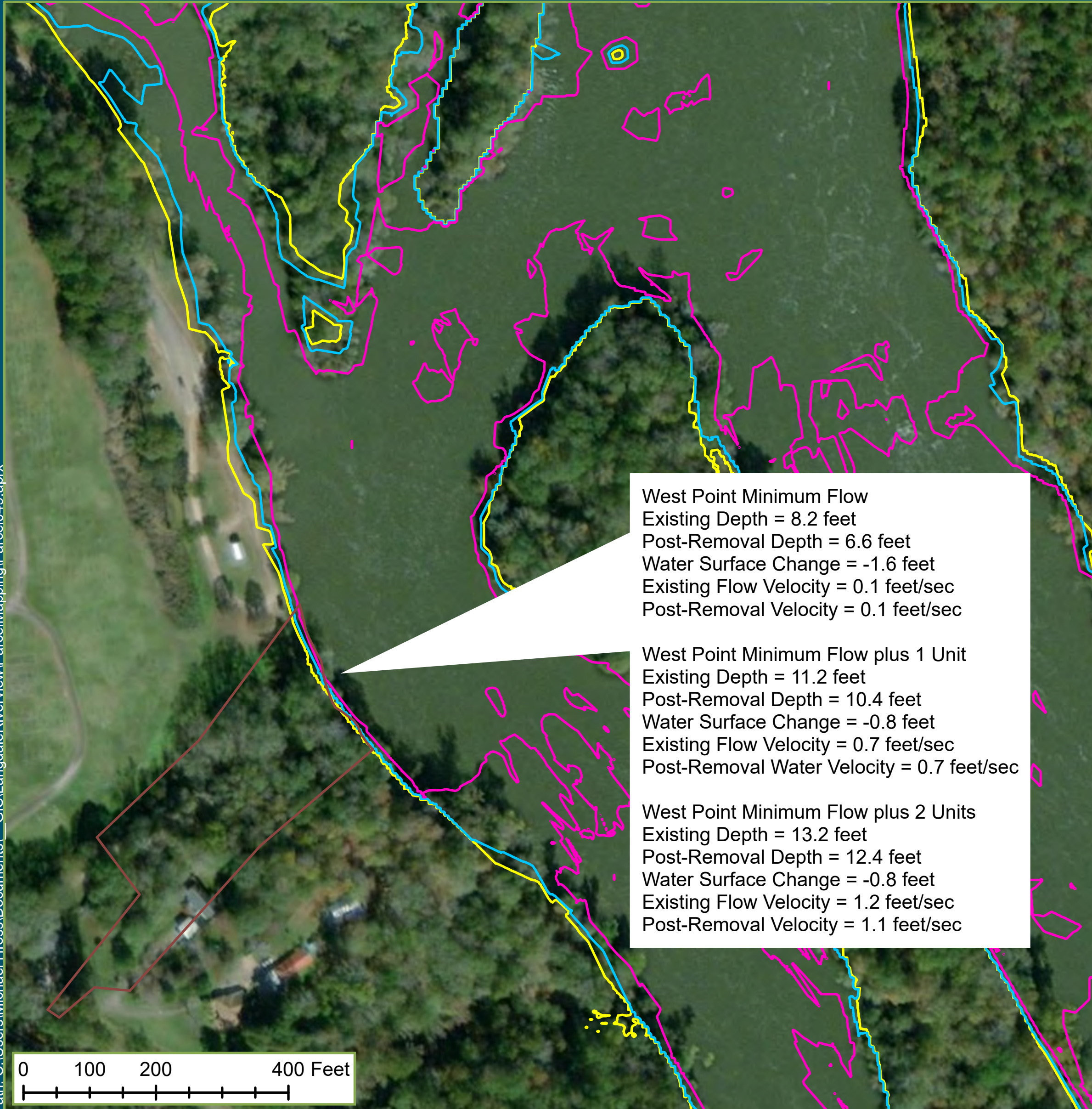
Source: Esri, DigitalGlobe, GeoEye, USDA, USGS

PN: 0534039.01



Source: Esri, DigitalGlobe, GeoEye, USDA, USGS

Path: C:\Users\Michael Hross\Documents__GIS\LangdaleRiverview\ParcelMapping\Parcel049.aprx

Parcel 049

Legend

Property Parcels

Parcel 049

Post-Dam Removal

West Point Minimum Flow
West Point Minimum Flow plus 1 Unit
West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
MPH	03-21-2020	ADY	03-30-2020

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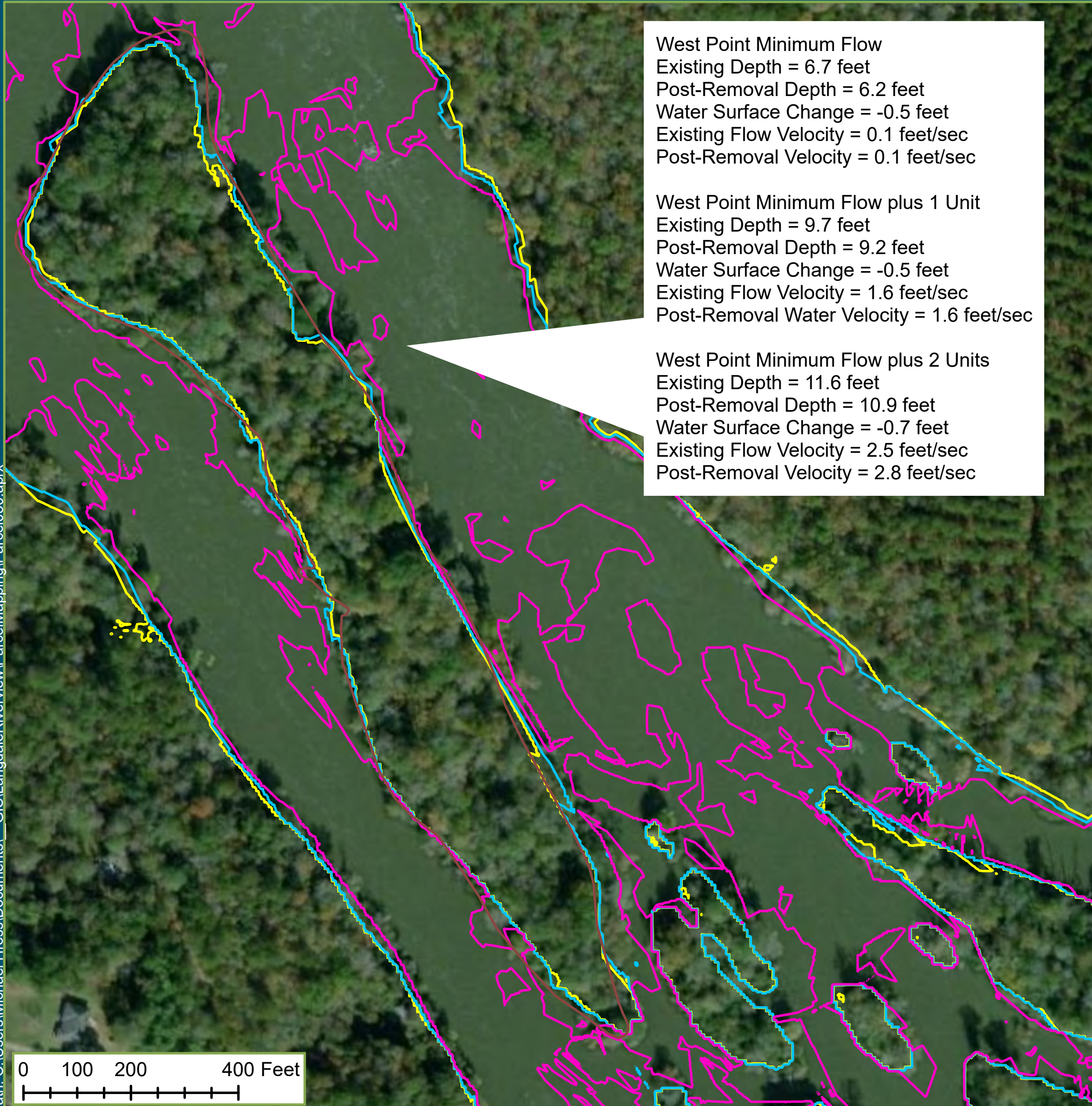

Parcel 050

Legend

Property Parcels

- Parcel 050

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
MPH	03-21-2020	ADY	03-30-2020

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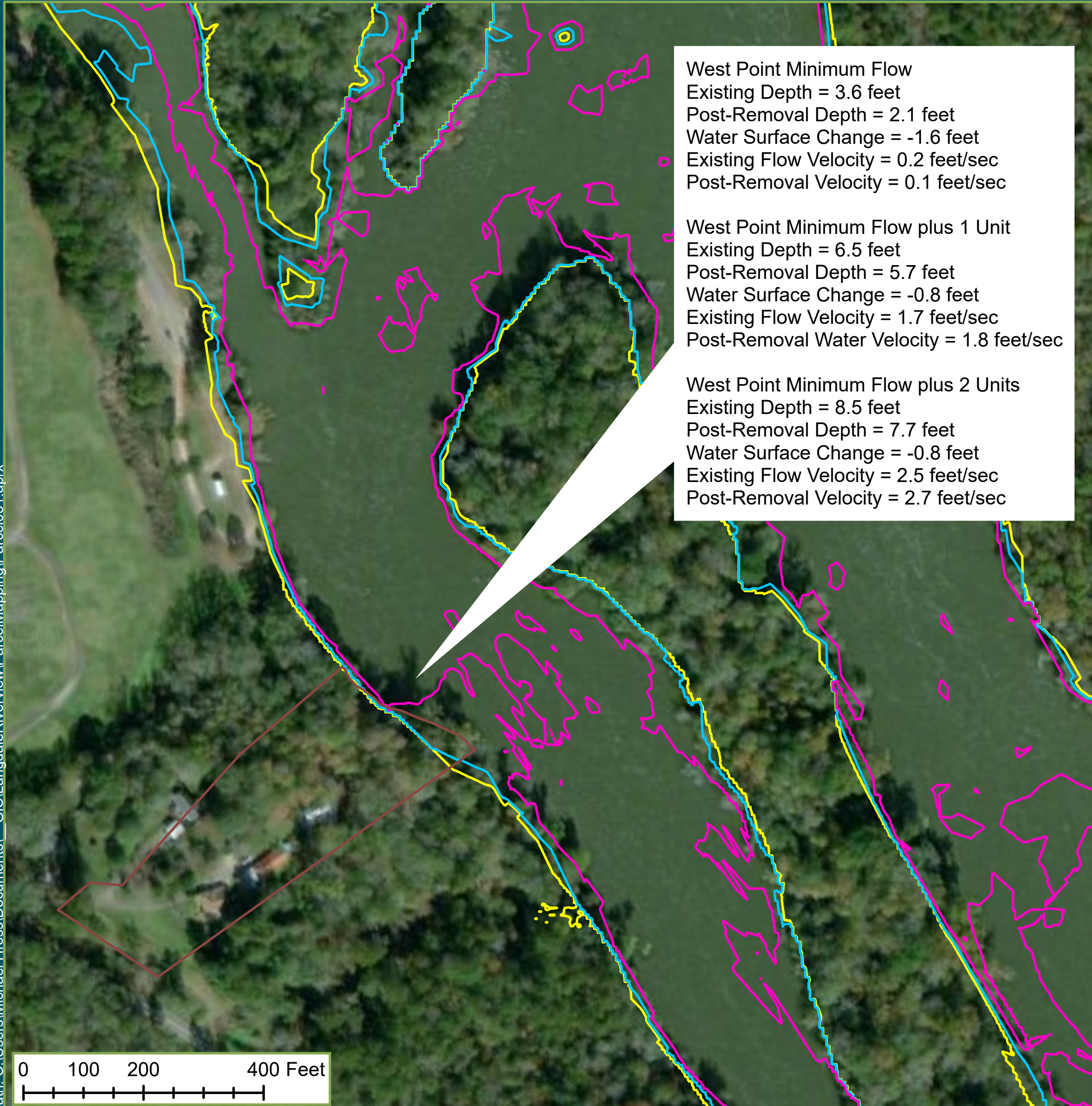
PN: 0534039.01



Parcel 051

Legend

Property Parcels

Parcel 051

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
MPH	03-21-2020	ADY	03-30-2020

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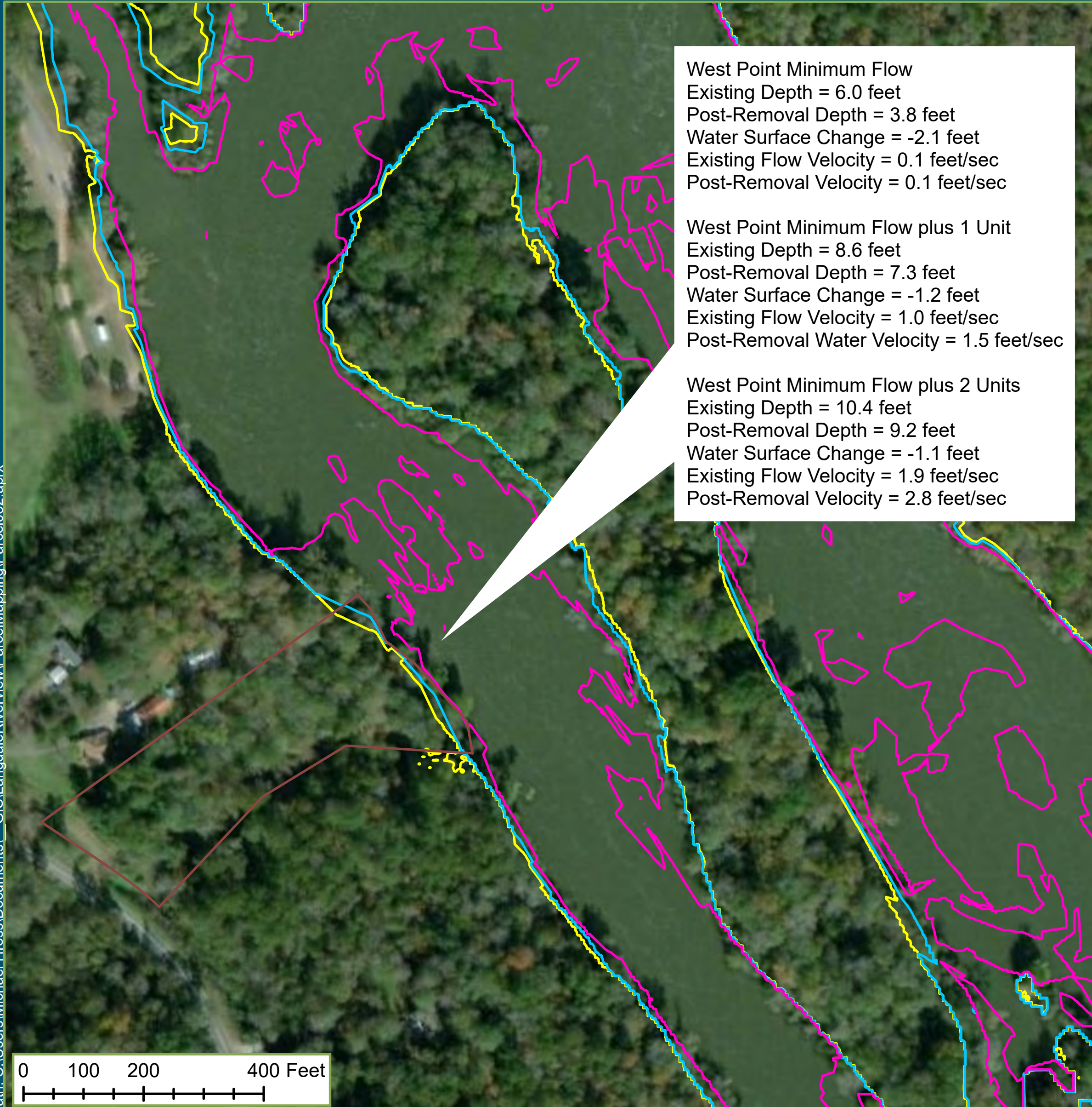
Date Printed: 4/14/2020



Parcel 052

Legend

Property Parcels

Parcel 052

Post-Dam Removal

West Point Minimum Flow
West Point Minimum Flow plus 1 Unit
West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
MPH	03-21-2020	ADY	03-30-2020

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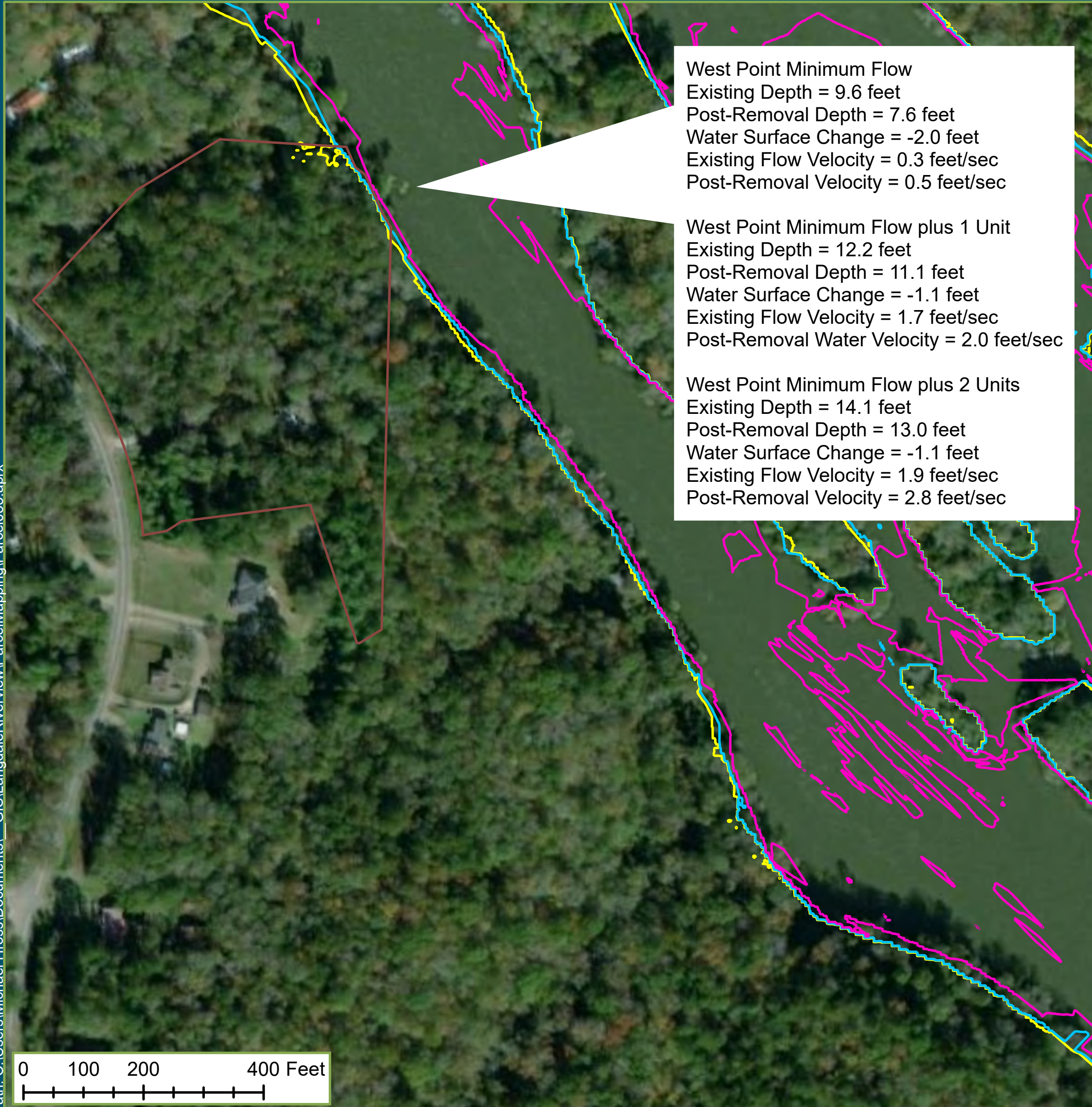
Date Printed: 4/14/2020

Source: Esri, DigitalGlobe, GeoEye, USDA, USGS

PN: 0534039.01



Parcel 053

Legend

Property Parcels

- Parcel 053

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
MPH	03-21-2020	ADY	03-30-2020

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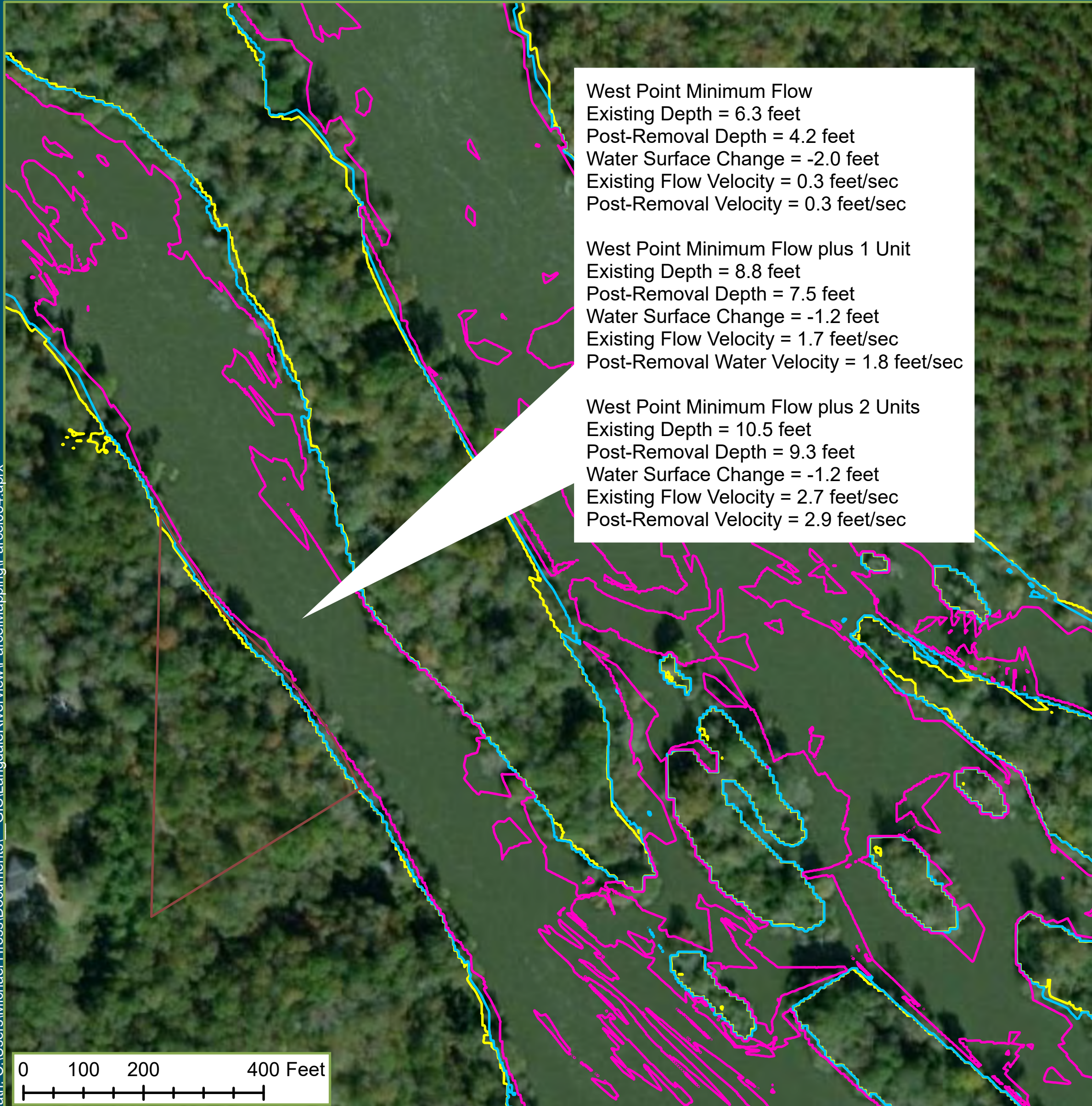
Source: Esri, DigitalGlobe, GeoEye, USDA, USGS

PN: 0534039.01



Parcel 054

Legend

Property Parcels

Parcel 054

Post-Dam Removal

West Point Minimum Flow
West Point Minimum Flow plus 1 Unit
West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
MPH	03-21-2020	ADY	03-30-2020

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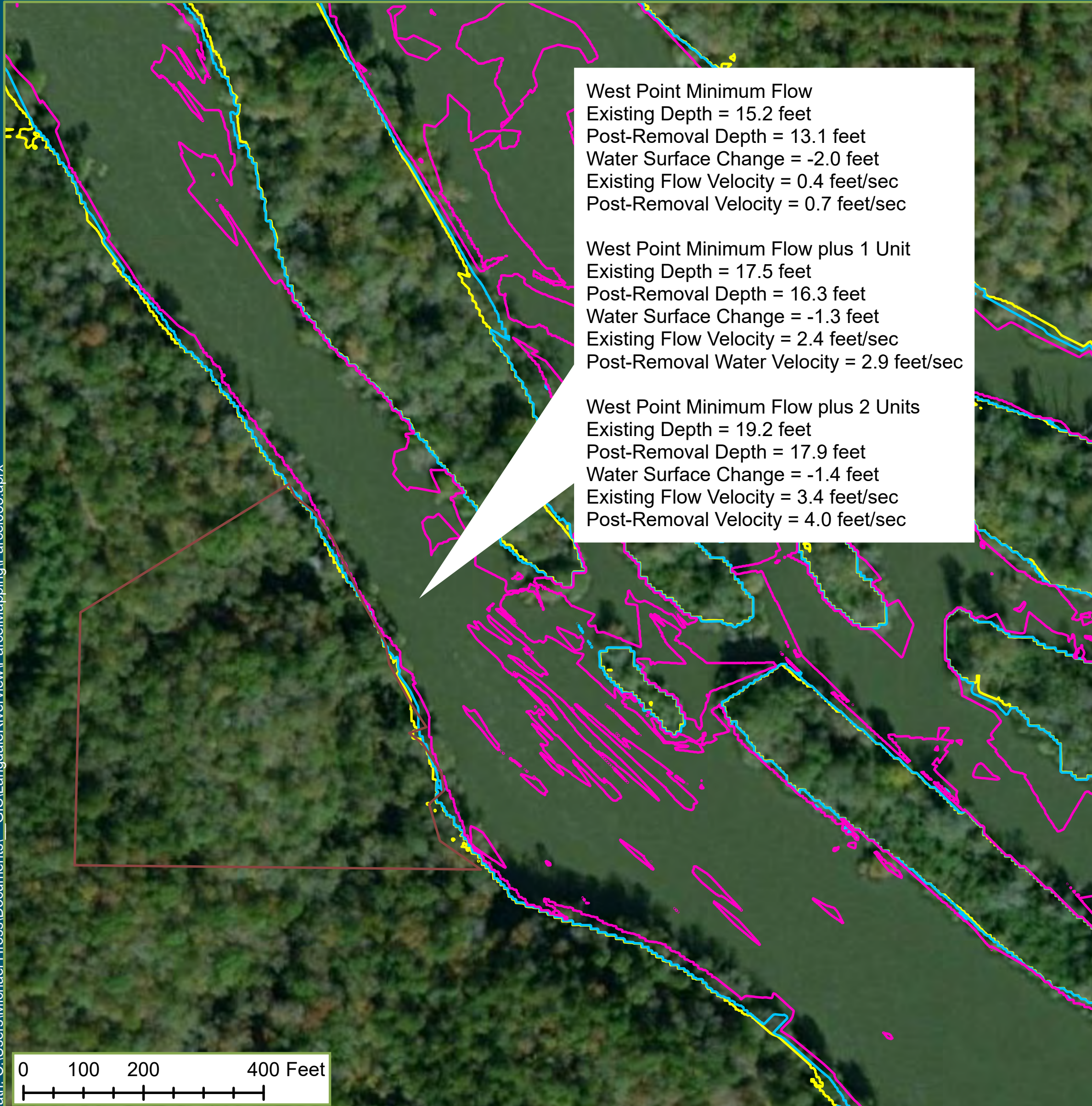
Source: Esri, DigitalGlobe, GeoEye, USDA, USGS

PN: 0534039.01



Path: C:\Users\Michael Hross\Documents_GIS\LangdaleRiverview\ParcelMapping\Parcel055.aprx

Source: Esri, DigitalGlobe, GeoEye, USDA, USGS

Parcel 055

Legend

Property Parcels

Parcel 055

Post-Dam Removal

West Point Minimum Flow
West Point Minimum Flow plus 1 Unit
West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
MPH	03-21-2020	ADY	03-30-2020

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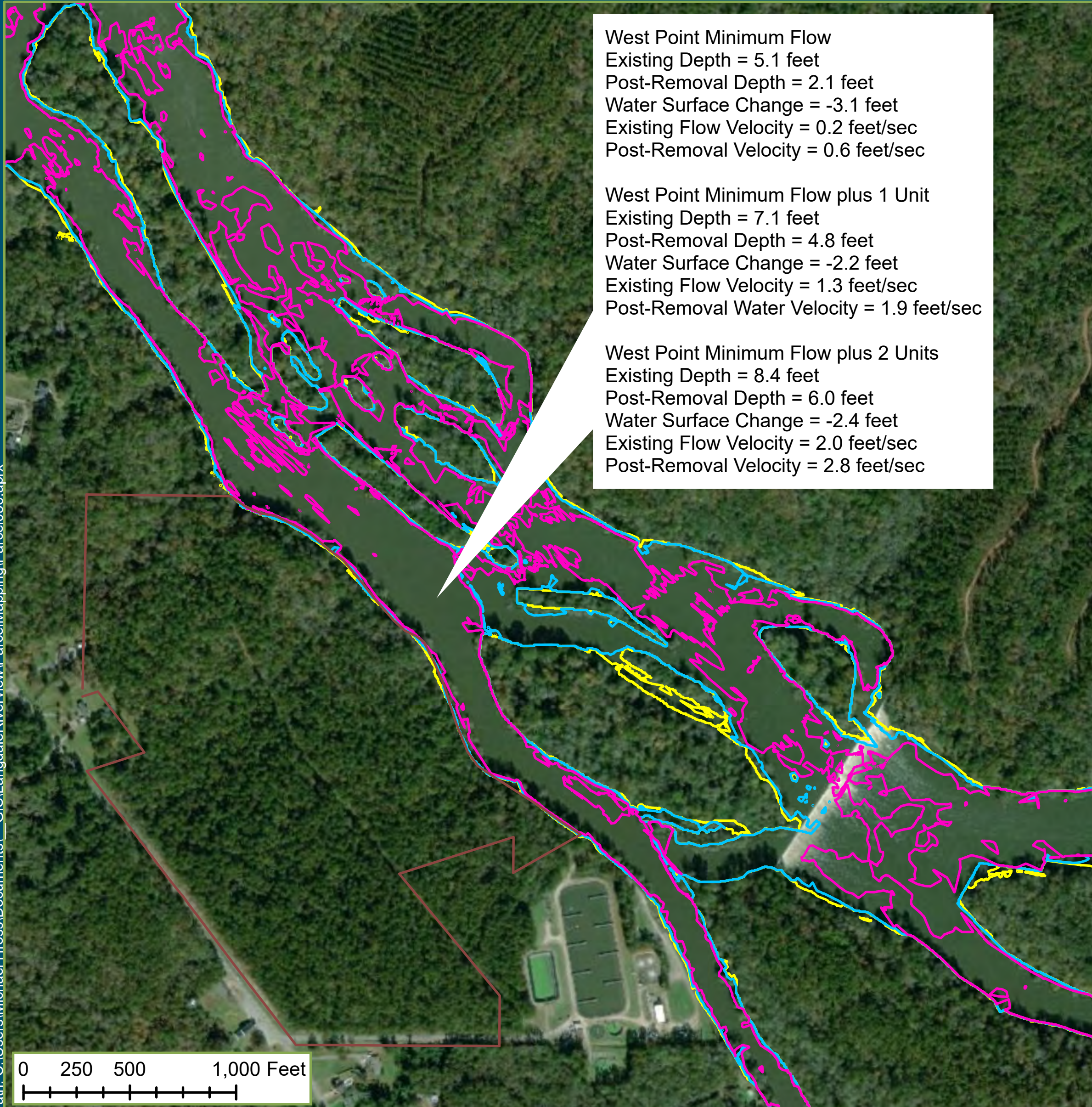

Parcel 056

Legend

Property Parcels

- Parcel 056

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
MPH	03-21-2020	ADY	03-30-2020

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PN: 0534039.01

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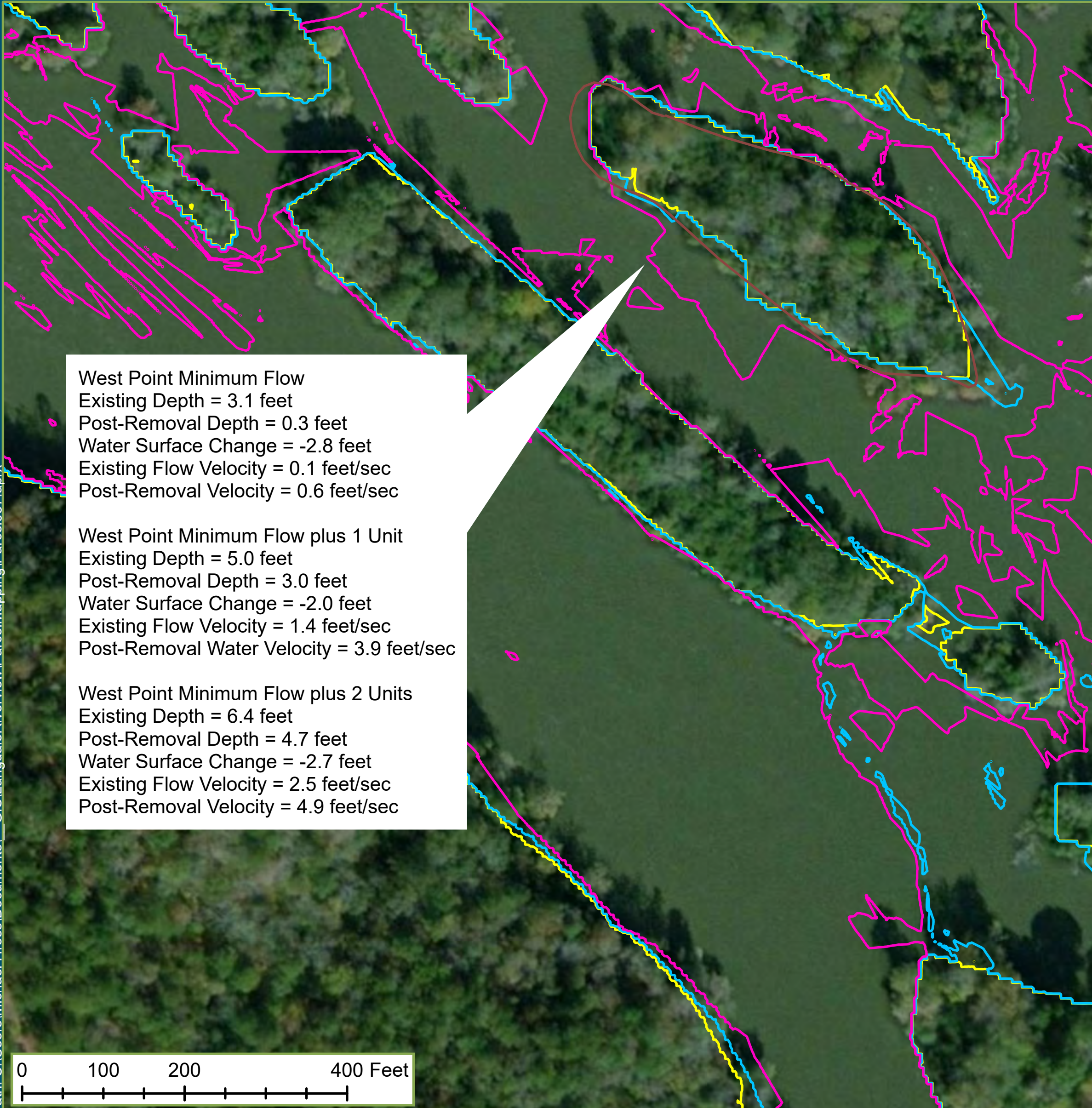
Date Printed: 4/14/2020



Parcel 057

Legend

Property Parcels

Parcel 057

Post-Dam Removal

West Point Minimum Flow

West Point Minimum Flow plus 1 Unit

West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

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MPH	03-21-2020	ADY	03-30-2020

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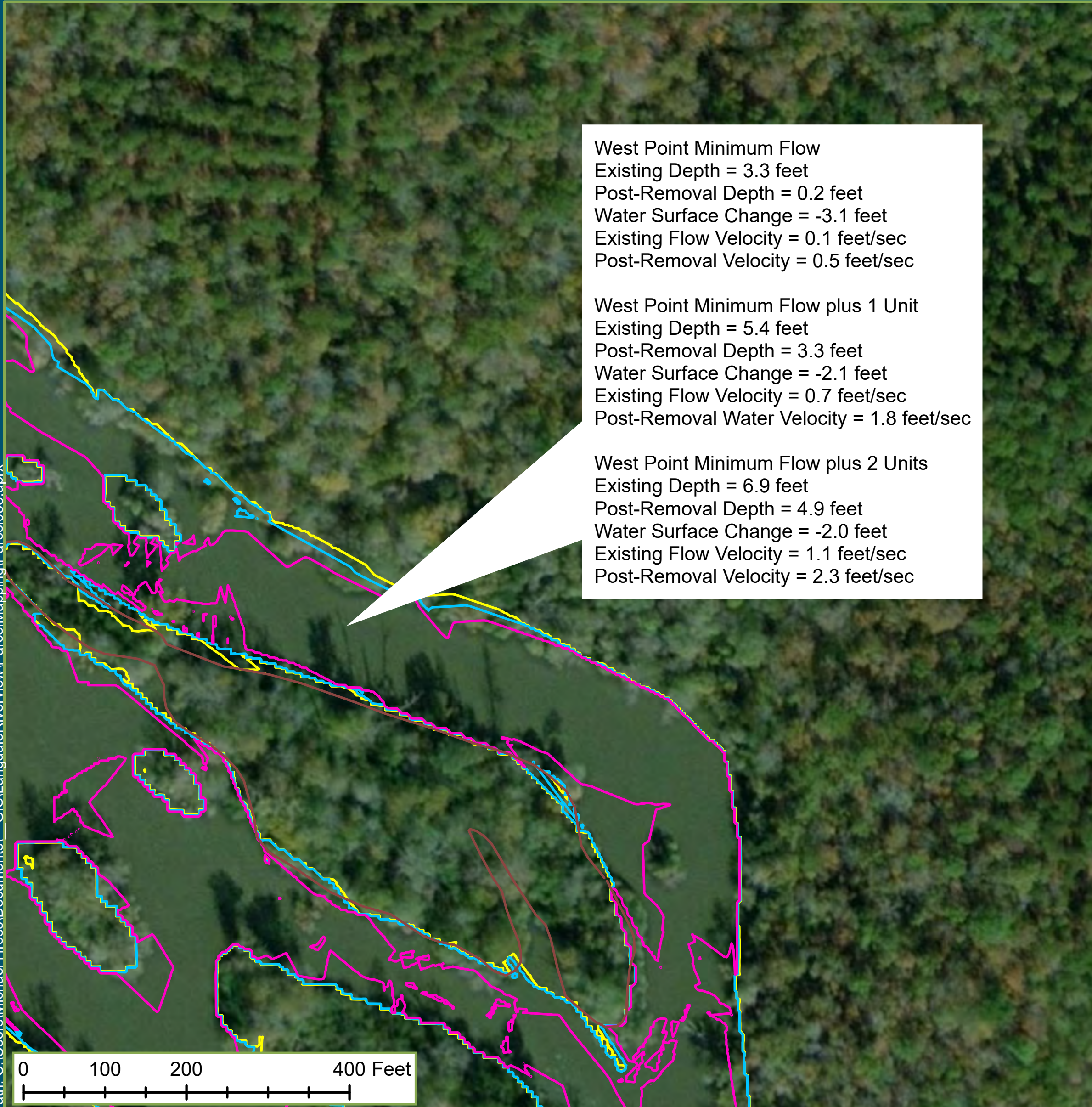
PN: 0534039.01



Parcel 058

Legend

Property Parcels

Parcel 058

Post-Dam Removal

West Point Minimum Flow
West Point Minimum Flow plus 1 Unit
West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
MPH	03-21-2020	ADY	03-30-2020

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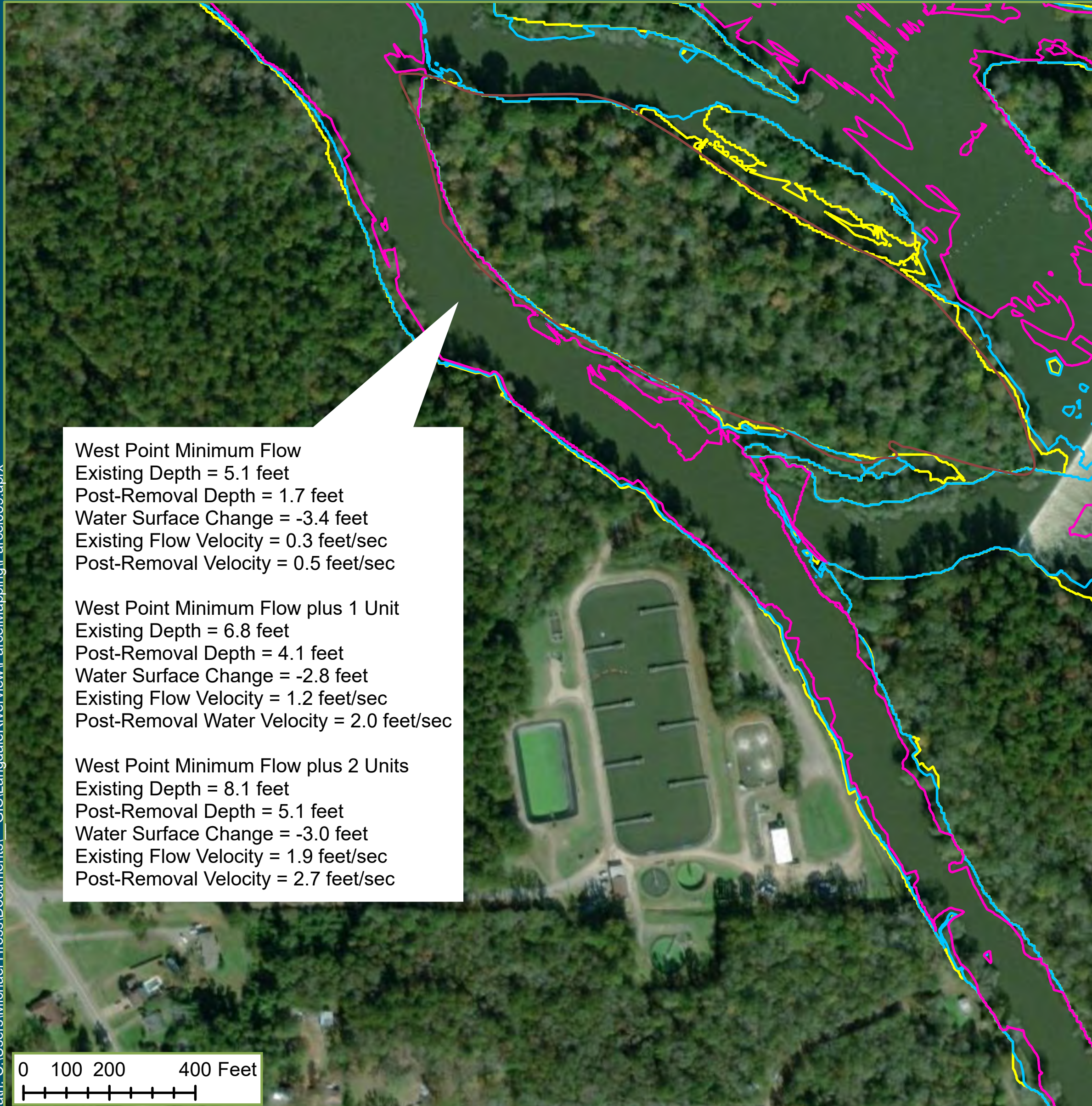
PN: 0534039.01



Parcel 059

Legend

Property Parcels

- Parcel 059

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
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Date Printed: 4/14/2020

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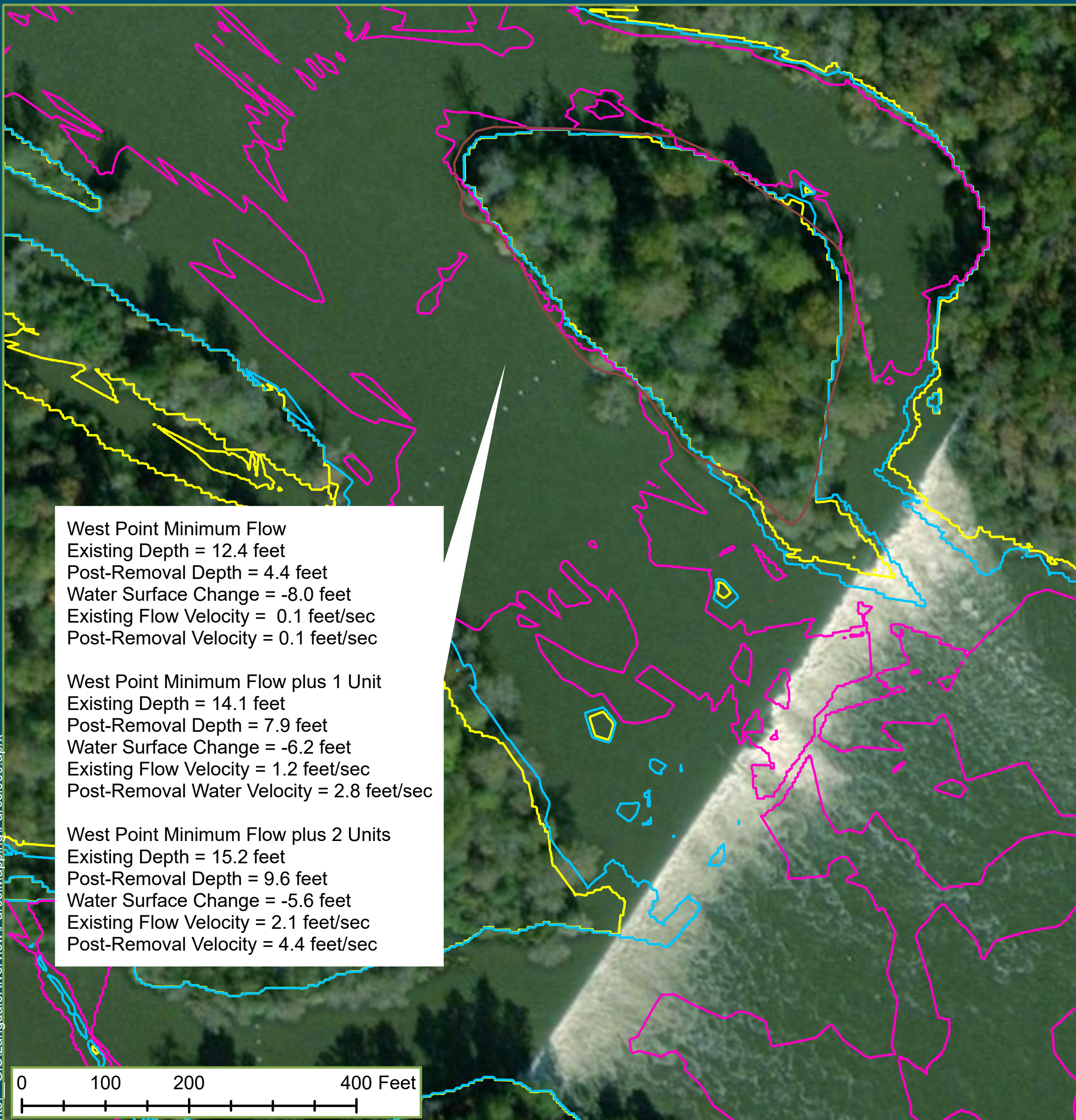
PN: 0534039.01

Parcel 060



Path: C:\Users\Michael Hross\Documents\GIS\LangdaleRiverview\ParcelMapping\Parcel060.aprx

Legend

Property Parcels

Parcel 060

Post-Dam Removal

West Point Minimum Flow

West Point Minimum Flow plus 1 Unit

West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

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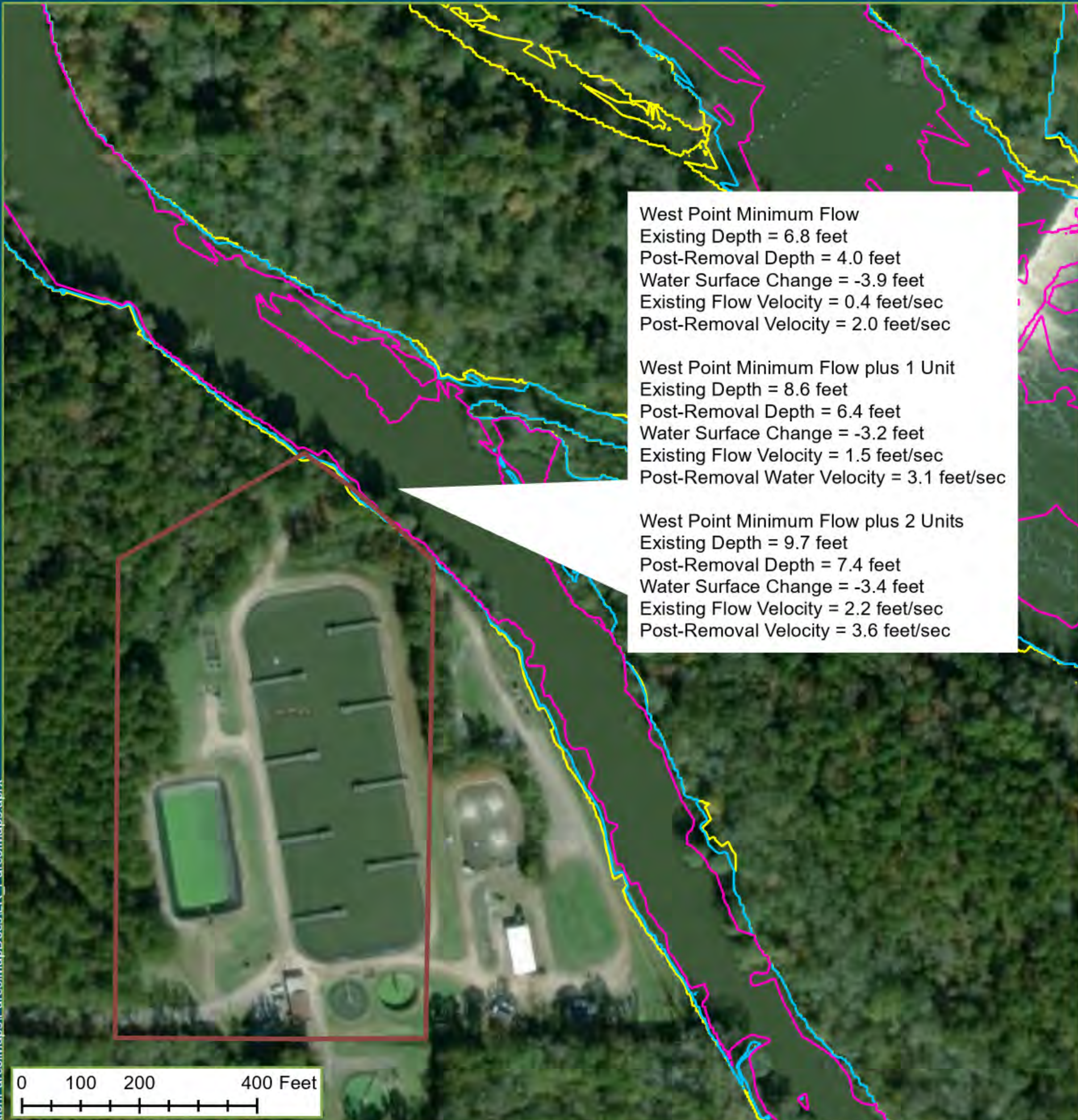
PN: 0534039.01

Parcel 063



Legend

Property Parcels

- Parcel 063

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

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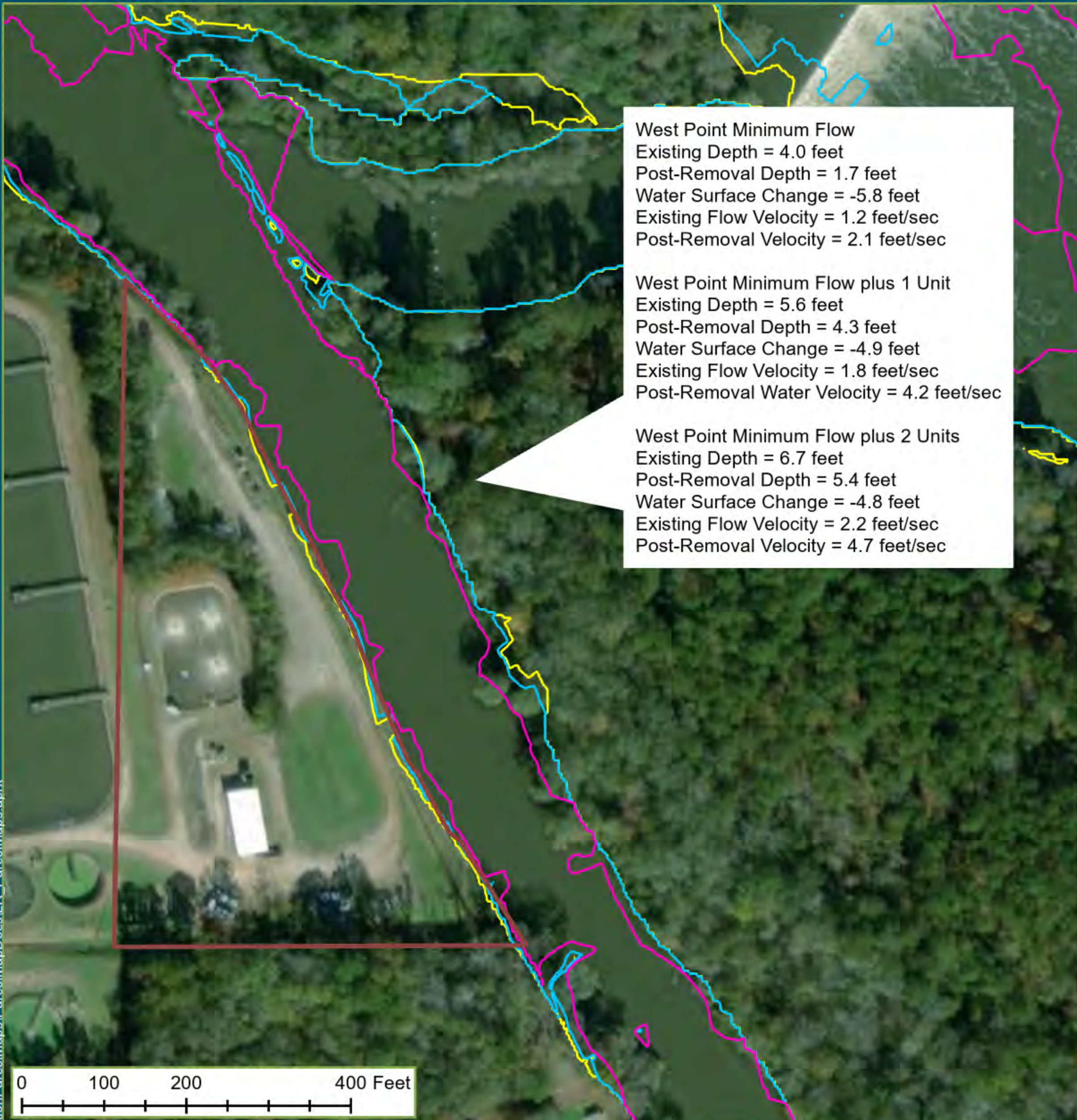
Parcel 064



Legend

Property Parcels

- Parcel 064

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

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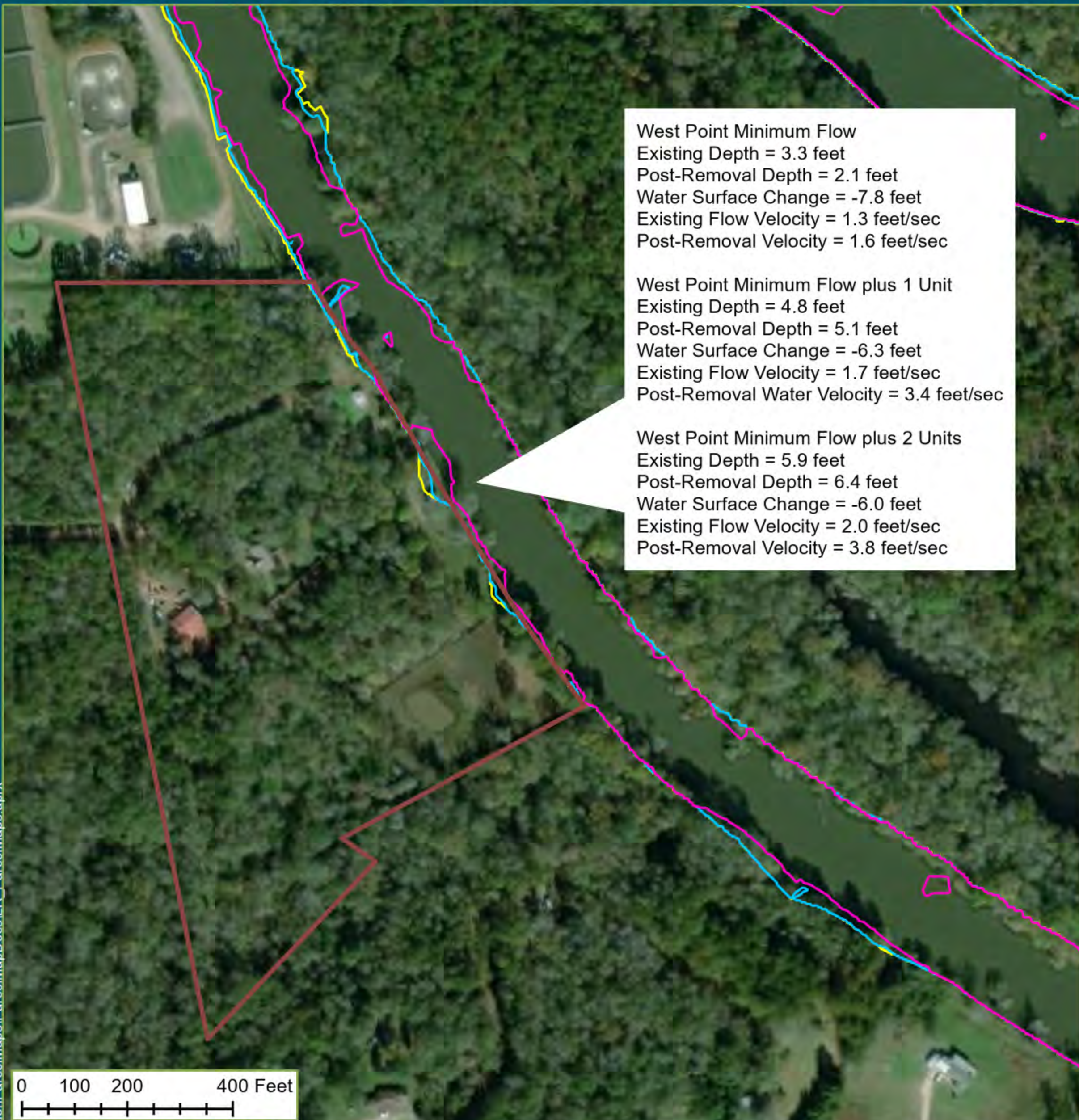
Parcel 065



Legend

Property Parcels

- Parcel 065

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
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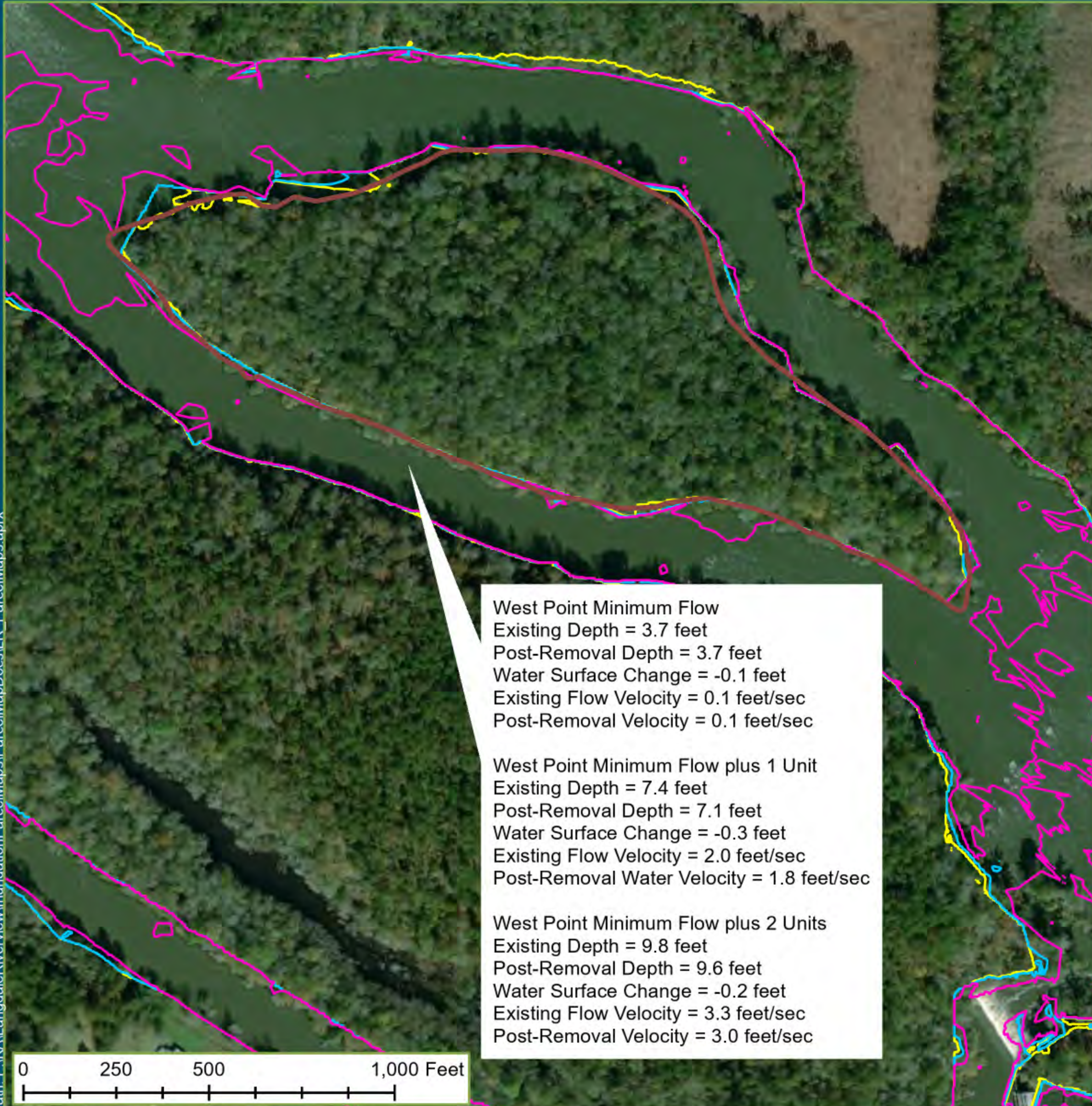

West Point Minimum Flow
Existing Depth = 3.7 feet
Post-Removal Depth = 3.7 feet
Water Surface Change = -0.1 feet
Existing Flow Velocity = 0.1 feet/sec
Post-Removal Velocity = 0.1 feet/sec

West Point Minimum Flow plus 1 Unit
Existing Depth = 7.4 feet
Post-Removal Depth = 7.1 feet
Water Surface Change = -0.3 feet
Existing Flow Velocity = 2.0 feet/sec
Post-Removal Water Velocity = 1.8 feet/sec

West Point Minimum Flow plus 2 Units
Existing Depth = 9.8 feet
Post-Removal Depth = 9.6 feet
Water Surface Change = -0.2 feet
Existing Flow Velocity = 3.3 feet/sec
Post-Removal Velocity = 3.0 feet/sec

Parcel 066

Legend

Property Parcels

- Parcel 066

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
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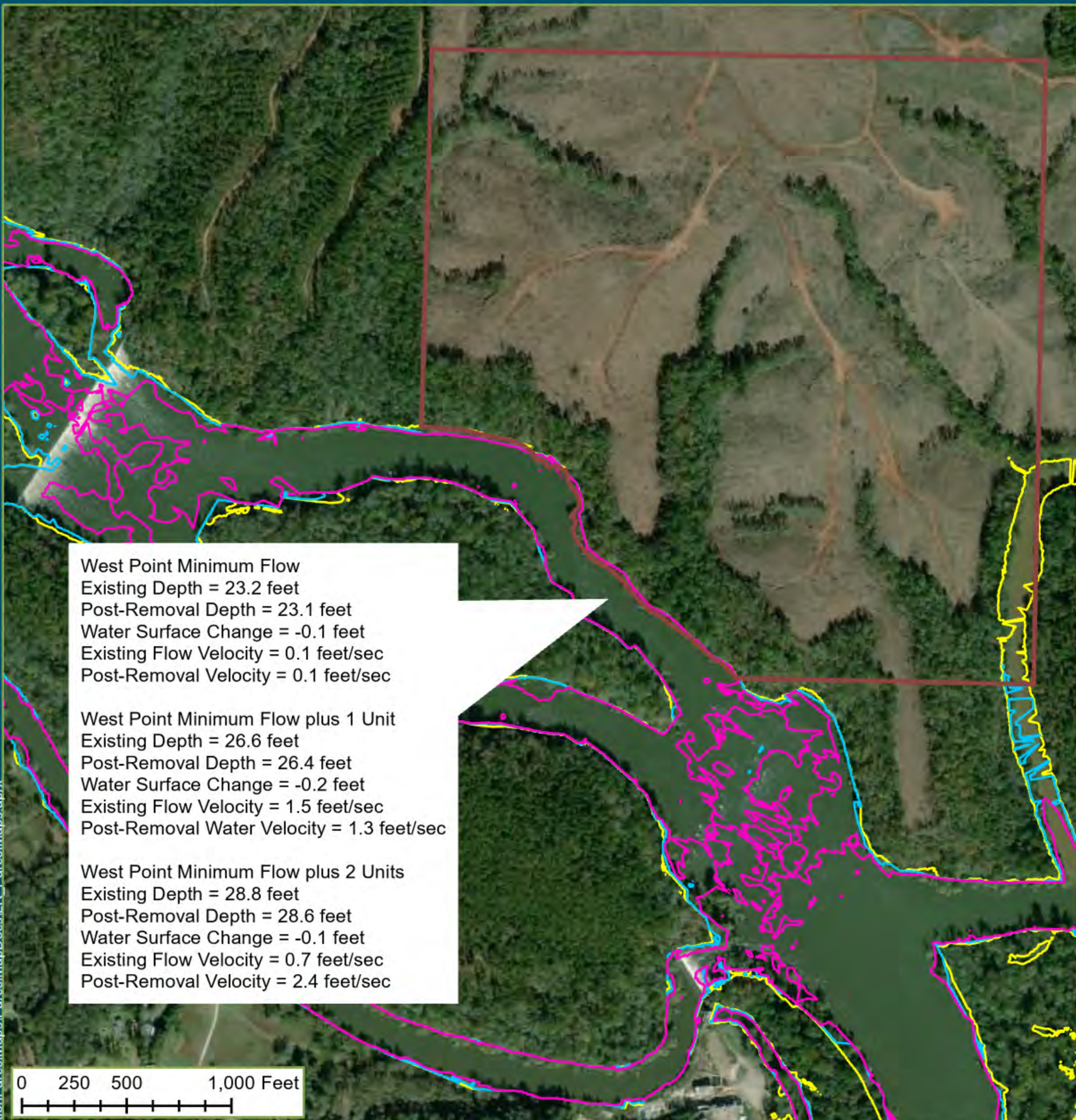
PN: 0534039.01

Parcel 067



Legend

Property Parcels

Parcel 067

Post-Dam Removal

West Point Minimum Flow

West Point Minimum Flow plus 1 Unit

West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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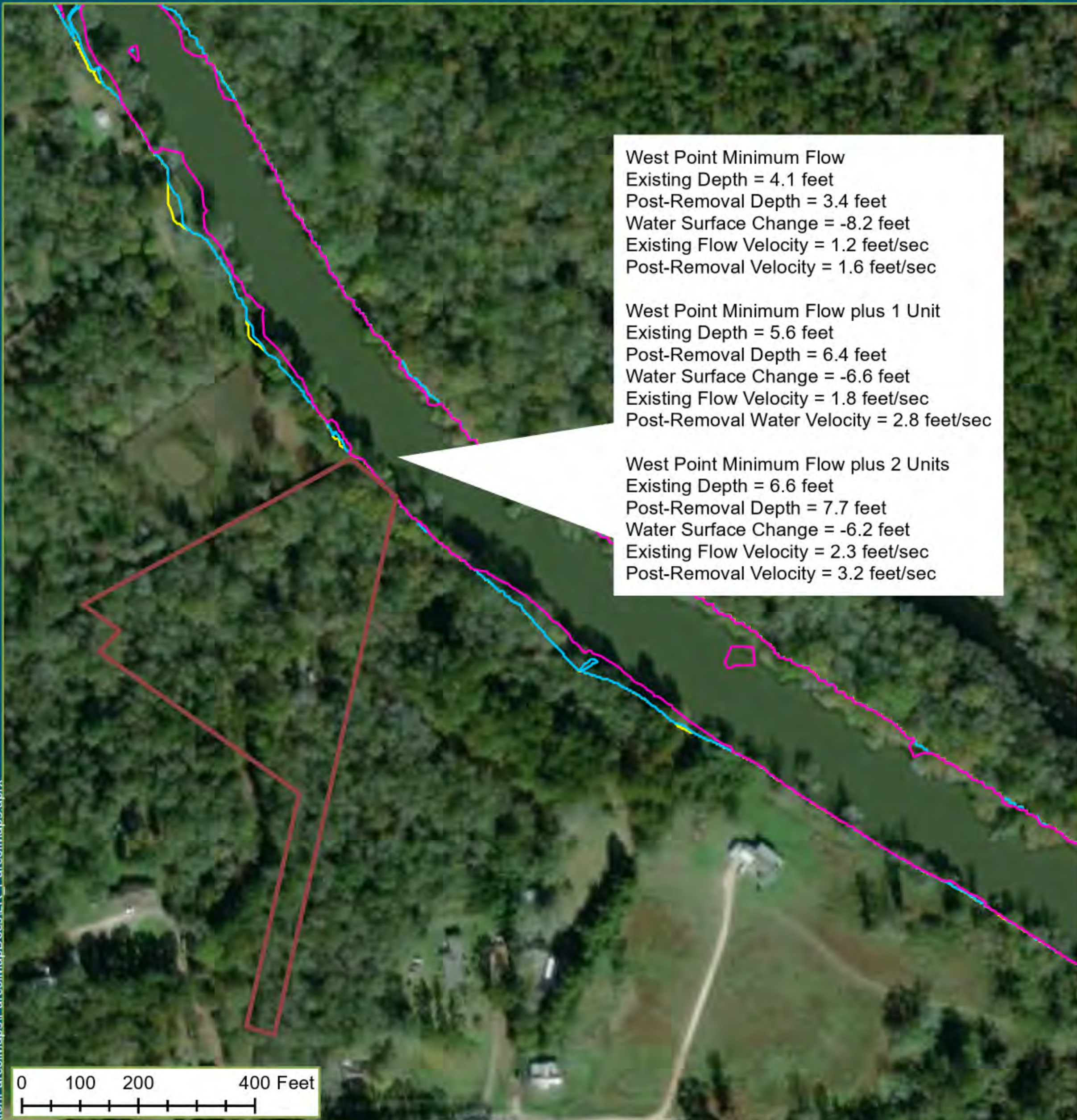
PN: 0534039.01

Parcel 068



Legend

Property Parcels

Parcel 068

Post-Dam Removal

West Point Minimum Flow

West Point Minimum Flow plus 1 Unit

West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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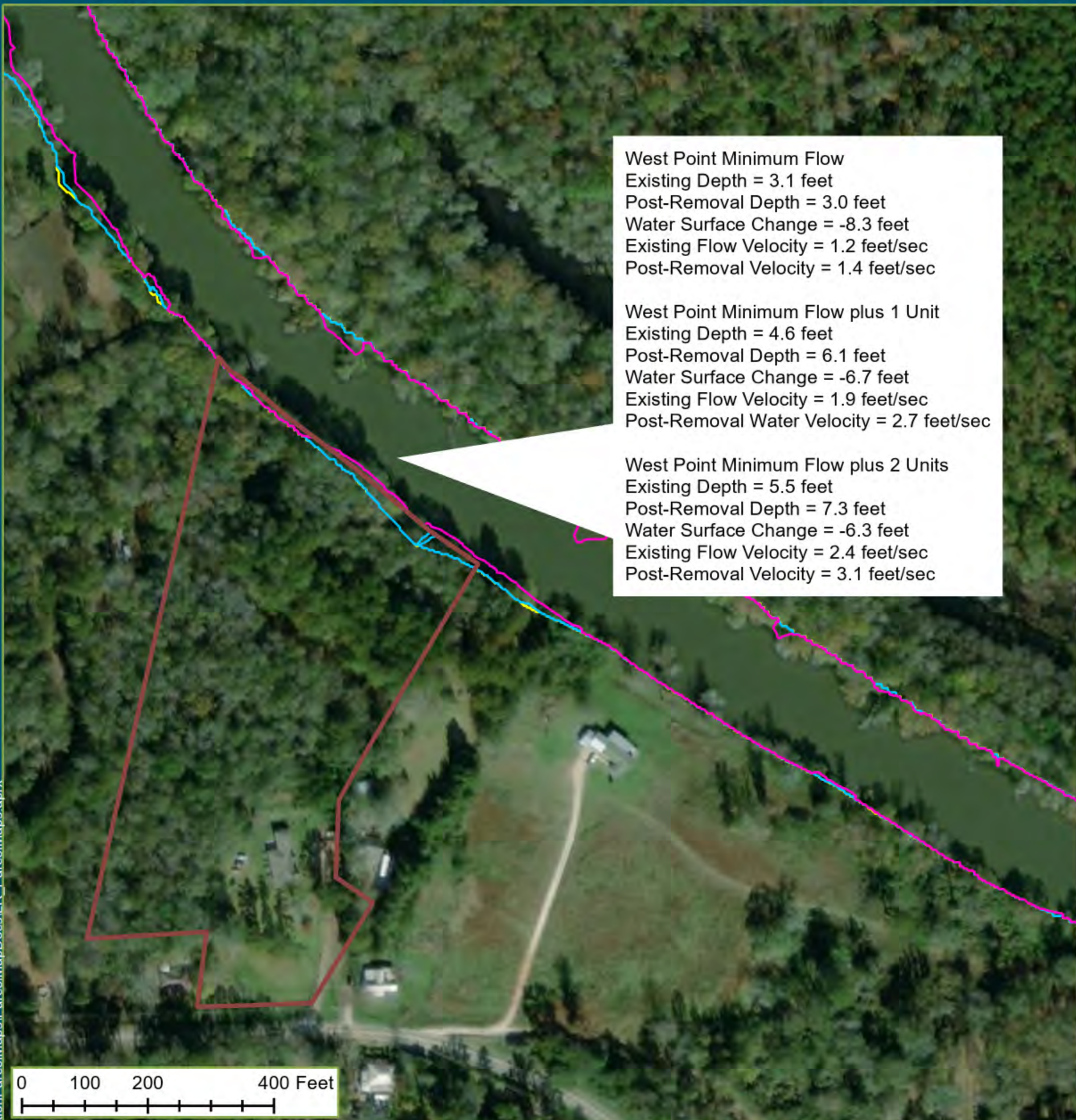
Date Printed: 4/17/2020

Source: Esri, DigitalGlobe, GeoEye, USDA, USGS

PN: 0534039.01

Parcel 069



Legend

Property Parcels

- Parcel 069

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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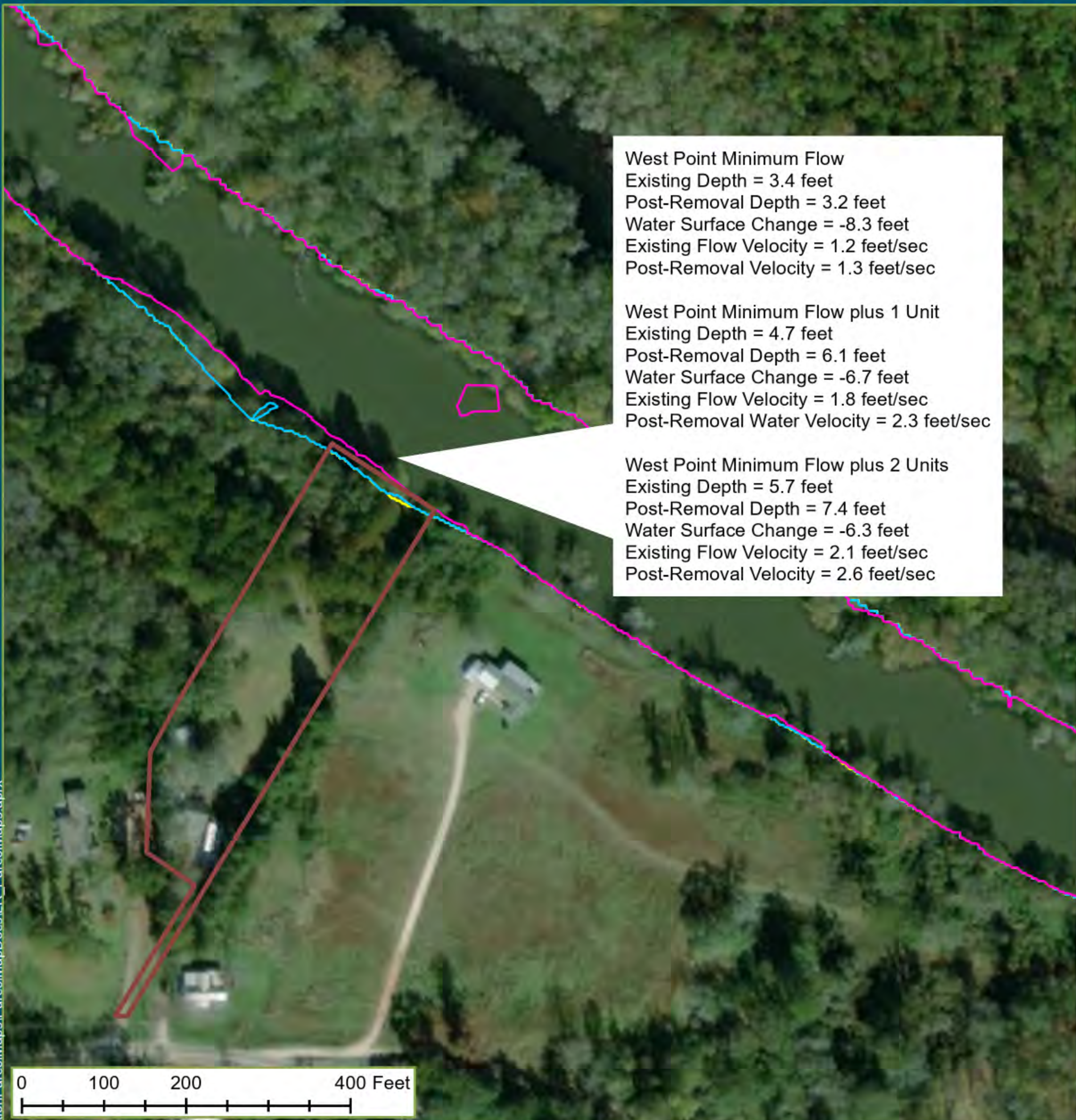
PN: 0534039.01

Parcel 070



Legend

Property Parcels

- Parcel 070

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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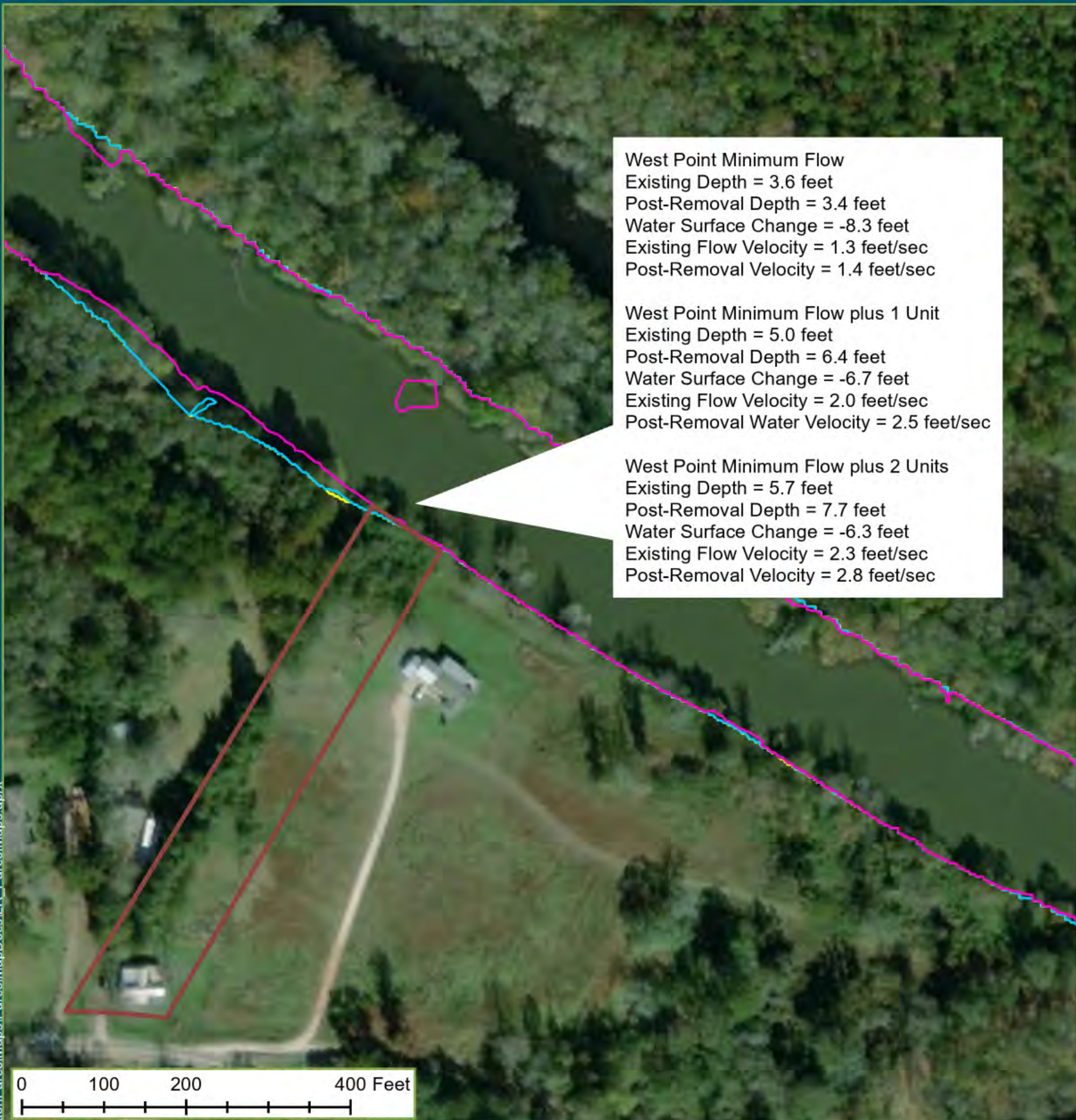
PN: 0534039.01

Parcel 071



Legend

Property Parcels

Parcel 071

Post-Dam Removal

West Point Minimum Flow
West Point Minimum Flow plus 1 Unit
West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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PN: 0534039.01

Parcel 073

Legend

Property Parcels

- Parcel 073

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company

Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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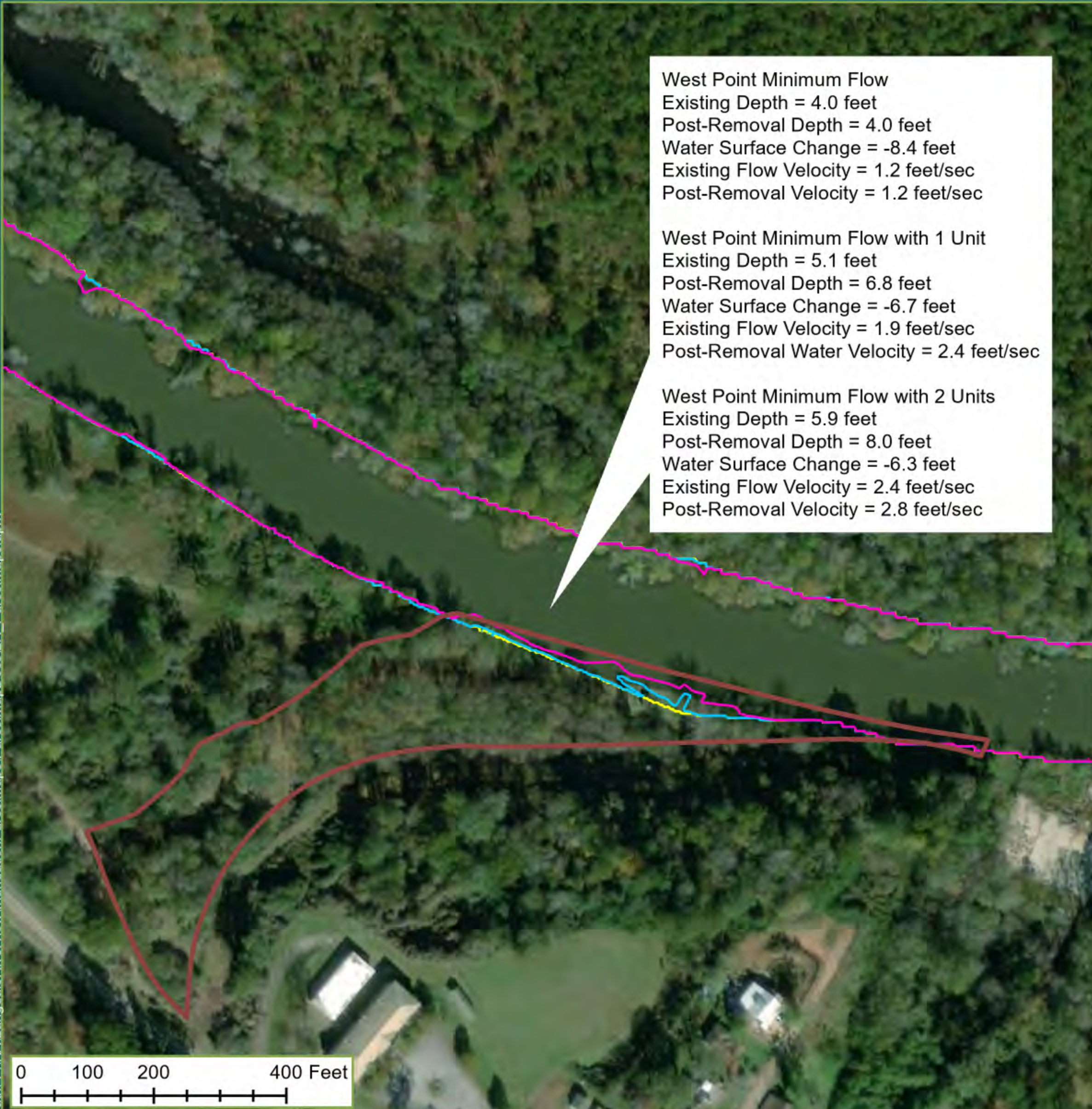
PN: 0534039.01



Parcel 074

Legend

Property Parcels

- Parcel 074

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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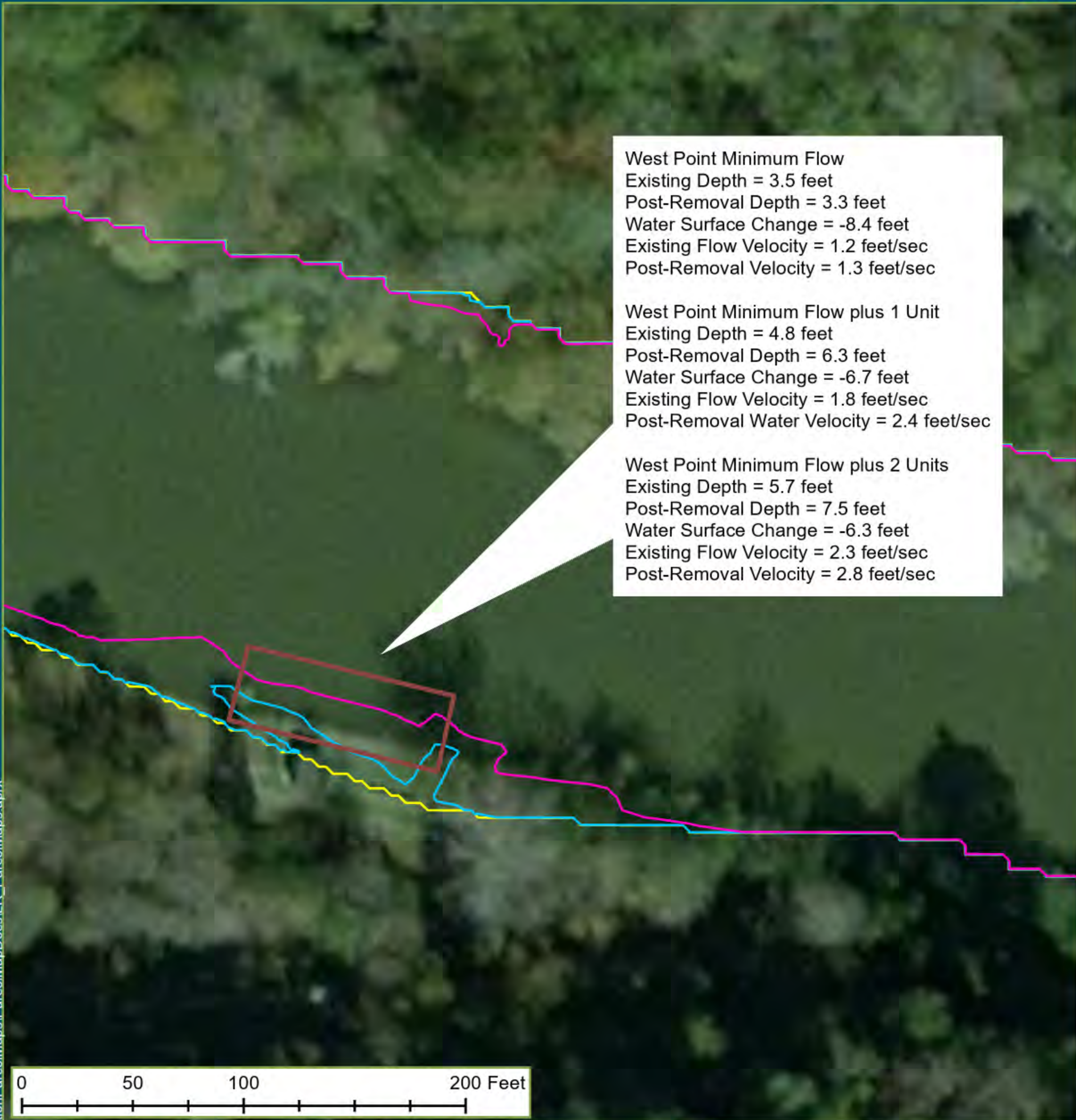
Parcel 075



Legend

Property Parcels

Parcel 075

Post-Dam Removal

West Point Minimum Flow
West Point Minimum Flow plus 1 Unit
West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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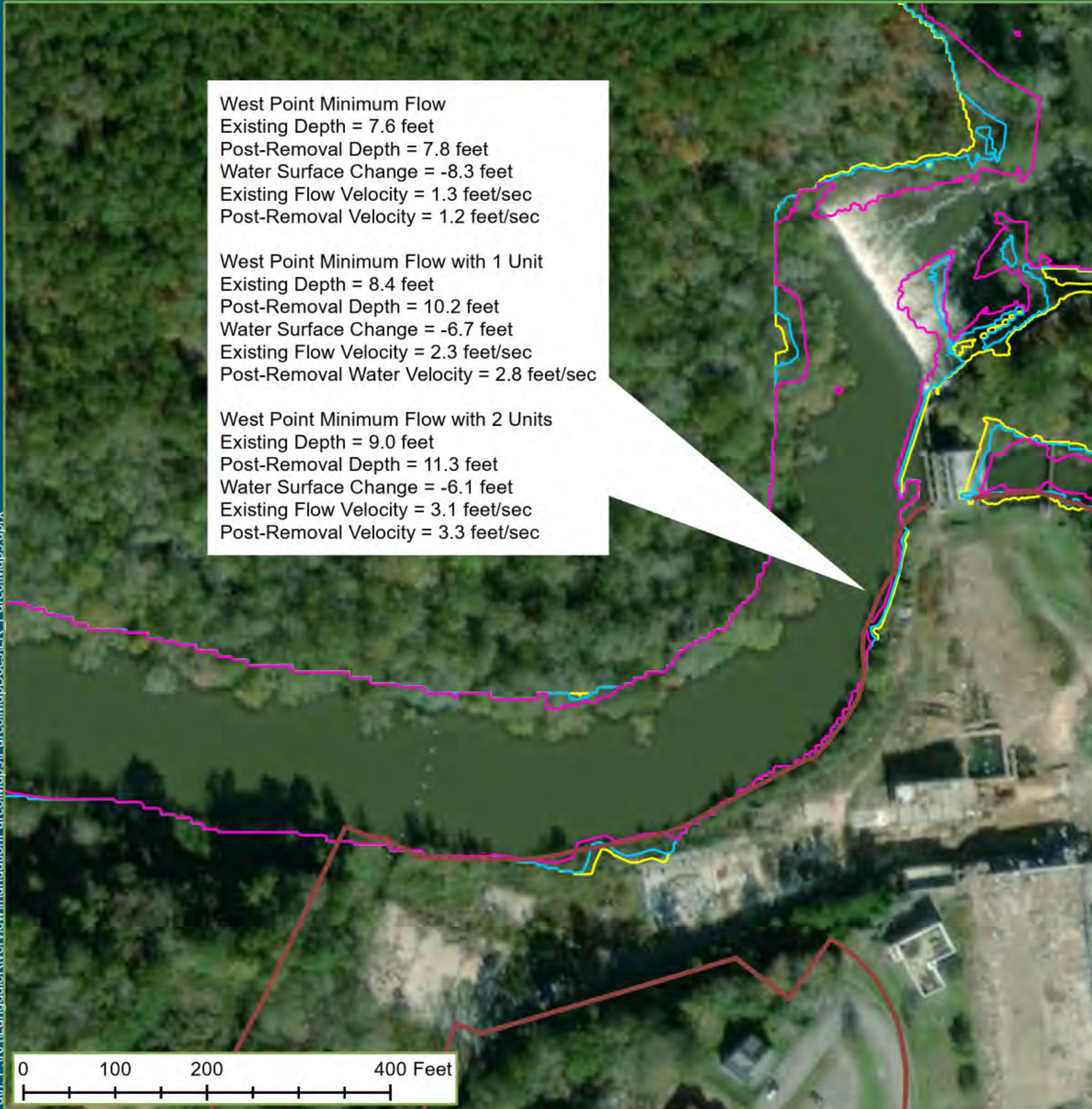

Parcel 076

Legend

Property Parcels

- Parcel 076

Post-Dam Removal

- West Point Minimum Flow
- West Point Minimum Flow plus 1 Unit
- West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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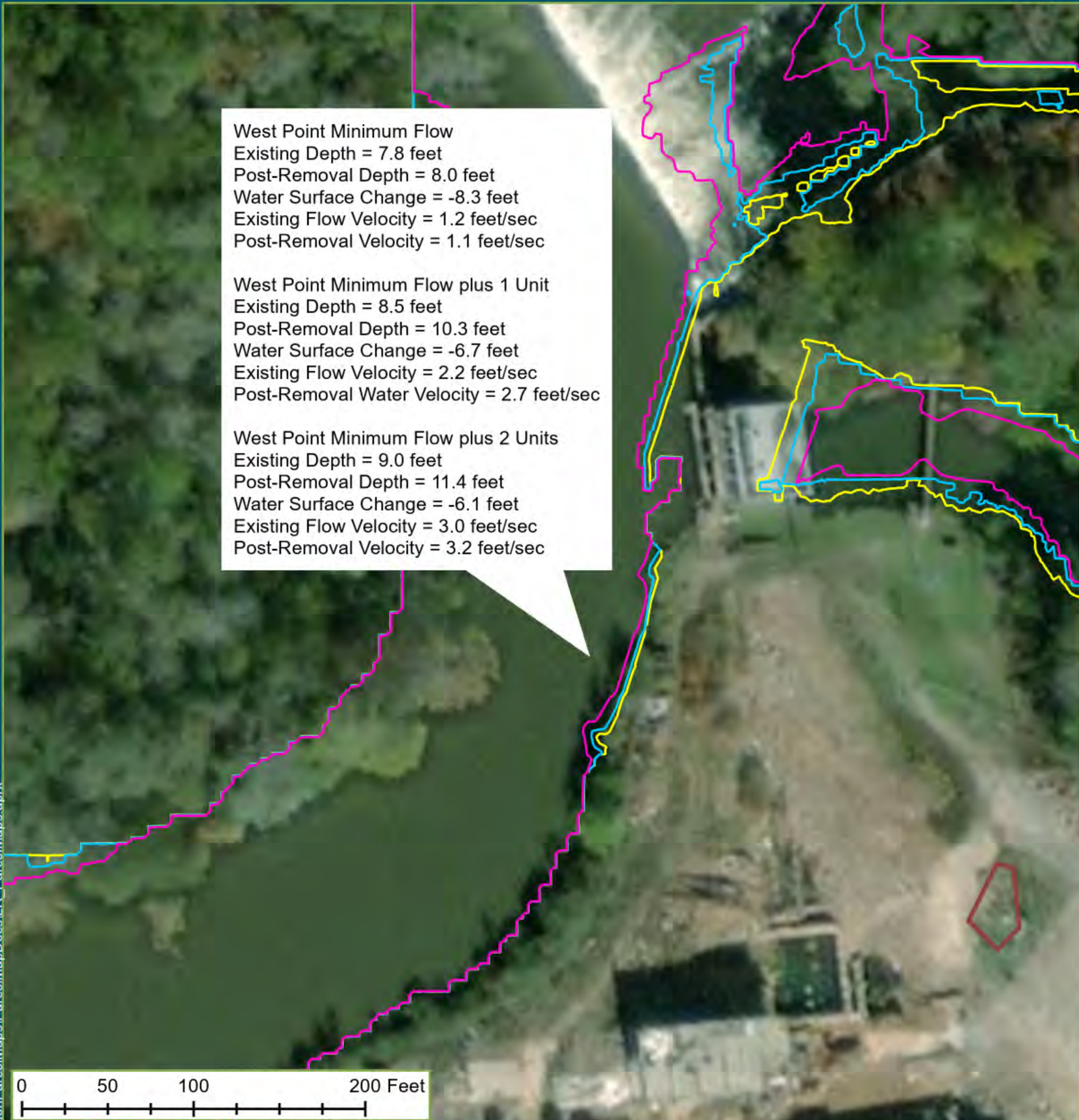
Parcel 077



Legend

Property Parcels

Parcel 077

Post-Dam Removal

West Point Minimum Flow

West Point Minimum Flow plus 1 Unit

West Point Minimum Flow plus 2 Units

Georgia Power Company
Atlanta, Georgia

Drawn By:	Date Drawn:	Checked By:	Date Checked:
ADY	04-16-2020	MPH	04-17-2020

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Summary of the Documentation of Consultation
Hydrology and Hydraulics (H&H) Study

In response to the March 11, 2020[1] Federal Energy Regulatory Commission (FERC) letter, Georgia Power Company (Georgia Power) has prepared the following summary of consultation between Georgia Power and the stakeholders. The purpose of this consultation document is to provide an overview of all consultation to date on the hydrology and hydraulics (H&H) Study. The results of the H&H and other decommissioning studies will be presented and discussed in the October 5, 2020 Public Meeting, with an additional opportunity for stakeholders to comment in writing on the draft study reports on or before October 24, 2020.

Stakeholder comments on the draft study reports will be compiled for the final study reports which will be filed with FERC concurrent with the filing of the Langdale and Riverview Projects Dam Decommissioning Plan.

The following describes the overall consultation timeline leading to development and implementation of this H&H Study.

Georgia Power conducted pre-filing consultation beginning in 2018. This consultation was filed with the license surrender application in December 2018[2] (Appendix B to the surrender applications). At that time, no agency requested any studies; discussions included the agencies' specific interests for the Langdale and Riverview decommissioning and the development of the H&H model.

After consultation, Georgia Power filed the Draft Study Plan with FERC on May 24, 2019[3]. Concurrent with filing the Draft Study Plan, Georgia Power requested that stakeholders provide written comment within 30 days, or by Monday, June 24, 2019, on the Draft Study Plan. Georgia Power received comments from FERC and from Chattahoochee Riverkeeper and responded to them in the Final Study Plan, which was filed in the FERC docket July 24, 2019. No agency has

[1] Document Accession #: 20200311-3001 (Langdale); Document Accession #20181218-5452 (Riverview)
[2] Document Accession #20181218-5451
[3] Document Accession #20190525-5216 (Langdale); Document Accession #20190524-5217 (Riverview)

requested additional studies or provided comments beyond what is reflected in the consultation document.

On January 23, 2020, stakeholders who own property adjacent to the Chattahoochee River near the Langdale and Riverview Projects were invited to meet with Georgia Power to discuss how the proposed license surrender and dam removal may affect property owners' parcels. Georgia Power prepared large-scale figures showing the depth, velocity, and changes in wetted area to discuss with property owners. Project renderings were provided. Georgia Power also prepared individual parcel maps to show respective property owners the anticipated effects for both the existing and adjusted bathymetry. As a result of property owners' comments, Georgia Power developed additional information specific to river access and property, as described in the Draft H&H Study Report.

On February 20, 2020, Georgia Power filed a Progress Report with FERC on the decommissioning studies. Georgia Power continued to consult on the studies while the studies were ongoing, as described in the Final Study Plan. When the H&H modeling was complete, Georgia Power continued consulting with state and federal resource agencies, local governments and other stakeholders on the preliminary model results. Adjustments were made in the modeling and H&H study report based on stakeholder feedback provided to Georgia Power. At this time, all studies are complete and Georgia Power is developing the Dam Decommissioning Plan for the Langdale and Riverview Projects.

In the final study reports, Georgia Power will insert a table showing the comments received on the draft study reports and how those comments were addressed. Final study reports will be filed with the Dam Decommissioning Plan.

GEORGIA
DEPARTMENT OF NATURAL RESOURCES

WILDLIFE RESOURCES DIVISION

MARK WILLIAMS
COMMISSIONER

RUSTY GARRISON
DIRECTOR

February 27, 2019

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

RE: Comments on the Notice of Application for Surrender of License, Soliciting Comments, Motions to Intervene and Protests, Langdale Project, FERC # 2341 and Riverview Project FERC # 2350

Dear Secretary Bose:

The Georgia Department of Natural Resources, Wildlife Resources Division (WRD) has reviewed Notice of Application for Surrender of License, Soliciting Comments, Motions to Intervene and Protests, Langdale Project, FERC # 2341 and Riverview Project FERC # 2350 filed by the Southern Company, on behalf of Georgia Power. Georgia Power proposes to decommission and remove Langdale Dam (RM 192) and Riverview Dam (RM 190.6), as well as its diversion dam, Crow Hop (RM 191). These small, run-of-river, hydroelectric projects (≤ 5 MW) are located on the Chattahoochee River between Bartlett's Ferry Dam (FERC No. 485) and West Point Dam (FERC No. US Army Corp of Engineers) and have not generated power since 2009.

Georgia Power has proposed a series of studies that include accurately defining impounded surface area and volume of these relatively shallow (<10ft mean depth) impoundments using LiDAR, conducting mussel surveys in the immediate vicinity of the dam removal areas, and collecting water quality data upstream of the dams prior to demolition for post-removal comparison. Georgia Power also proposes to develop hydrologic and hydraulic models of the Chattahoochee River from the I-85 bridge crossing to Bartlett's Ferry to inform the process and stakeholders of the range of possible river and flow characteristics that may occur once the dams are removed. A sediment study is not currently proposed as the removal of Eagle-Phenix and City Mills dam on the Chattahoochee River demonstrated that "significant amounts of sediment do not accumulate at small run-of river projects". However, bathymetry collected to develop the hydrologic model will be used to determine sediment volume behind each dam.

Both project applications address shoal bass under Rare, Threatened, and Endangered Species headings. In Georgia, shoal bass are recognized as a high priority, rare species (S2) in the WRD State Wildlife Action Plan due to several factors including limited range, habitat connectivity and others. To clarify, this game fish does not hold conservation status under the Federal Endangered Species Act or the Georgia Endangered Wildlife Act.

Georgia Power has been 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 remain engaged 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.

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,

Rusty Garrison
Director

cc. Jon Ambrose
Matt Thomas

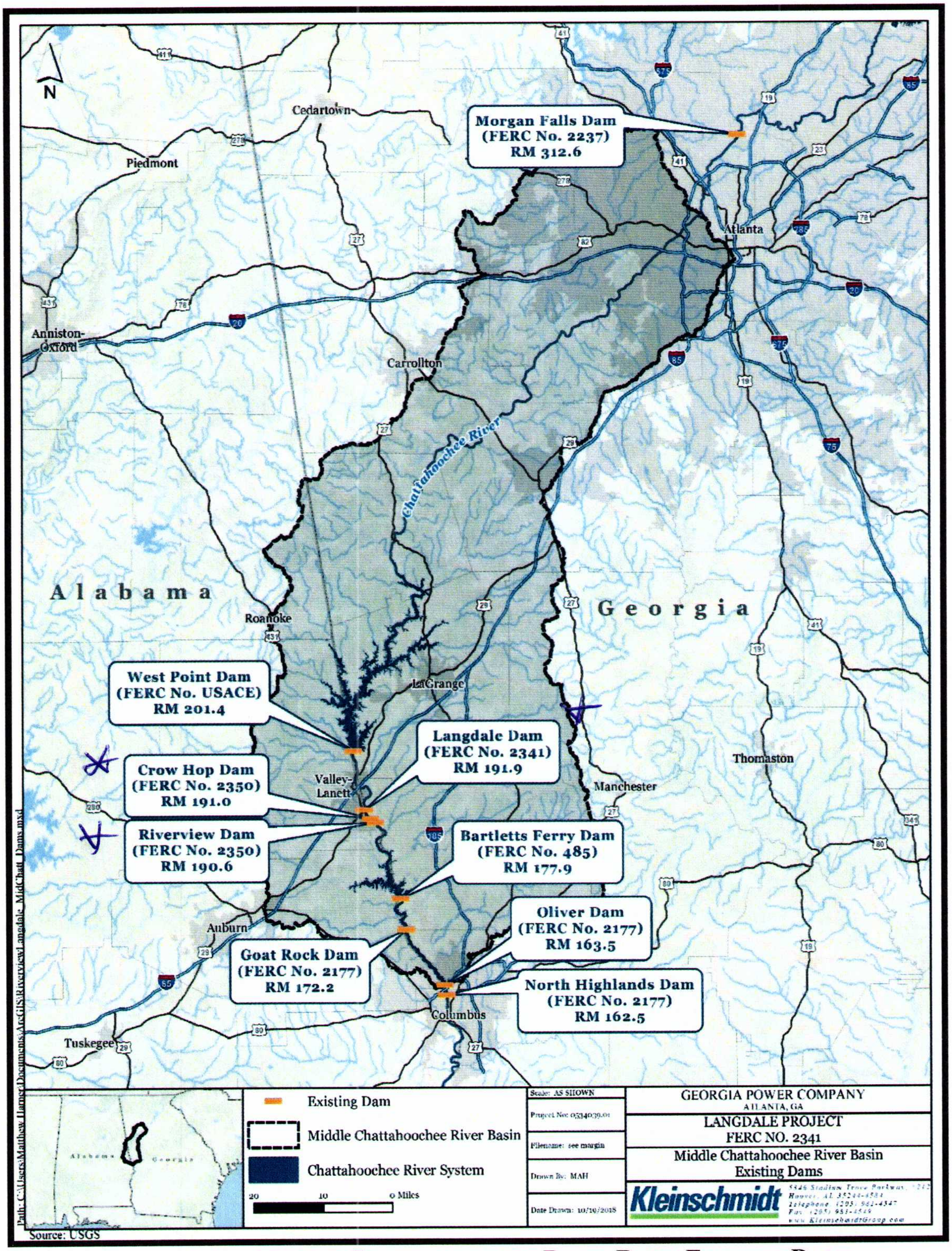


FIGURE 1-3 MIDDLE CHATTAHOOCHEE RIVER BASIN EXISTING DAMS

ORIGINAL

March 4, 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: COMMENT regarding Georgia Power Company, Project Number P-2350-025 (Riverview hydroelectric dam & Crow Hop diversion dam), and Project Number P-2341-033 (Langdale hydroelectric dam)

Dear Secretary Bose,

Chattahoochee Riverkeeper appreciates the opportunity to file a **COMMENT** in response to the Federal Regulatory Energy Commission's (FERC) Notice of Application for Surrender of License, Soliciting Comments, Motions to Intervene, and Protests issued on January 24, 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.

CRK generally supports barrier free creeks, streams, and rivers. Removing barriers reduces liability, enhances connectivity for aquatic species, and provides safe recreational opportunities. Removal may improve recreational opportunities and make a long proposed water trail project more viable.

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.

Additionally, CRK recognizes that every barrier removal project is different and will result in significant change. CRK wishes to direct all involved parties to two resources. American Rivers produced two videos over a decade ago highlighting barrier removals in different parts of the United States. The videos document why the structures were removed, and the level of citizen and local government involvement. Additionally, there is significant testimony from individuals who did not initially support barrier removal. Upon removal and reflection these individuals realized their concerns and fears were not realized. You may find the videos online:

Taking a Second Look: Communities and Dam Removal (2010)
https://youtu.be/cCQiaT1KcPo

Restoring America's River: Preparing for the Future (2010)
https://vimeo.com/11111432

CRK does have two concerns. First, a robust and transparent study of flow and hydrodynamics must be completed and publically released to ensure enough flow will remain in the river for municipal water supply and wastewater assimilation. The proposed barrier removals will 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 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.

Second, a more detailed analysis of the amount and necessary management of legacy sediment may be necessary. 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.

CRK supports the request to surrender the license and decommission the projects prior to the end of their license terms. Furthermore, CRK supports the 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 for cultural and historic purposes if reasonable, feasible, and safe.

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

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

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 Companyâ€™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 Companyâ€™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 Damâ€™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 municipalitiesâ€™ raw water supply withdrawal points and the East Alabama Water, Sewer and Fire Protection Districtâ€™s wastewater discharge. There are other wastewater dischargesâ€”including West Point (Ga.), Lanett (Al.), and inflow from Long Cane Creek (which supports multiple wastewater discharges in Georgia)â€”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 Companyâ€™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.

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 structureâ€™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 damâ€™s physical condition?

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

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

Langdale and Riverview Hydroelectric Projects
FERC Projects #2341 and #2350

Communication Date:
7/16/2019

Communication Type *(telephone, email, in-person meeting, other):*
In-person (Bartletts Ferry Club House)

List and attach pertinent written correspondence:
(i.e. letter, fax, meeting notes/handouts, printed materials, etc.)
Agenda and Chris Goodell's PowerPoint presentation

List persons attending from Southern Company/Georgia Power:
Courtenay O'Mara, Laurie Munn, Kawonya Carswell - SCS
Dawson Ingram, Joey Slaughter, Jennifer Cannon, Patrick O'Rouke, Jim Ozier, Tony Dodd, Joey Charles - GPC
Nancy DeShazo, Dana Wells – Middle Chattahoochee Hydro
Kelly Schaeffer, Chris Goodell, Michael Hross (by phone) - Kleinschmidt

List organization name and persons attending from other organization:
- Georgia Department of Natural Resources (GDNR) – Wildlife Resources Division – Tom Litts, Scott Robinson, Brent Hess, Matt Thomas
- U.S. Fish and Wildlife Service – Tripp Bolton, Steve Jackson, Allan Brown
- Alabama Historical Commission - Amanda McBride, Chris Kinder

Subject:
Review and discuss the results of the Langdale and Riverview Projects H&H modeling; discuss additional data gathering efforts, construction sequencing, and potential dates for the public meeting and request for agency attendance and support at the public meeting.

Comments/Discussions/Requests:
- Courtenay opened the meeting and talked about Georgia Power's data collection and modeling efforts to date. Courtenay introduced Chris Goodell who presented the results of the H&H modeling.
- Chris presented modeling for the existing condition (all dams and powerhouses in place); each individual dam removed (Langdale powerhouse remains in all scenarios); and all three dams removed. The model included looking at water surface elevations and velocities at the base flow (minimum flow from West Point), base flow + one unit generating and base +2 units generating.

- Chris also presented the change in conditions above I85 with all dams removed. Georgia Power is collecting additional bathymetry data above I85 to the base of West Point to develop the two dimensional (2-D) analysis in HEC-RAS. The 2-D modeling will render more accurate results than just using the existing transect data and interpolating.
- After viewing the modeling results, the agencies expressed concern over a “pinch-point” area at Langdale (post dam removal) that results in a narrow area of high velocity flow on the Georgia side of the river. Agencies are concerned about scouring and eroding that area and that the flow velocity would be too high for shoal bass movement above that area.
- Courtenay expressed concern that in the existing models, the Alabama side (west) of the river above Langdale dam will be “dry”. She noted that the City of Valley has publicly requested that water remain in the Langdale channel.
- The agencies discussed how to determine the amount of sediment above Langdale and that it may be possible to engineer the river so that water spreads from East to West and keeps the Langdale channel wetted.
- GDNR-WRD staff who were involved in the downstream City Mills and Eagle Phenix low head dam removals stated that their was insignificant sediment quantity and no dredging was required; there were no significant concerns in the sediment quality data.
- The USFWS indicated their preference for removal of both Crow Hop and Langdale dams and asked if Georgia Power would be willing to determine the amount of sediment in front of Langdale.
- The USFWS indicated that they would support an “engineered” dam removal to accomplish the USFWS goal of river connectivity and restoration and the City of Valley’s desire to keep the Valley AL channel wet. The USFWS requested that Georgia Power model the Langdale dam removal down to elevation 540 (higher elevation than the base of the dam in order to support flow to the western side of the river).
- USFWS has some ideas about construction sequencing and access.
- Action Items:
    - Georgia Power will finish the bathymetry data collection up to West Point
    - Georgia Power will collect data on the sediment above Langdale Dam
    - Georgia Power will conduct additional HEC-RAS model runs
    - Georgia Power will schedule another agency meeting (via Skype) to discuss the results of the additional data collection and model runs – this meeting is scheduled to occur

Form Completed By:

Courtenay O’Mara

Kleinschmidt

Langdale and Riverview Projects – Preliminary Hydrologic & Hydraulic Modeling

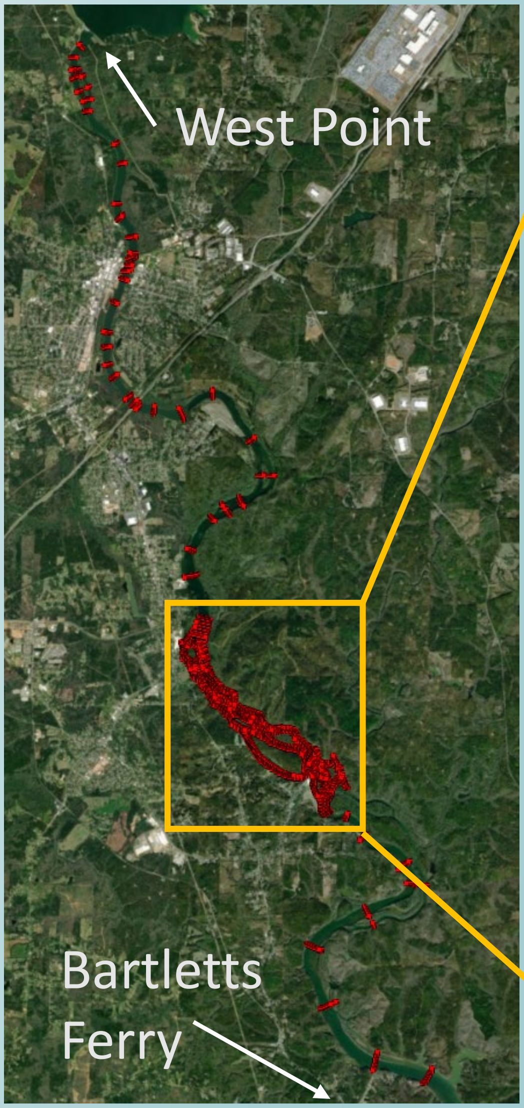
June 11, 2019

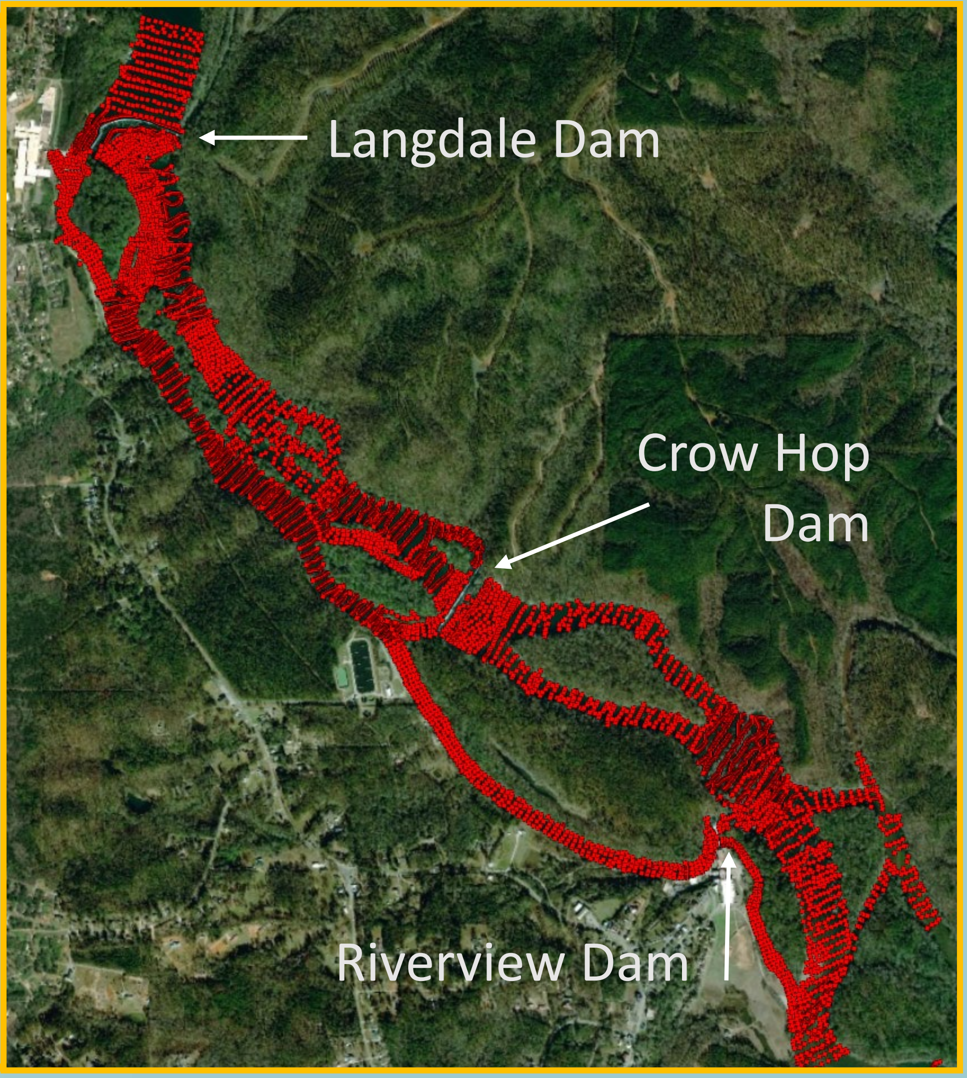
Georgia Power

Modeling Approach

- Model Purpose –
  1. Assess changes to depth of inundation along the river after dam removals
  2. Assess flow velocity through dam breach locations
- Removal Scenarios
  - 25%, 50%, 75%, 100% removal of each dam
  - 25%, 50%, 75%, 100% removal of all dams
- Hydrologic Cases
  - Base Flow Unit (675 cfs)
  - Base Plus One Unit (8,275 cfs)
  - Base Plus Two Units (15,875 cfs)
- Downstream Boundary Condition: WSEL = 519.10 feet, NAVD88

Model Bathymetry Data

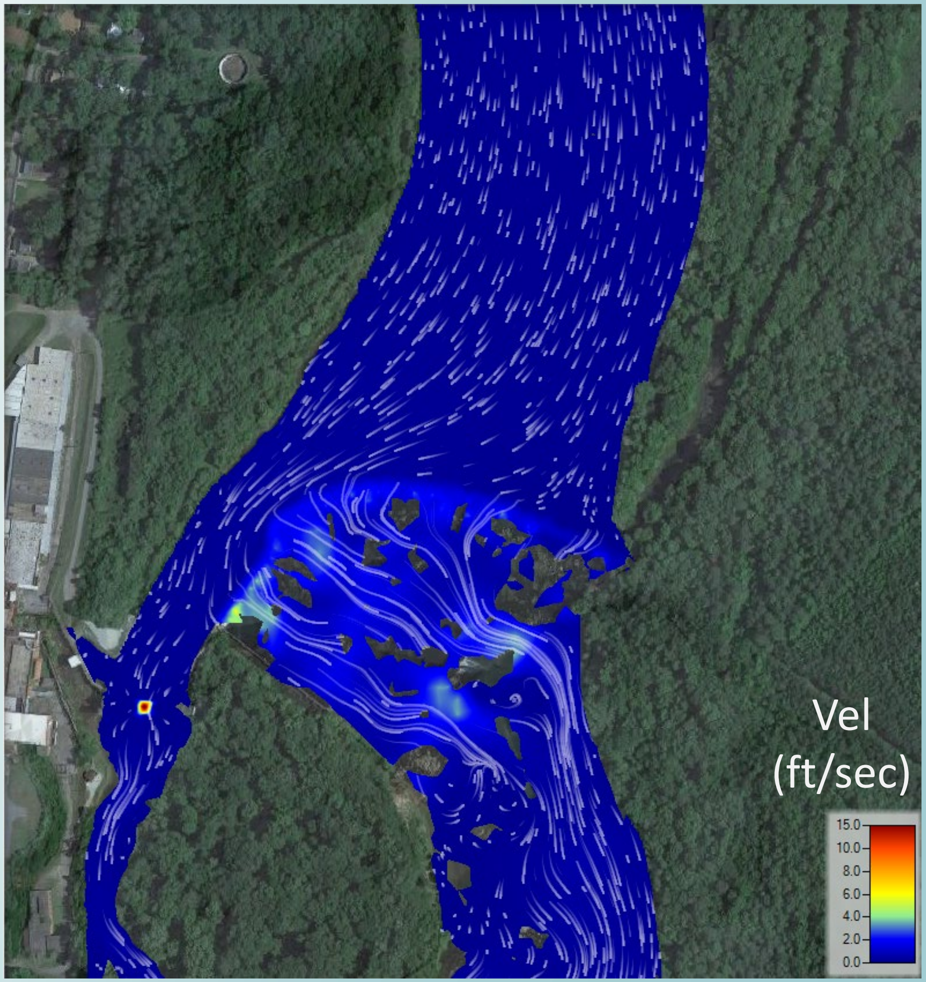




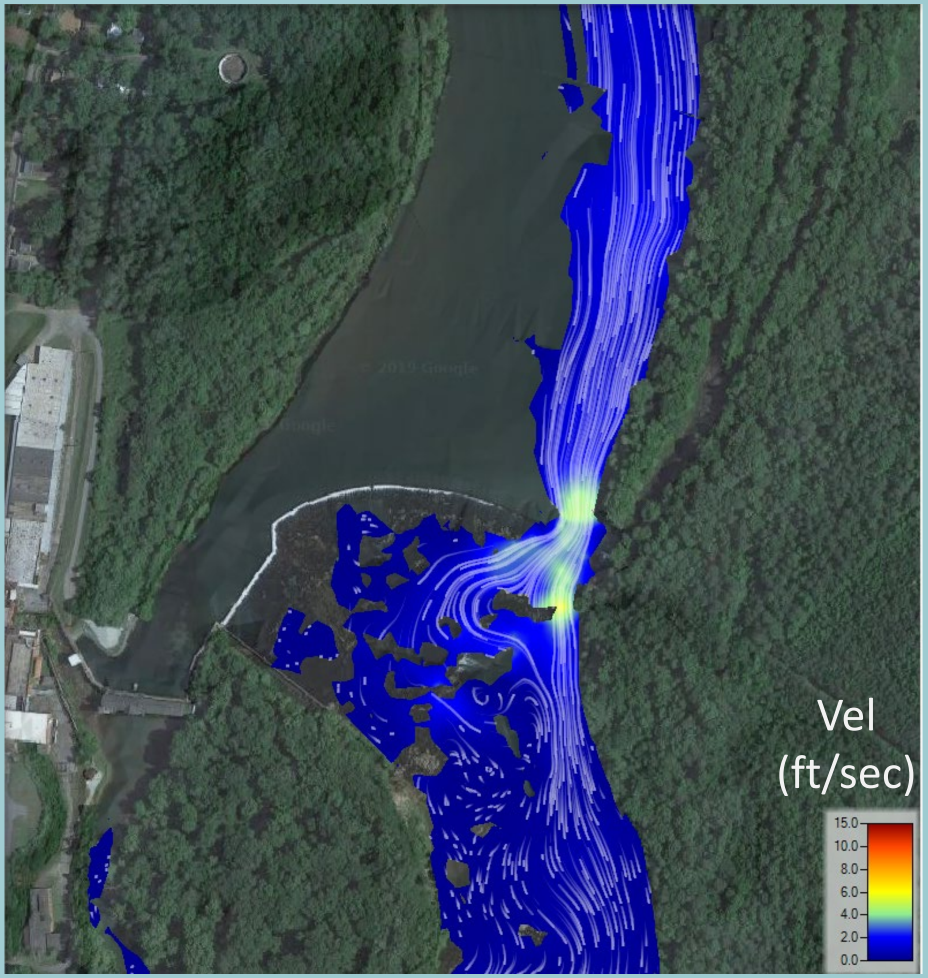
Langdale Dam Removal

Arch Dam Removal – Base Flow Case

Existing Conditions

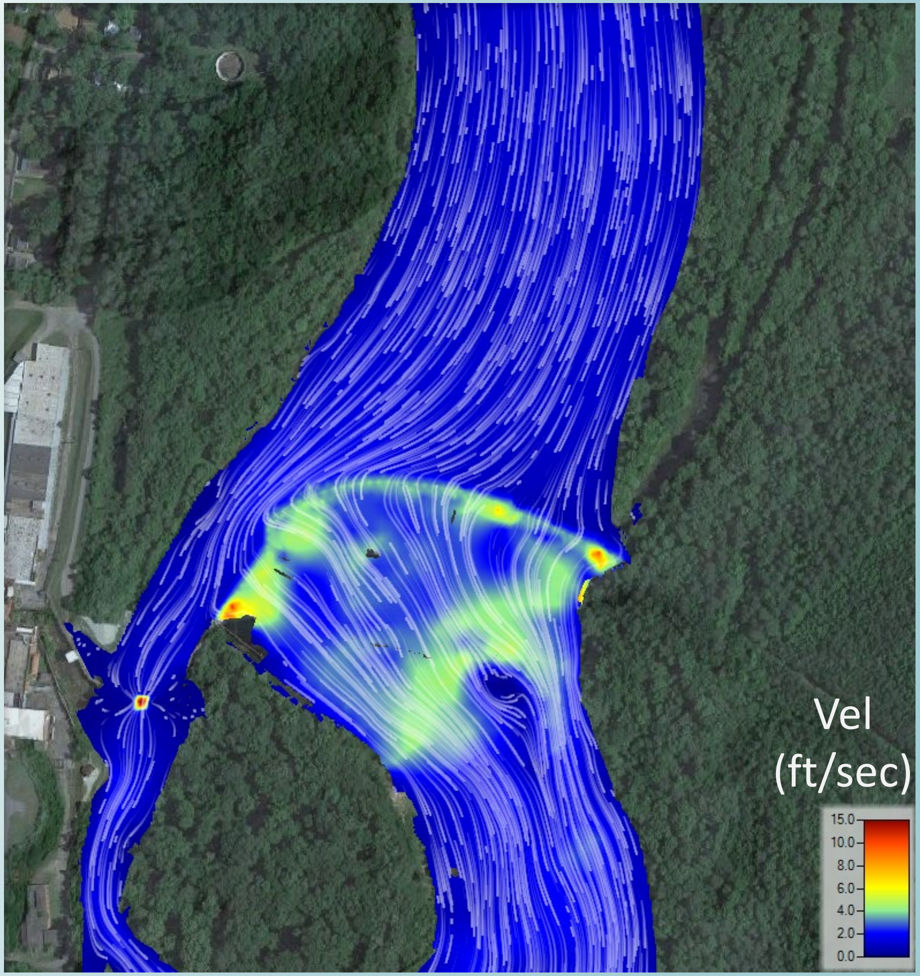


Post-Dam Removal

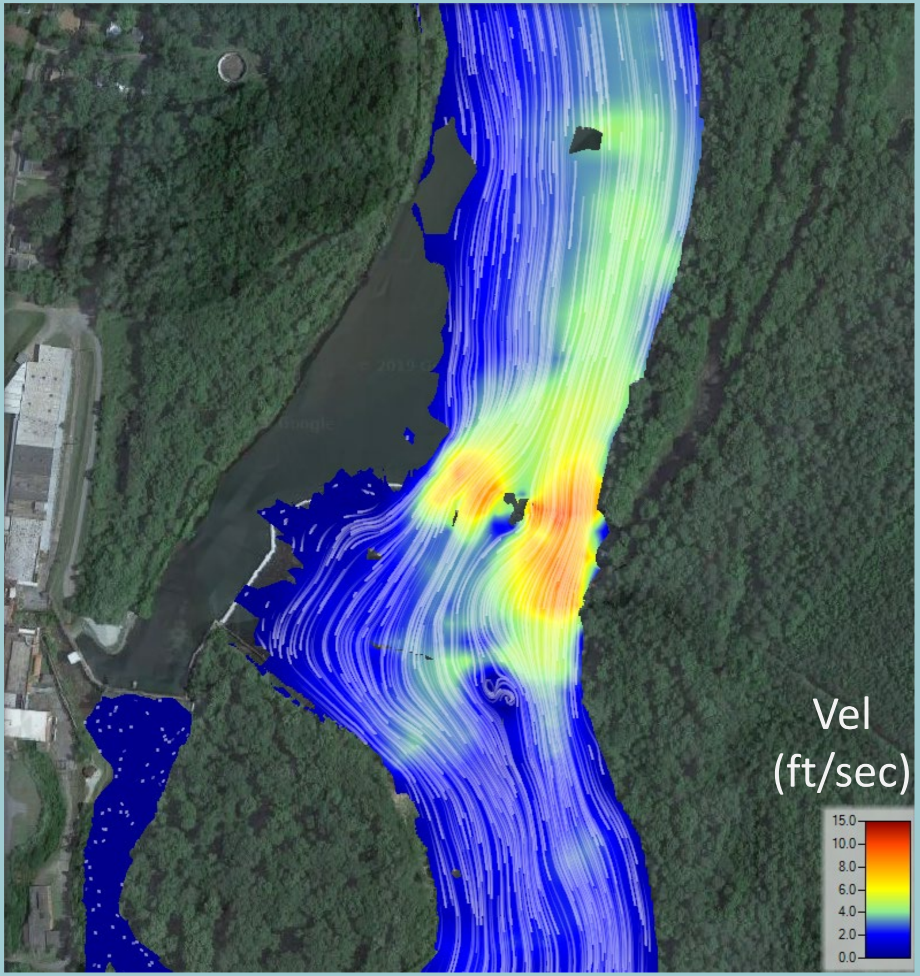


Arch Dam Removal – Base +1 Flow Case

Existing Conditions

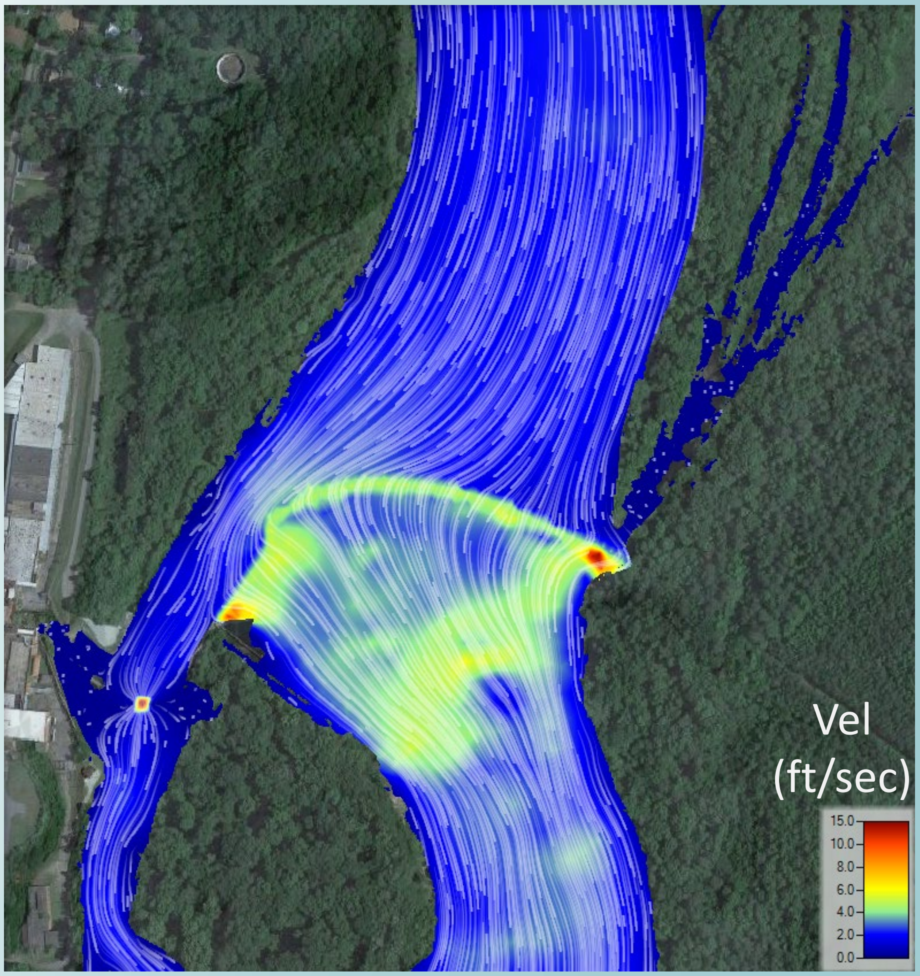


Post-Dam Removal

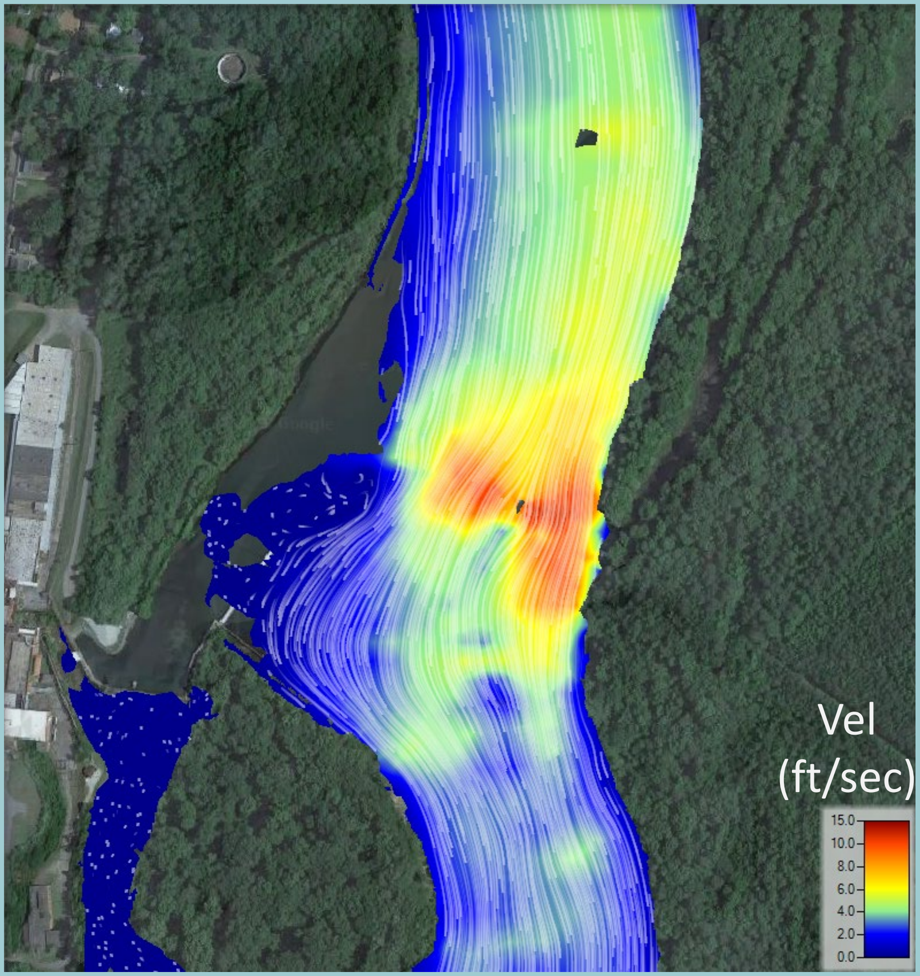


Arch Dam Removal – Base +2 Flow Case

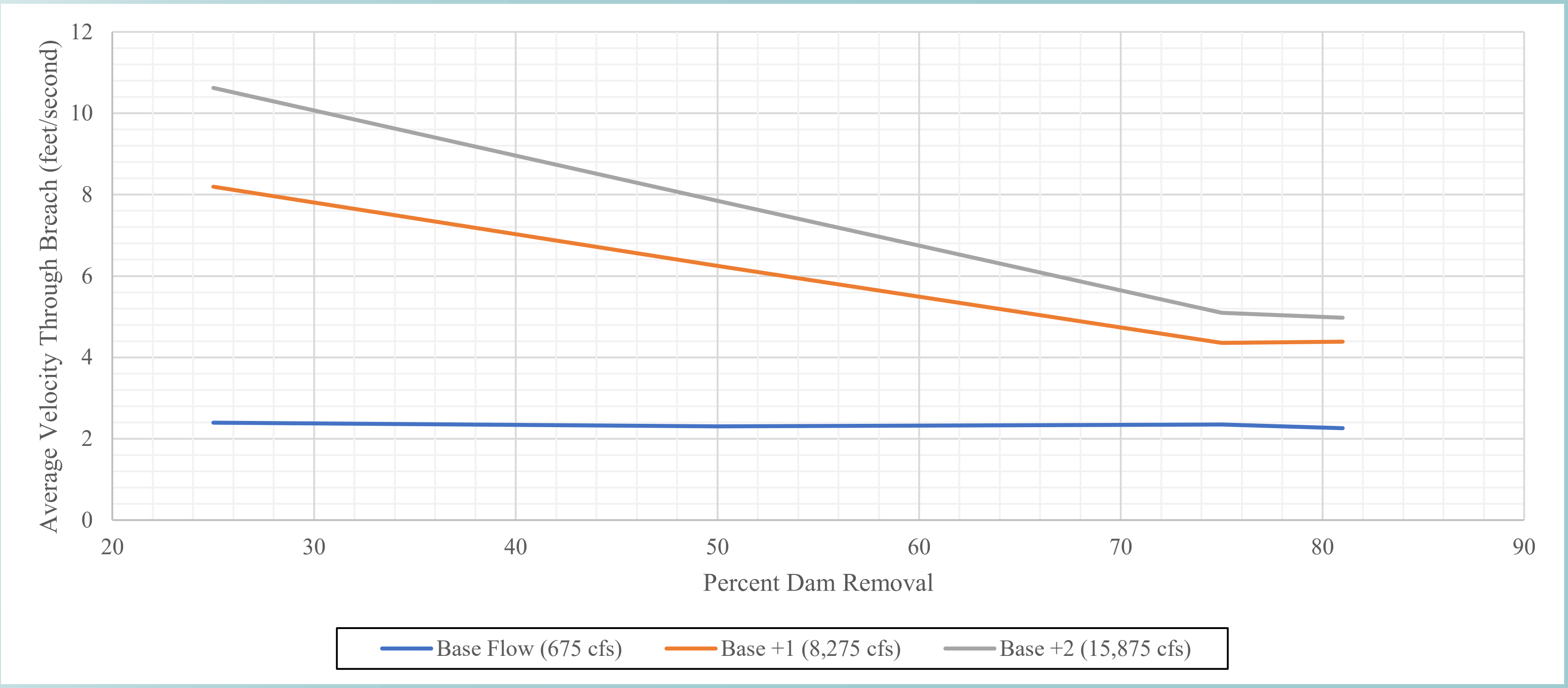
Existing Conditions



Post-Dam Removal



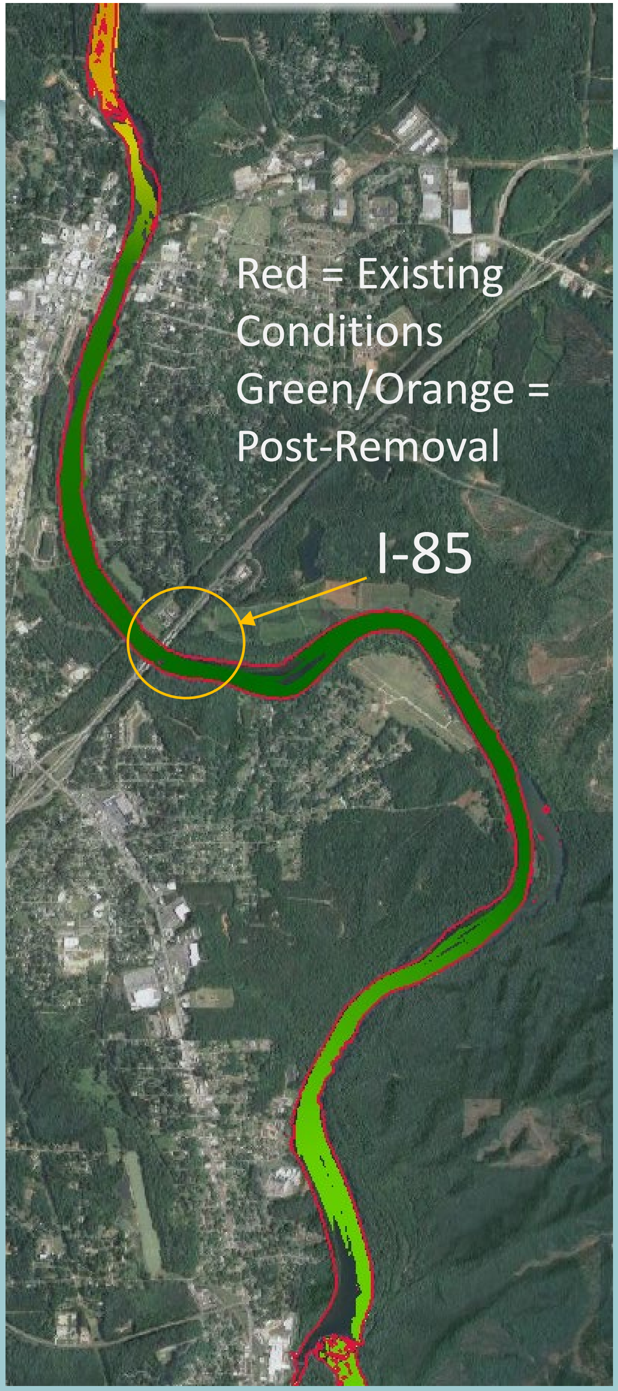
Langdale Average Breach Velocities



Case	Base Flow	Base +1	Base +2
Percent Removal	Average Velocity (feet/second)		
25	2.4	8.2	10.6
50	2.3	6.2	7.9
75	2.3	4.4	5.1
81	2.3	4.4	5.0

Note: Arch removal is approximately 81% of dam length

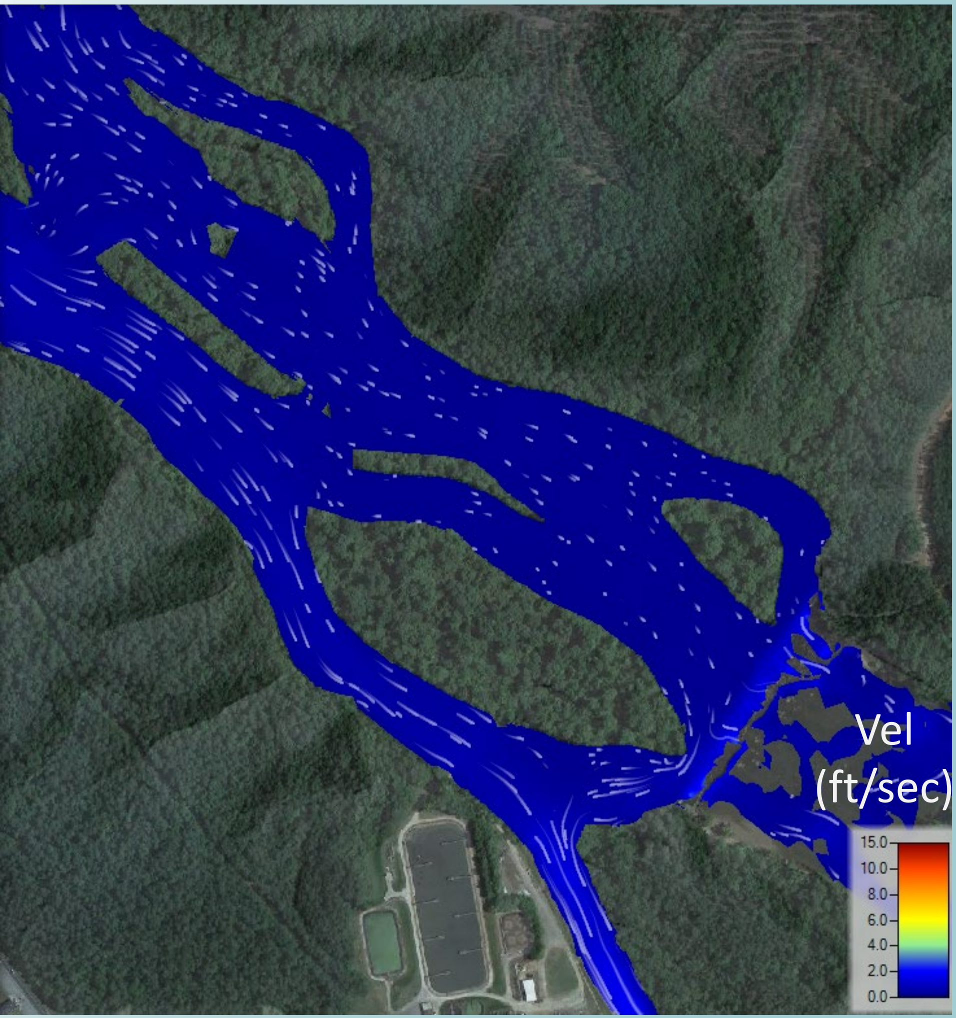
Upstream Effects (Full Removal) at Base Flow



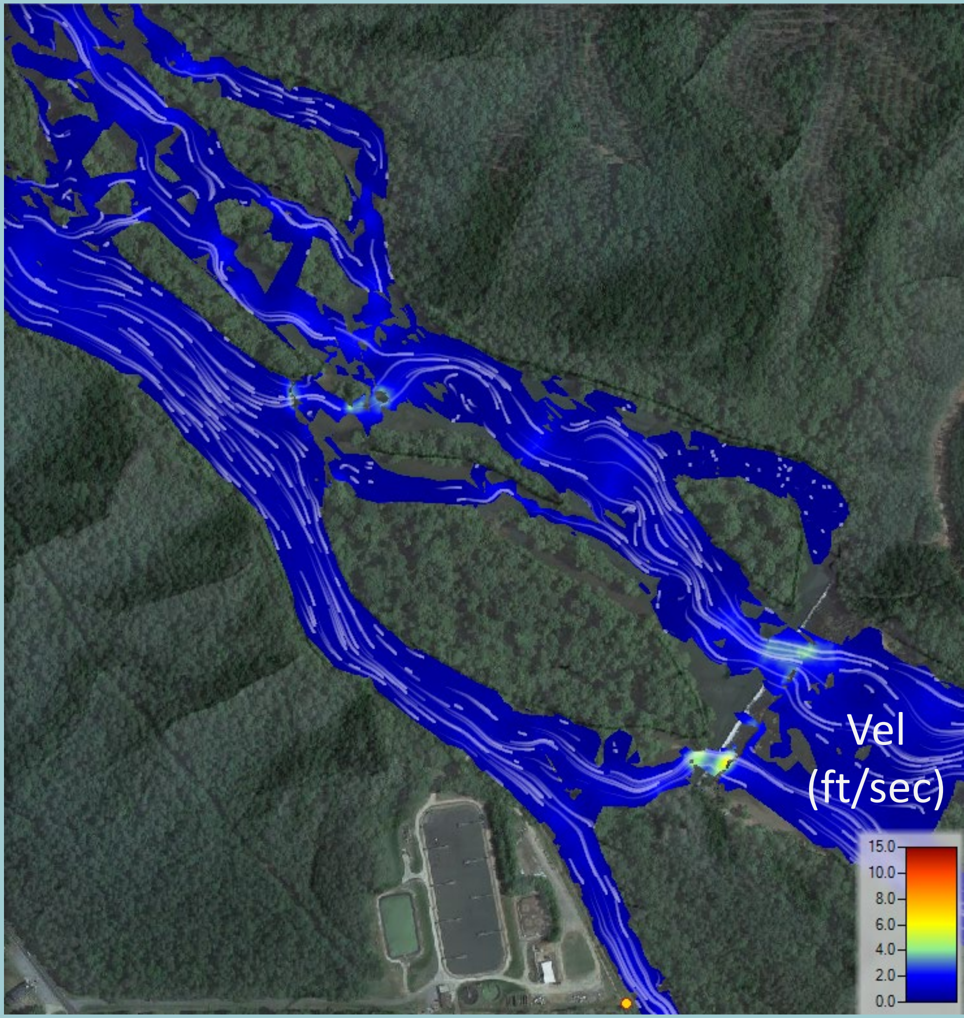
Crow Hop Dam Removal

100% Removal – Base Flow Case

Existing Conditions

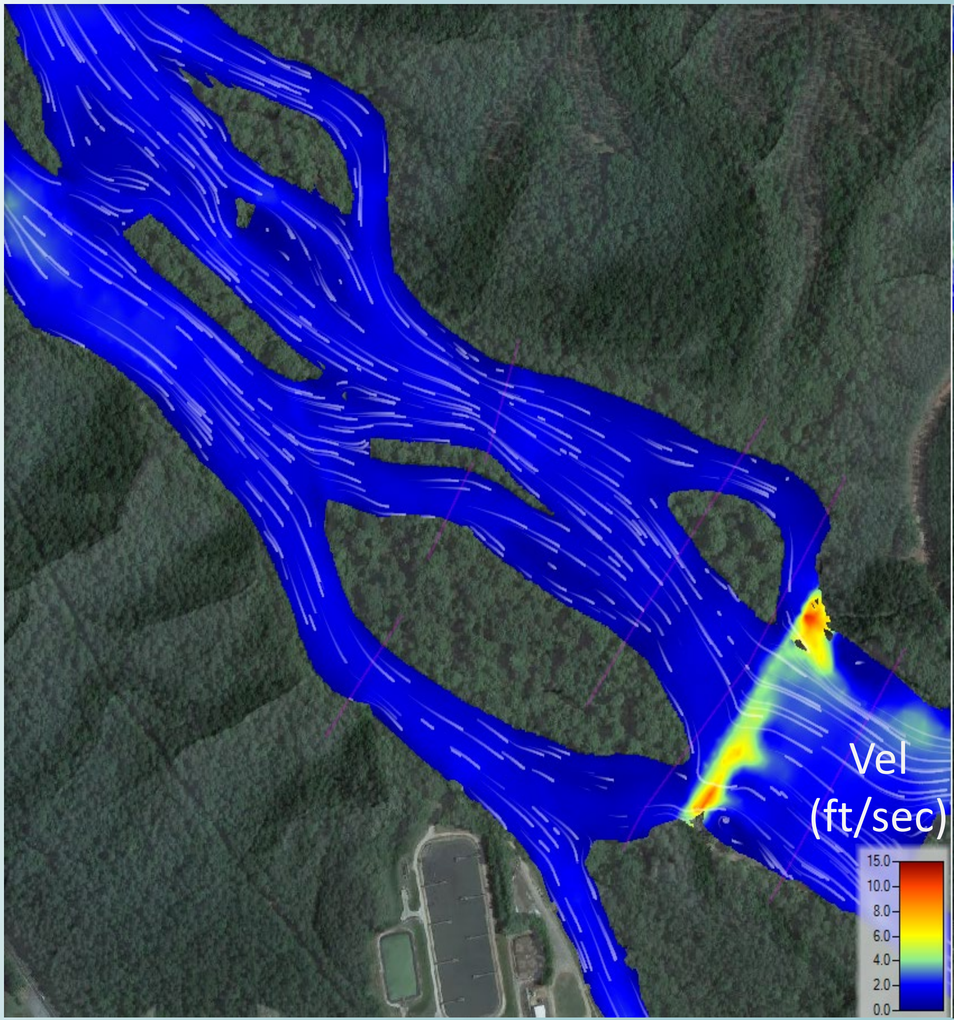


Post-Dam Removal

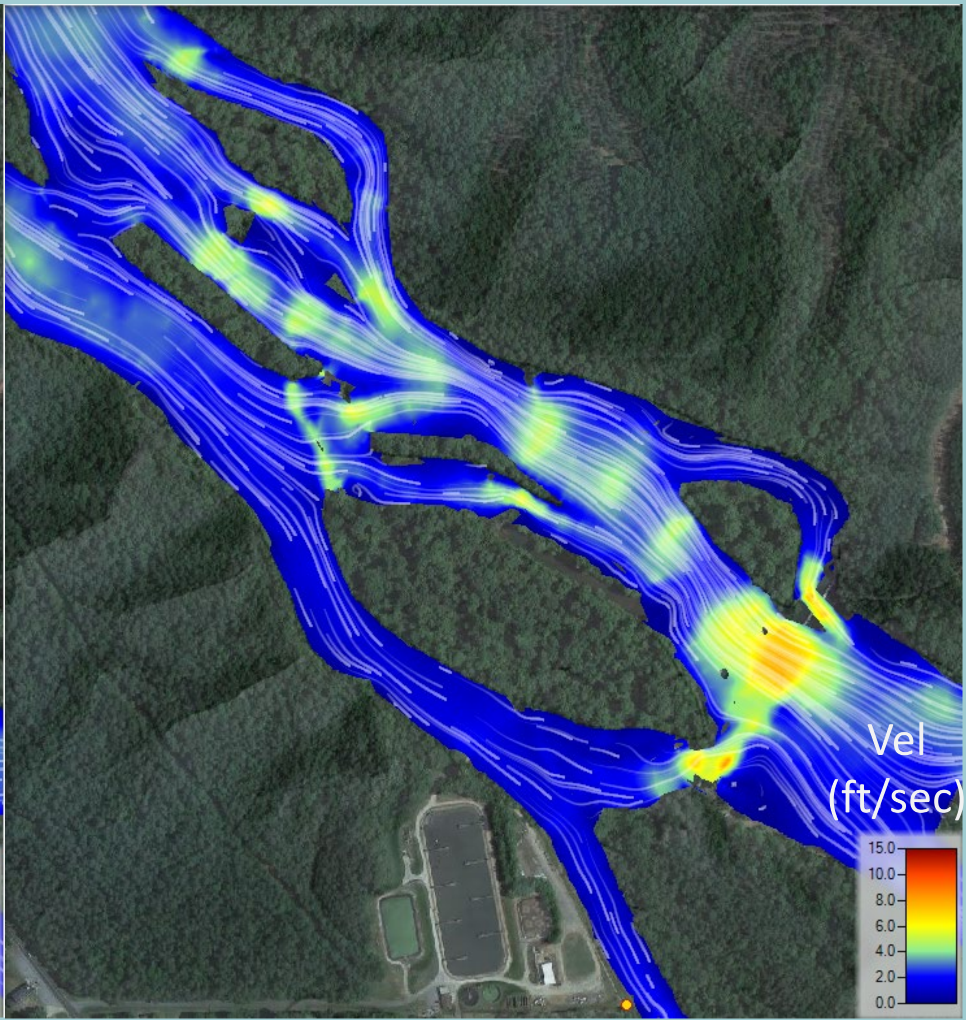


100% Removal – Base +1 Flow Case

Existing Conditions

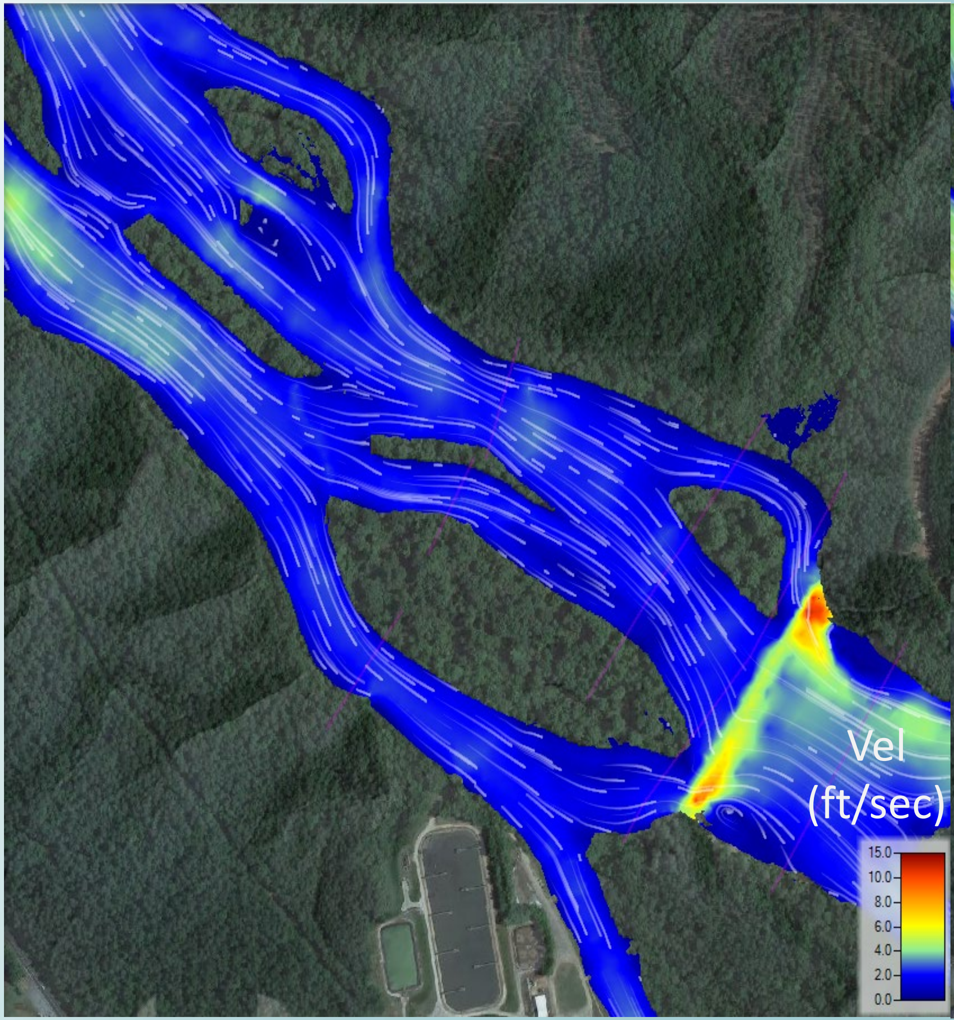


Post-Dam Removal

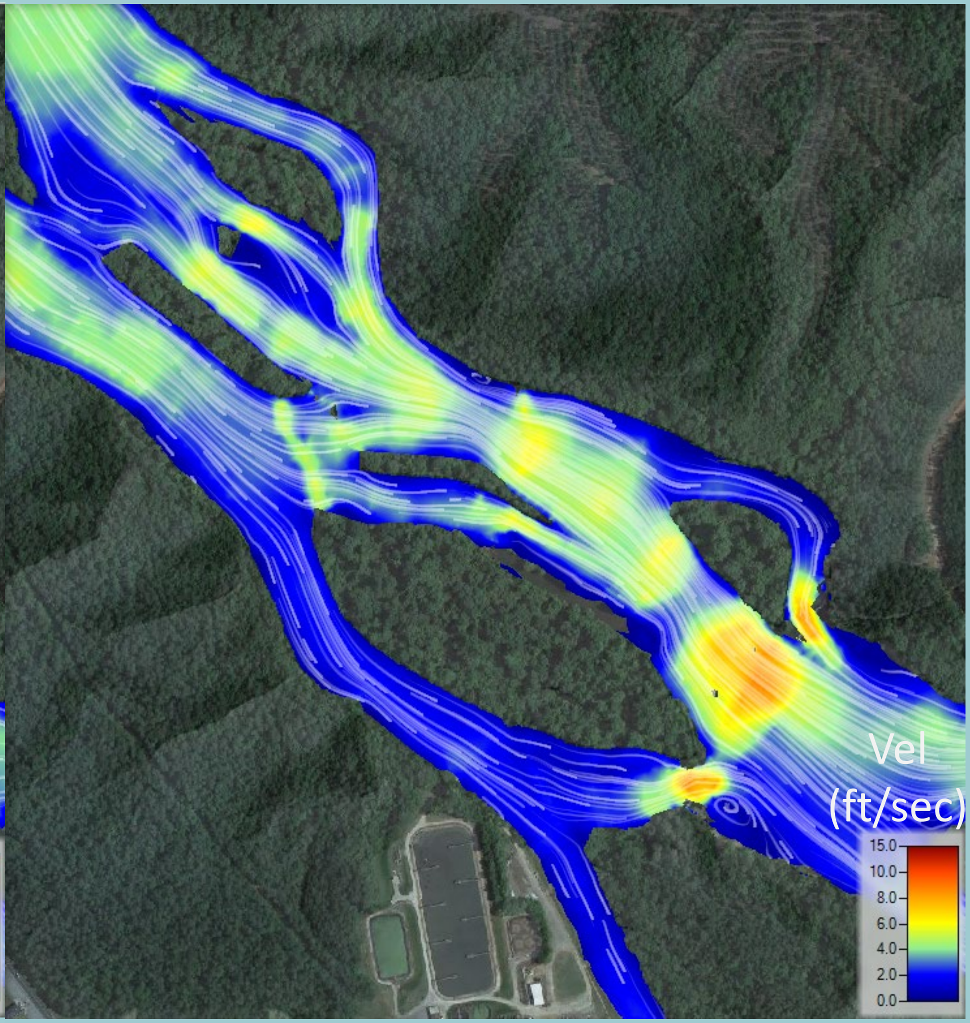


100% Removal – Base +2 Flow Case

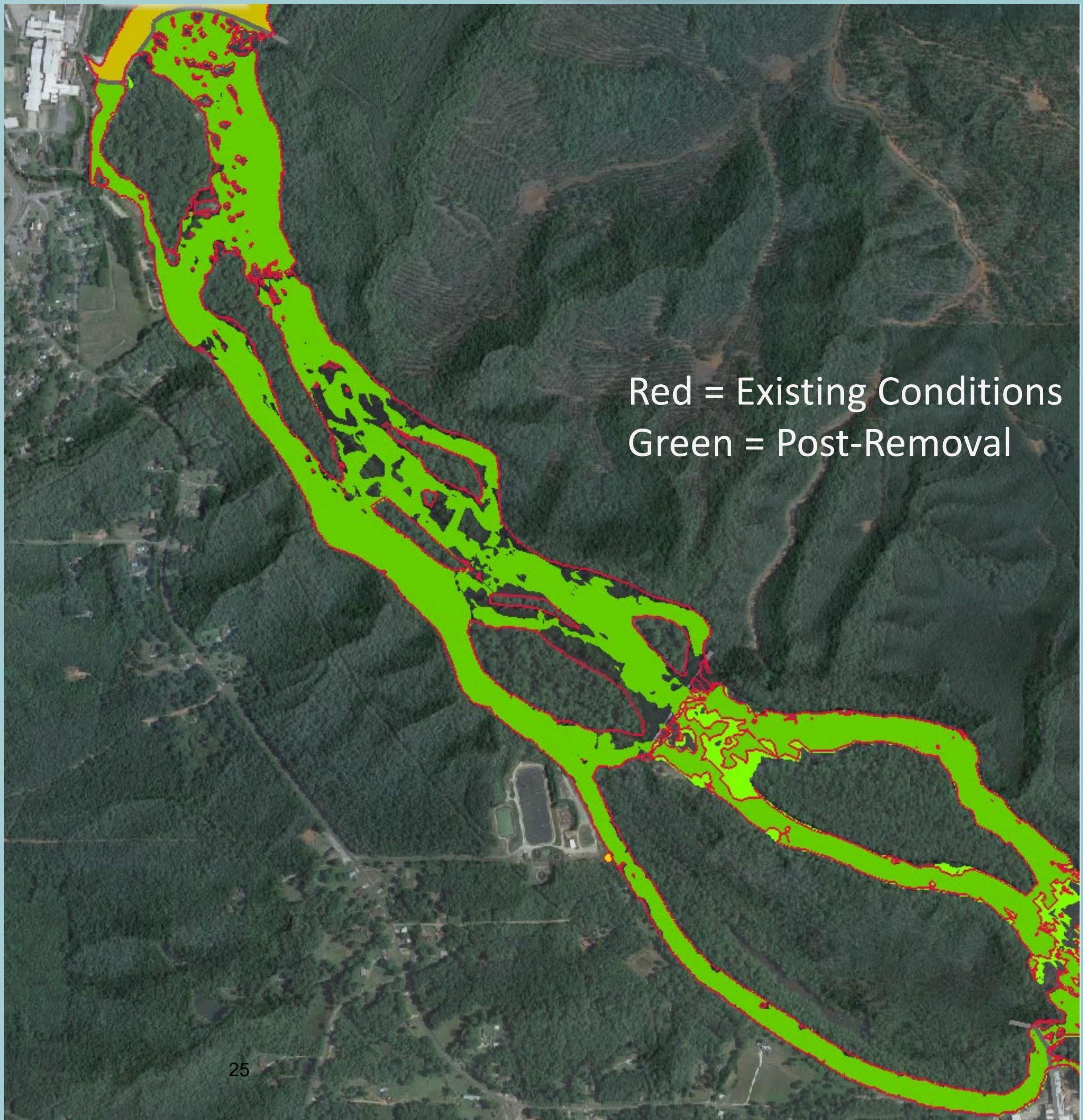
Existing Conditions



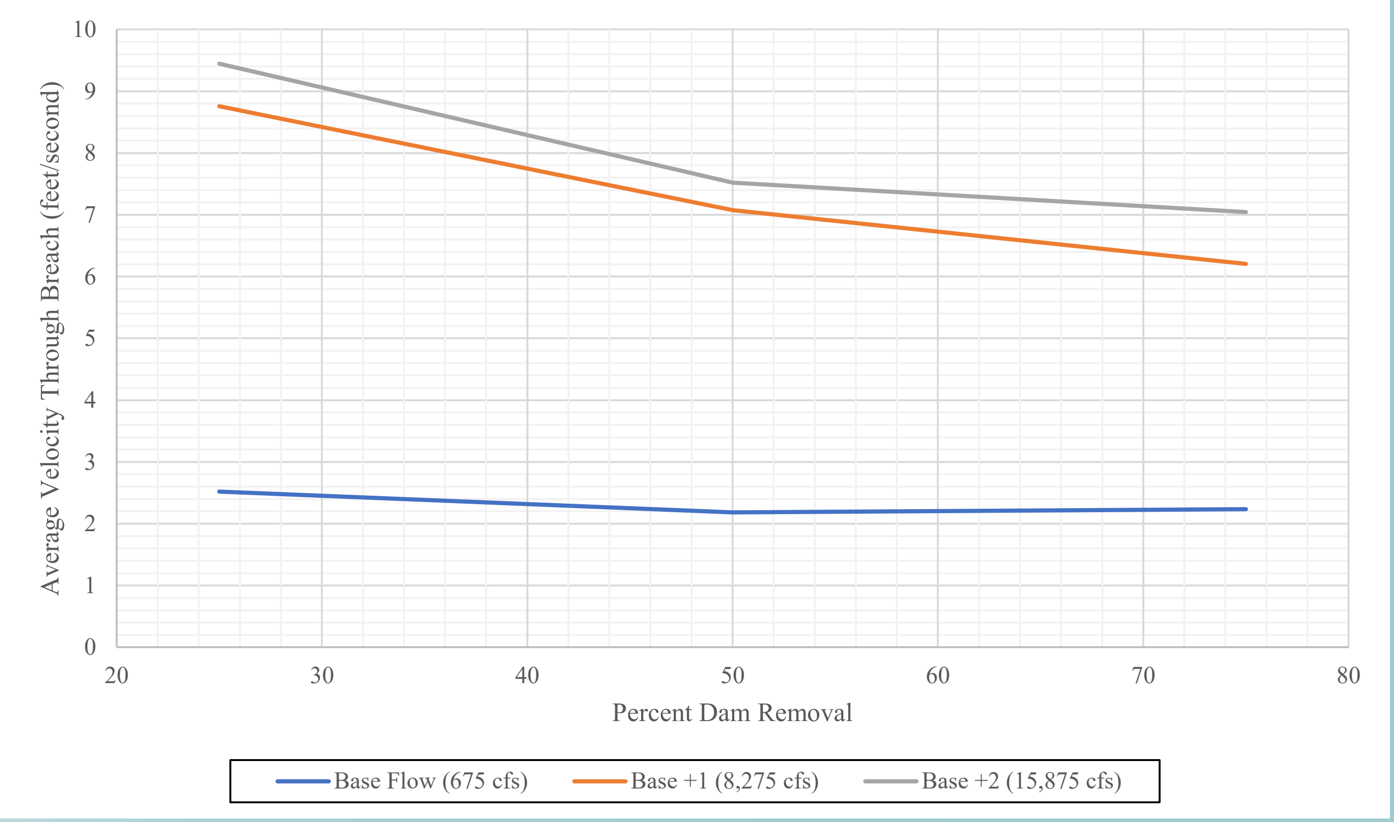
Post-Dam Removal



100% Removal at Base Flow



Crow Hop Average Breach Velocities

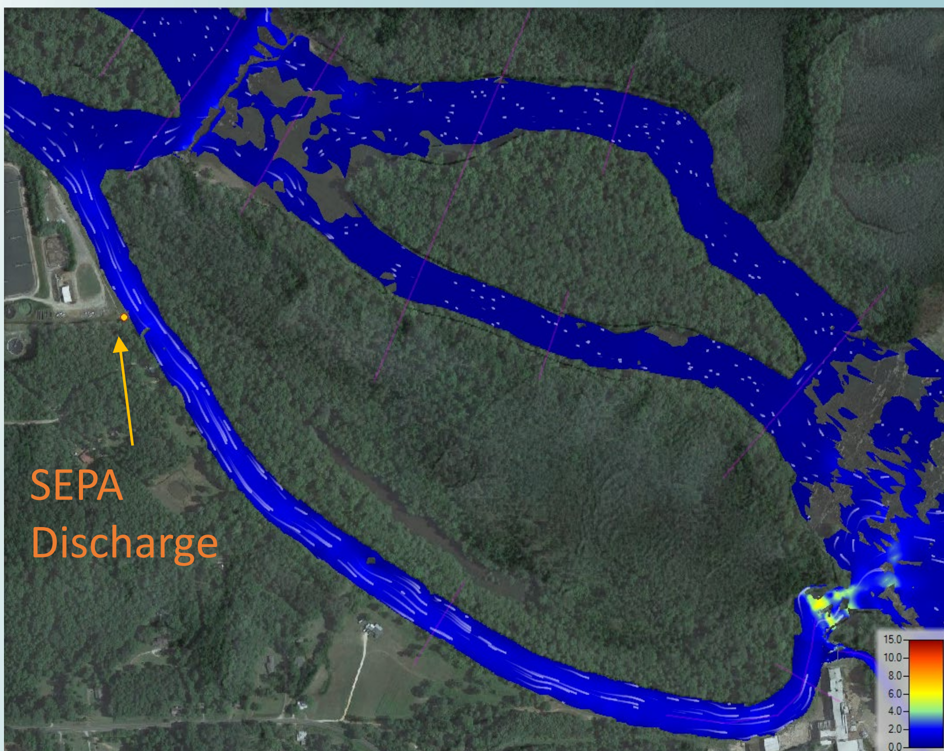


Case	Base Flow	Base +1	Base +2
Percent Removal	Average Velocity (feet/second)		
25	2.5	8.8	9.4
50	2.2	7.1	7.5
75	2.2	6.2	7.0

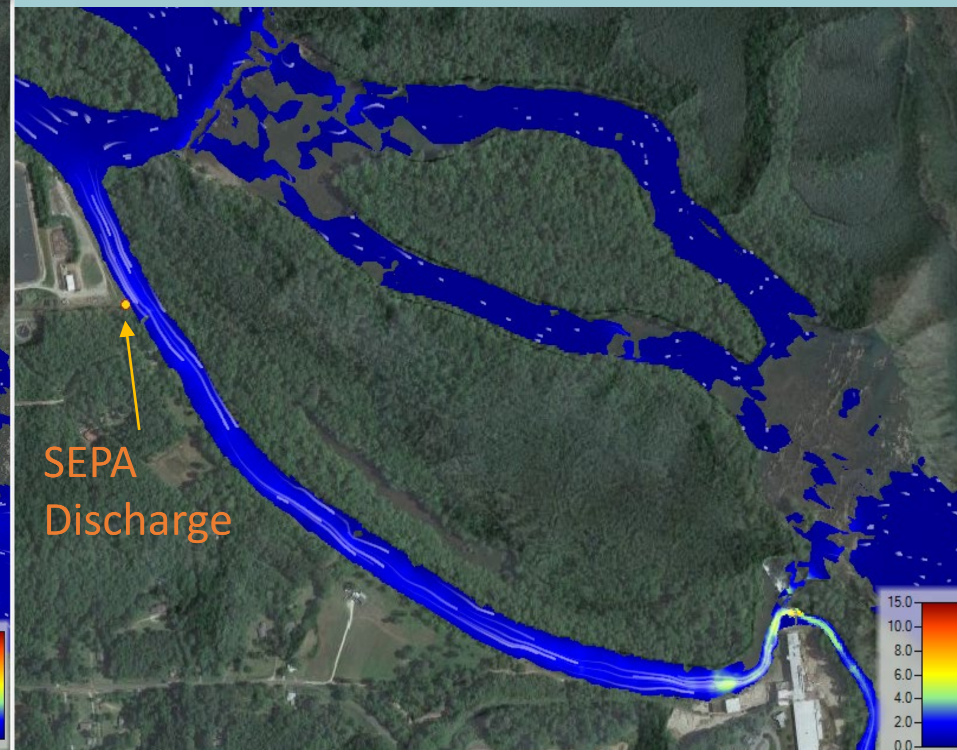
Riverview Dam Removal

100% Removal – Base Flow Case

Existing Conditions

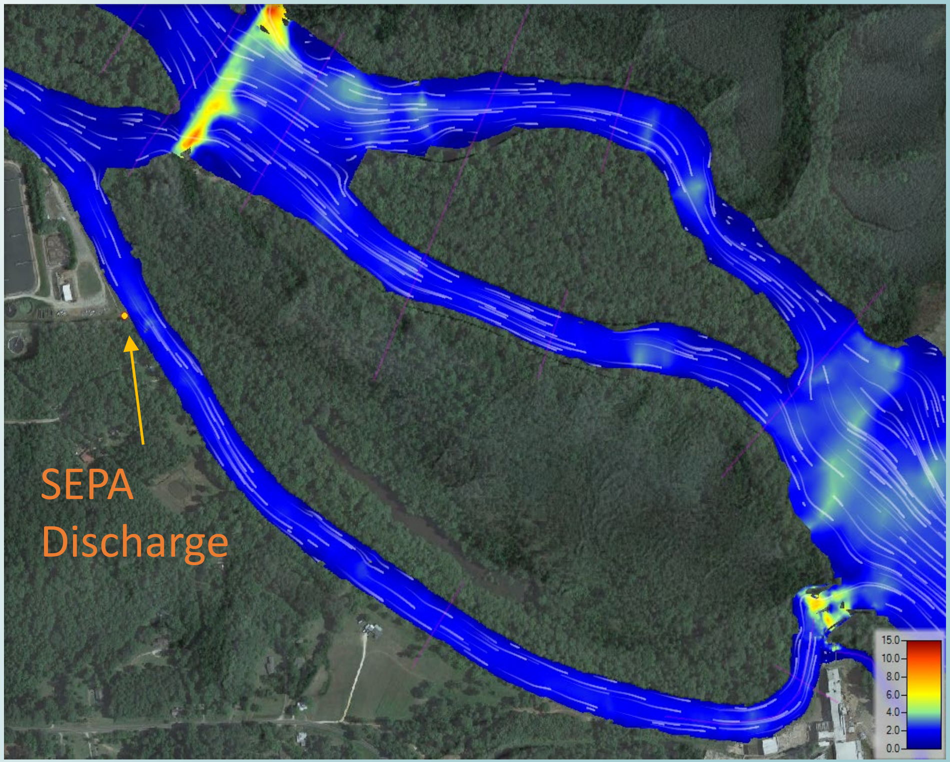


Post-Dam Removal

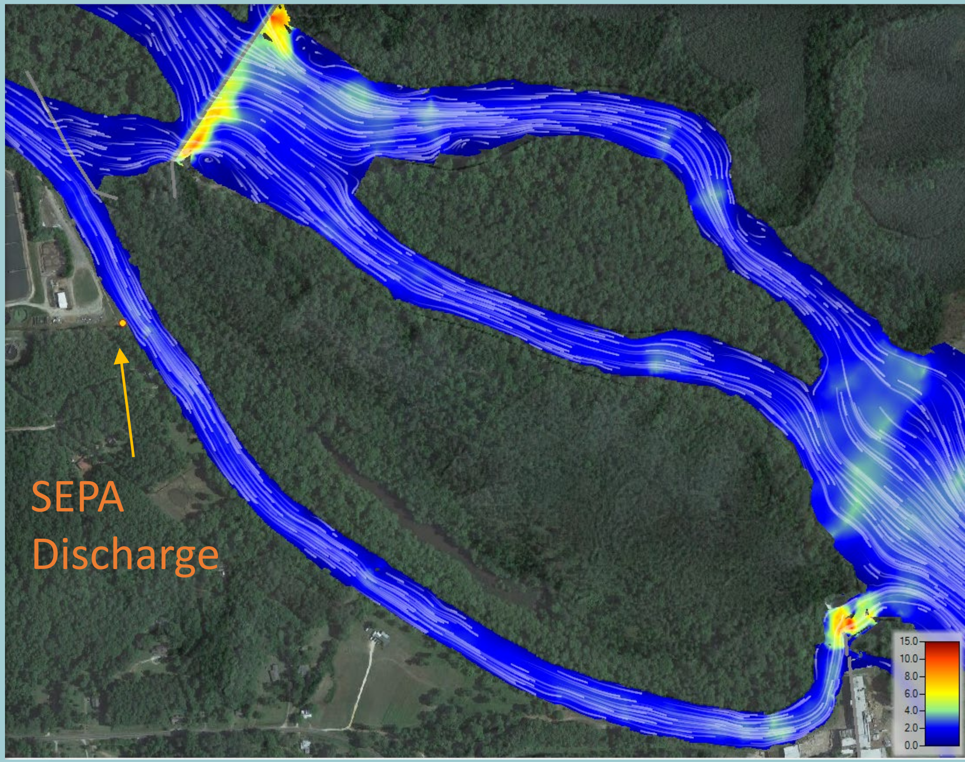


100% Removal – Base +1 Flow Case

Existing Conditions

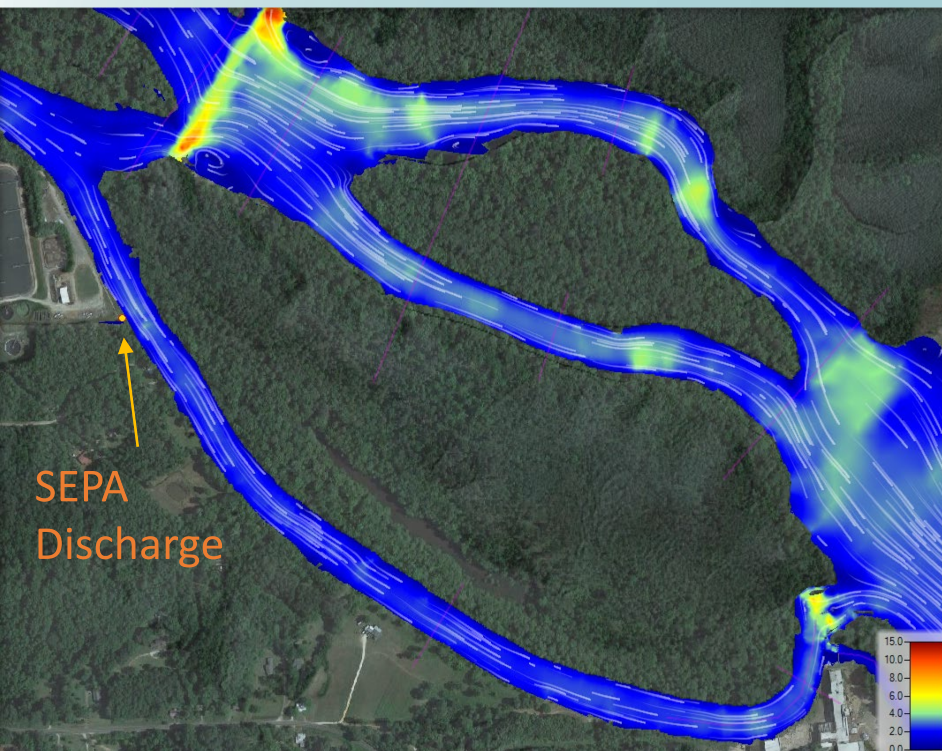


Post-Dam Removal

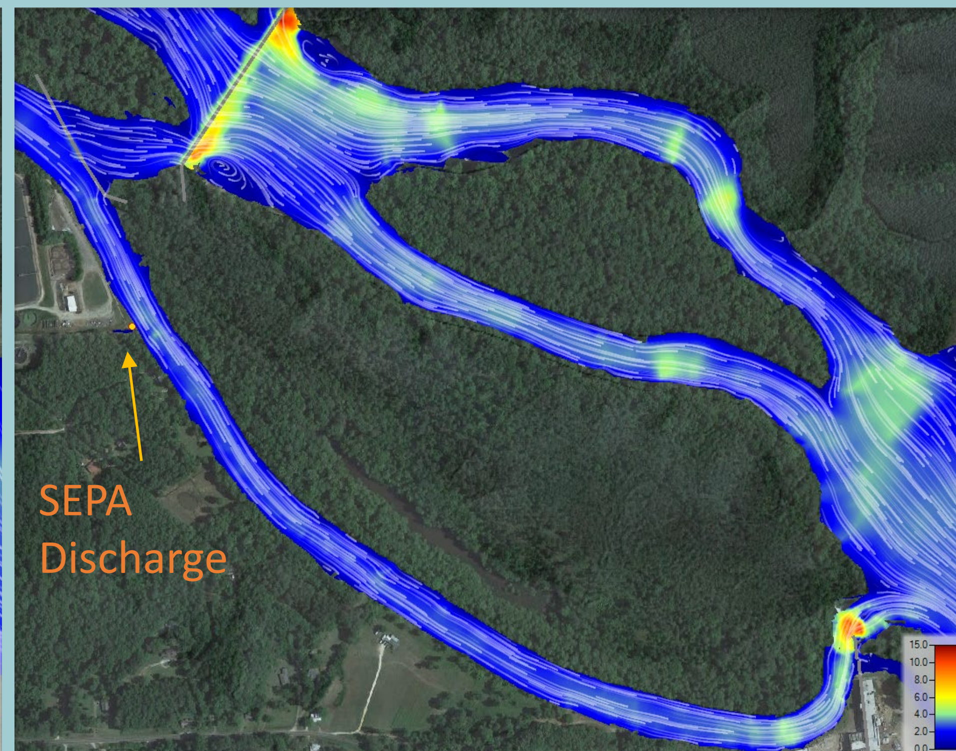


100% Removal – Base +2 Flow Case

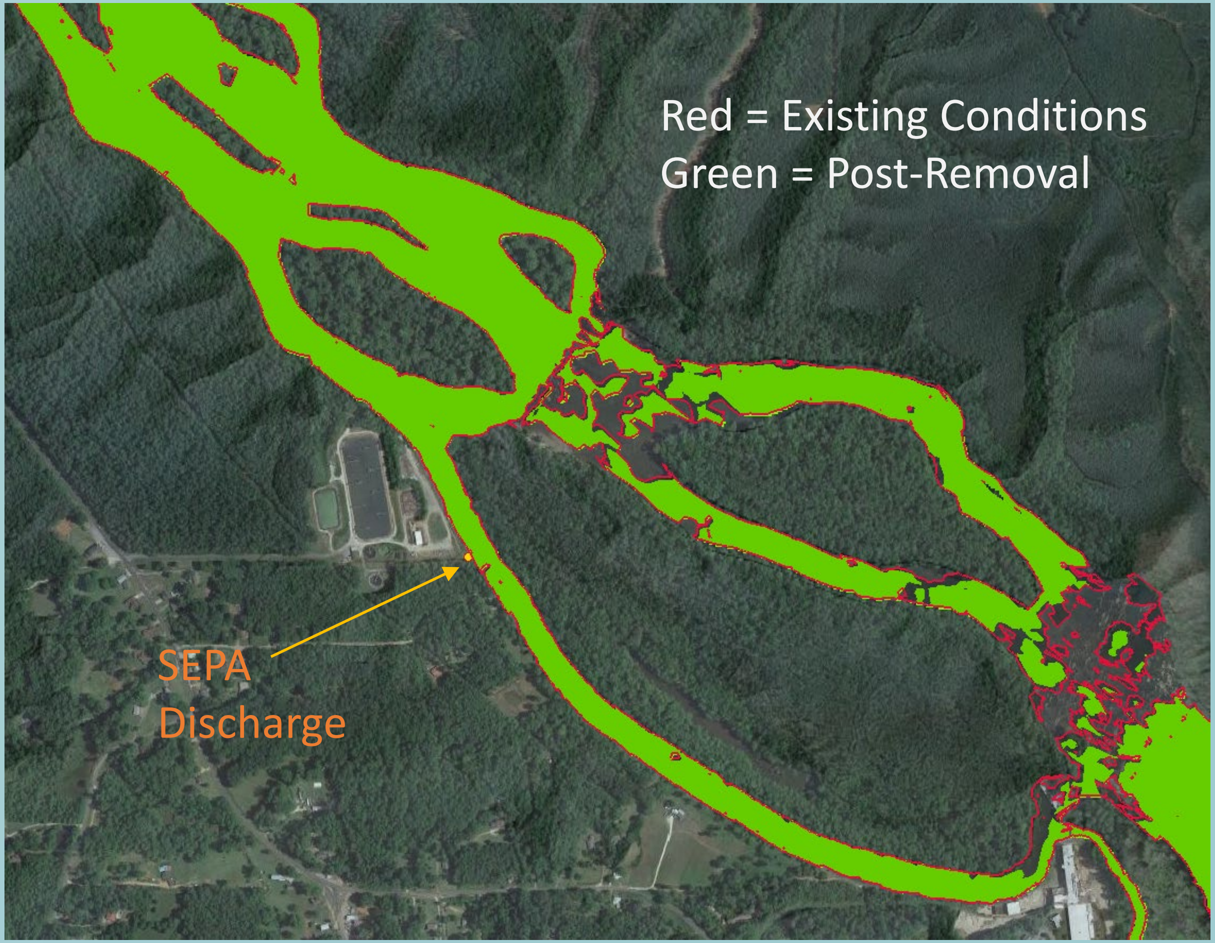
Existing Conditions



Post-Dam Removal

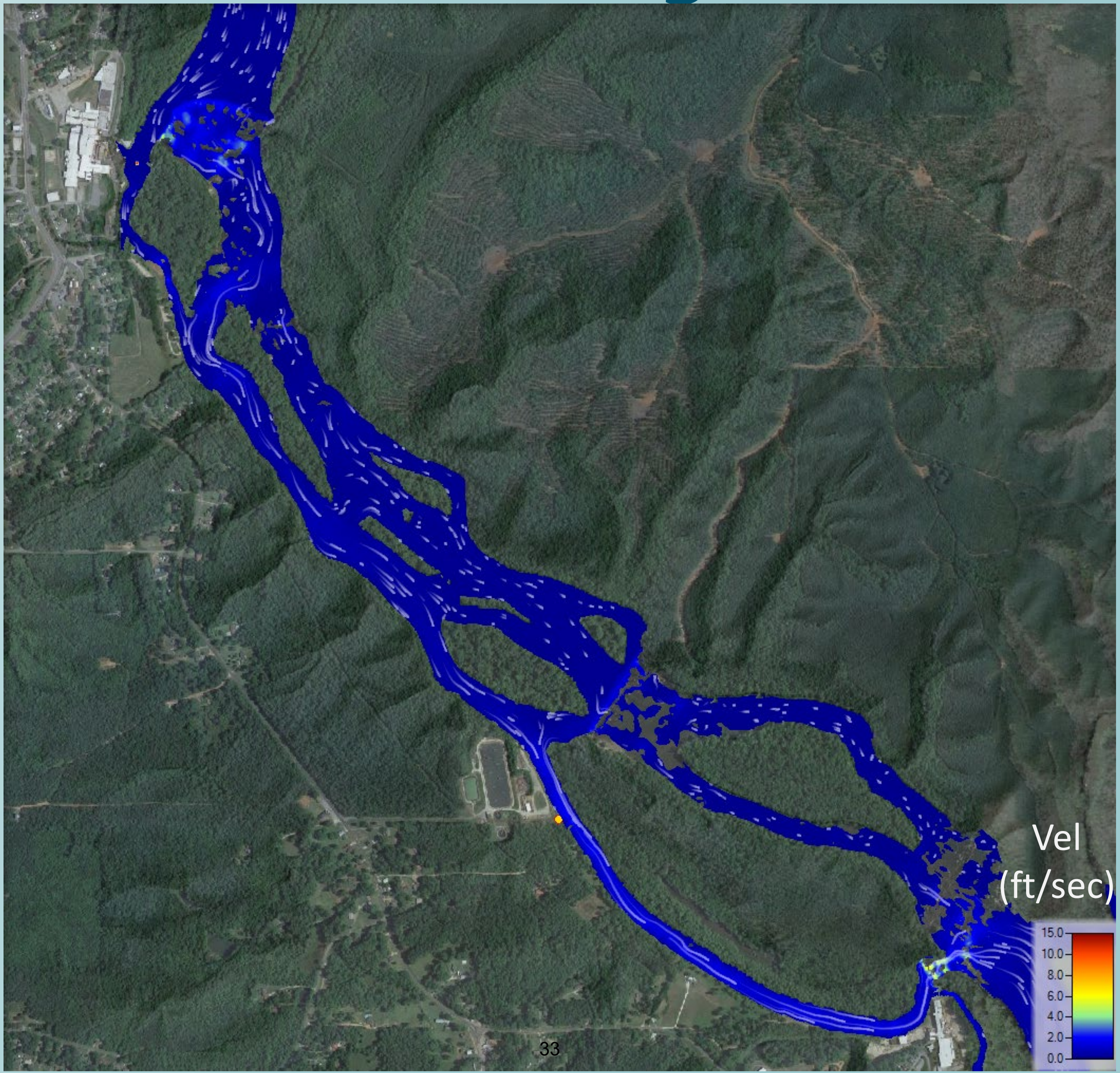


Upstream Effects (100% Removal) at Base Flow

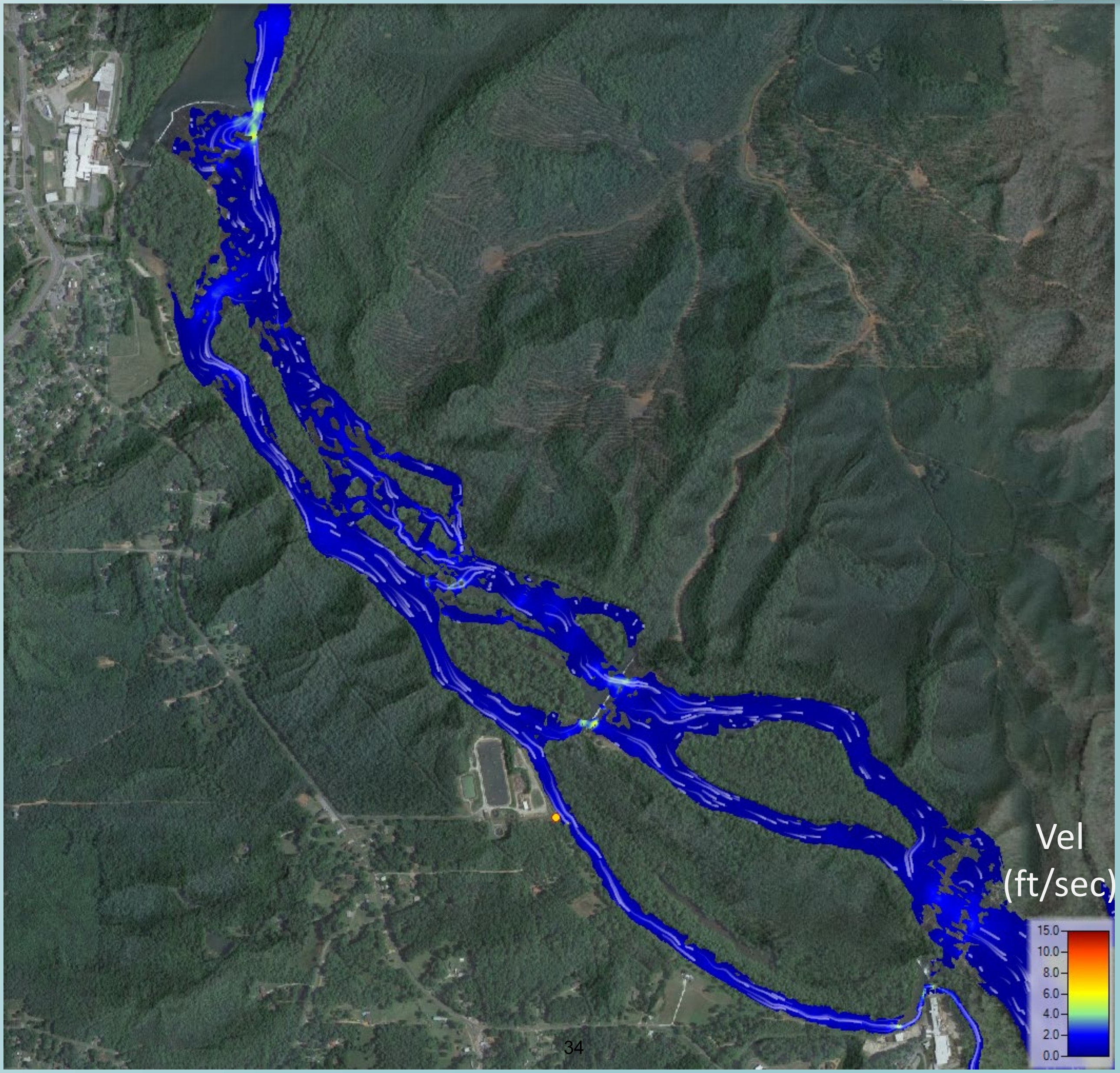


Crow Hop, Riverview, and Langdale Removals

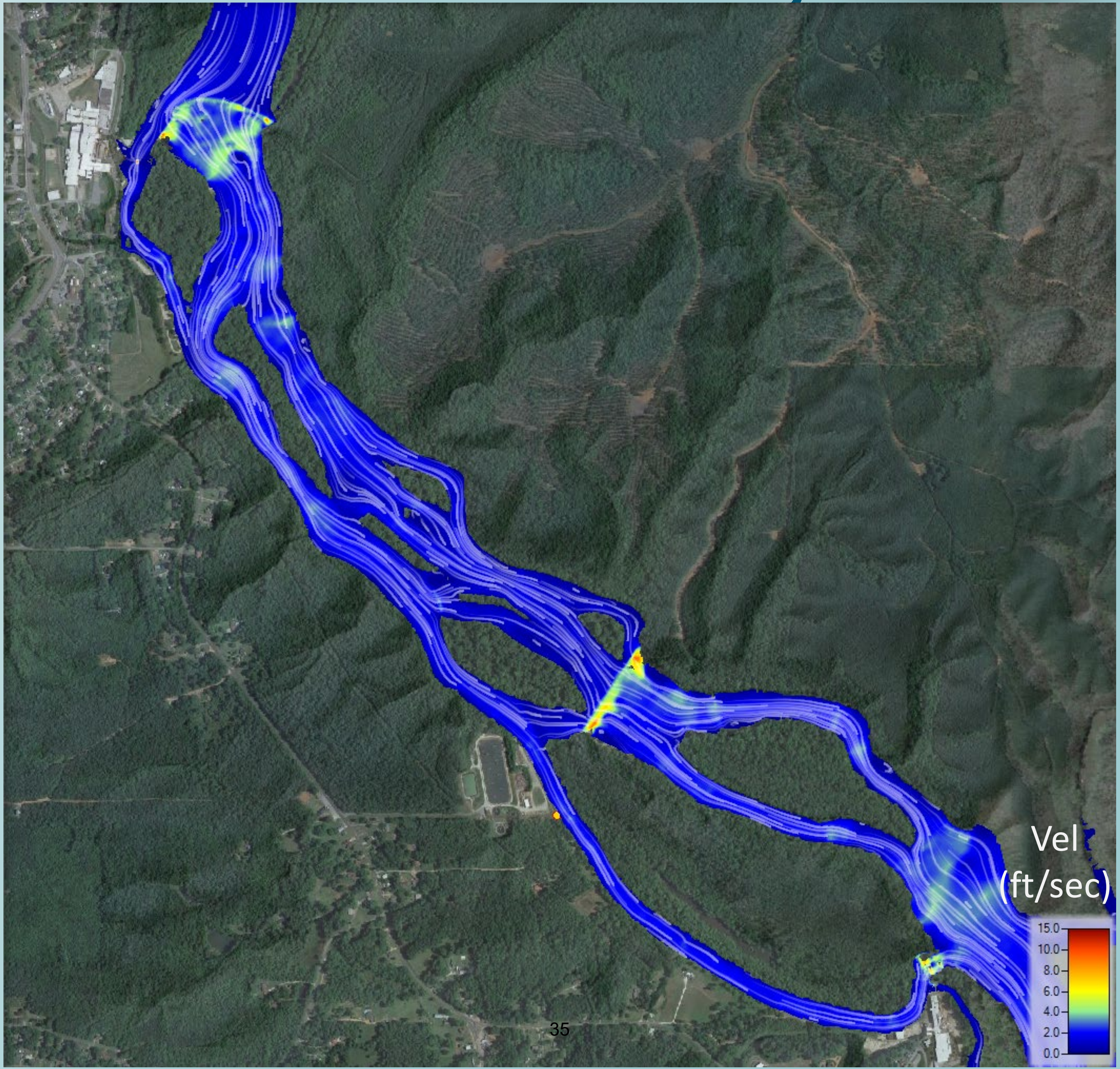
Base Flow – Existing Conditions



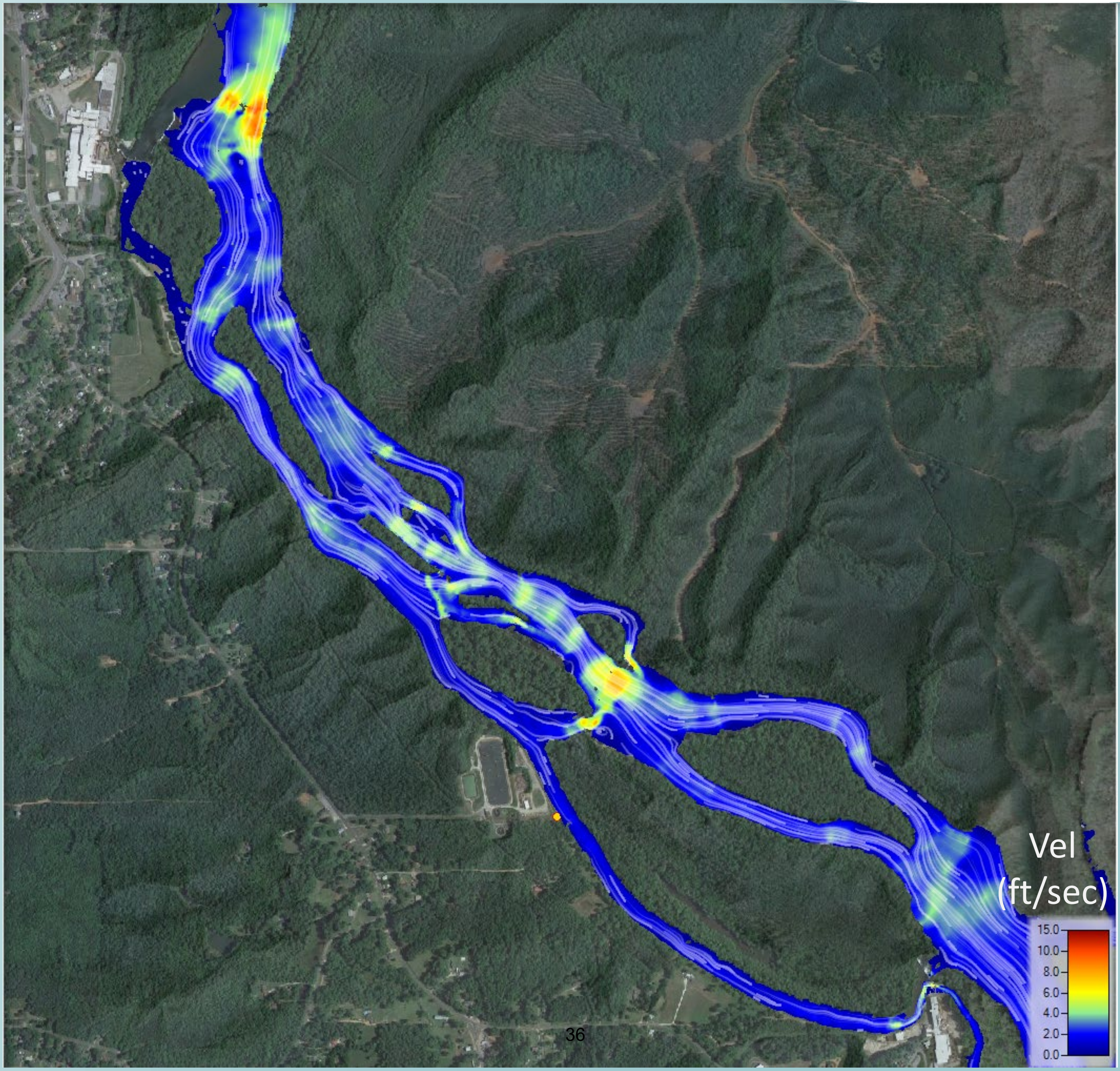
Base Flow – 100% All Dam Removal



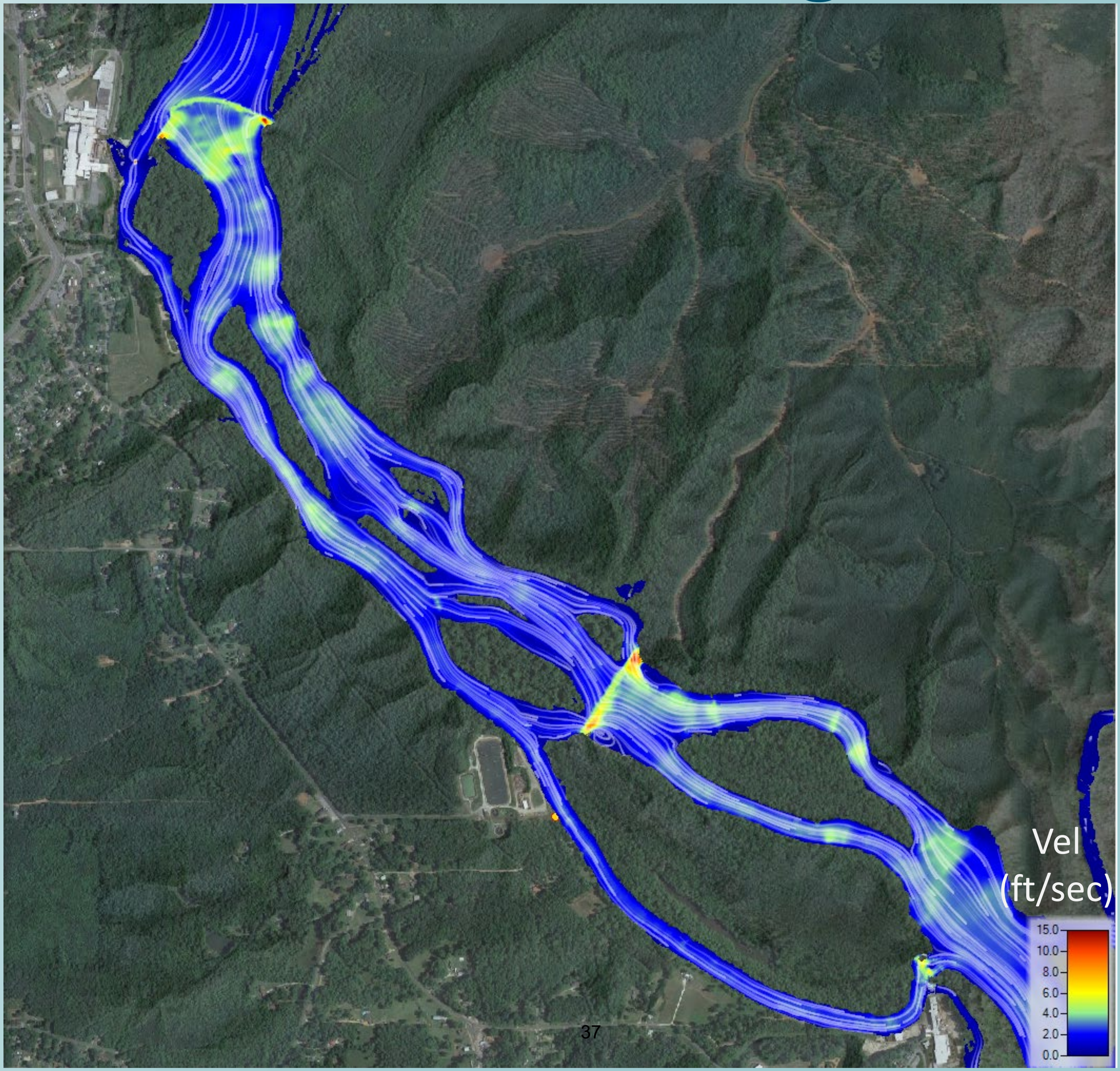
Base +1 Flow – Existing Conditions



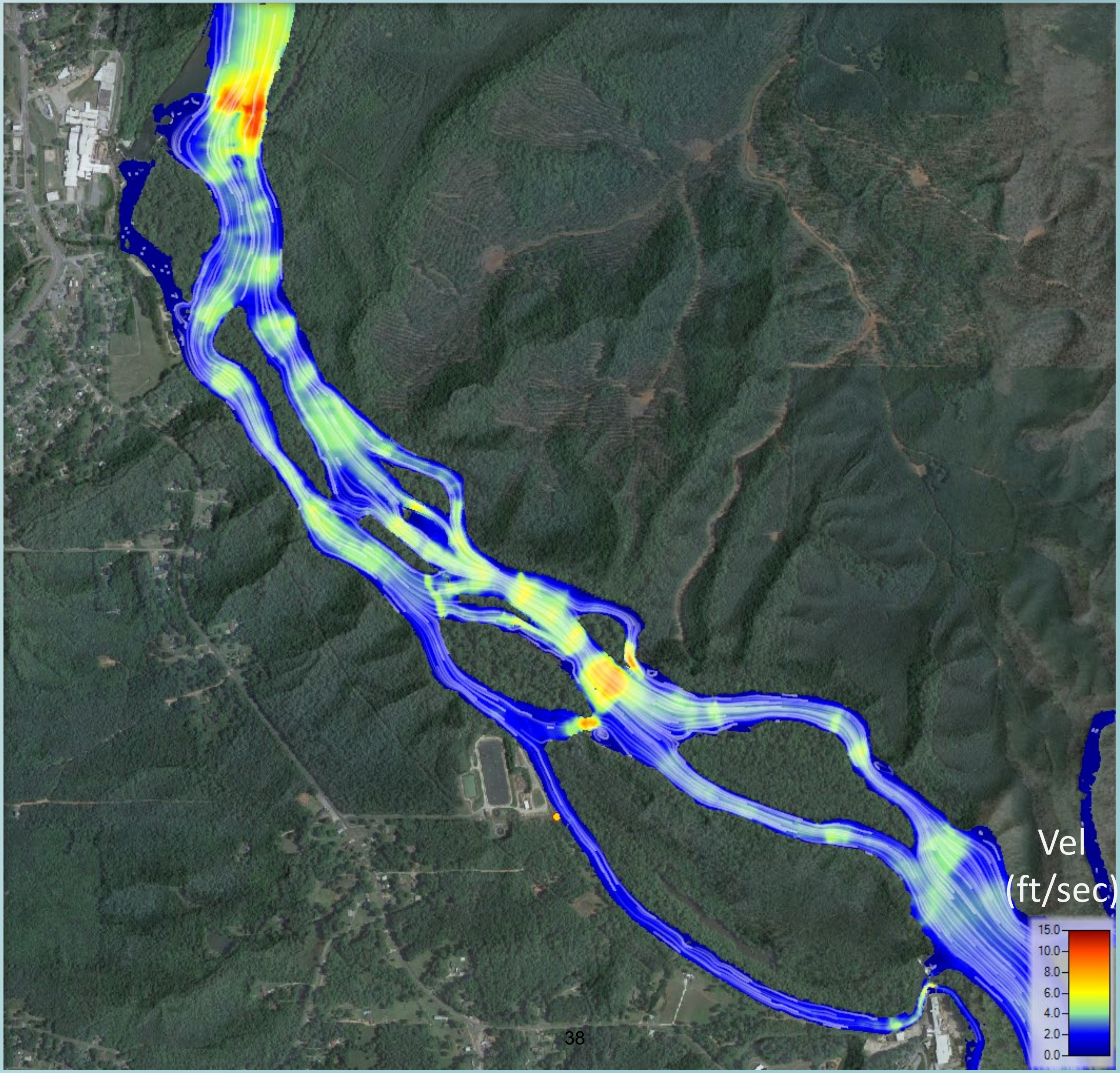
Base +1 Flow – 100% All Dam Removal



Base +2 Flow – Existing Conditions



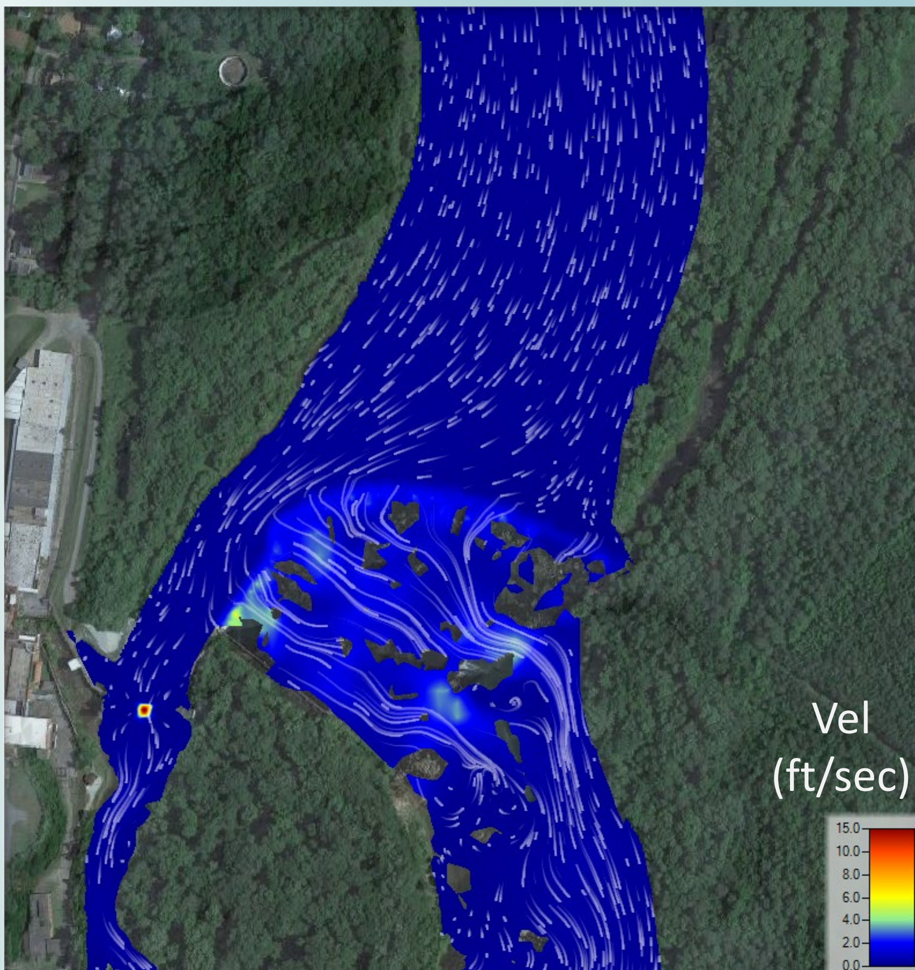
Base +2 Flow – 100% All Dam Removal



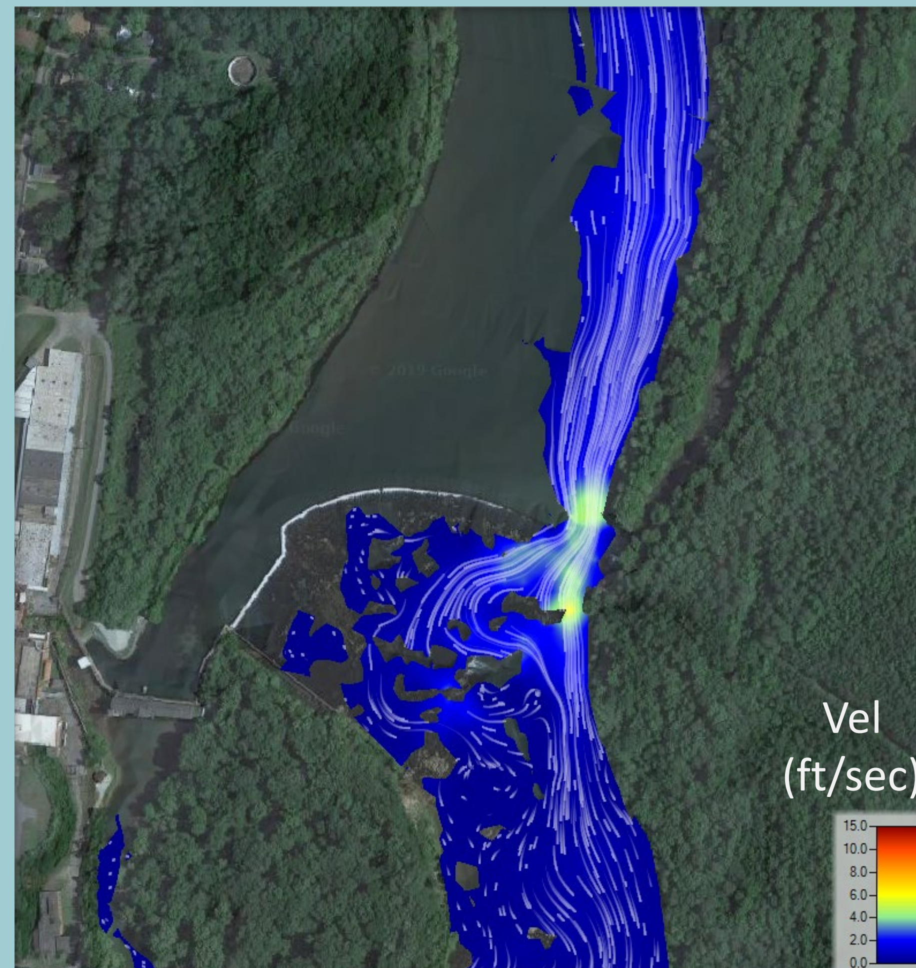
Additional Results

25% Removal – Base Flow Case

Existing Conditions

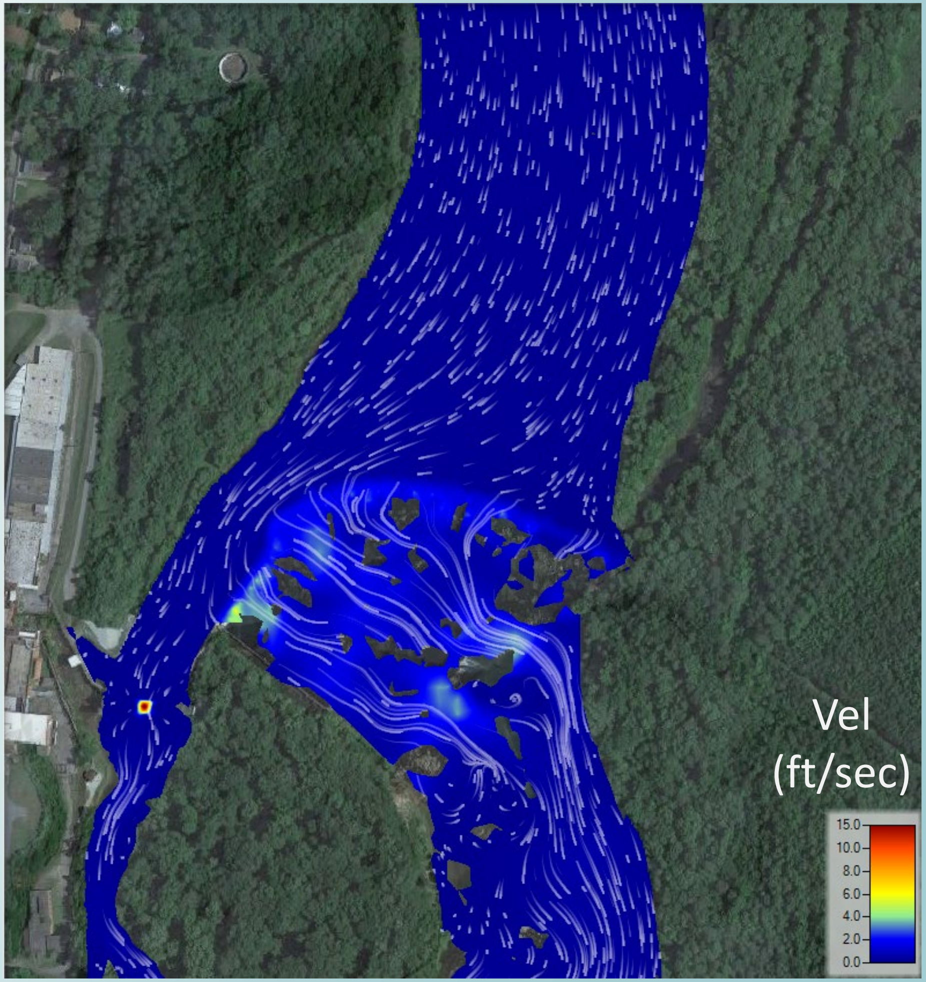


Post-Dam Removal

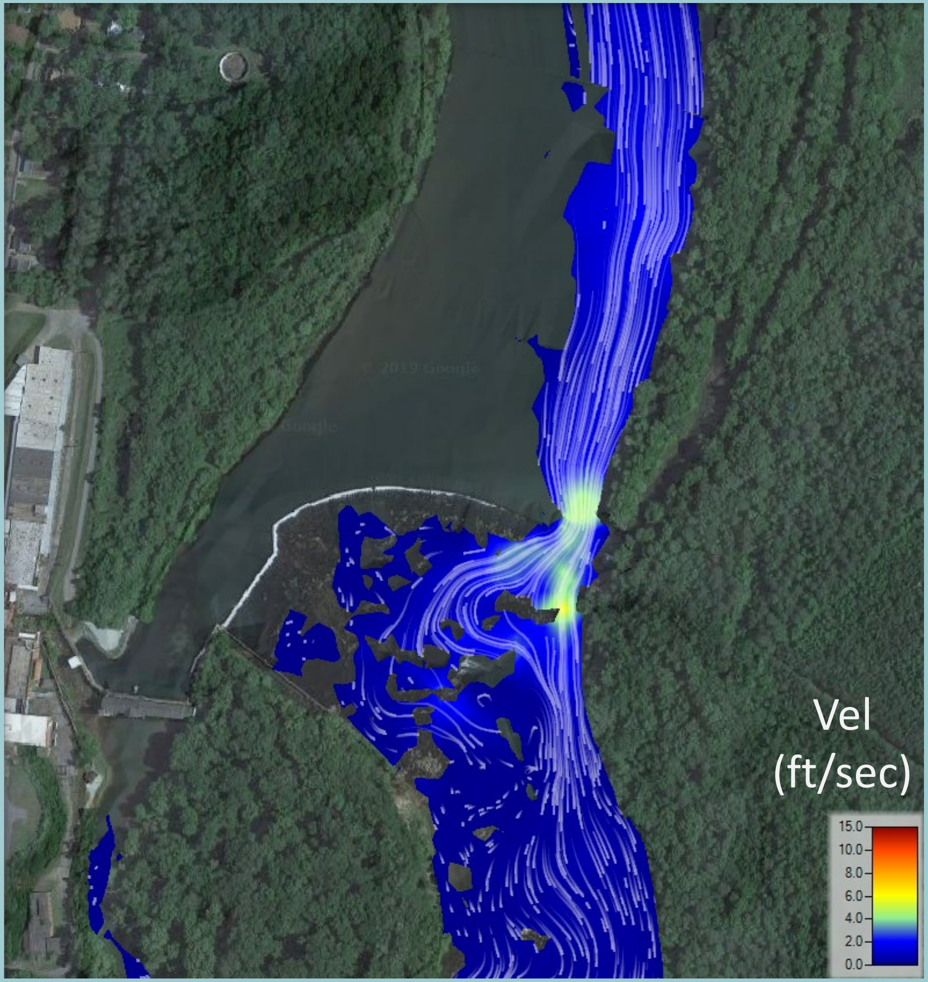


50% Removal – Base Flow Case

Existing Conditions

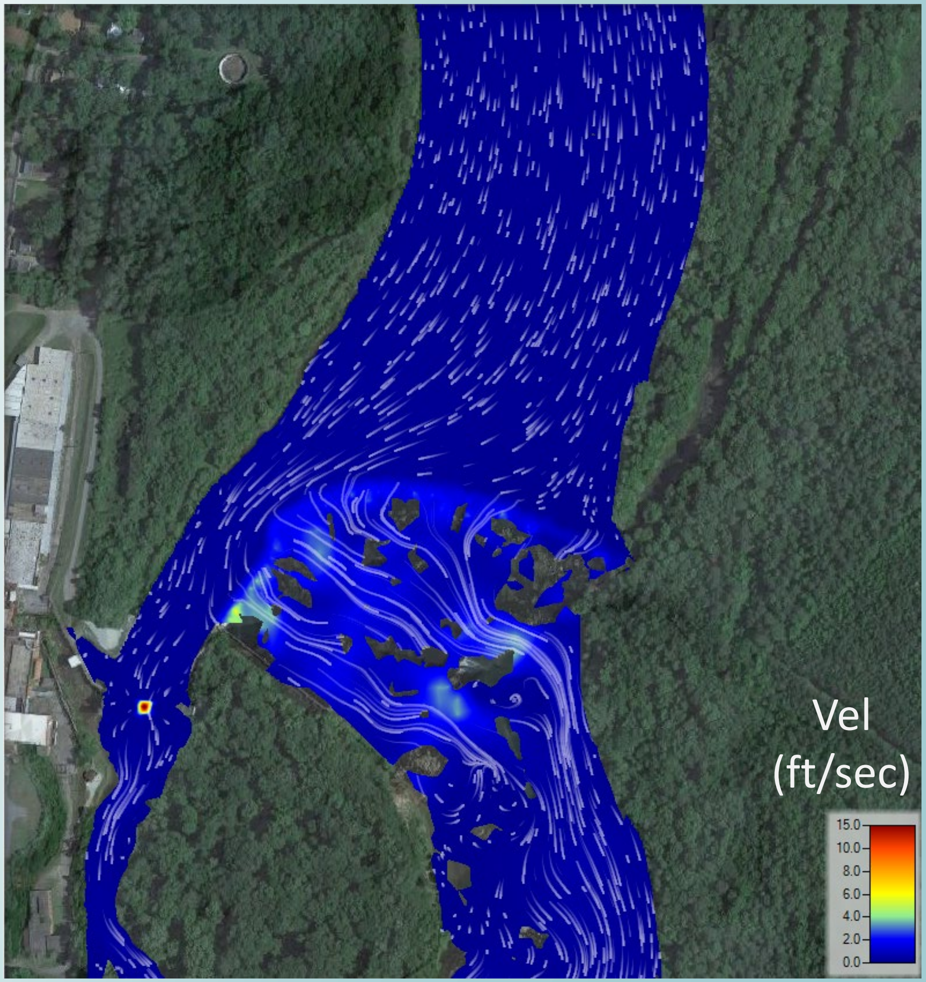


Post-Dam Removal



75% Removal – Base Flow Case

Existing Conditions



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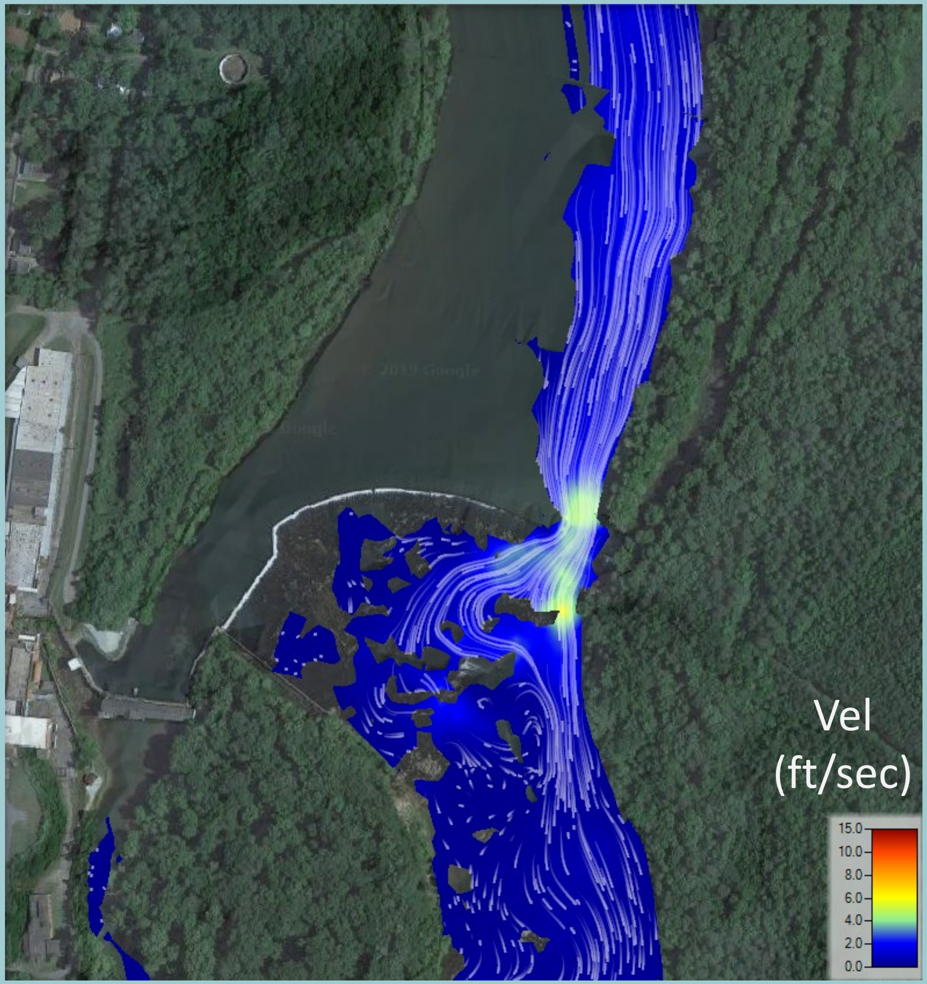
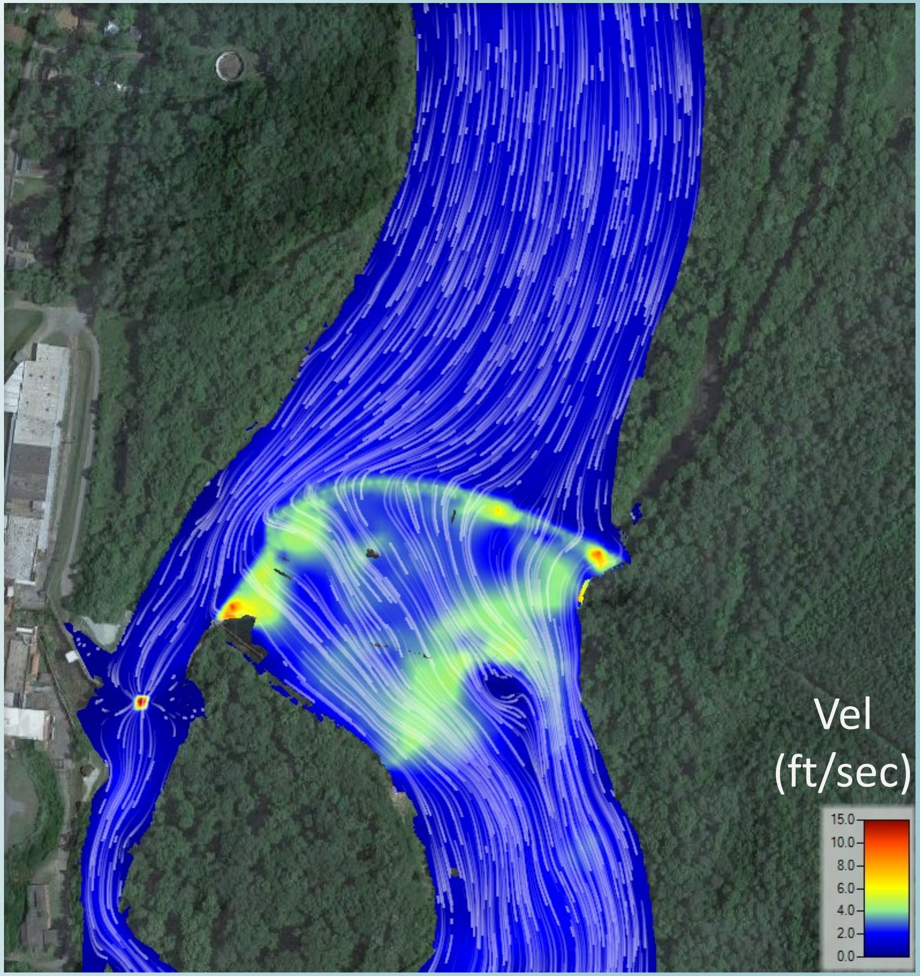


25% Removal – Base +1 Flow Case

Existing Conditions



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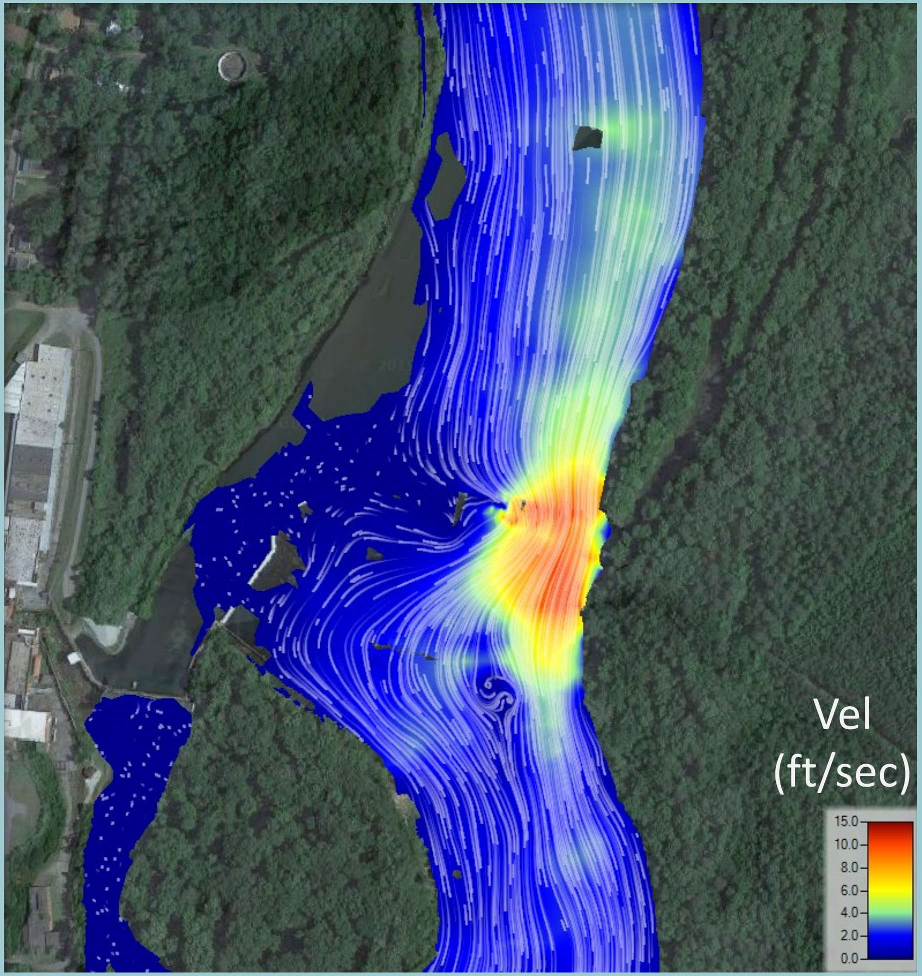
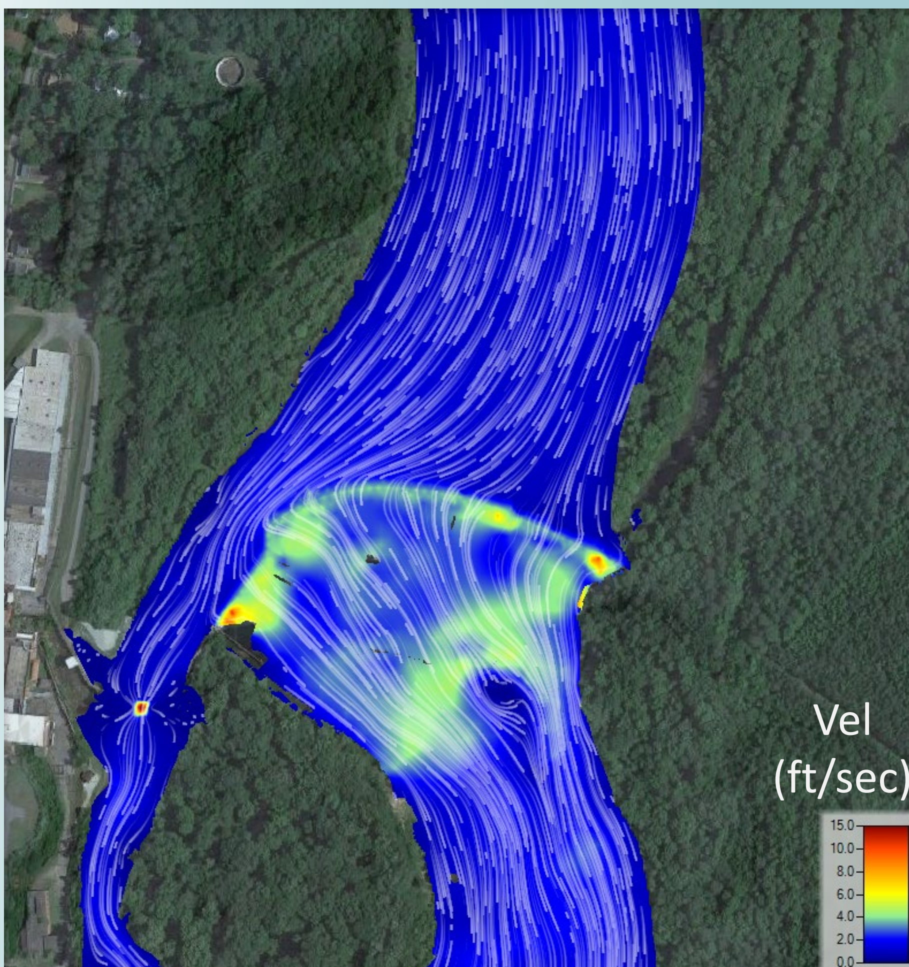


50% Removal – Base +1 Flow Case

Existing Conditions



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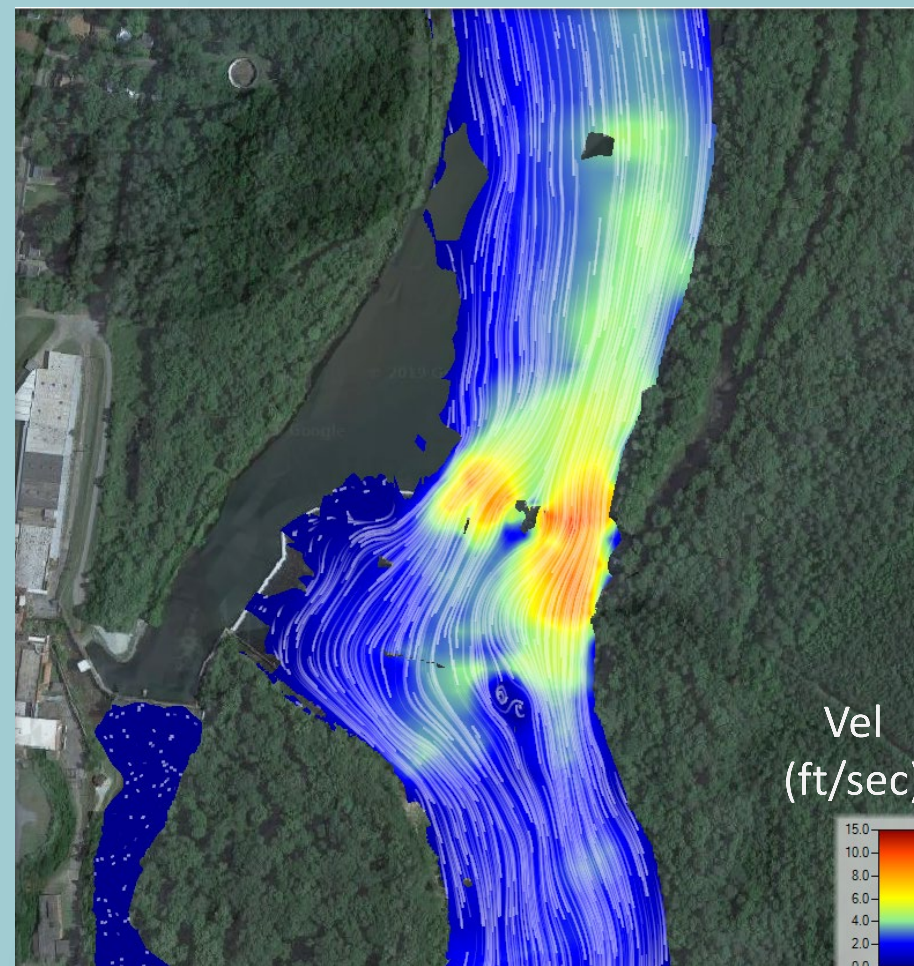
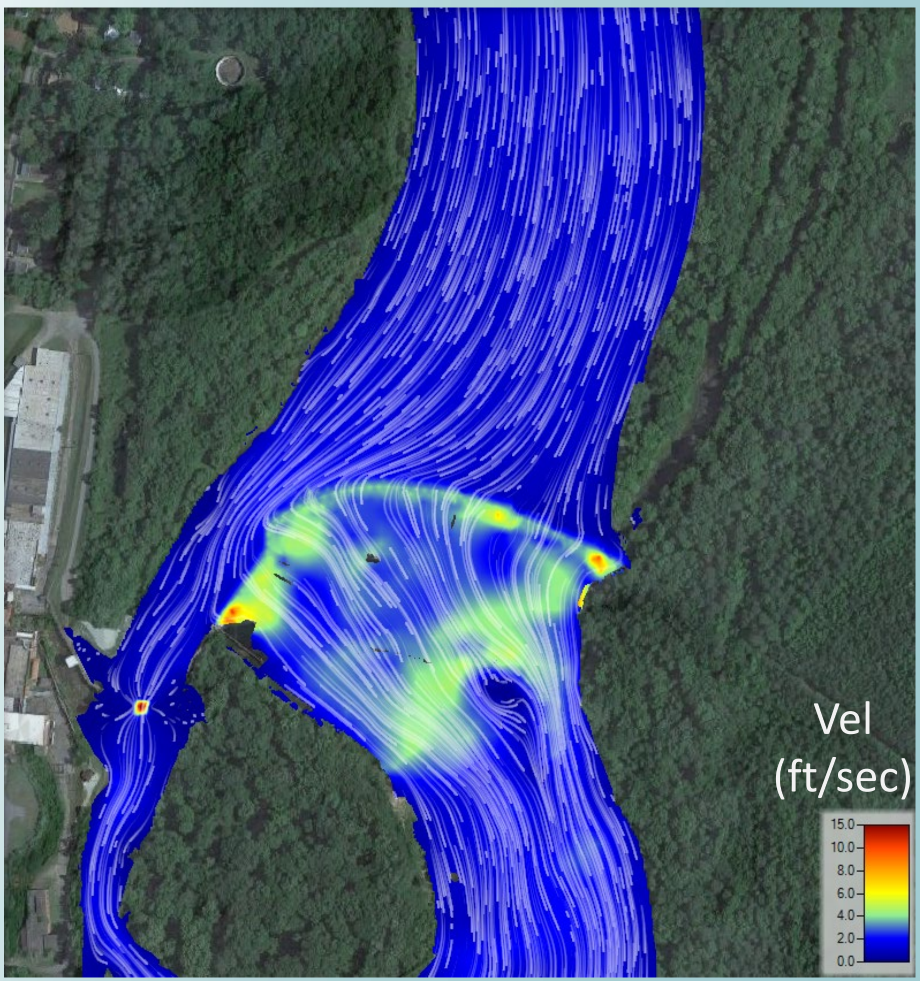
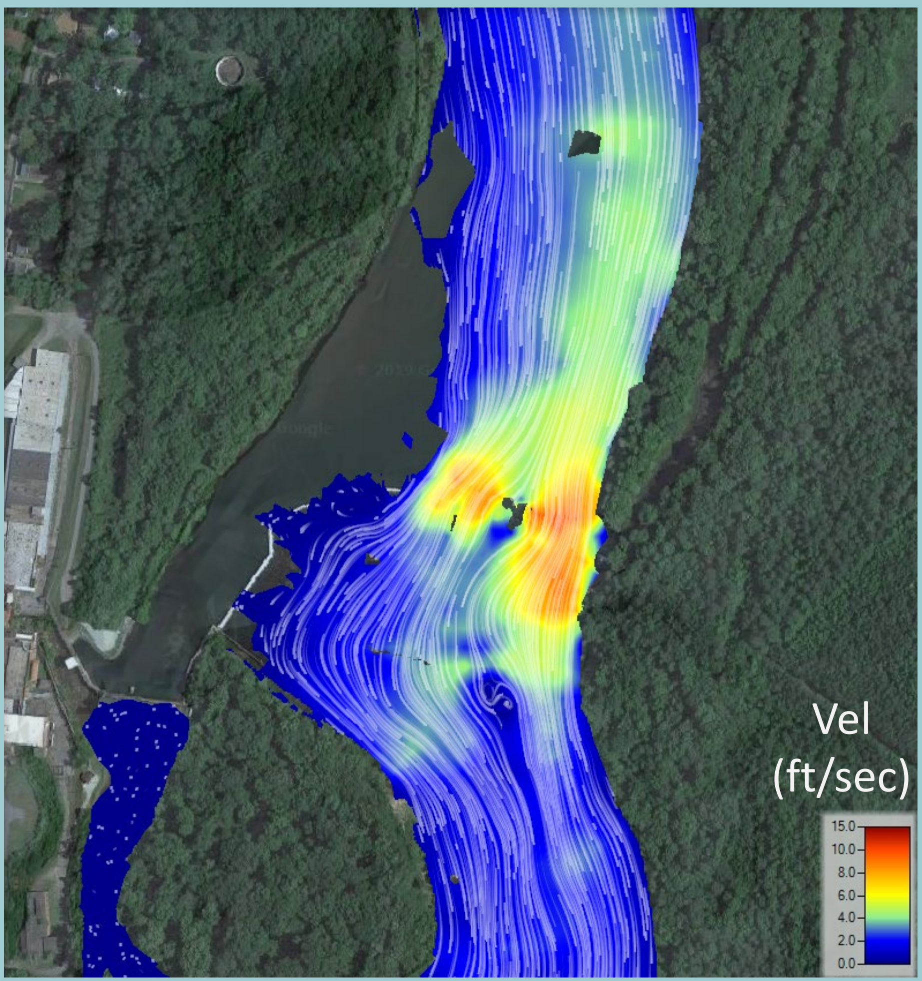


75% Removal – Base +1 Flow Case

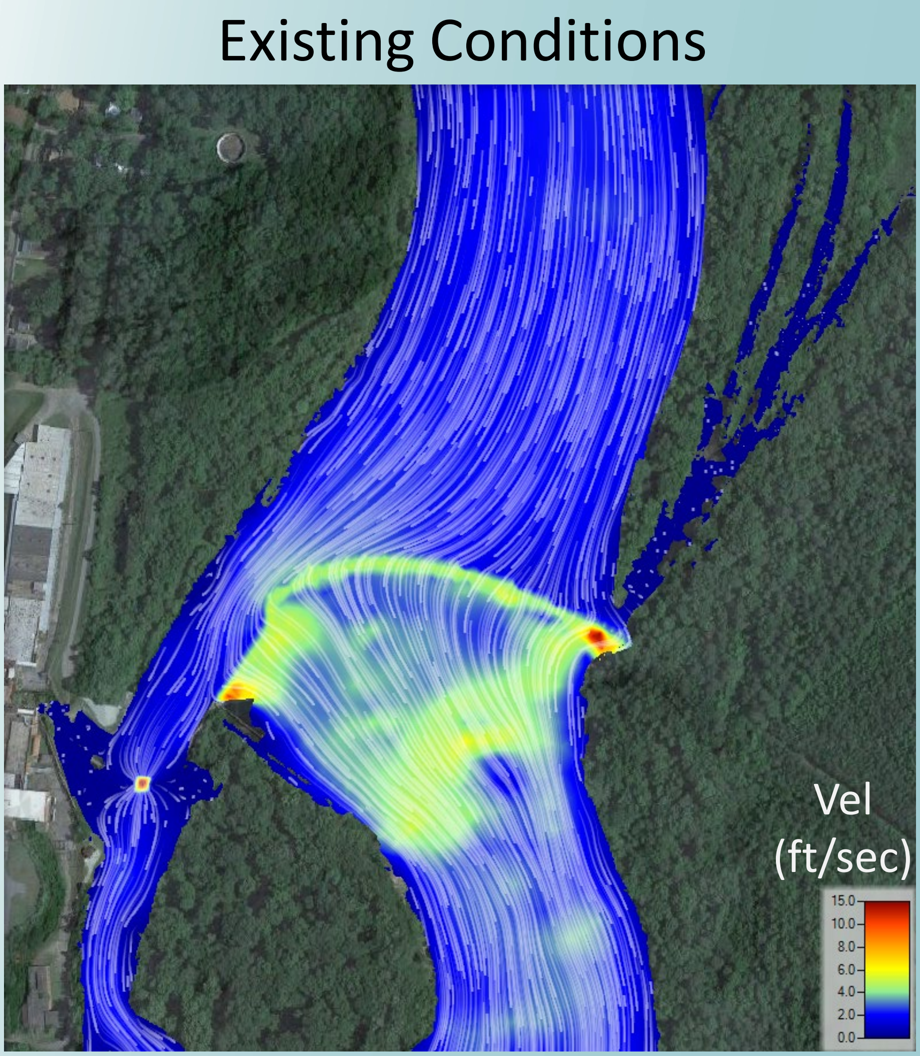
Existing Conditions

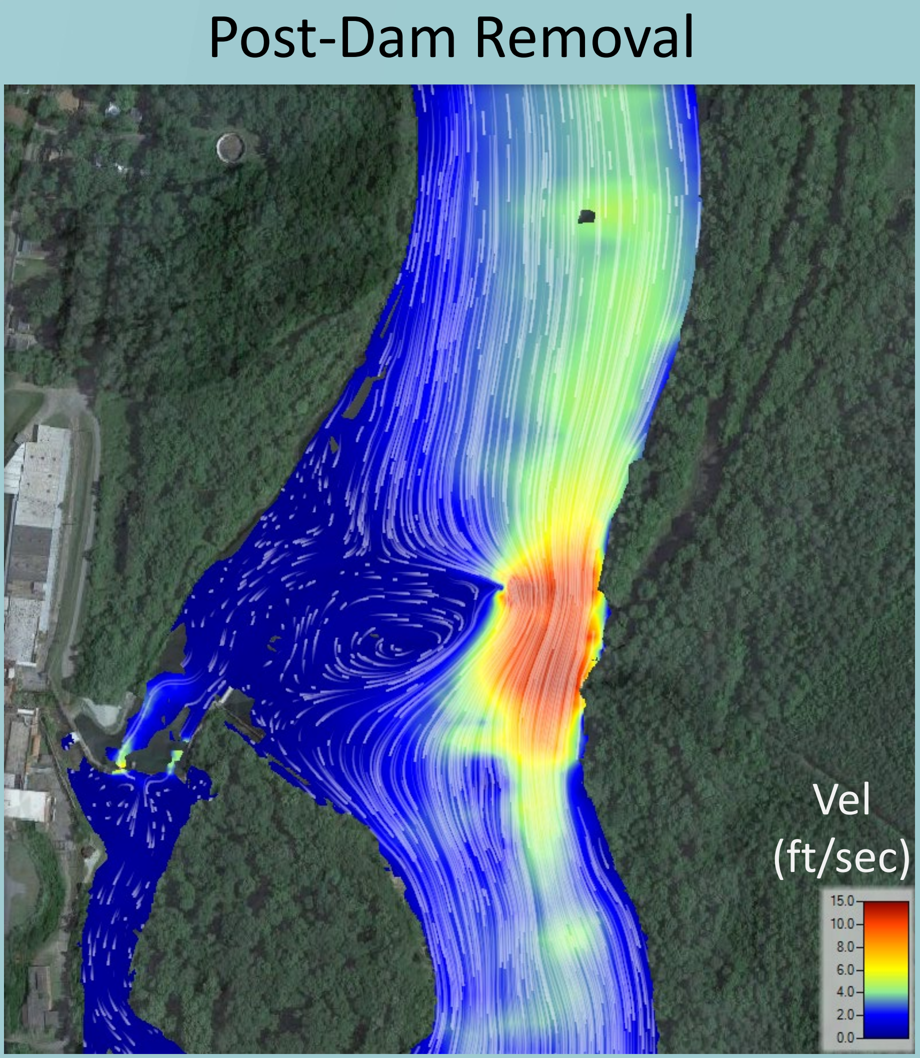


Post-Dam Removal



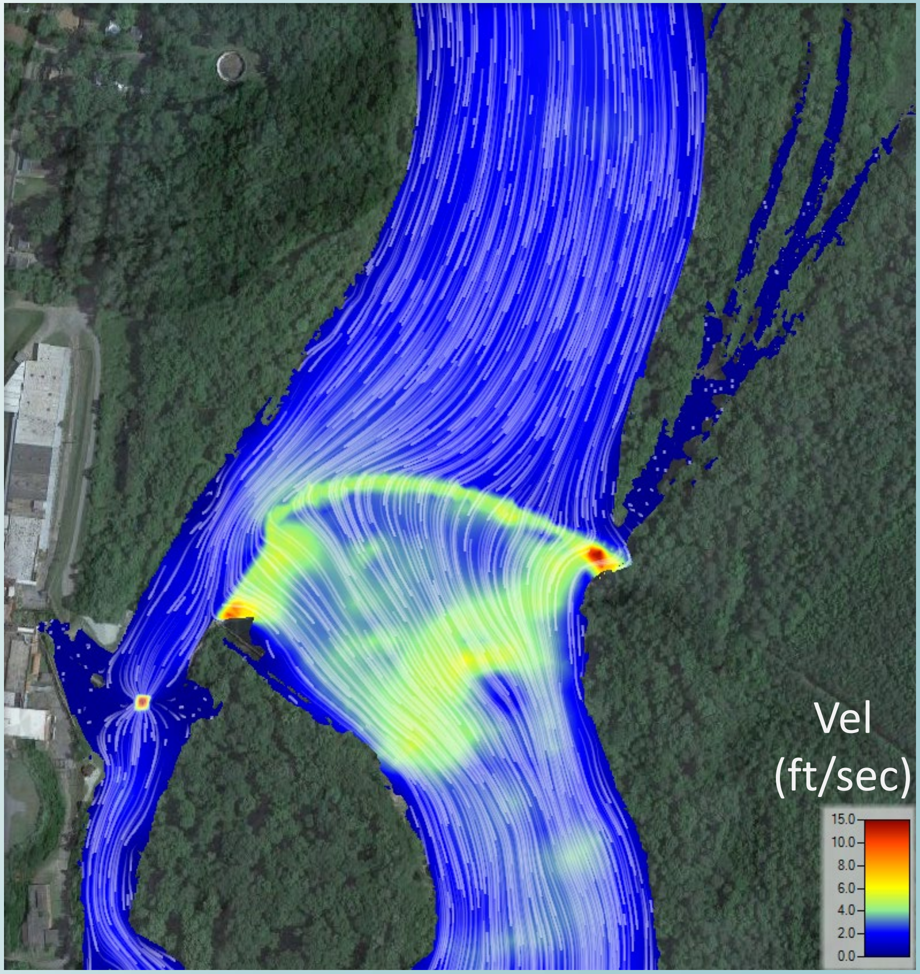
25% Removal – Base +2 Flow Case



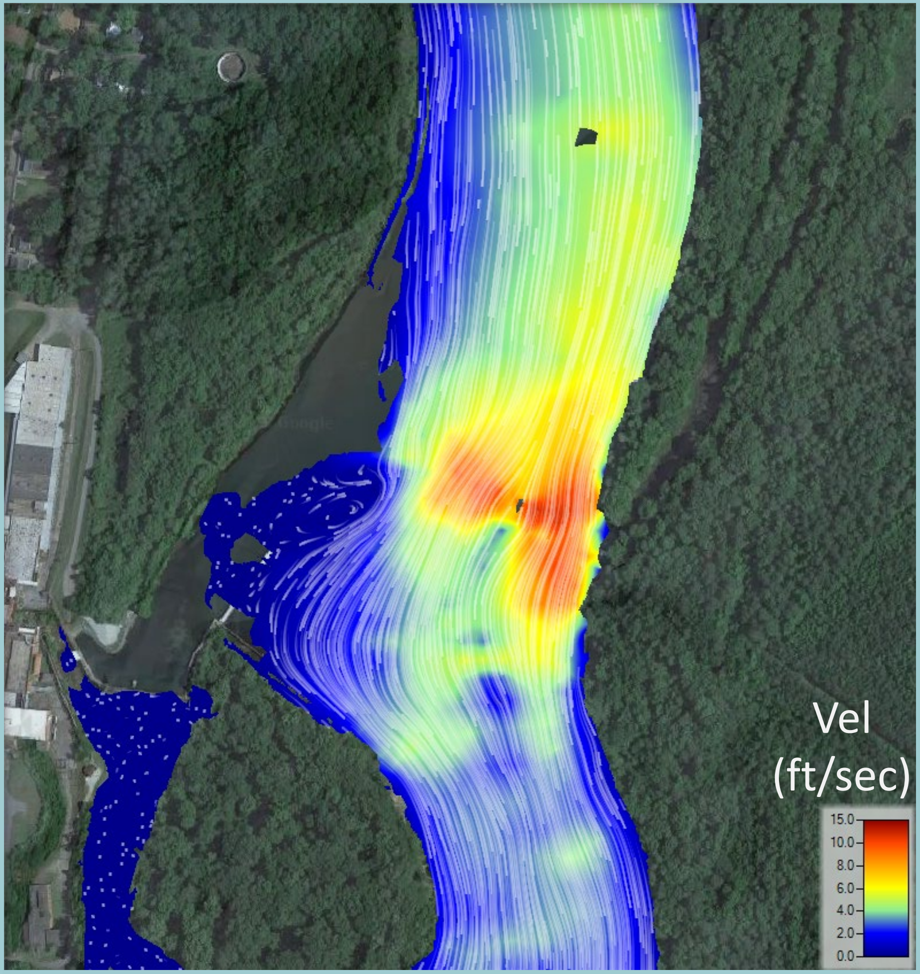


50% Removal – Base +2 Flow Case

Existing Conditions

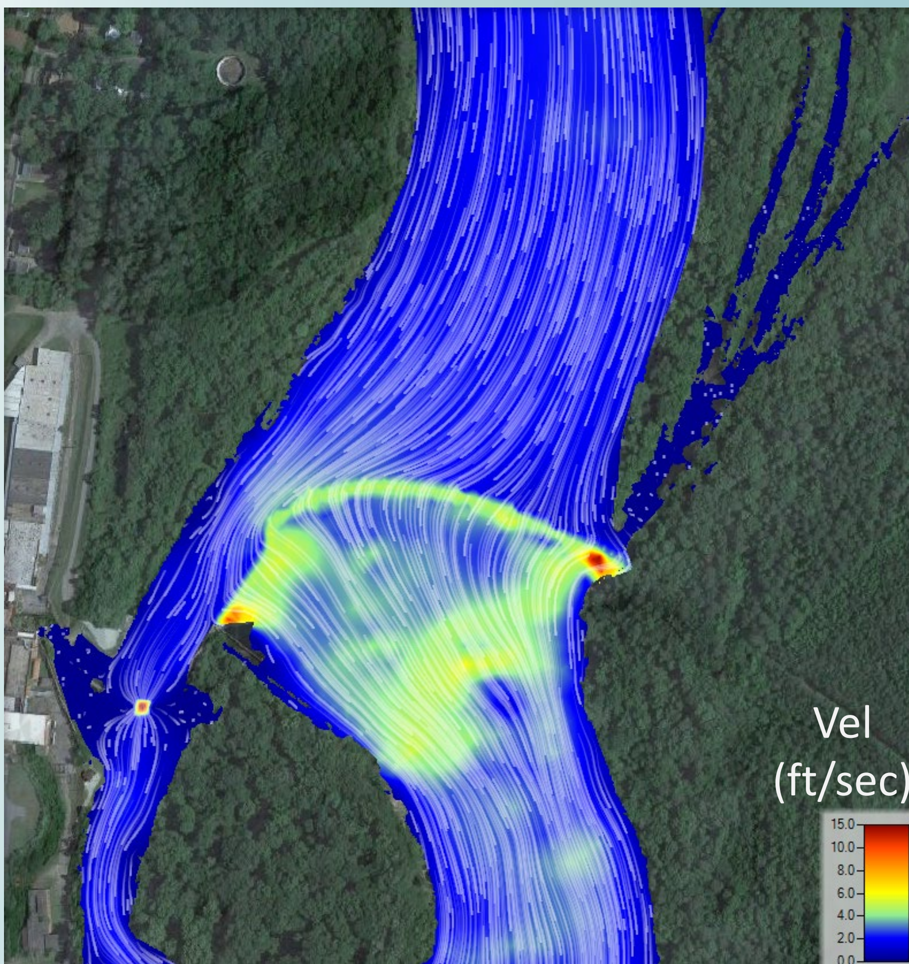


Post-Dam Removal

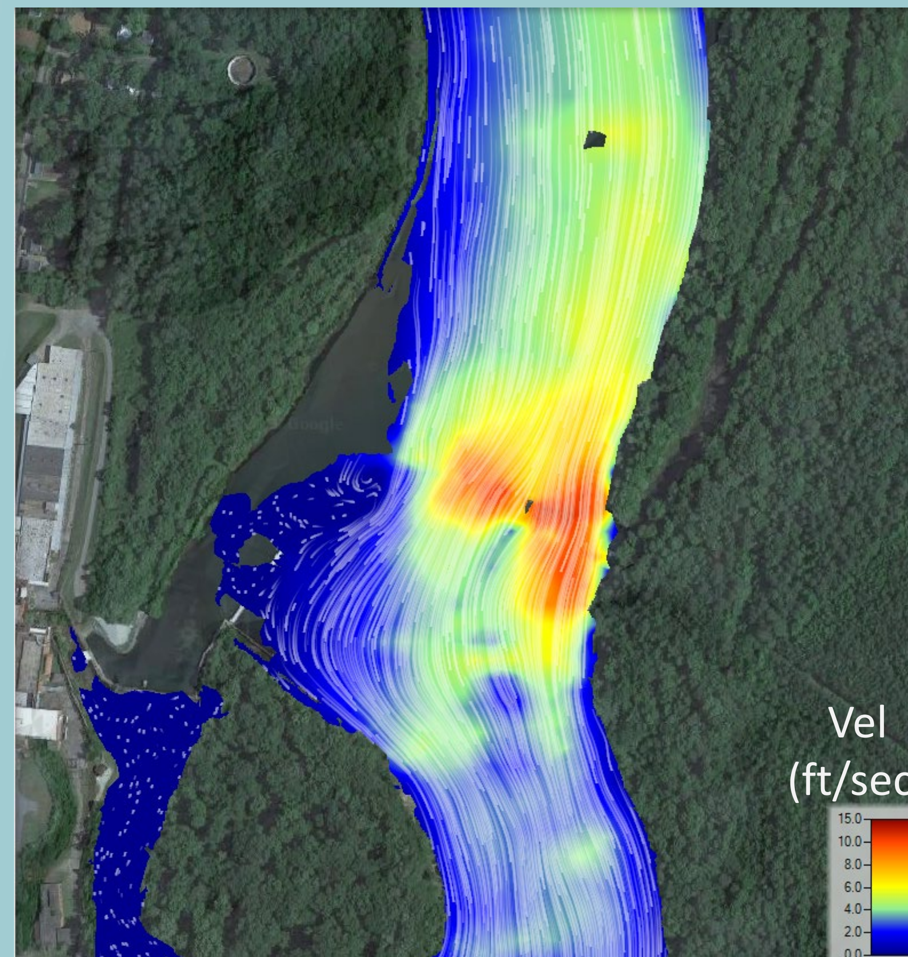


75% Removal – Base +2 Flow Case

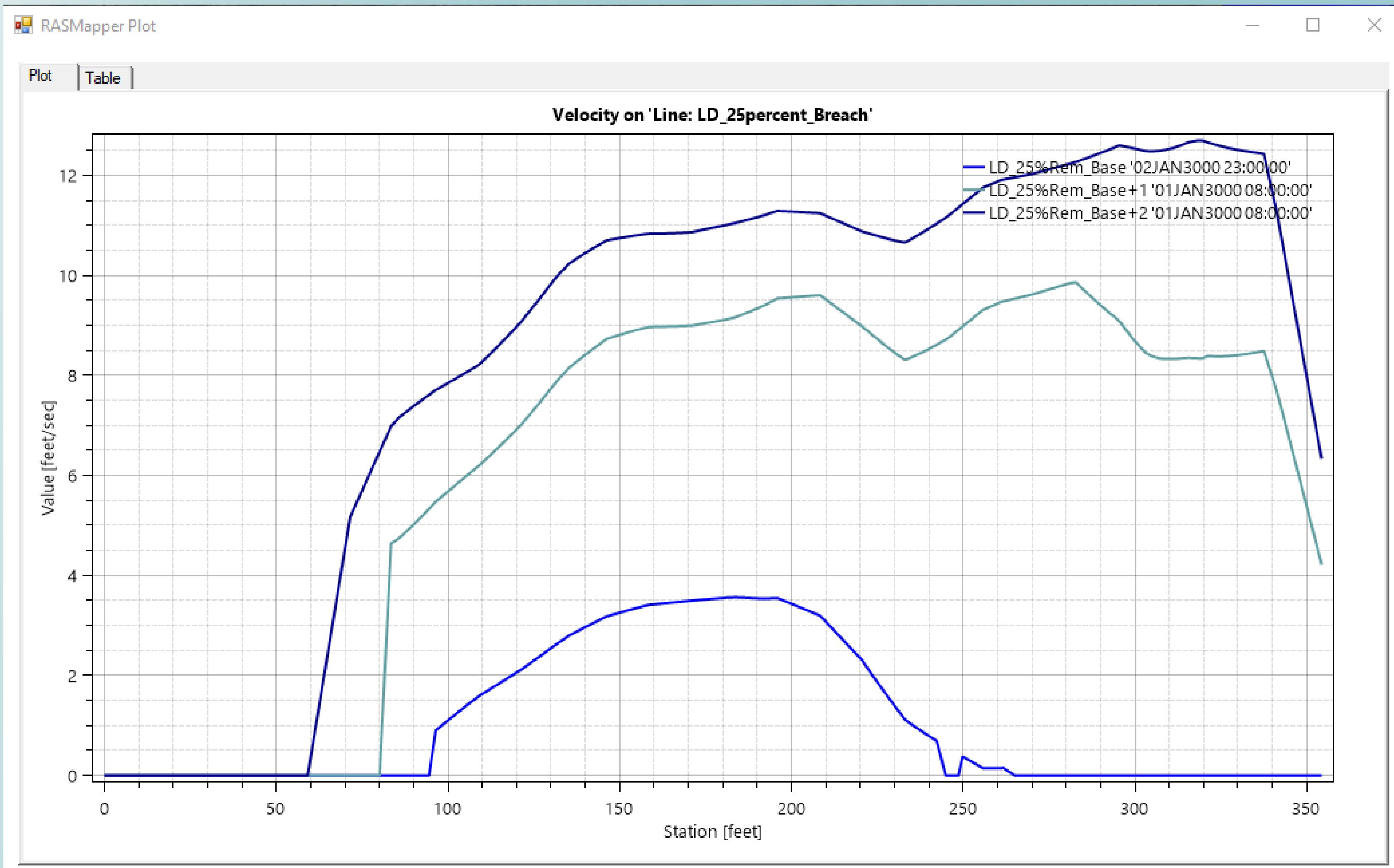
Existing Conditions



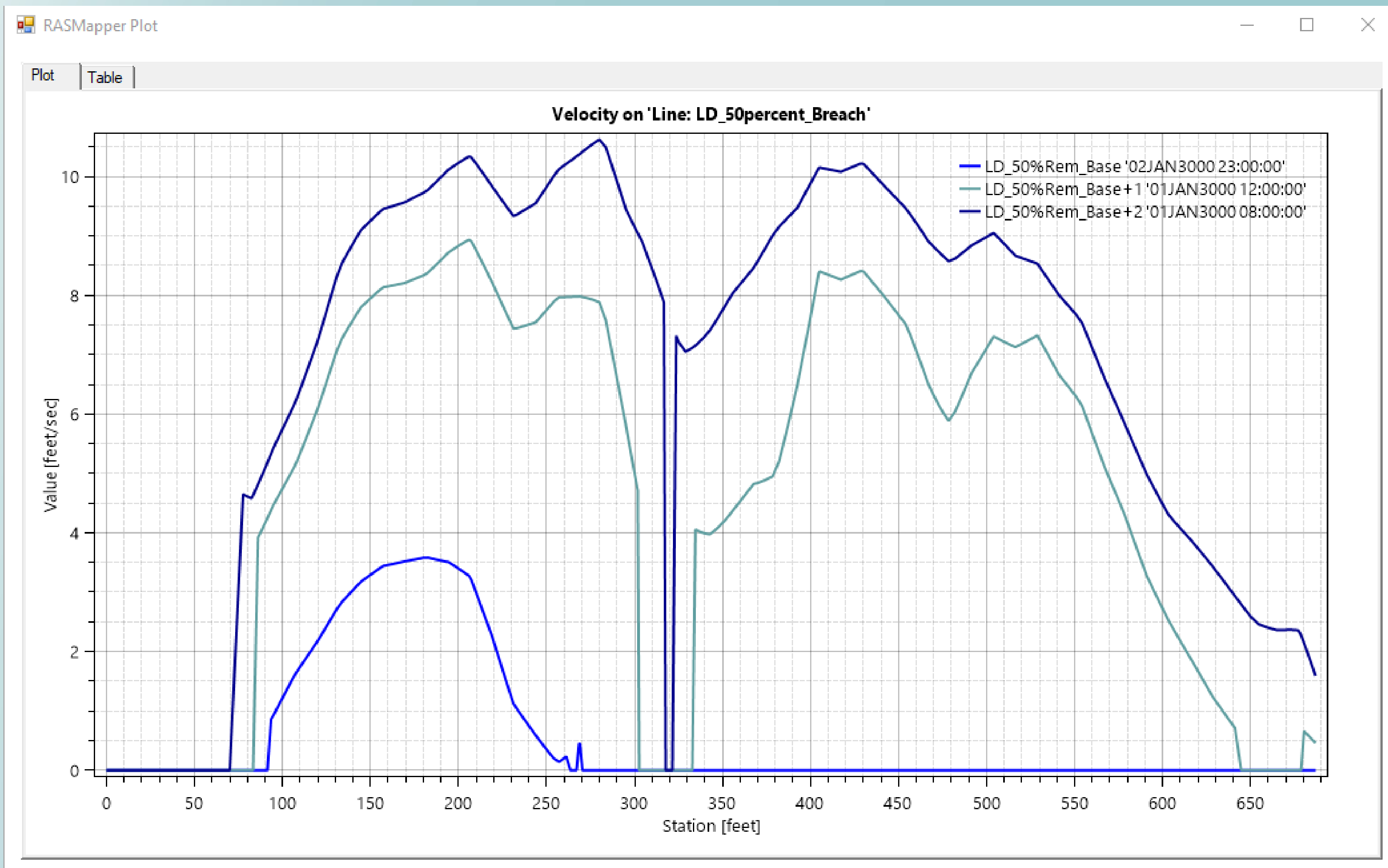
Post-Dam Removal



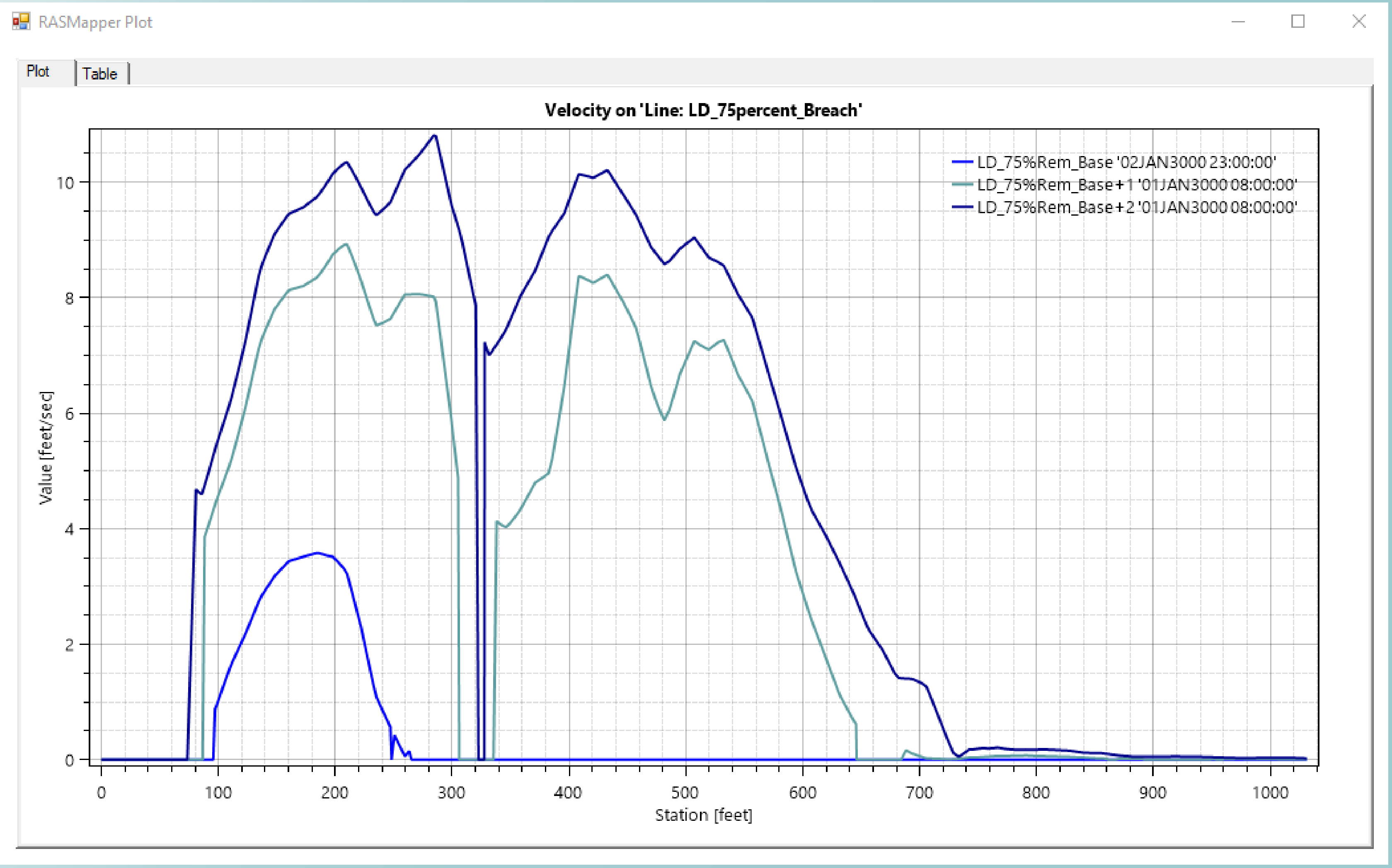
Langdale – 25% Breach Velocity Profiles



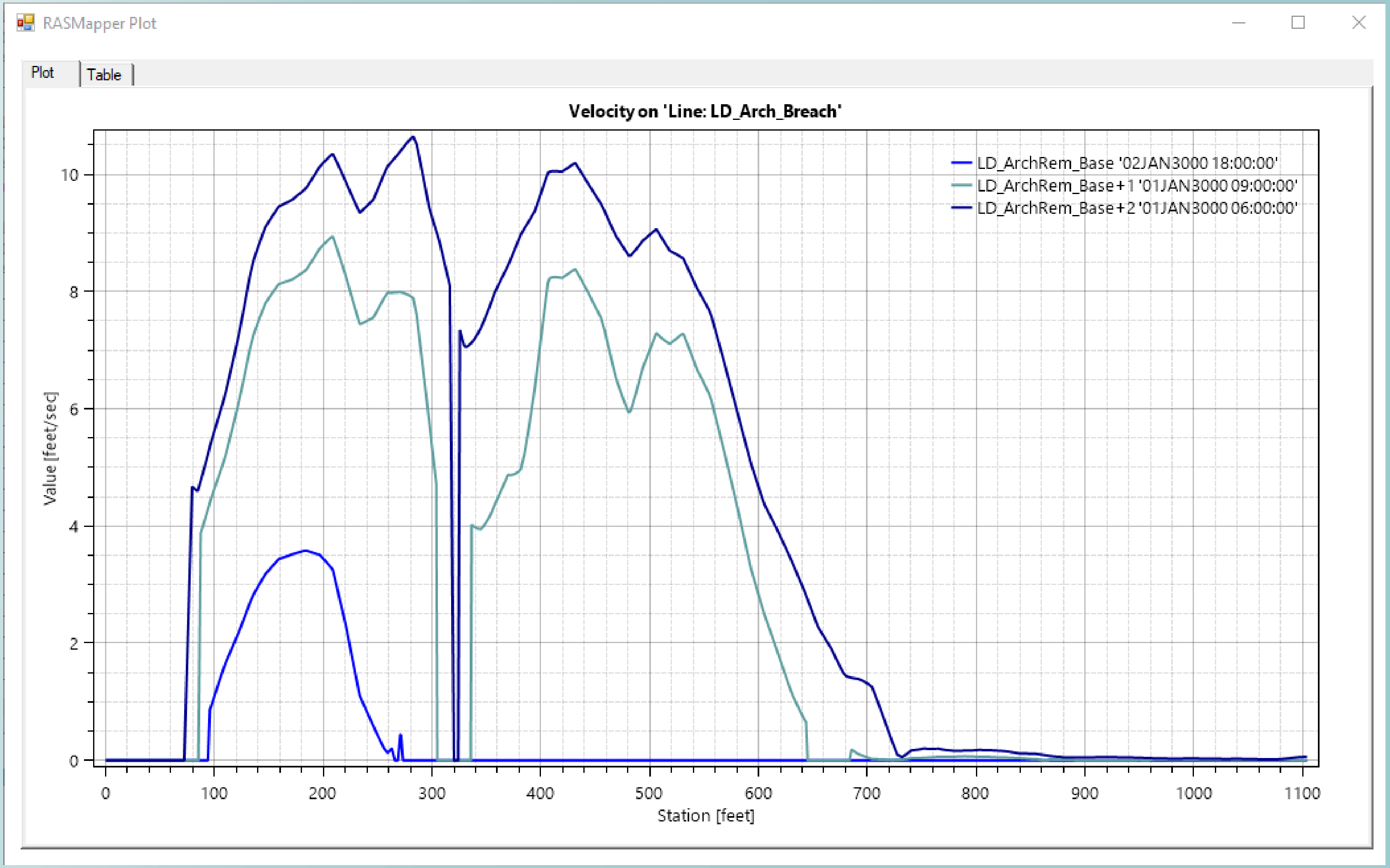
Langdale – 50% Breach Velocity Profiles



Langdale – 75% Breach Velocity Profiles

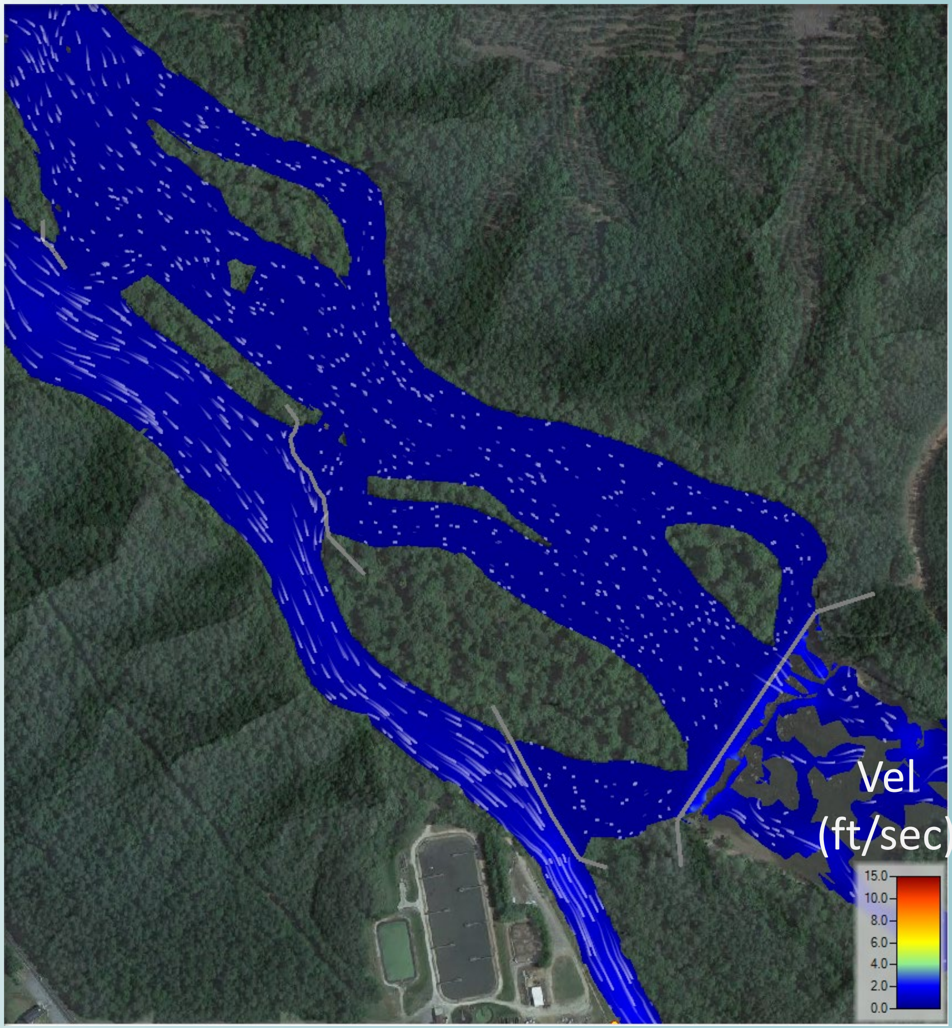


Langdale – Arch Breach Velocity Profiles

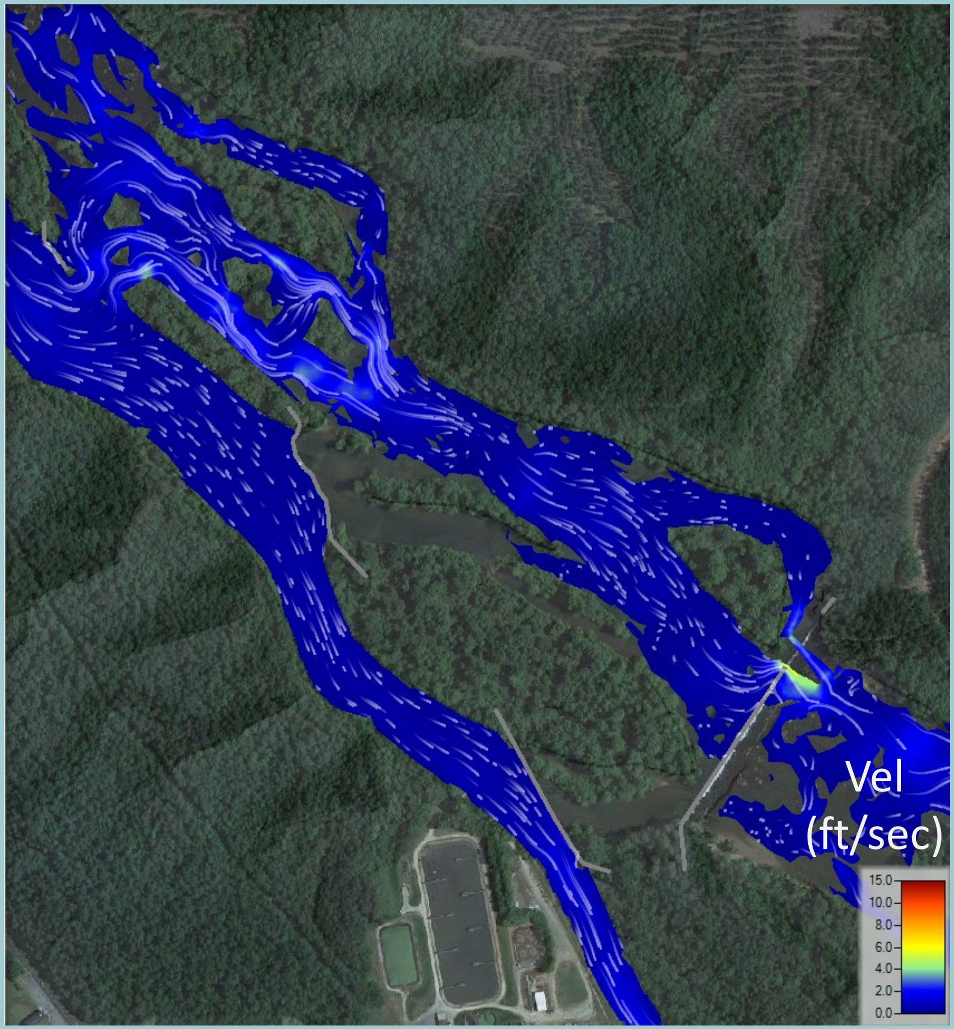


25% Removal – Base Flow Case

Existing Conditions

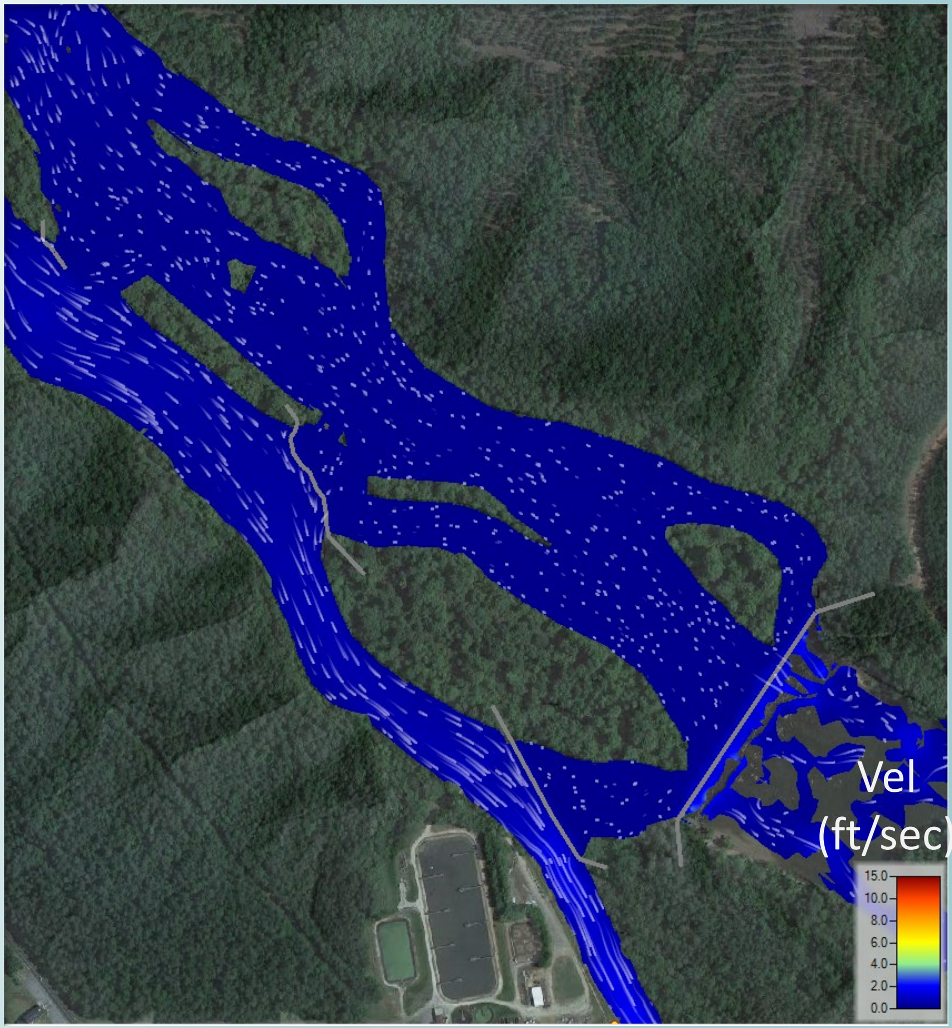


Post-Dam Removal



50% Removal – Base Flow Case

Existing Conditions



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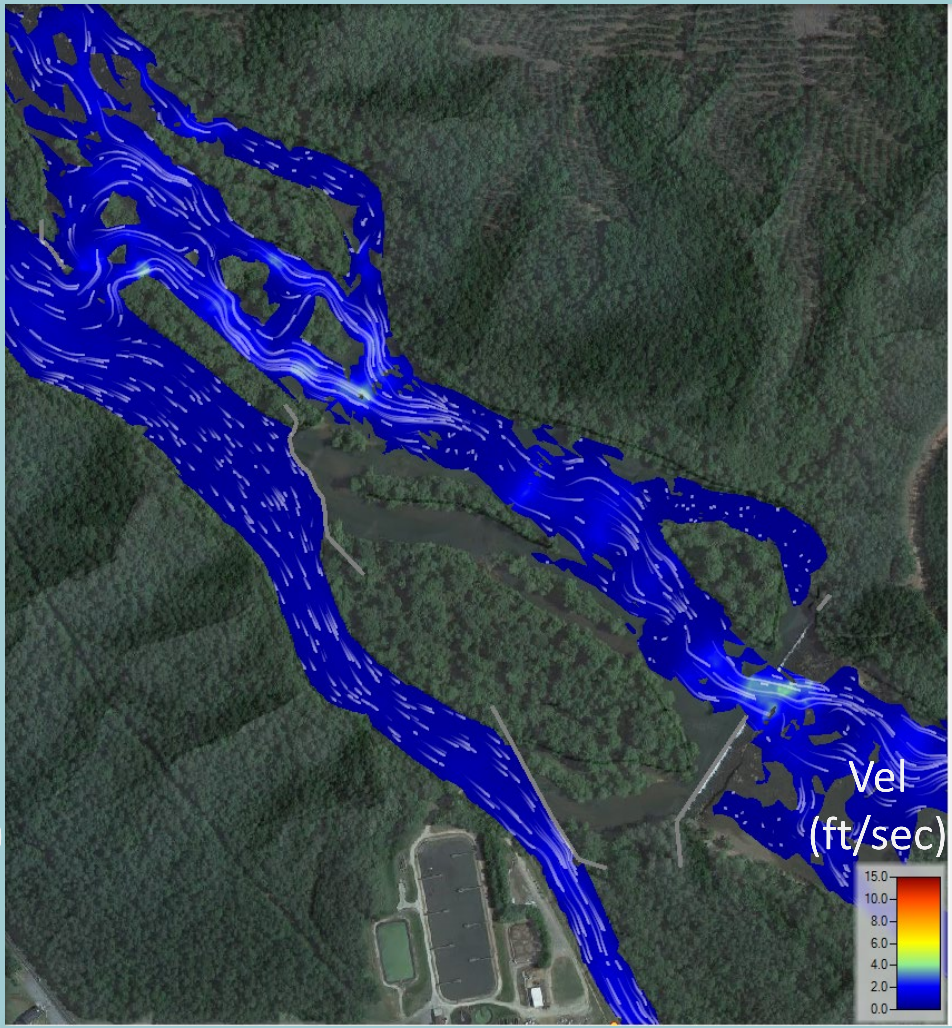
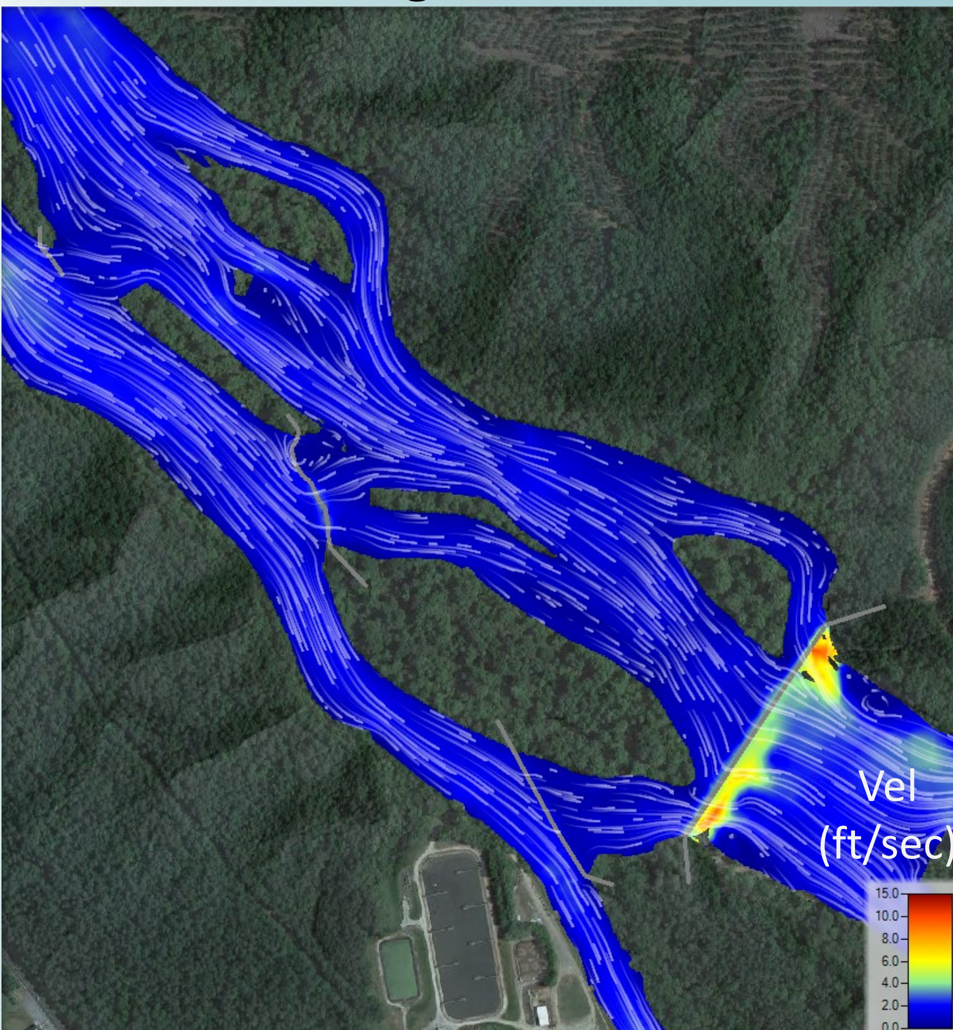


25% Removal – Base +1 Flow Case

Existing Conditions



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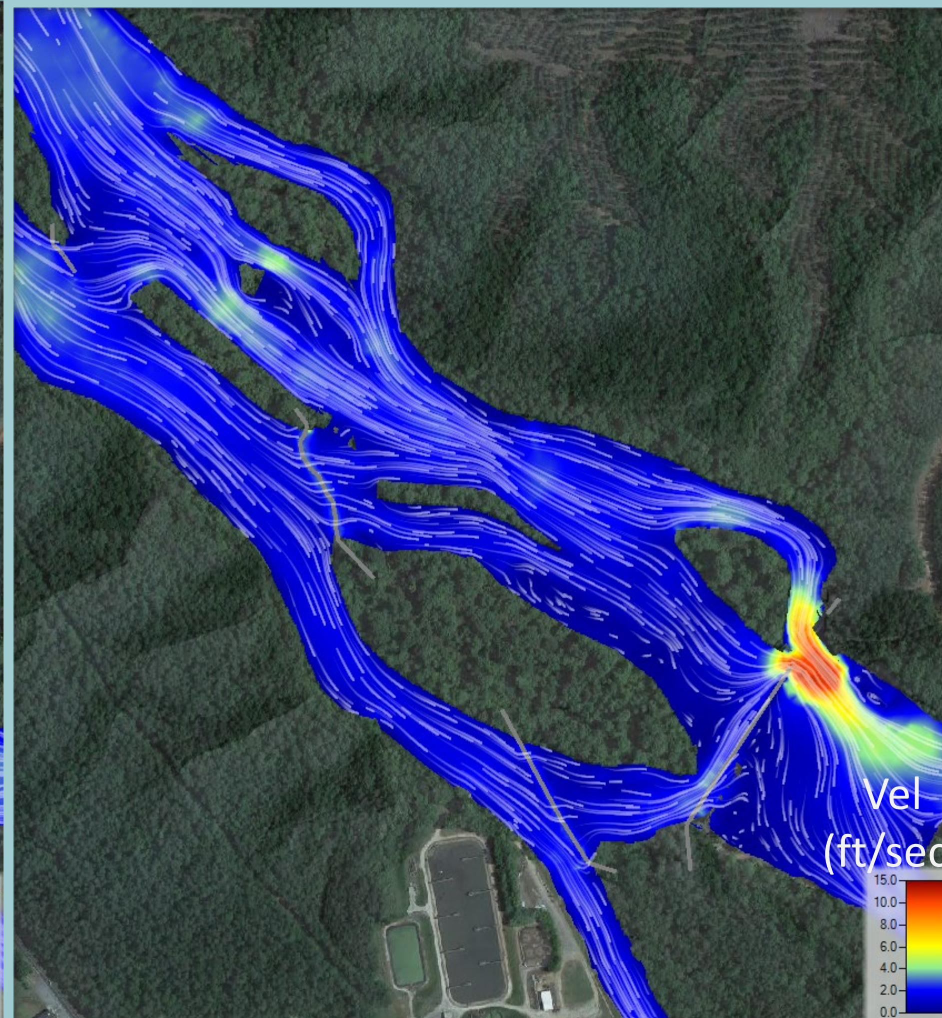
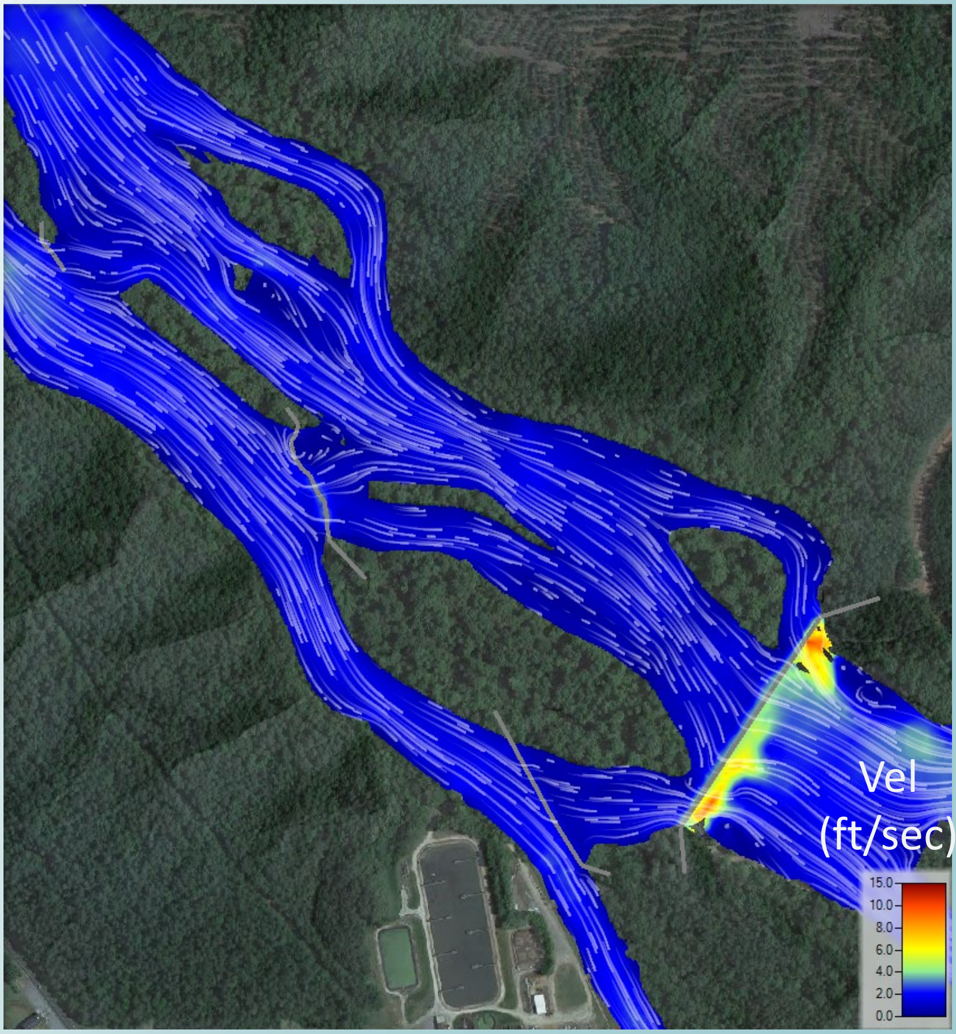


50% Removal – Base +1 Flow Case

Existing Conditions



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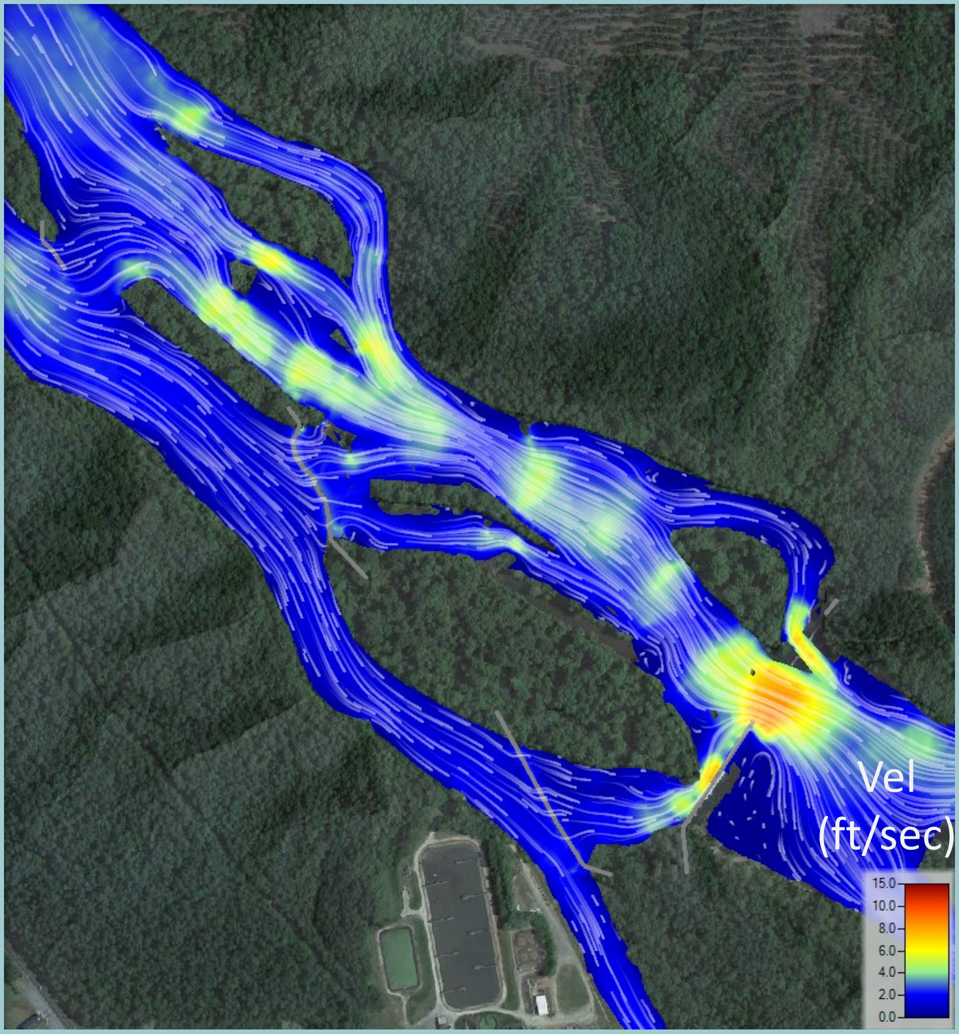
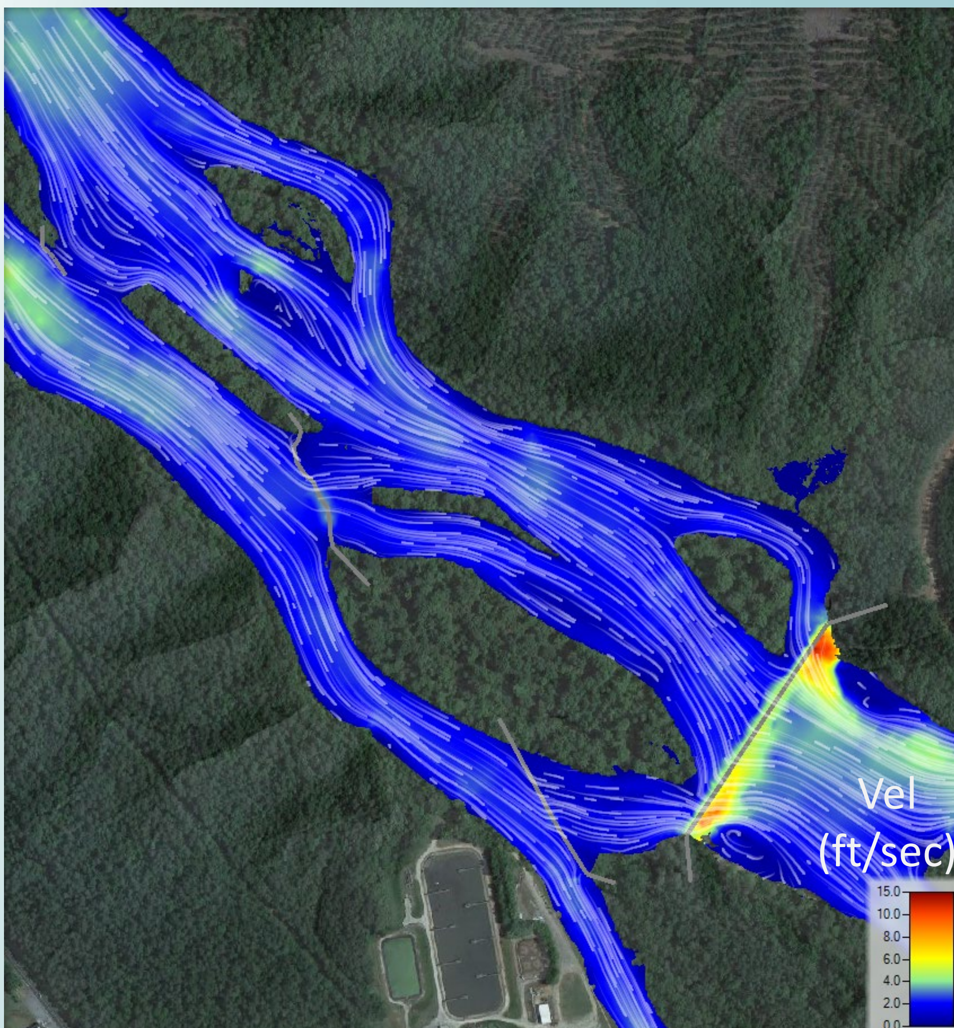
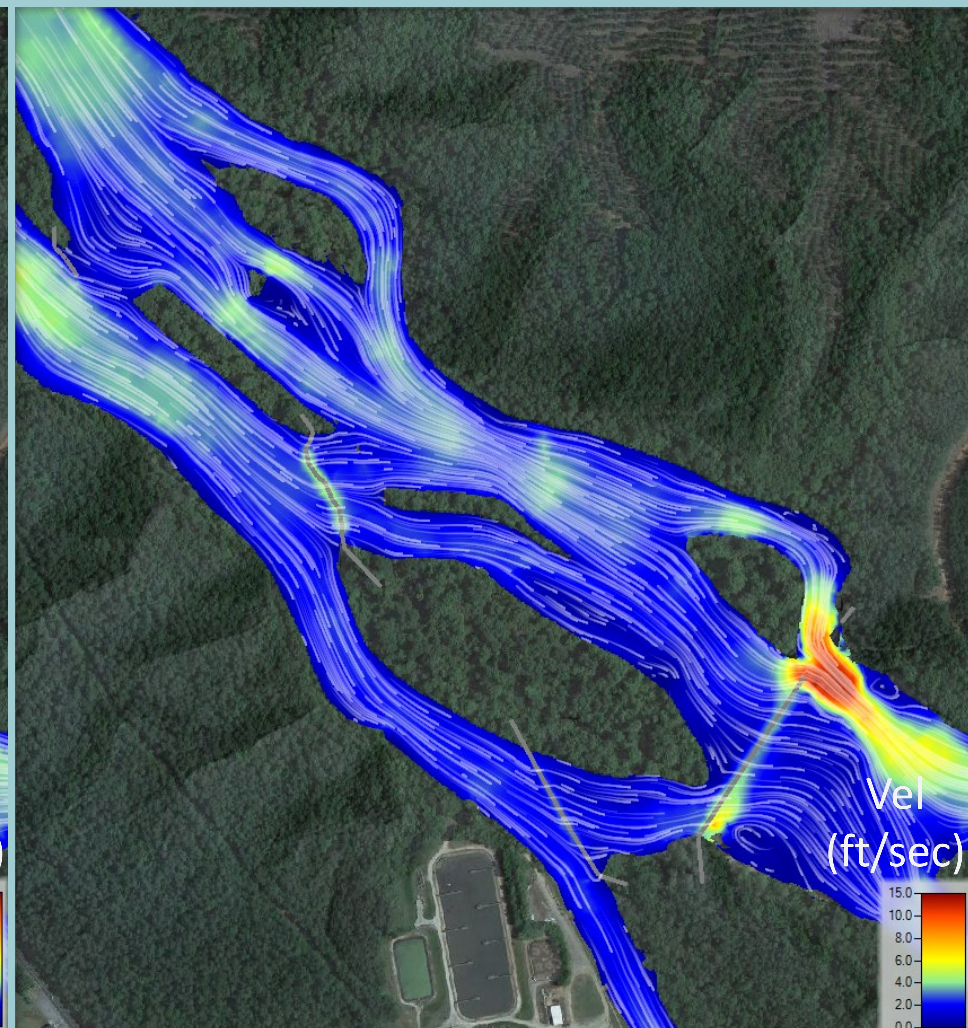


25% Removal – Base +2 Flow Case

Existing Conditions

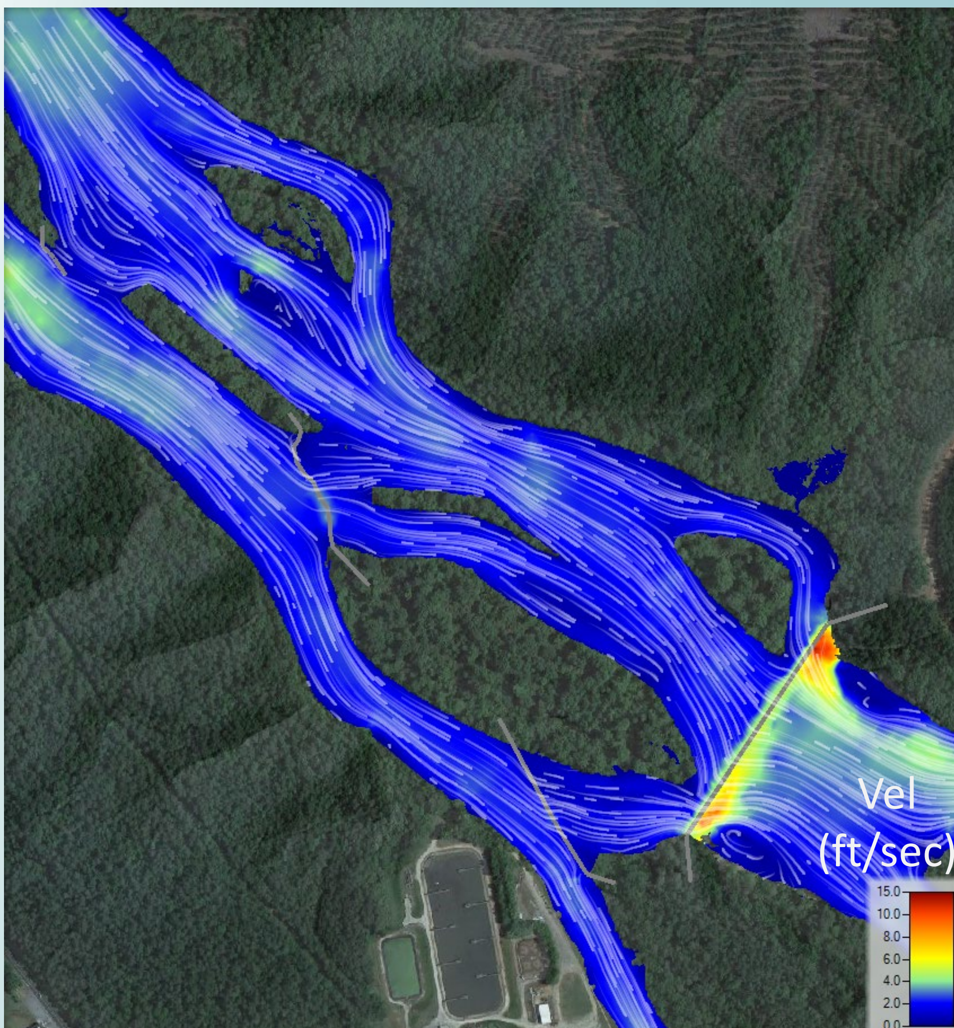


Post-Dam Removal

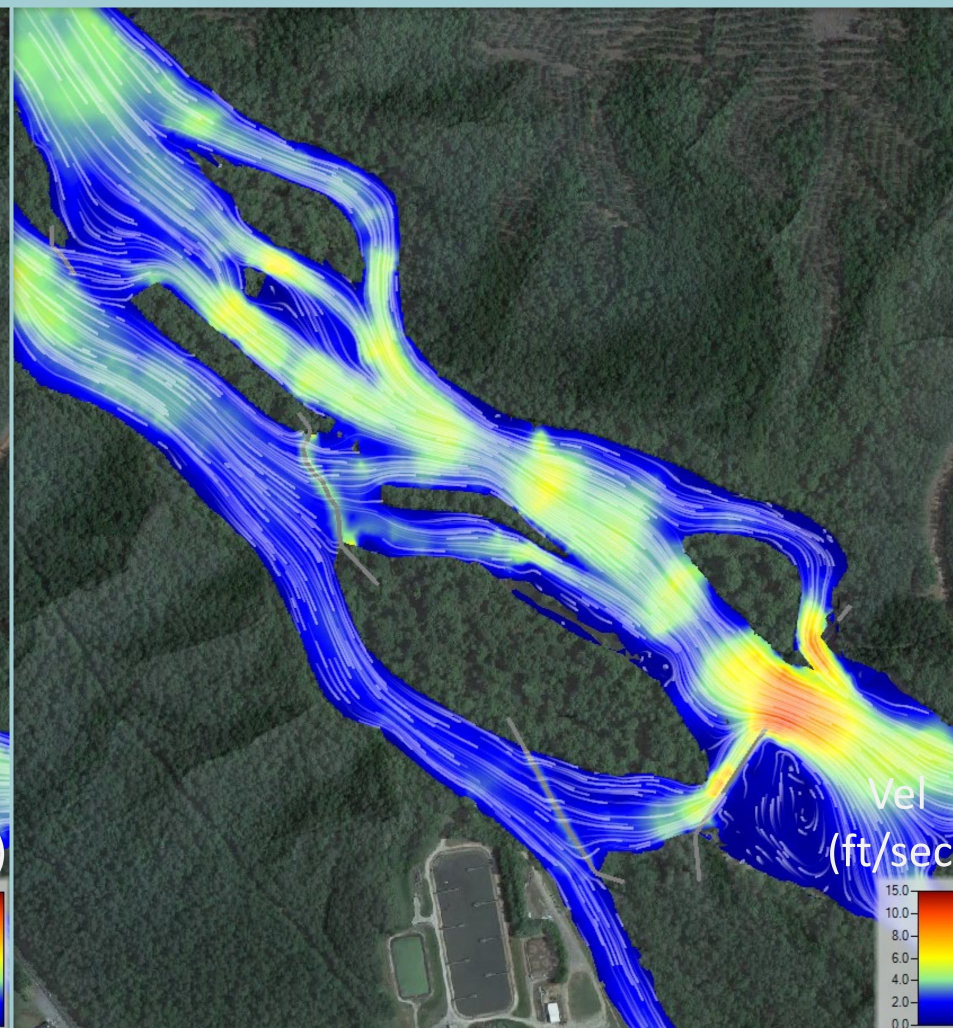


50% Removal – Base +2 Flow Case

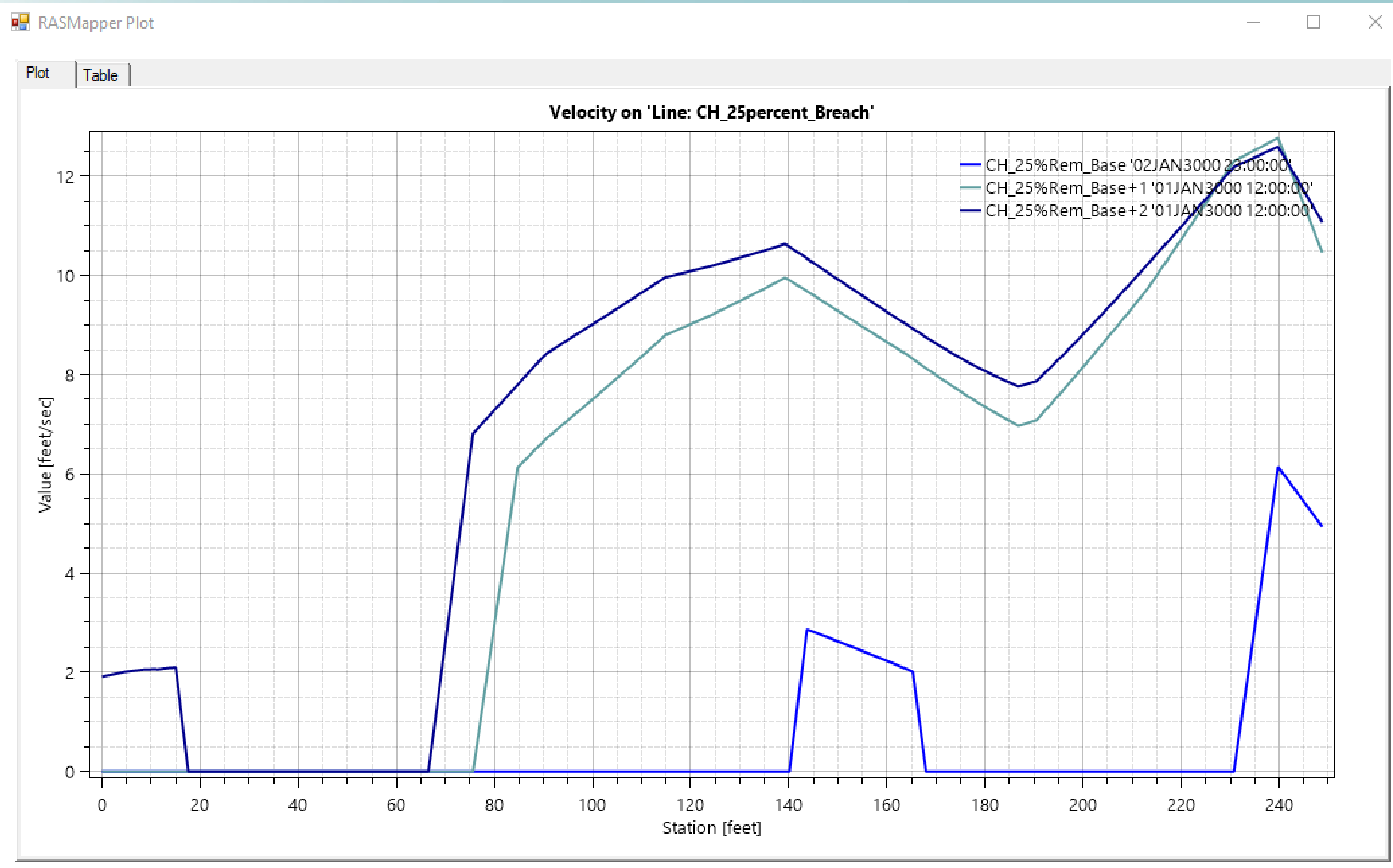
Existing Conditions



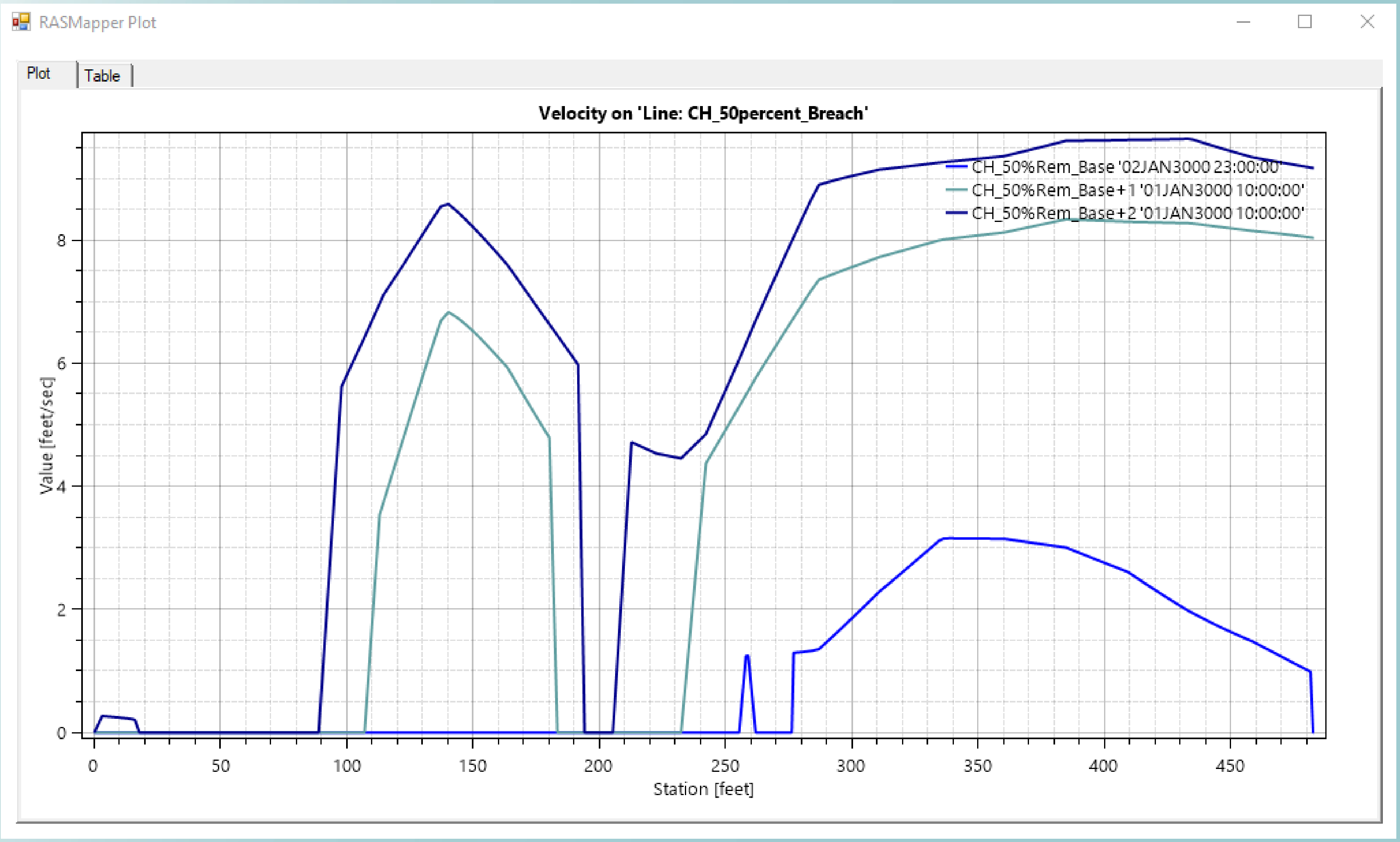
Post-Dam Removal



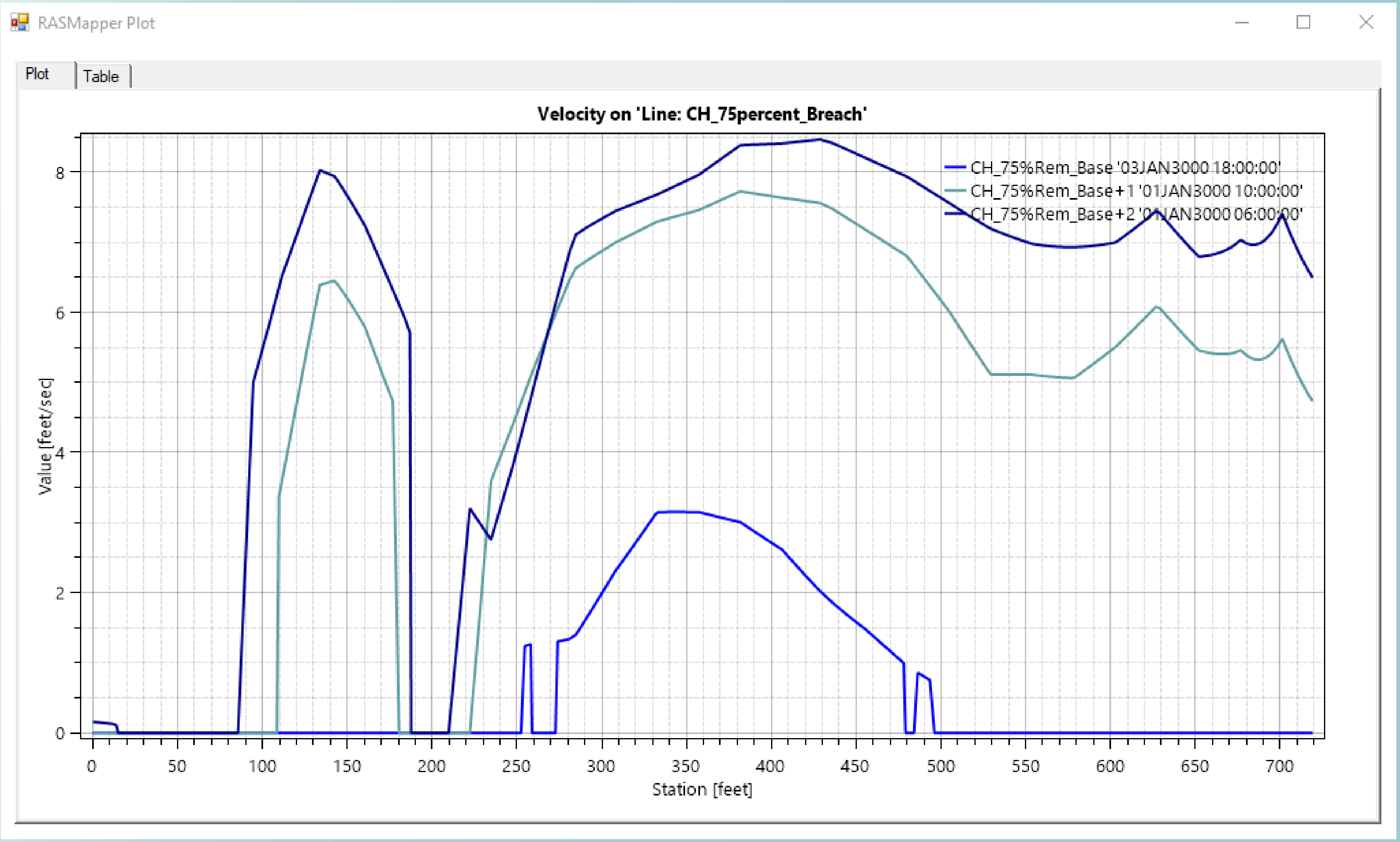
Crow Hop – 25% Breach Velocity Profiles



Crow Hop – 50% Breach Velocity Profiles

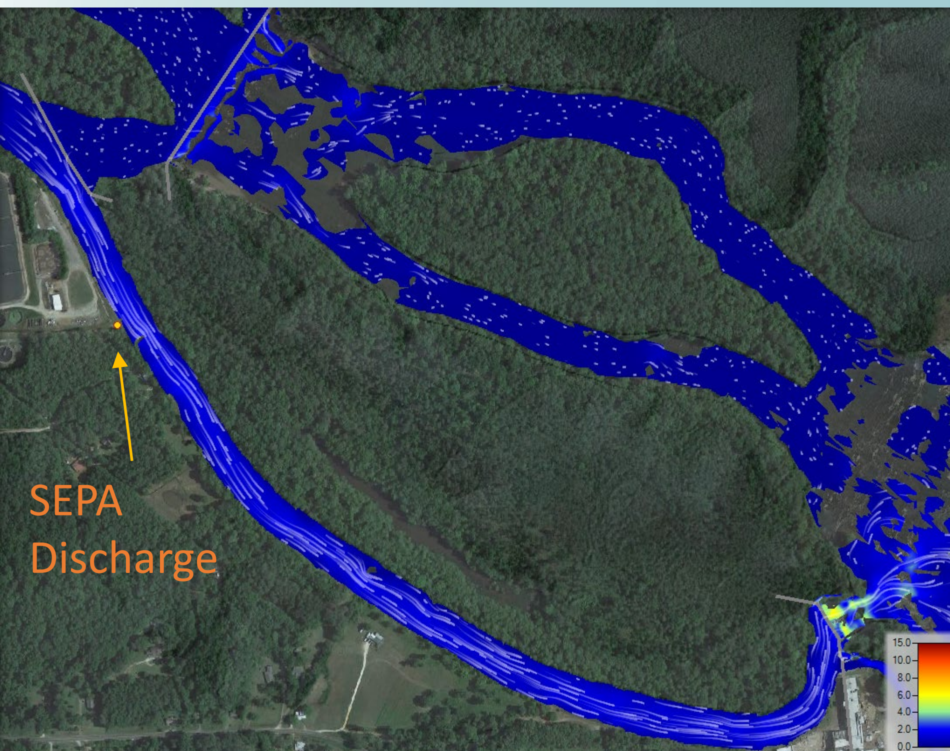


Crow Hop – 75% Breach Velocity Profiles

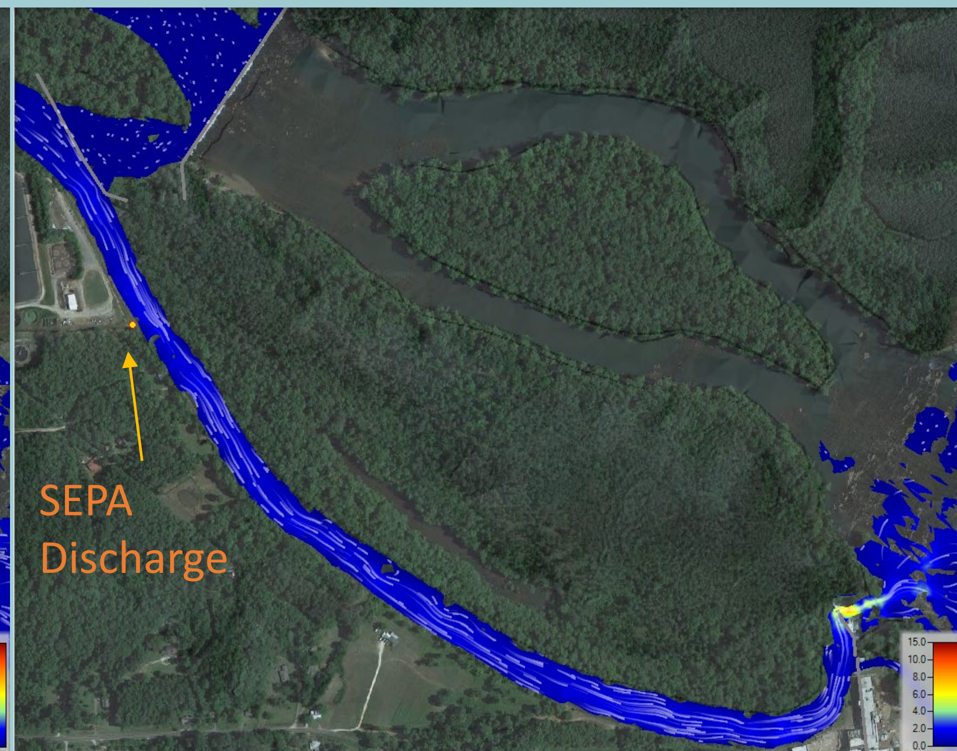


25% Removal – Base Flow Case

Existing Conditions

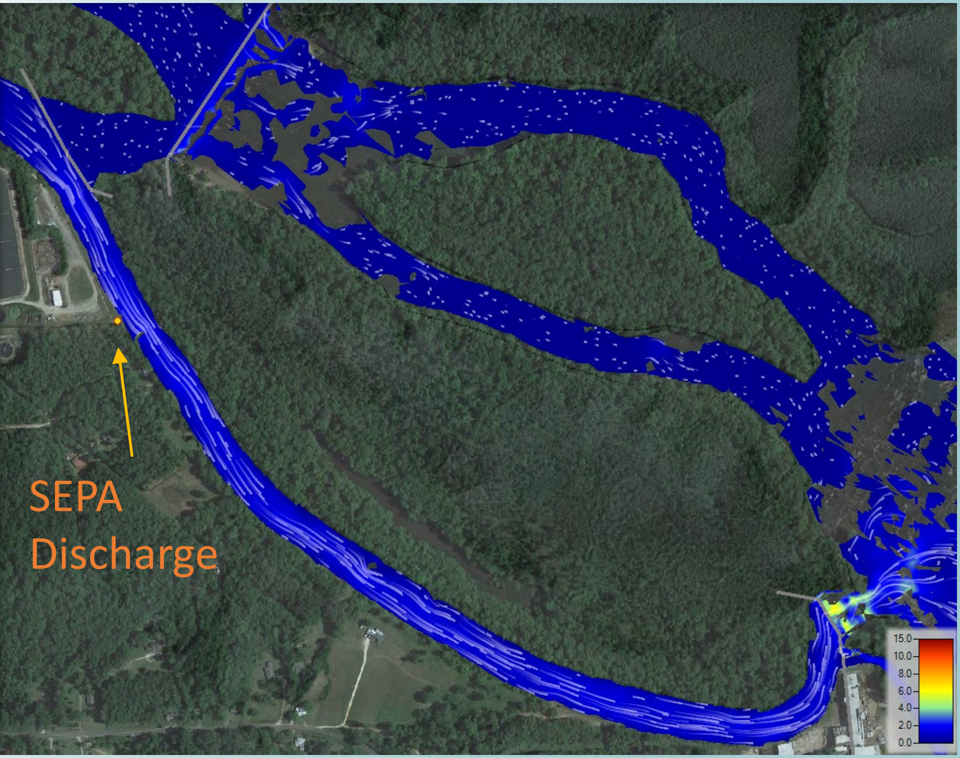


Post-Dam Removal

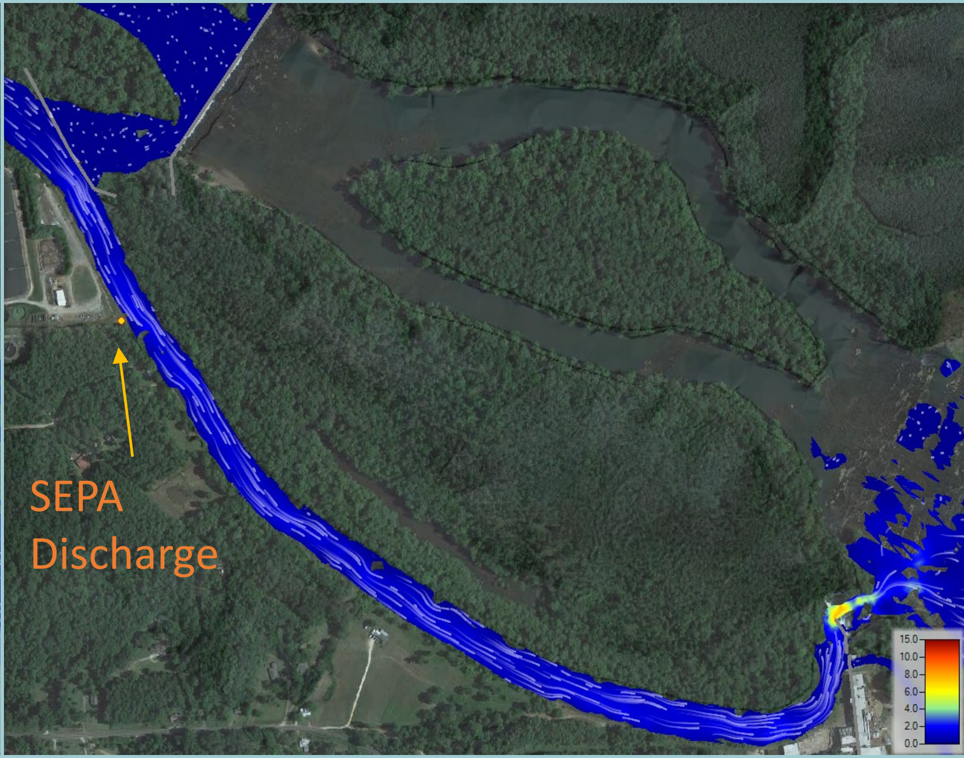


50% Removal – Base Flow Case

Existing Conditions

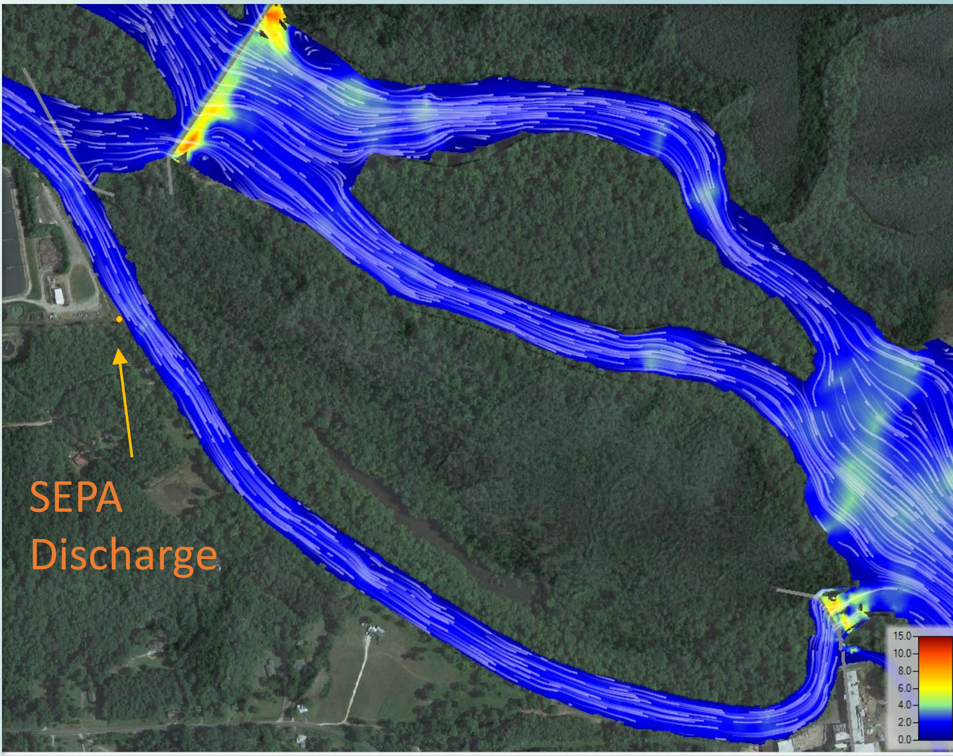


Post-Dam Removal



25% Removal – Base +1 Flow Case

Existing Conditions



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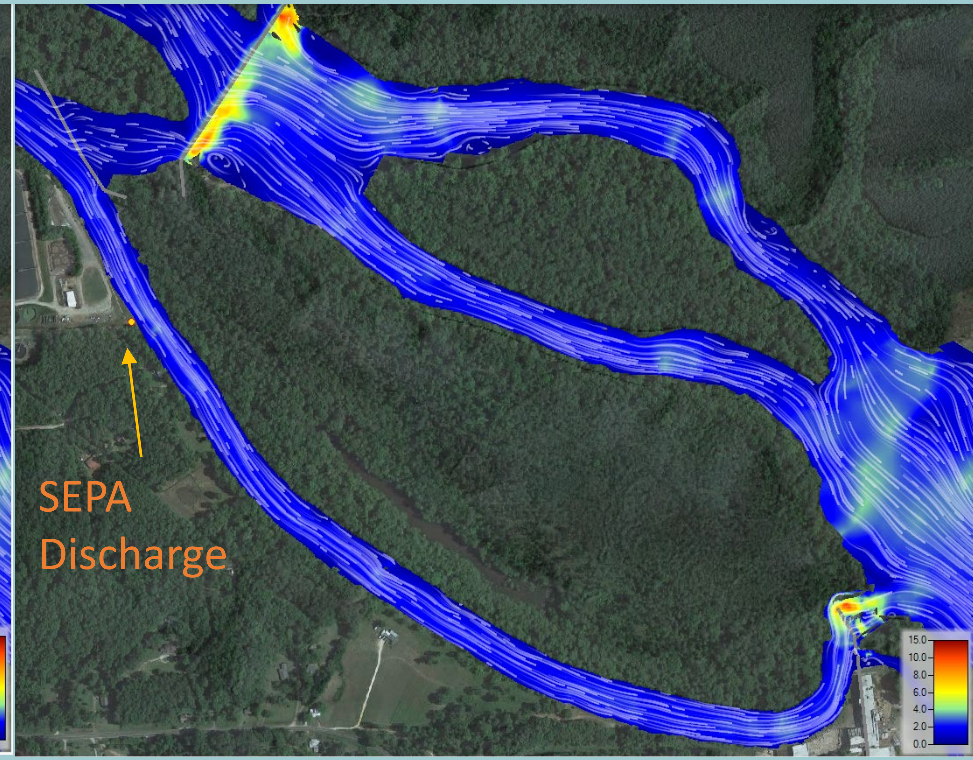
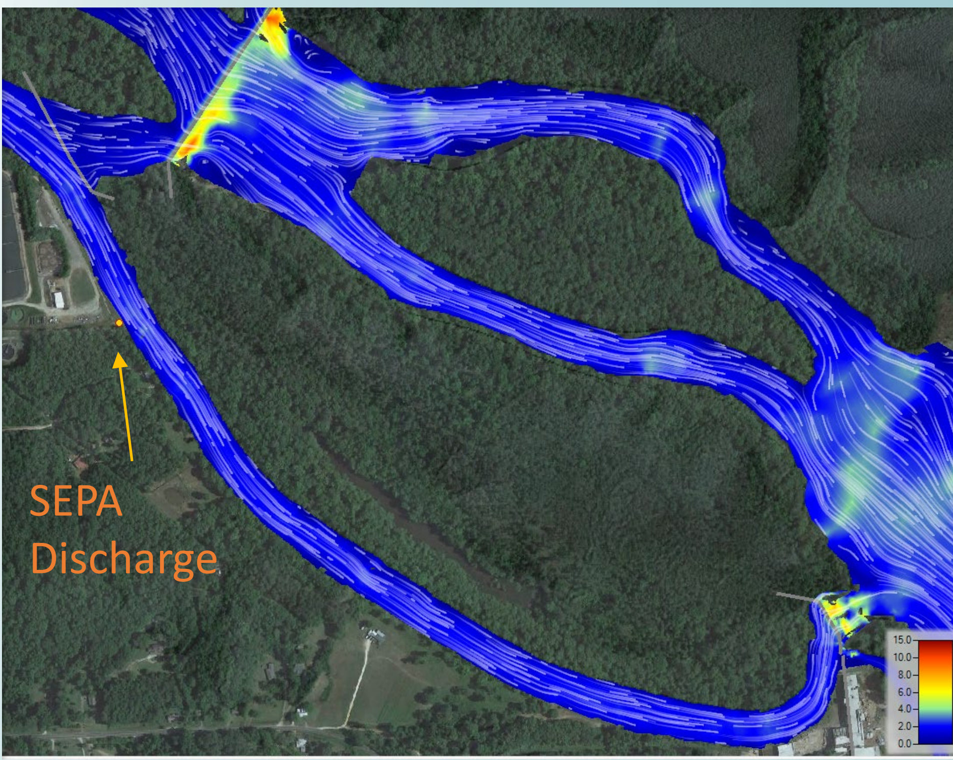
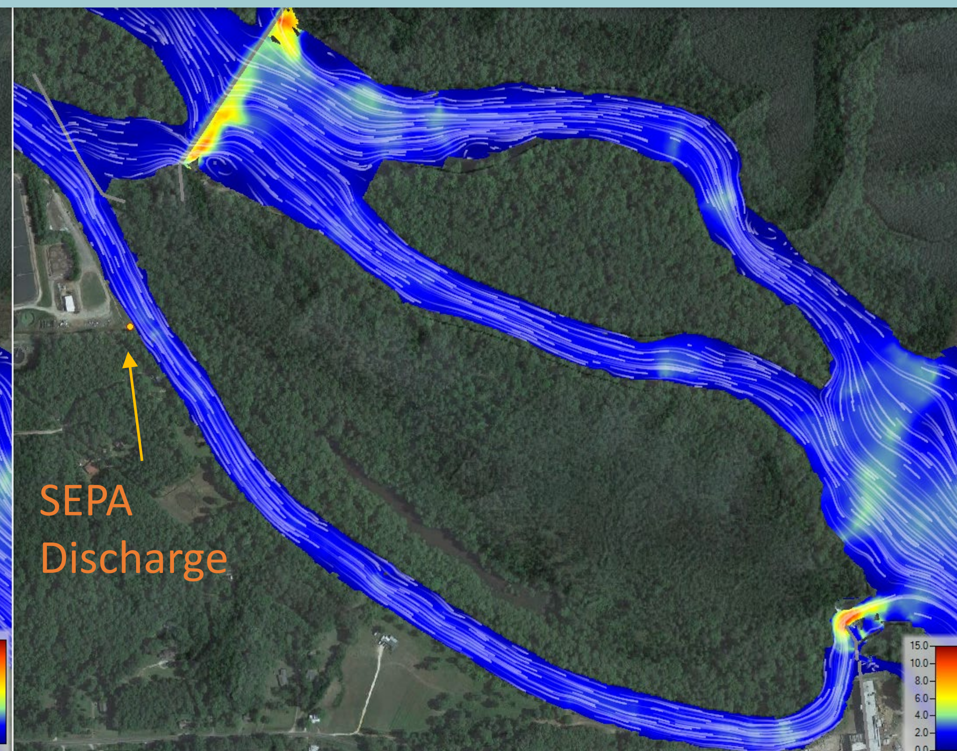


50% Removal – Base +1 Flow Case

Existing Conditions

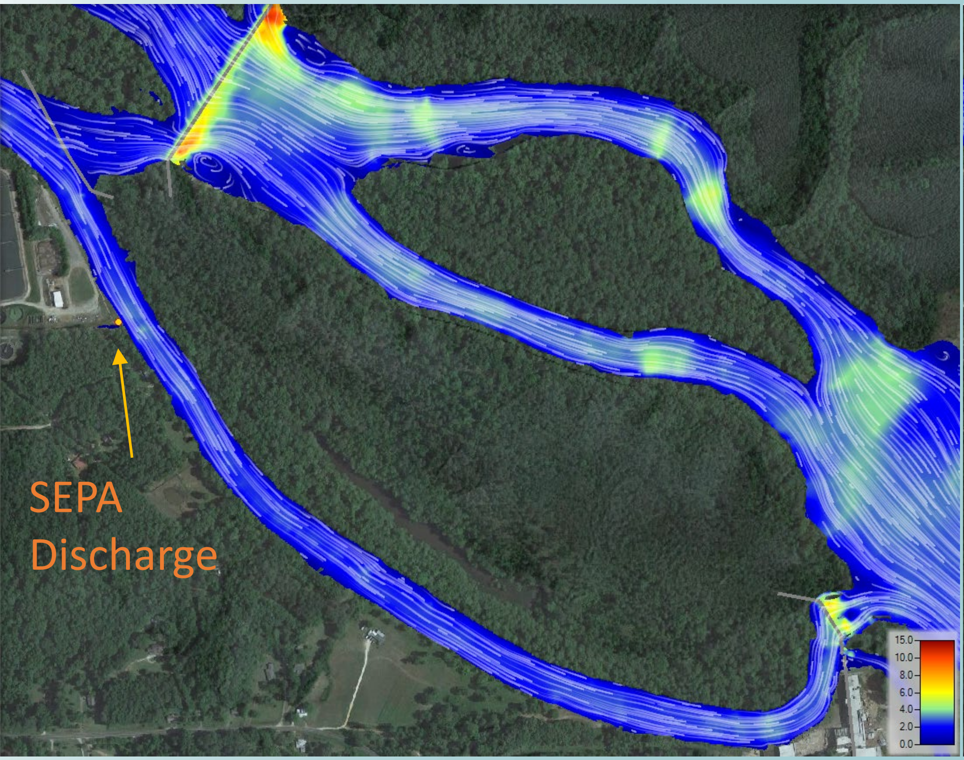


Post-Dam Removal

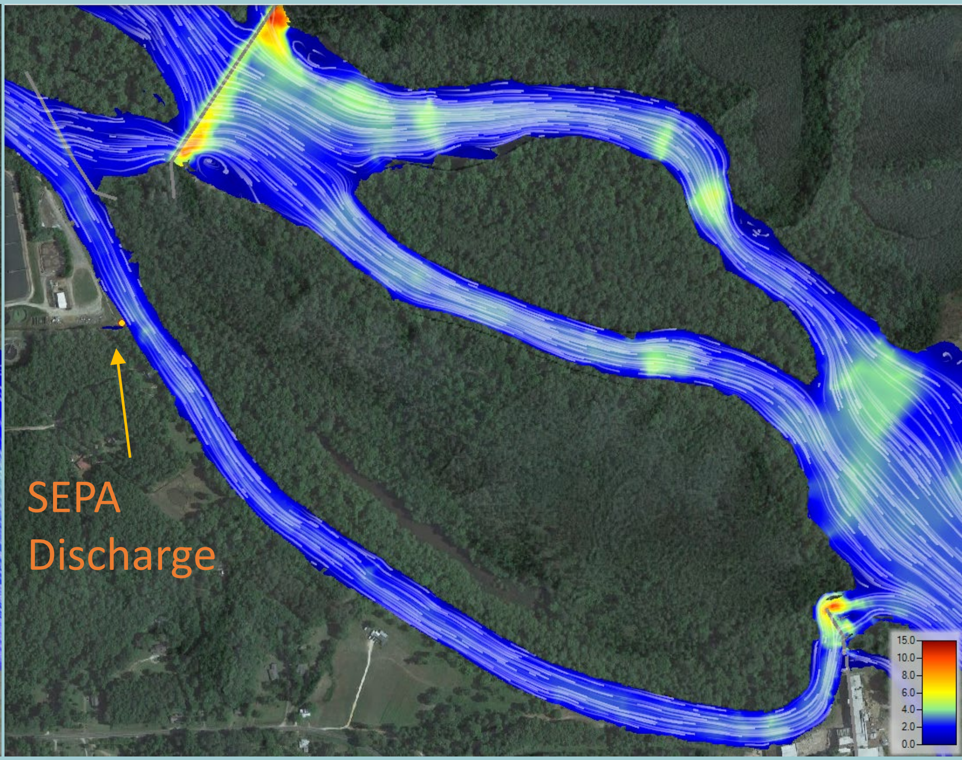


25% Removal – Base +2 Flow Case

Existing Conditions

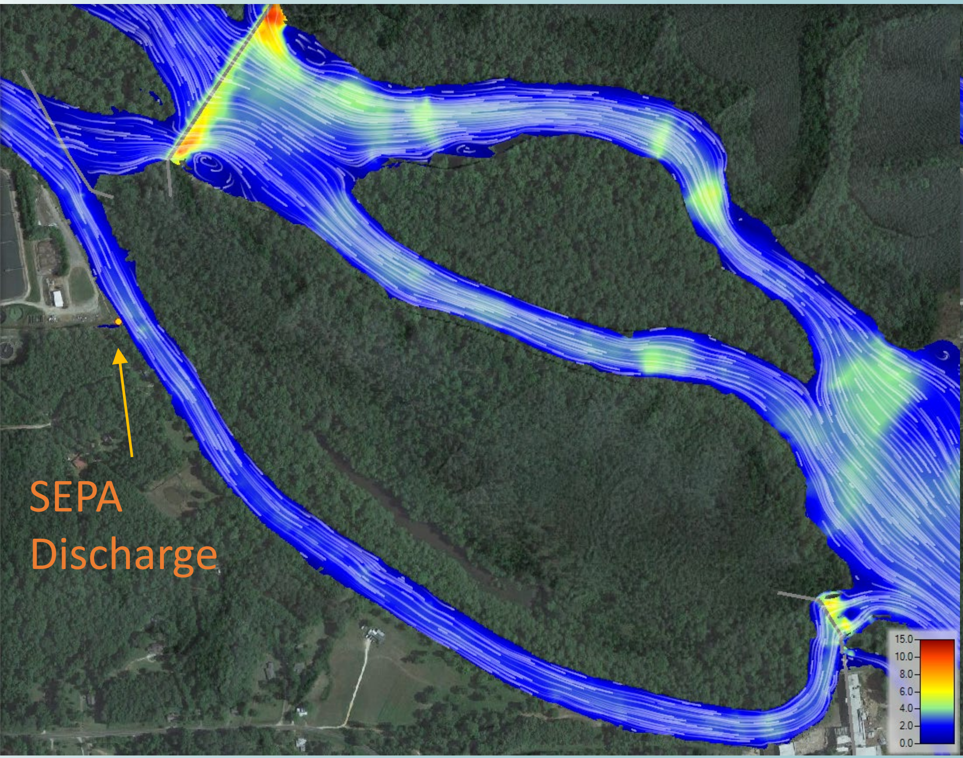


Post-Dam Removal

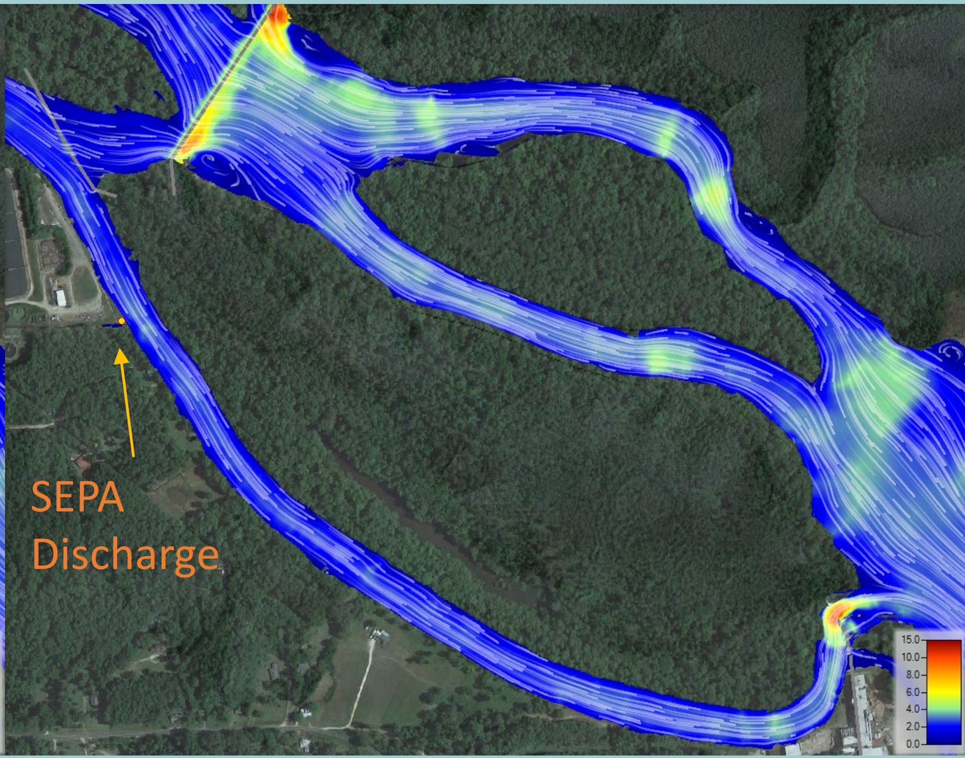


50% Removal – Base +2 Flow Case

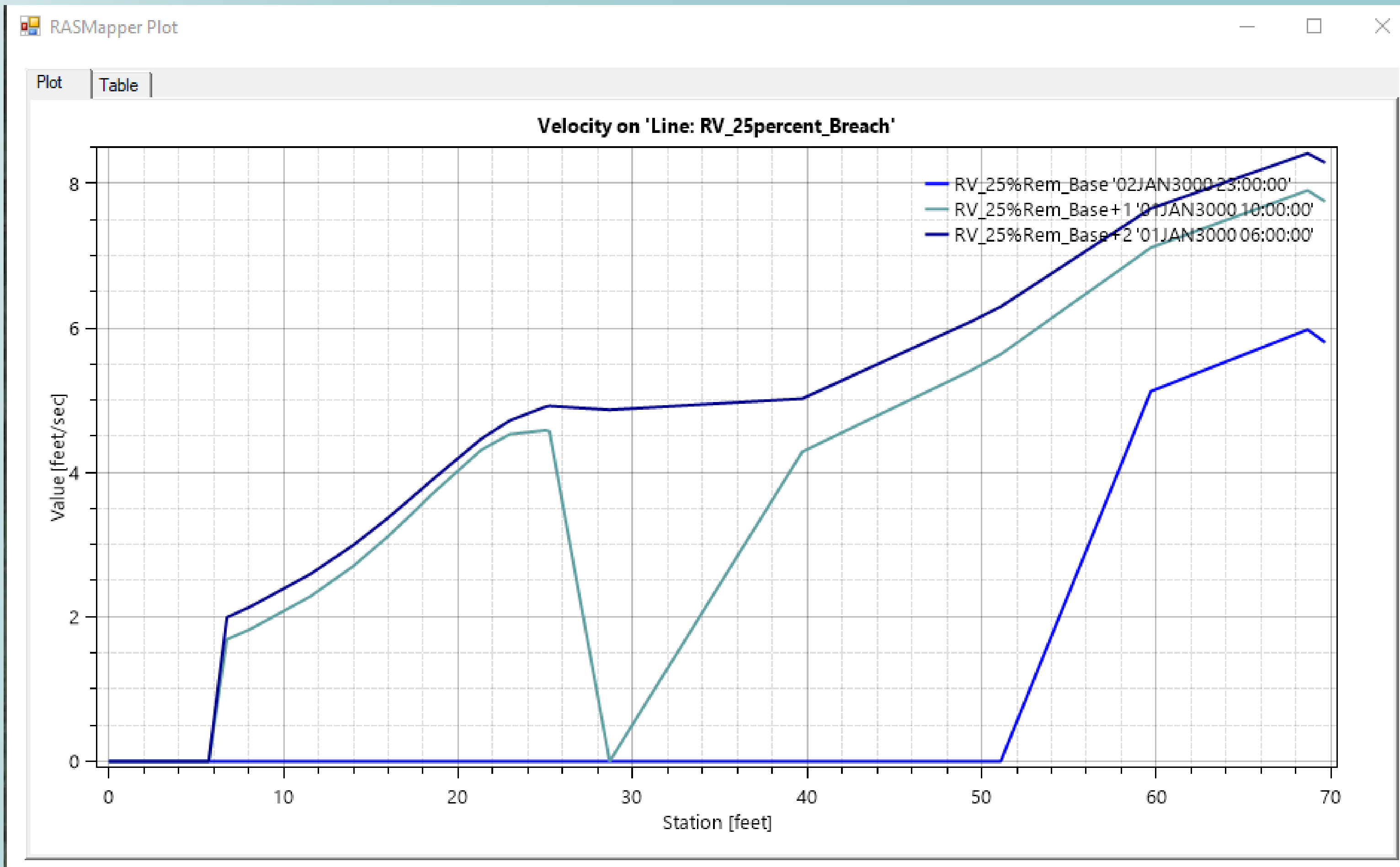
Existing Conditions



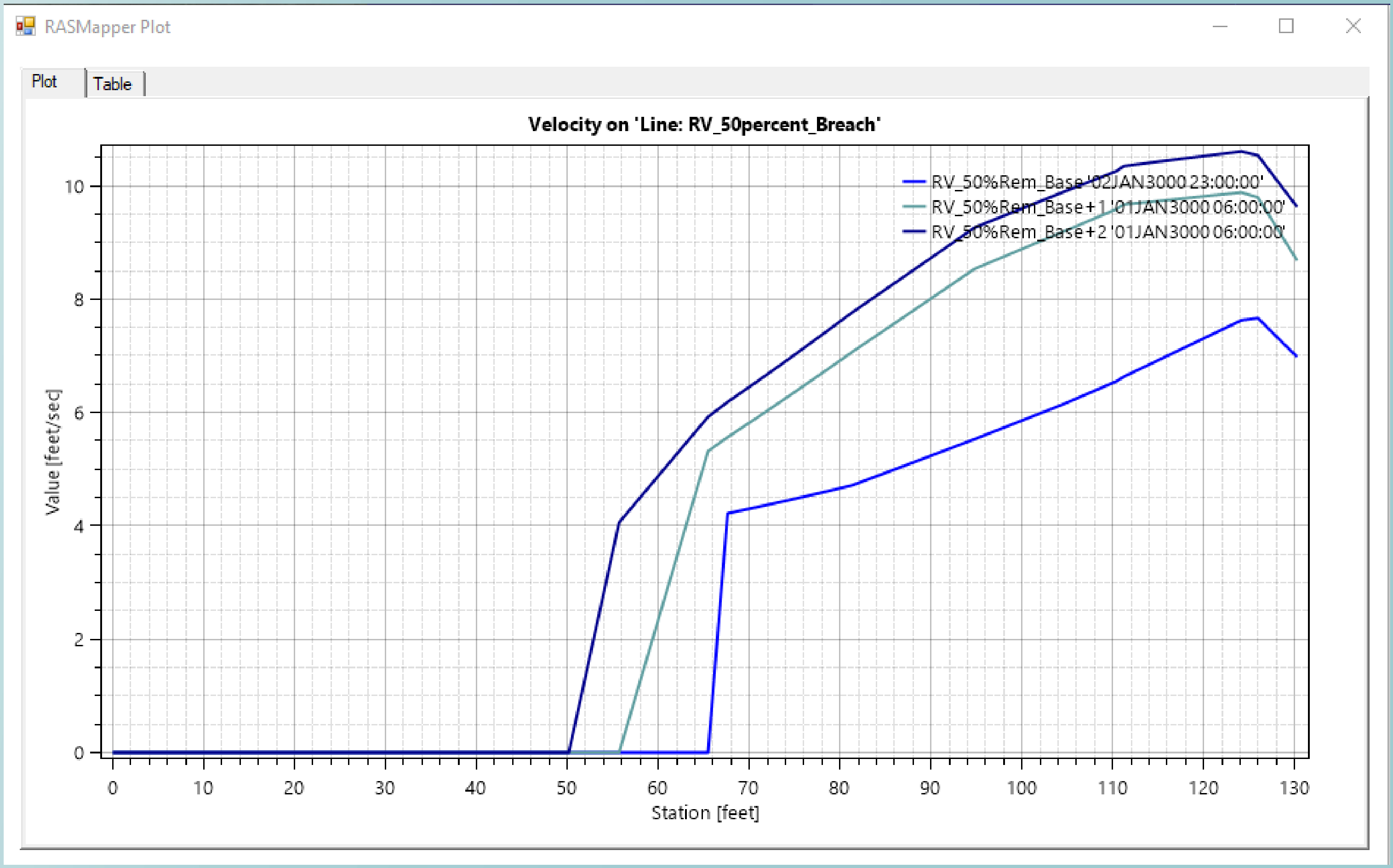
Post-Dam Removal



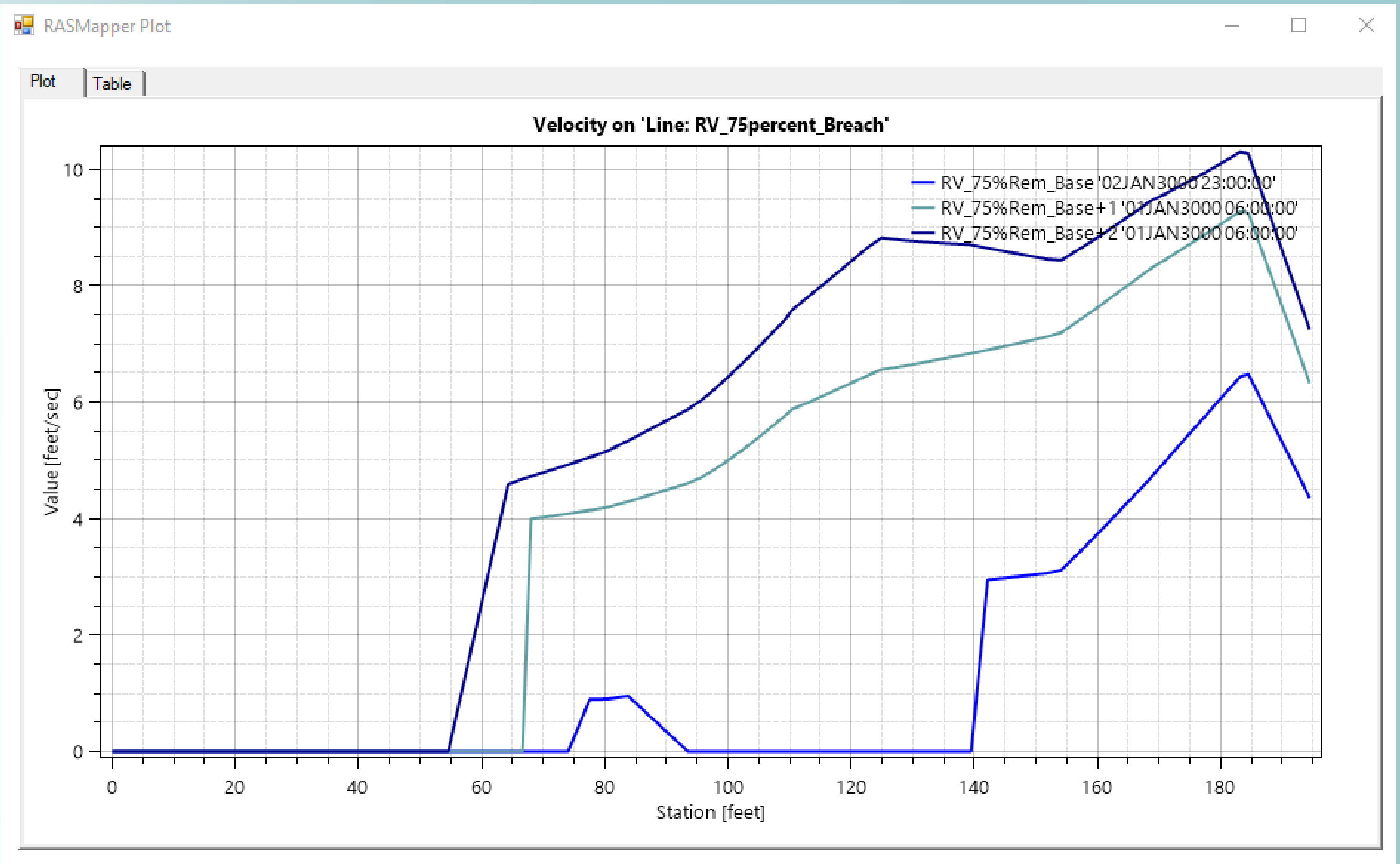
Riverview – 25% Breach Velocity Profiles



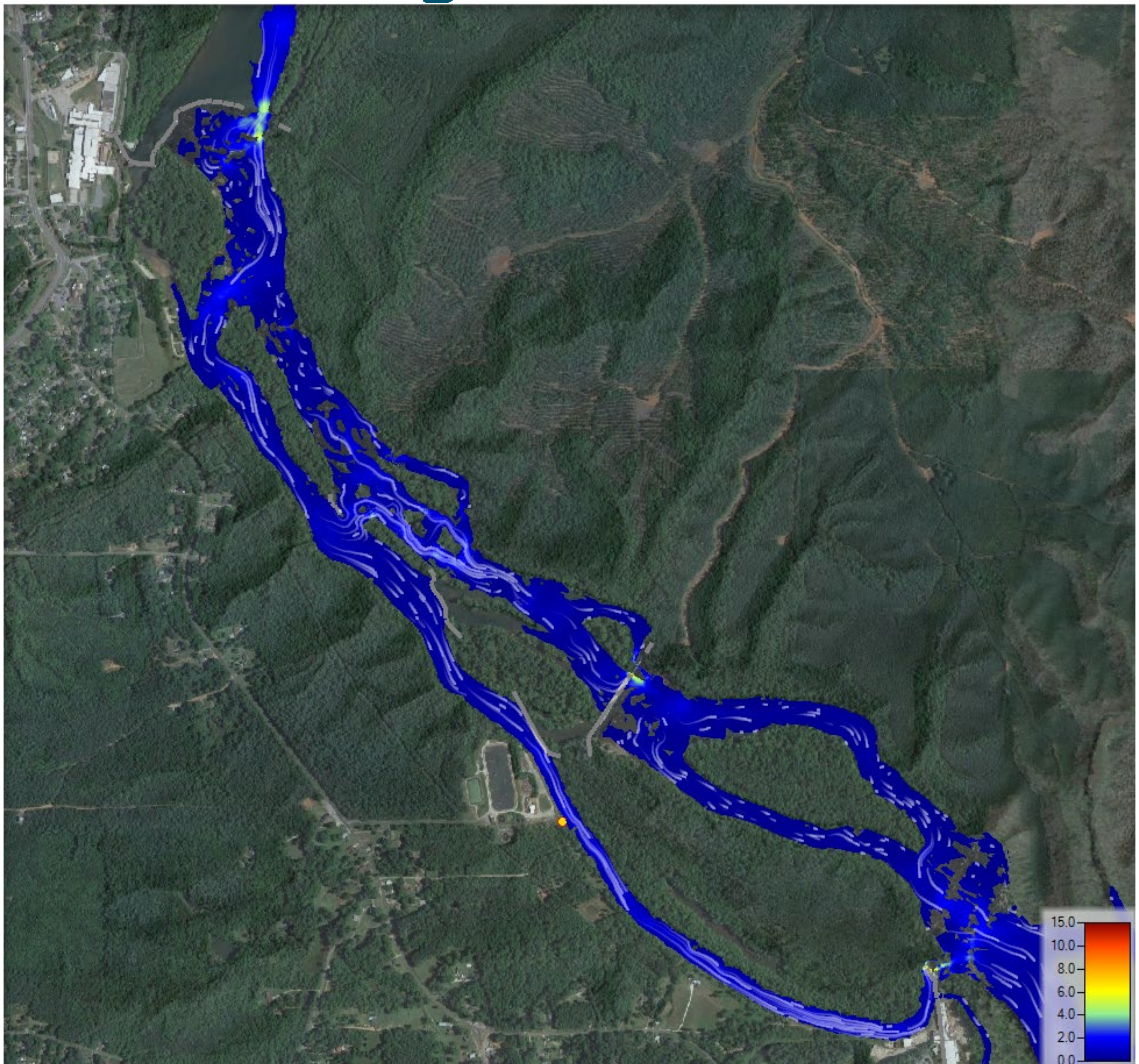
Riverview – 50% Breach Velocity Profiles



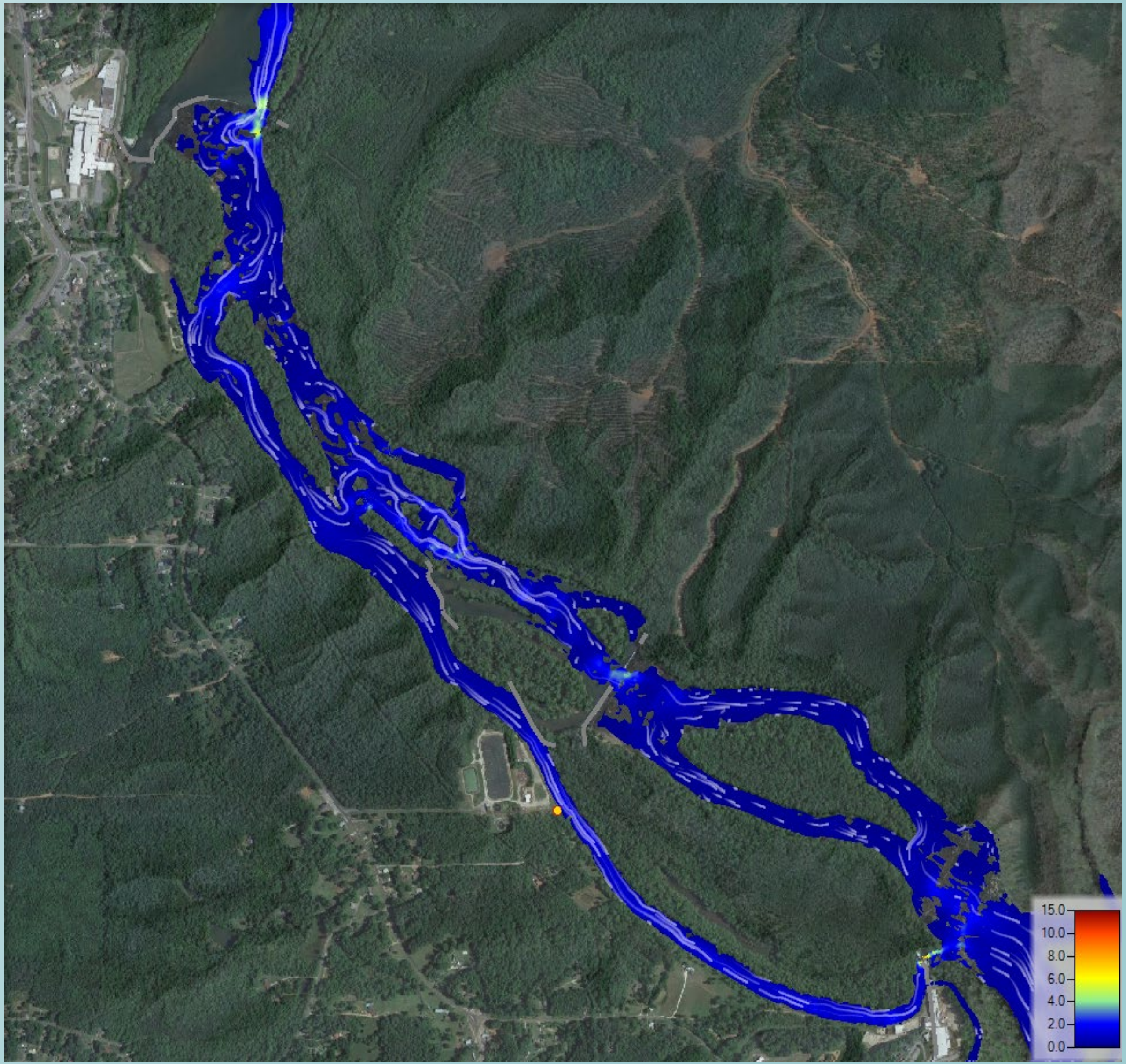
Riverview – 75% Breach Velocity Profiles



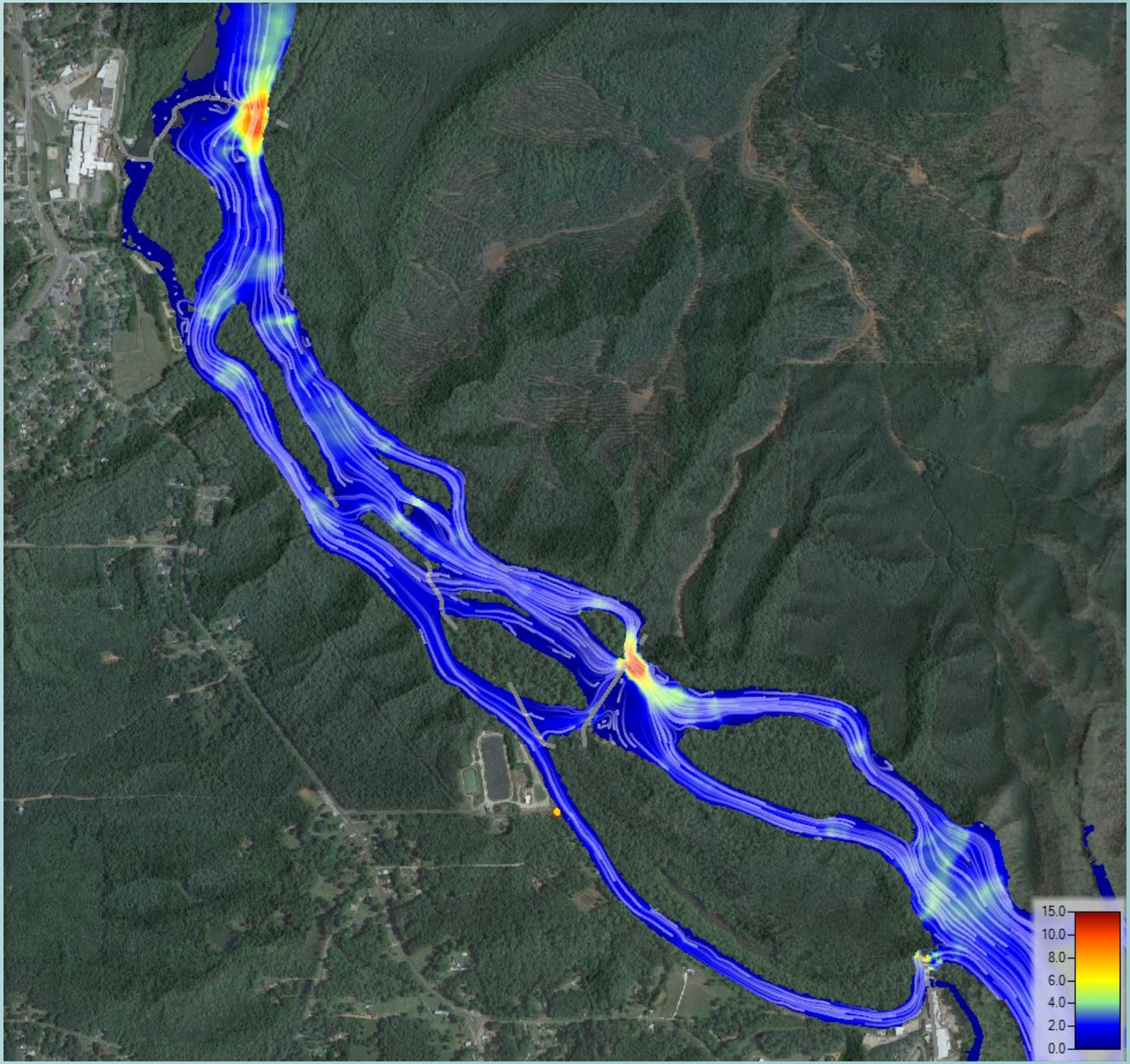
Base Flow – 25% All Dam Removal



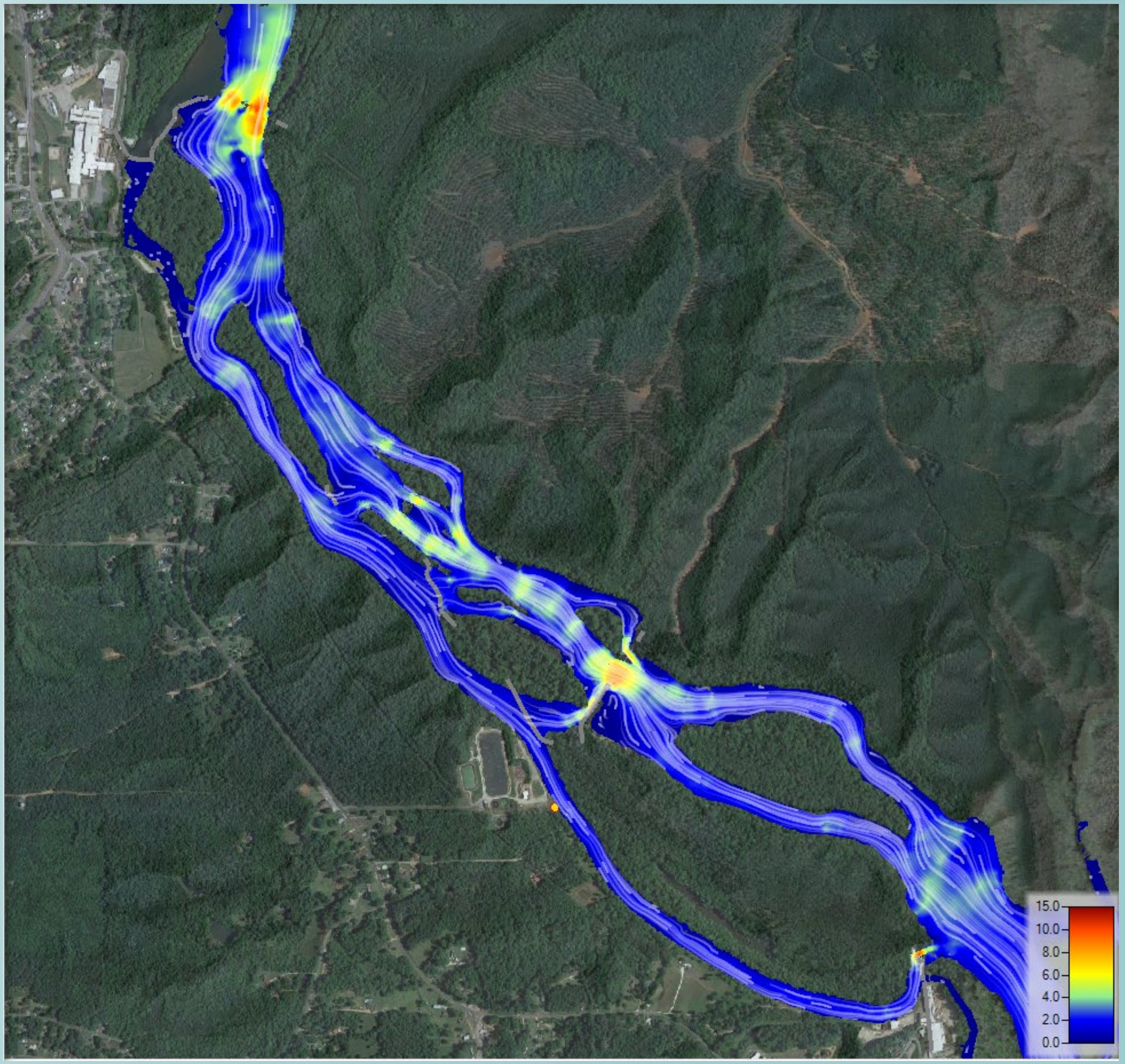
Base Flow – 50% All Dam Removal



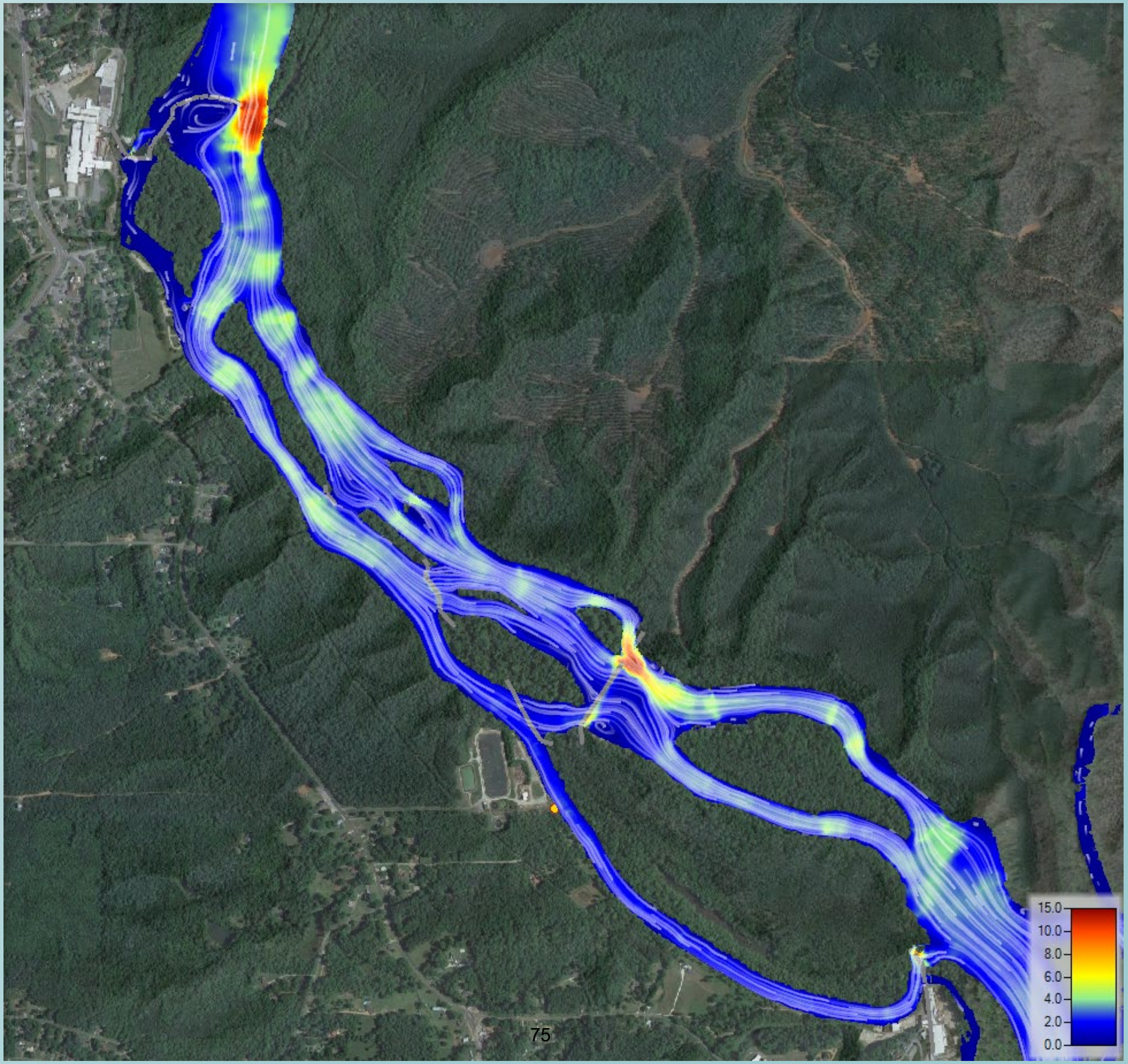
Base +1 Flow – 25% All Dam Removal



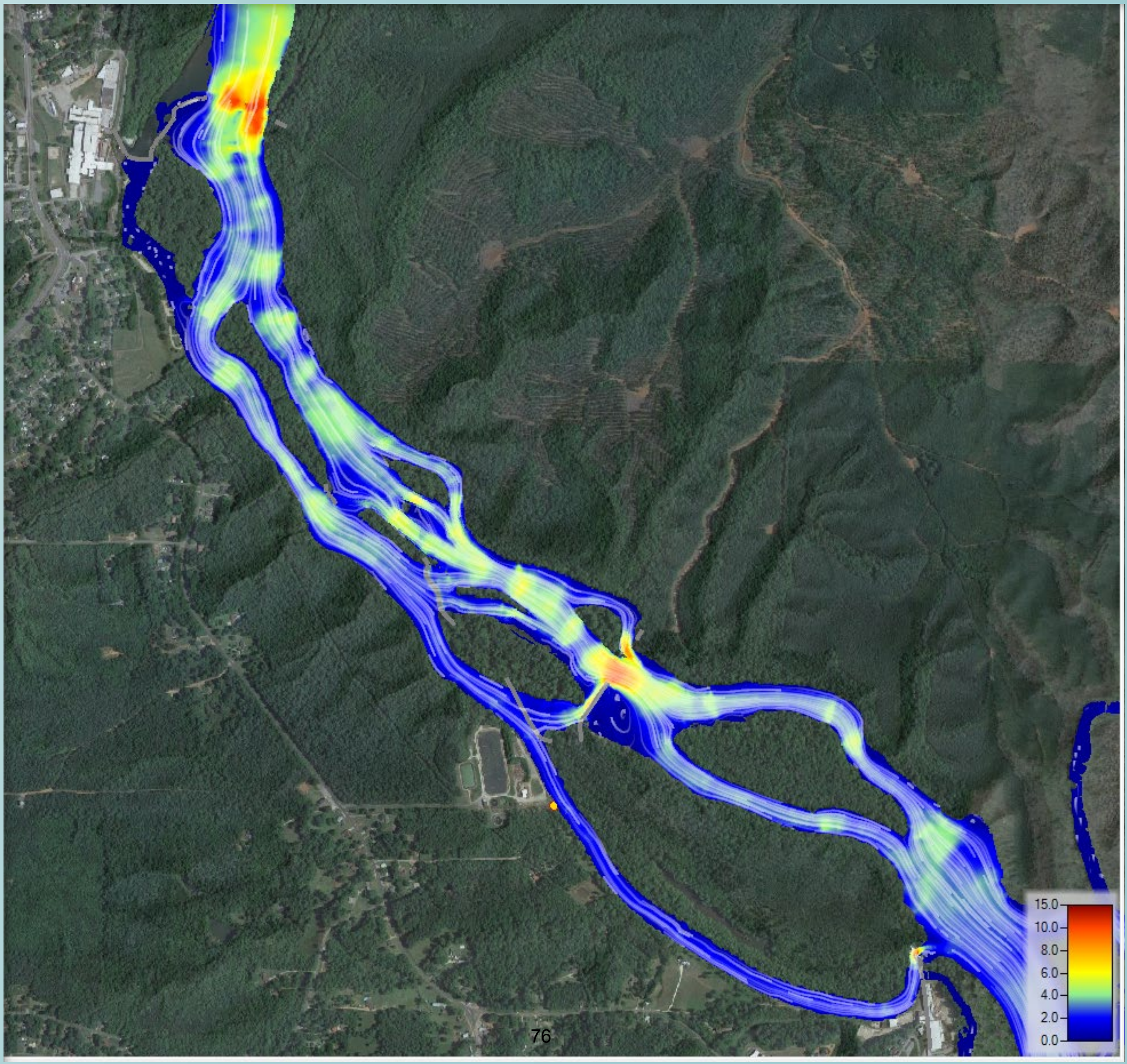
Base +1 Flow – 50% All Dam Removal



Base +2 Flow – 25% All Dam Removal



Base +2 Flow – 50% All Dam Removal



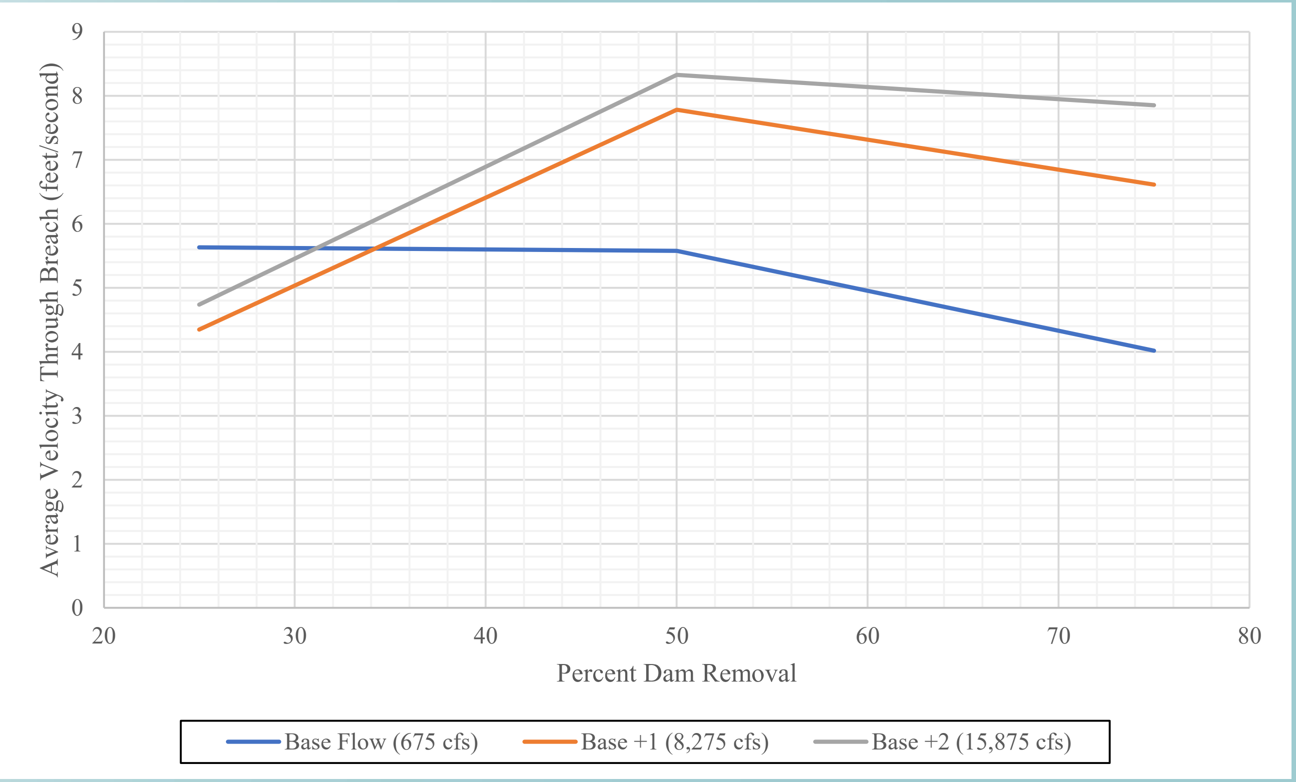
Average Velocity Change – Single Dam versus All Dam Removal

Langdale Dam Removal Only			
Case	Base Flow	Base +1	Base +2
Percent Removal	Average Velocity (feet/second)		
25	2.4	8.2	10.6
50	2.3	6.2	7.9
75	2.3	4.4	5.1
81	2.3	4.4	5.0
All Dams Removed			
Case	Base Flow	Base +1	Base +2
Percent Removal	Average Velocity (feet/second)		
25	2.4	8.2	10.7
50	2.3	6.3	8.0
75	2.4	4.5	5.1

Crow Hop Removal Only			
Case	Base Flow	Base +1	Base +2
Percent Removal	Average Velocity (feet/second)		
25	2.8	8.6	8.1
50	2.3	7.4	8.2
75	2.2	7.1	7.1
All Dams Removed			
Case	Base Flow	Base +1	Base +2
Percent Removal	Average Velocity (feet/second)		
25	2.8	7.3	7.3
50	2.3	7.4	8.2
75	2.2	6.1	6.1

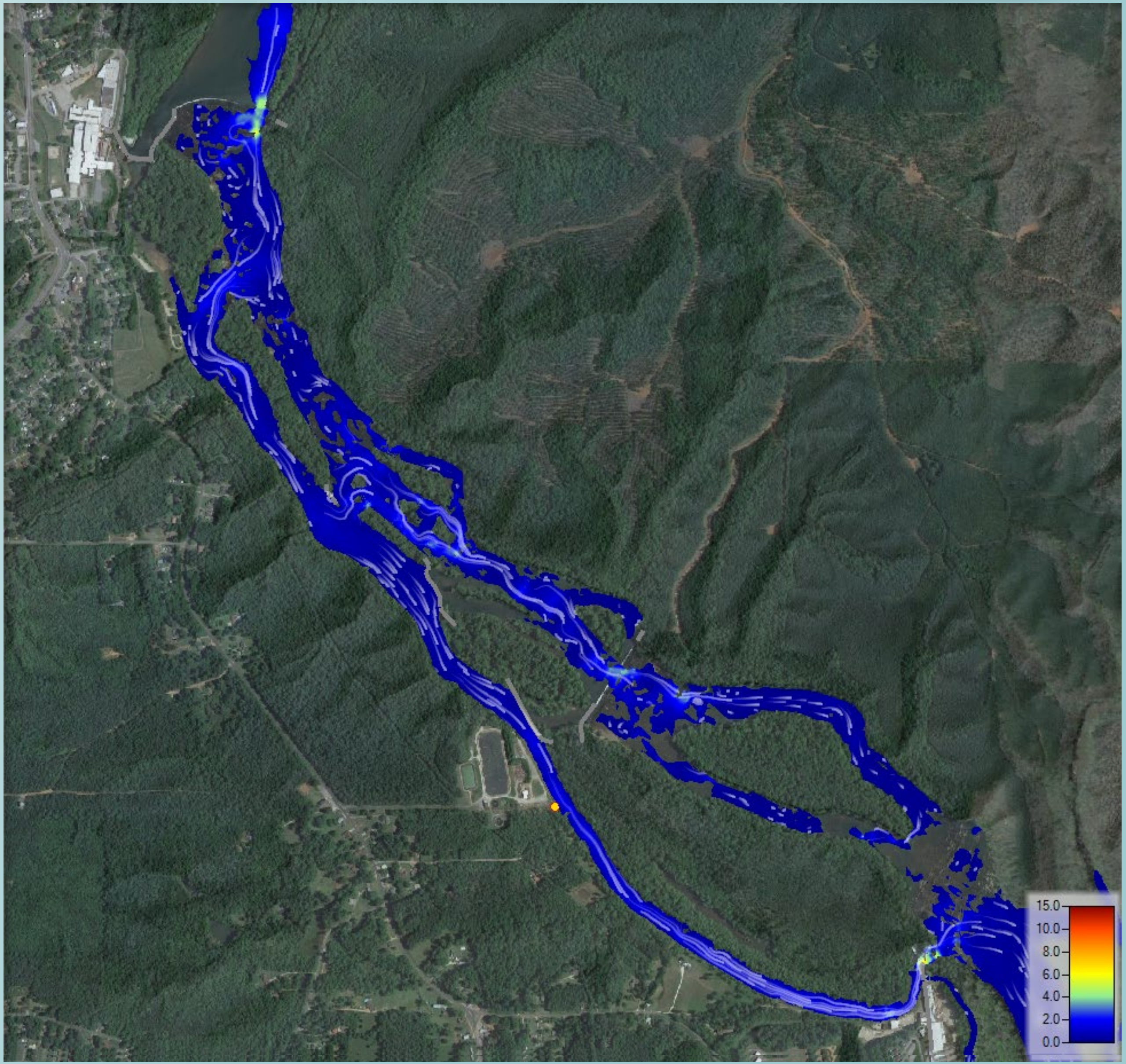
Riverview Dam Removal Only			
Case	Base Flow	Base +1	Base +2
Percent Removal	Average Velocity (feet/second)		
25	5.6	4.3	4.7
50	5.6	7.8	8.3
75	4.0	6.6	7.9
All Dams Removed			
Case	Base Flow	Base +1	Base +2
Percent Removal	Average Velocity (feet/second)		
25	2.8	4.0	4.5
50	5.5	6.9	7.3
75	4.2	5.4	5.4

Riverview Average Breach Velocities

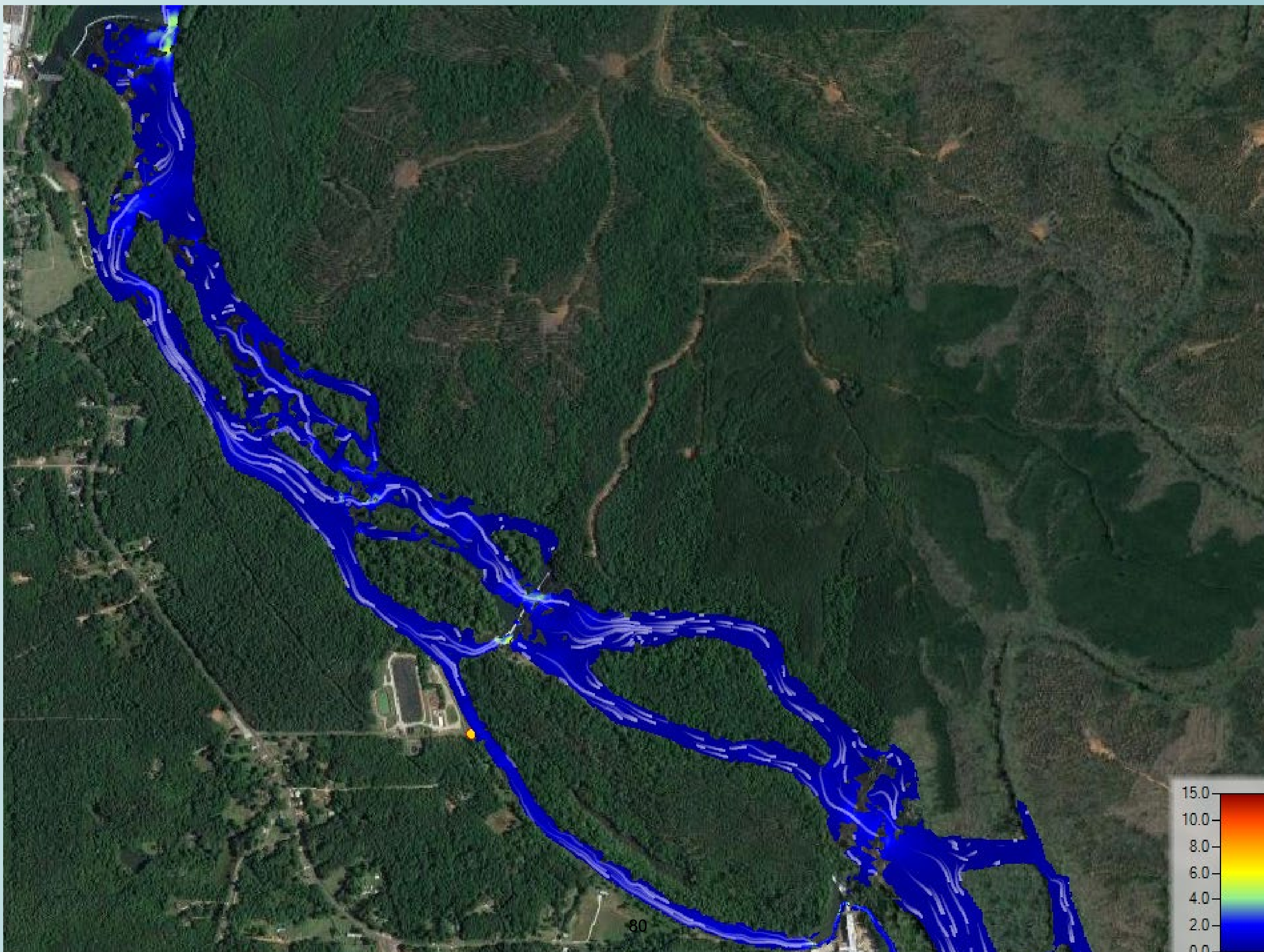


Case	Base Flow	Base +1	Base +2
Percent Removal	Average Velocity (feet/second)		
25	5.6	4.4	4.7
50	5.6	7.8	8.3
75	4.0	6.6	7.9

Base Flow – 75% All Dam Removal



Base Flow – 100% All Dam + Crib Dam Removals



Langdale and Riverview Hydroelectric Projects
FERC Projects #2341 and #2350

Communication Date: 07/22/2019

Communication Type *(telephone, email, in-person meeting, other):*
In-person

List and attach pertinent written correspondence:
(i.e. letter, fax, meeting notes/handouts, printed materials, etc.)
Handout: Copy of PowerPoint presentation entitled Langdale and Riverview Projects – Preliminary Hydrologic & Hydraulic Modeling, July 2019

Handout: Depth Change Model Results in Langdale Powerhouse and mill area

List persons attending from Southern Company/Georgia Power:
Courtenay O'Mara & Melissa Crabbe - SCS

Dawson Ingram & Nancy DeShazo - GPC

Kelly Schaeffer - Kleinschmidt

List organization name and persons attending from other organization:
Travis Carter, City Manager, City of Valley (CoV)

Leonard Riley, Mayor, City of Valley

Subject:
Review preliminary hydrologic and hydraulic modeling results for complete dam removal.

Comments/Discussions/Requests:
Courtenay provided a PowerPoint presentation overview of the complete dam removal scenario (all three dams and Riverview powerhouse) under base flow, base flow + one unit generation at West Point and base flow + two unit generation at West Point. Areas highlighted during the presentation included areas that are currently wetted that the model predicts will be dry following dam removal and changes that the model predicts will occur at the at properties upstream and downstream of the Langdale powerhouse as this is an area of primary concern for the city. Courtenay provided a summary of resource agency priorities from the 7/16/2019 consultation meeting. Resource agencies requested that Georgia Power consider ways to eliminate the concentrated water channel that hugs the east bank of the Chattahoochee River, including engineering the riverbed characteristics to spread the flow west ward. GPC will conduct additional water modeling to spread the water westward and hope to review the revised models with City of Valley in late August/early September.

Courtenay stated that in consultation with Georgia Historic Preservation Division, that agency expressed a desire to donate lands and Langdale powerhouse to an agency/city/county rather than a private developer due to protective covenants that will likely be placed to preserve the Langdale powerhouse and FERC's likely interest in preserving public access to the river. City of Valley is interested in acquiring GPC's land assets around Langdale and the powerhouse.

City of Valley Primary Concerns:

- Preserving a wetted shoreline on the west bank of the Chattahoochee River at Langdale is a primary concern. How does sediment upstream and downstream of Langdale powerhouse influence the model results that show this area dries up under base flow and base flow + one unit?
- Education around public safety associated with changing flows.
- The EAWSFPD lift station below Langdale Powerhouse is a major collector for the Valley area.
- Preserve future usability of Shawmut, Cemetery Park and Riverview boat ramps.
- Shawmut old airport is 94 acres and has boat ramp, parking, and walking track. Valley is currently considering expanding this facility to add a playground and dog park.

Action Items/Follow-up Items:

GPC: Rendering of the Langdale powerhouse area will be completed and will potentially include a riverside natural park and sidewalk, with low maintenance being a priority to minimize future maintenance costs for the City of Valley.

CoV and GPC: Continue to discuss public safety, education and law enforcement challenges for future use of Langdale island.

CoV: Requests a walk-through of the Langdale powerhouse and property. This was held August 8th, where the City confirmed their interest in the powerhouse and surrounding properties. GPC also discussed the possibility of only providing flows downstream of Langdale and enhancing upstream of Langdale into a park like setting. The City was open to this approach, so GPC will include it as a potential option in the revised modeling: Historical low flows pre-West Point. How much water was coming through City of Valley before West Point was built and how has West Point changed the flows that will come through the Langdale tailrace area. GPC suspects that the low flows are lower since the construction of West Point, which is why the area dries out upstream of Langdale at the base flow from West Point. GPC can run the numbers for CoV on this.

GPC: Set up a follow up meeting to review revised model with City of Valley.

Form Completed By:

Melissa Crabbe

Langdale and Riverview Hydroelectric Projects
FERC Projects #2341 and #2350

Communication Date:
7/22/2019

Communication Type *(telephone, email, in-person meeting, other):*
In-person

List and attach pertinent written correspondence:
(i.e. letter, fax, meeting notes/handouts, printed materials, etc.)
Handout: Copy of PowerPoint presentation entitled Langdale and Riverview Projects – Preliminary Hydrologic & Hydraulic Modeling, July 2019

Handout: Depth Change Model Results in the Riverview headrace channel

Resource Document: EAWSFPD provided a copy of their NPDES Permit and permit rationale

List persons attending from Southern Company/Georgia Power:
Courtenay O'Mara & Melissa Crabbe - SCS
Dawson Ingram & Nancy DeShazo - GPC
Kelly Schaffer - Kleinschmidt

List organization name and persons attending from other organization:
Tony Segrest, East Alabama Water Sewer and Fire Protection Division (East Alabama)
Neil Marbury – Fire Chief, Water Rescue
Wheeler Crook & Matt Cobb, Goodwynn Mills and Cawood – Engineering Consultants to East Alabama

Subject:
Review preliminary hydrologic and hydraulic modeling results for complete dam removal.

Comments/Discussions/Requests:
Courtenay provided a PowerPoint presentation overview of the complete dam removal scenario (all three dams and Riverview powerhouse) under base flow, base flow + one unit generation at West Point and base flow + two unit generation at West Point. Areas highlighted during the presentation included areas that are currently wetted that the model predicts will be dry following dam removal and changes that the model predicts will occur at the EAWSFPD properties, including the wastewater treatment plant and two lift stations. Courtenay provided a summary of resource agency priorities from the 7/16/2019 consultation meeting. Resource agencies requested that Georgia Power consider ways to eliminate the concentrated water channel that hugs the east bank of the Chattahoochee River, including engineering the riverbed characteristics to spread the west ward. GPC will conduct additional water modeling to spread the water westward and hope to review the revised models with

Georgia Power

Langdale and Riverview Hydroelectric Projects
FERC Projects #2341 and #2350

Communication Date:
08/01/19

Communication Type *(telephone, email, in-person meeting, other):*
In-person (HPD office)

List and attach pertinent written correspondence:
(i.e. letter, fax, meeting notes/handouts, printed materials, etc.)

emails, PowerPoint presentations

List persons attending from Southern Company/Georgia Power:
Courtenay O'Mara - SCS

Joey Charles - GPC

List organization name and persons attending from other organization:
Georgia Department of Natural Resources – Historic Preservation Division – Whitney Rooks, Debbie Wallsmith

Subject:
Review and discuss the results of the Langdale and Riverview Projects H&H modeling; discuss additional data gathering efforts, construction sequencing, and cultural resources study plan.

Comments/Discussions/Requests:
- Joey Opened the meeting by recapping the July 16 agency meeting in which representative from USFWS, WRD, USACE, and AHC met with representatives from GPC, SCS, and KA to discuss hydraulic modeling results.
- Courtenay talked about Georgia Power's data collection and modeling efforts to date. Courtenay presented the results of the H&H modeling.
- Whitney Rooks (HPD) was new to the project, so Joey and Courtenay gave some background on the projects.
- Preservation covenants and other creative mitigation measures were discussed and a site visit by HPD staff was tentatively planned to coincide with the public meeting.
- It was acknowledged that the final decommissioning plan was still a work in progress and that more discussion/consultation with them and other agencies would need to take place to finalize the scope of cultural resources work to be done and develop an MOA

Form Completed By:
Joey Charles

Langdale and Riverview Hydroelectric Projects
FERC Projects #2341 and #2350

Communication Date:
8/6/2019

Communication Type *(telephone, email, in-person meeting, other):*
In-person

List and attach pertinent written correspondence:
(i.e. letter, fax, meeting notes/handouts, printed materials, etc.)
None

List persons attending from Southern Company/Georgia Power:
Courtenay O'Mara, Laurie Munn, & Melissa Crabbe - SCS
Dawson Ingram, Joey Slaughter, Jennifer Cannon, Patrick O'Rouke, Joey Charles & Nancy DeShazo – GPC
Nick Morgan - Kleinschmidt

List organization name and persons attending from other organization:
Kevin Thames & Holly Ross – Savannah District Corps of Engineers (404 permitting)
Cindy Donald – Mobile District of United States Army Corps of Engineers (USACE) (flow management of Chattahoochee Dams and property ownership adjacent to the river)

Subject:
Discuss Corps Permitting of Langdale, Crow Hop and Riverview Dam Removals

Comments/Discussions/Requests:

- Courtenay provided a project overview and then opened discussion about permitting.
- Kevin explained that based on the location of the projects that the USACE Savannah District would be permitting the projects as necessary.
- Courtenay mentioned that a FERC Environmental Assessment (EA) would be prepared as part of the license surrender and suggested that perhaps the USACE could use the same EA for their permitting purposes. Kevin agreed that they would not want to create any redundancies and the USACE could use the FERC EA. Kevin asked to be put in touch with the FERC staff that will manage the surrender process for Langdale and Riverview.
- Kevin did not see many issues with the permitting because Georgia Power Company (GPC) would mostly be removing material from the river. If anything was being permanently placed in the river then a Section 404 Permit would be necessary; however, this could be accomplished through several different Nationwide Permits (NWP). They mentioned that NWP 13 (shoreline stabilization), 27 (aquatic habitat restoration), 33 (temporary construction, access, and

dewatering) would likely be options that could be necessary. If using NWP 27, then GPC would need to demonstrate habitat improvement. The criteria was simple and the United State Fish and Wildlife Service will also need to demonstrate this for their grant purposes. The USACE felt that this information would be easy to justify the NWP 27.

- Kevin seemed interested in the potential impacts that are regulated by Section 10 (navigable water ways) and Section 408 (impacts to their projects). GPC would need to prove through hydraulic modeling that removing these dams would not impact USACE projects and therefore eliminate the need for a Section 408 permit. The Section 10 Permit would be issued with the NWP or separately if a NWP was not necessary. Kevin did not think there would be any Section 408 impacts, but Section 10 is likely.
- Cultural and historical features were discussed and that GPC was working with the State Historic Preservation Office (SHPO) to discuss the necessary avoidance, minimization, and mitigation measures.
- Corps Savannah asked if sediment had come up in our consultations. GPC stated that agencies have only discussed quantity of sediments and GPC is planning to estimate these based off of the bathymetry and dam geometry. Reference was also made to the Corps downstream removal of City Mills and Eagle & Phenix as a Section 206 project, which were also run of river, low head dams; it was discussed that the Corps had determined that the sediment was insignificant and had no sediment quality issues, thus removal was not necessary.
- Holly said that wetland delineations would only be needed where there are direct temporary or permanent impacts proposed in wetlands or streams.
- Courtenay explained the future schedule of this project. A mid-October public meeting is going to be scheduled to discuss with the public the proposed decommissioning plan. GPC will likely have the conceptual plan and flow modeling completed by the end of September to share with the USACE. They discussed sharing it with the Mobile District for their review of Section 408 impacts and Savannah District concurred that Mobile District would be the best entity to determine Section 408 impacts.
- Georgia Power will follow up to add Holly Ross and Kevin Thames to the stakeholder mailing list and follow up with Cindy Donald for a Corps Real Estate contact.

Form Completed By:

Melissa Crabbe

Georgia Power

Langdale and Riverview Hydroelectric Projects
FERC Projects #2341 and #2350

Communication Date:
September 5, 2019

Communication Type *(telephone, email, in-person meeting, other)*:
In-person meeting

List and attach pertinent written correspondence:
(i.e. letter, fax, meeting notes/handouts, printed materials, etc.)

- emails were exchanged between Tony Dodd and ADEM prior to the meeting for the purpose of scheduling

-handouts were given to ADEM, specifically a copy of maps depicting predicted base river flows in the Langdale, Riverview project area with dams removed. The map was recognized in conversation as draft/preliminary as another modeling revision was underway at that time.

List persons attending from Southern Company/Georgia Power:
Melissa Crabbe – Hydro Engineer and Compliance Specialist
Courtenay O'Mara – Hydro Licensing Manager
Laura Munn - Hydro Engineer and Compliance Specialist
Tony Dodd – Aquatic Biologist

List organization name and persons attending from other organization:
Jennifer Haslbauer – Chief, Standards and Planning, Water Quality Branch, Alabama Department of Environmental Management (ADEM)
David Moore – Environmental Engineer, ADEM

Subject: Project Update for Langdale and Riverview FERC License Surrender and Chattahoochee River Restoration

Comments/Discussions/Requests:
Met at ADEM Headquarters in Montgomery, AL.
Courtenay O'Mara introduced the team and described Georgia Power's intent to update ADEM on project progress and to specifically request ADEM's review and input on wastewater mixing details for

the East Alabama Water and Sewer Authority's NDPES permitted outfall located in the project area - located just upstream of the Riverview powerhouse.

Courtenay described the point of current project progress within the FERC process. She described local stakeholders' interest in post dam removal river stage effects and the powerhouse facility at Langdale. The then most-recent results of GPC's hydraulic modeling (by Kleinschmidt Associates) were described. The discussion was aided by handouts of maps depicting projected river stage under base flow vs higher flows anticipated by Corps operations of Wests Point Dam upstream of Langdale and Riverview. Discussion included anticipated dam removal process via USFWS dam removal team and GPC's potential consideration of certain engineered features to achieve certain base flow river stage effects. Specifically, highlighted were GPC's awareness of wetted perimeter along the west bank features at the City of Valley as well as (water volume) at the East Alabama Water and Sewer and Fire Protection District (EAWSFPD) treatment plant discharge. Discussion further included GPC's then-on-going effort to collect additional stream-channel substrate and subsurface survey data to enhance model resolution with respect to sediment volume and flow effects. As related to projected base flow and compliance, SCS Hydro members raised questions and contributed to discussion about assimilation capacity within EAWSFPD's discharge permit allowance. At our team's request, ADEM agreed to have its NPDES group review the EAWSFDP permit limits and calculation, with respect to its 7Q2 mixing criteria, and reply to GPC with its analysis by mid-October 2019. GPC will continue dialogue with ADEM wand noted the next update opportunity this Fall in the form of a second multi-agency, hydraulic modeling update meeting.

Follow-up Requirements: None at this time.

Form Completed By: Tony Dodd

Langdale and Riverview Hydroelectric Projects
FERC Projects #2341 and #2350

Communication Date:
9/30/2019

Communication Type *(telephone, email, in-person meeting, other):*
In-person

List and attach pertinent written correspondence:
(i.e. letter, fax, meeting notes/handouts, printed materials, etc.)
Handout: Copy of PowerPoint presentation entitled Langdale and Riverview Projects – Preliminary Hydrologic & Hydraulic Modeling, July 2019

List persons attending from Southern Company/Georgia Power:
Courtenay O'Mara, Laurie Munn, Melissa Crabbe - SCS

List organization name and persons attending from other organization:
All from Georgia Environmental Protection Division (EPD):
Victoria Adams (Water Quality Standards)
Liz Booth (Program Manager, Watershed Planning and Monitoring)
Lewis Hays (Program Manager, Watershed Compliance)
Anna Truszczynski (Assistant Branch Chief, Watershed Protection Branch)
Joanna Smith (Surface Water Supply), Tom Woosley (Safe Dams)
Hallian Liang (Water Supply, Hydrological Unit)
Paul Lamare (Hydrological Modeler)
Feng Jiang (Hydrological Modeler)

Subject:
Review preliminary hydrologic and hydraulic modeling results for complete dam removal.

Comments/Discussions/Requests:
Courtenay provided a project overview of the proposal to surrender the Langdale and Riverview FERC licenses and the FERC process involved in surrounding a license and decommissioning the dams and Riverview Powerhouse. Courtenay talked through a handout of presentation slides that provided an overview of the complete dam removal scenario (all three dams and Riverview powerhouse) under base flow, base flow + one unit generation at West Point and base flow + two unit generation at West Point. Areas highlighted during the presentation included:

- areas of concern for the City of Valley: area that are currently wetted that the model predicts will be dry following dam removal at the at properties upstream and downstream of the Langdale powerhouse
- the model has incorporated excavating a channel in the island abutting Langdale powerhouse to bring water to the tailrace channel
- resource agency priorities from the 7/16/2019 consultation meeting, including engineering as needed to keep post-removal velocities that meet the needs for upstream fish passage (approx.. 3-5 fps)
- East Alabama Water Sewer and Fire Protection District wastewater discharge

Moving forward we are making model revisions based on feedback received and plan to convene an resource agency revised model review meeting on November 7.

Courtenay reviewed the design for the Riverview powerhouse area as we plan to remove the powerhouse to the operating floor elevation, but the foundation in place. A berm would be built in the location of the powerhouse to divert water from the Riverview headrace channel back into the main stem of the Chattahoochee River rather than allowing it to pass to the Riverview tailrace channel. Courtenay specifically asked Tom Woosley if the berm would fall under EPD's Safe Dams regulatory program. Because the berm would not impound water Tom states the berm would not be regulated by Safe Dams.

Liz Booth inquired about how sediment will be handled. Courtenay explained that we have proposed to quantify sediment and determine composition and this information will be reported in the Hydraulics and Hydrology Study, which will be filed in December 2019. After review of the FERC proceeding for the dam removal of downstream FERC projects City Mills and Eagle and Phenix Dams, we have not proposed to sample to determine sediment quality. As a result of consultation with resource agencies regarding a 2008 sediment quality analysis for removal of these nearby and downstream dams, owner, UPtown Columbus, did not receive any recommendations for treatment of impounded sediments.

Courtenay asked what regulatory sediment quality standards or criteria would apply to the removal of dams. Anna Truszczynski stated that they would have to look into it, but Bio F and Bio M might be the criteria that would apply. They would consider habitat impacts, end of pipe limits and turbidity.

Courtenay discussed two water withdrawal facilities and three wastewater discharge points between West Point Dam and Riverview Dam. At this stage of modeling it appears that only East Alabama Water Sewer and Fire Protection District's (EAWSFPD) wastewater treatment facility needs to be further analyzed for impacts due to flow changes in the discharge channel. Courtenay let everyone know that we are currently in consultation with EAWSFPD and Alabama Department of Environmental Management (ADEM) on whether or not the flow changes in the Riverview headrace channel adversely impact EAWSFPD's point source discharge permit. The remaining 4 facilities are located upstream of where Interstate 85 crosses the Chattahoochee River and the model predicts negligible change in at and upstream of I-85. Lewis Hayes stated that he could provide the invert elevations of the City of West Point's water intake, which is located just upstream of I-85 on the eastern side of the Chattahoochee.

Courtenay invited attendees to participate in our next meeting with resource agency stakeholders that will take place on November 7 and asked if any attendees who are not already on the surrender mailing list would like to be added. Liz Booth requested that we add Steve Wiedl to the stakeholder mailing list. Steve will review our application for a 401 water quality certification for the decommissioning of project dams and Riverview powerhouse.

Action Items/Follow-up Items:

Send Victoria Adams instructions for filing comments on FERC's efiling system.

Add Steve Wiedl to the stakeholder mailing list.

Form Completed By:

Melissa Crabbe

Langdale and Riverview Hydroelectric Projects
FERC Projects #2341 and #2350

Communication Date:

10/10/19

Communication Type *(telephone, email, in-person meeting, other):*

In-person (Chattahoochee River Conservancy office – Spencer Environmental Center)

List and attach pertinent written correspondence:

(i.e. letter, fax, meeting notes/handouts, printed materials, etc.)

Printed materials and general discussion

List persons attending from Southern Company/Georgia Power:

Joey Slaughter and Dawson Ingram – GPC

List organization name and persons attending from other organization:

Chattahoochee River Conservancy – Henry Jackson; Auburn University – Steve Sammons; Adjacent Landowner/Local Fisherman – Kendall Andrews; Local Fisherman – Chris Funk

Subject:

Review and discuss the Langdale and Riverview Decommissioning Projects; H&H surveying and modeling activities; discuss fishing and access concerns.

Comments/Discussions/Requests:

- Joey opened the meeting with introductions, provided a project overview, discussed the efforts taken to date, and then opened discussion with the attendees.
- Kendall Andrews asked about the 2 rounds of surveys. Joey explained that the surveys were for modeling purposes and the second round was for more detailed survey data.
- Kendall Andrews also asked about the status of the December filing and it was acknowledged that the final decommissioning plan was still a work in progress and that more discussion/meetings with landowners and other agencies would take place before finalizing the plan.
- Kendall Andrews asked about the public meeting delay. It was explained that this was due to the additional work on the modeling referenced earlier.
- Kendall Andrews was concerned about his property value, especially if he loses boat access to the river.

- Kendall Andrews and Chris Funk were concerned about negatively impacting the Shoal Bass population contained between Riverview and Langdale Dams.
- Chris Funk asked about sedimentation impacts from the removal on the dams.
- Kendall Andrews asked to be included on future stakeholder communication.

Form Completed By:

Dawson Ingram

Georgia Power

Langdale and Riverview Hydroelectric Projects
FERC Projects #2341 and #2350

Communication Date: November 7, 2019

Communication Type: Teleconference

List and attach pertinent written correspondence: no hand-outs or e-files

Persons attending from Southern Company/Georgia Power:

Kawonya Carswell, Joey Charles, Melissa Crabbe, Tony Dodd, Dawson Ingram, Jim Ozier, Patrick O'Rouke

Kleinschmidt: Chris Goodell, Michael Hross, Tyler Kreider, Jason Moak, Kelly Schaeffer

Organization name and persons attending from other organization:

Tom Litts – Georgia Department of Natural Resources, Fisheries
Brent Hess – Georgia DNR, Fisheries
Whitney Rook – Georgia Department of Natural Resources, State Historic Preservation Office (SHPO)
David Moore – Alabama Department of Environmental Management (ADEM)
Jennifer Haslbauer – ADEM
Emily Anderson – ADEM
Shonda Torbart – ADEM

Subject: Update on the status of the Langdale and Riverview Hydrologic and Hydraulic (H&H) Study

Comments/Discussions/Requests:

Whitney Rook requested a copy of the presentation; noted that if Georgia Power is removing Langdale, they would need to figure out in the structure is eligible. Joey Charles stated that Georgia Power is currently in the field to determine eligibility and will work with Georgia SHPO to develop an Memorandum of Agreement (MOA).

Mike and Tyler discussed the model development and some of the model parameters including the various flows that the model would use to determine how those flows would appear in the river post dam-removal. Courtenay noted that the new 2-D modeling allowed Georgia Power to evaluate the water intakes above I85 , which Mike presented to the group. Brent noted that there are two public boat ramps above the I85 bridge that Georgia Power should confirm if there are likely to be effects on these ramps as a result of dam removal. Tom asked Mike to see the July velocities vs. new velocities at Langdale on the Georgia side. Courtenay also let the group know that a public meeting is planned for March 2020 at the Valley Recreation Center. FERC has been invited to that meeting. Tom also asked about a sediment analysis. Courtney described the soundings that were completed above each of the three dams and that the information is summarized in the H&H report.

Follow-up Requirements: 1) Provide presentation to meeting participants specific requirements at this stage; 2) Set up a meeting with Tripp Bolton in Charleston to review dam removal and H&H modeling

Form Completed By: Kelly Schaeffer

Kleinschmidt

Langdale and Riverview Projects – Preliminary Hydrologic & Hydraulic Modeling

November 7, 2019

Georgia Power

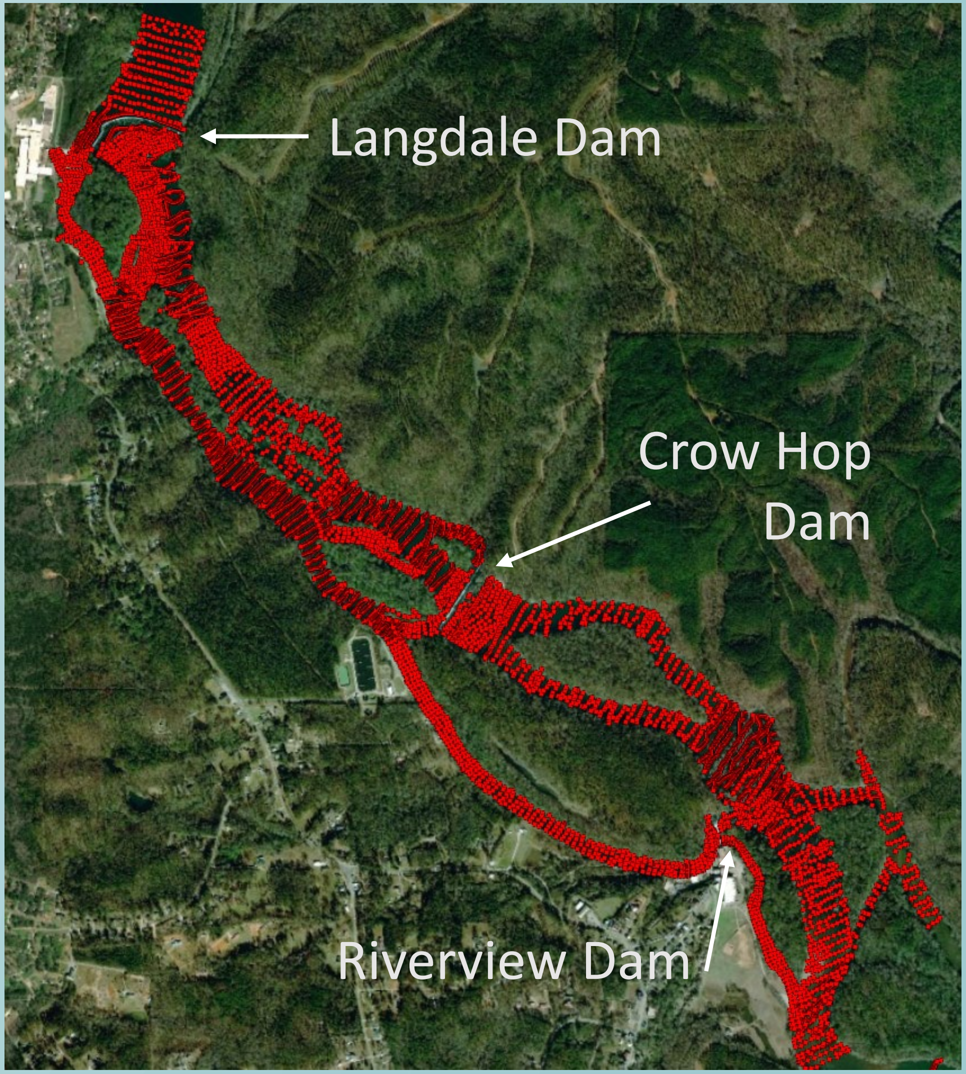
Modeling Approach

- Model Purpose
  1. Assess changes to depth/width of inundation along the river after dam removals
  2. Assess flow velocity through dam breach locations
- Removal Scenario
  - Removal of Langdale to El. 542 feet on GA side, complete removal on AL side; 100% Removal of Crow Hop and Riverview dams (10 feet long abutments remain)
  - New excavated channel in the island downstream of Langdale to provide water to Langdale Powerhouse tailrace channel/City of Valley
  - Removal of Riverview Powerhouse
  - Construction of cross vanes downstream of last rock weir (near Crow Hop)
- Hydrologic Cases
  - Base Flow Unit (675 cfs)
  - Base Plus One Unit (8,275 cfs)
  - Base Plus Two Units (15,875 cfs)
  - 100-Year Flood (peak flow 75,100 cfs)
- Downstream Boundary Condition: WSEL = 519.10 feet, NAVD88

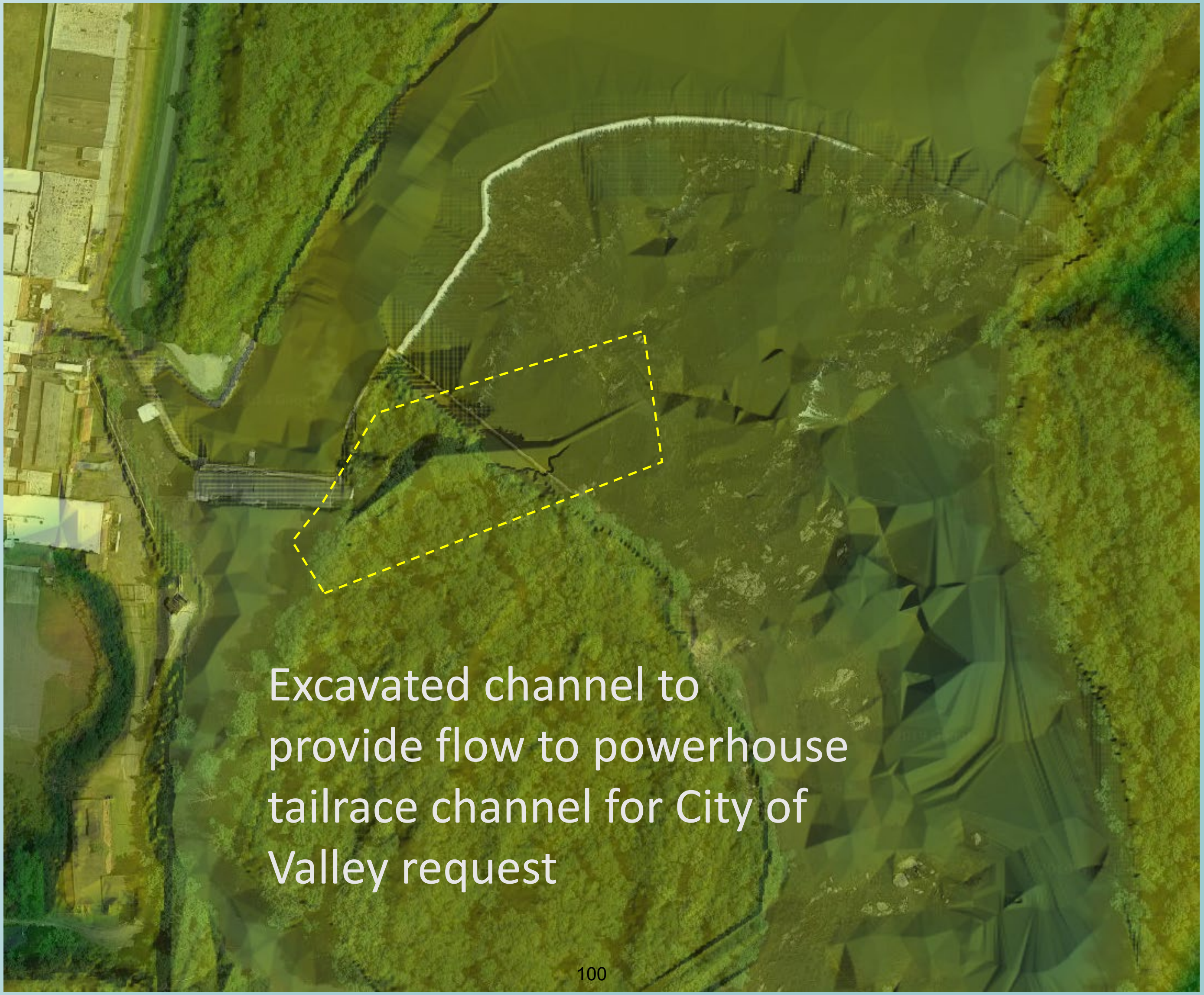
New Model Bathymetry Data

- Over 214,000 points collected along river bottom from West Point Project to Langdale Dam
- Bathymetric surface generated using new data and model 2D mesh extended to West Point
  - Entire model is now 2D

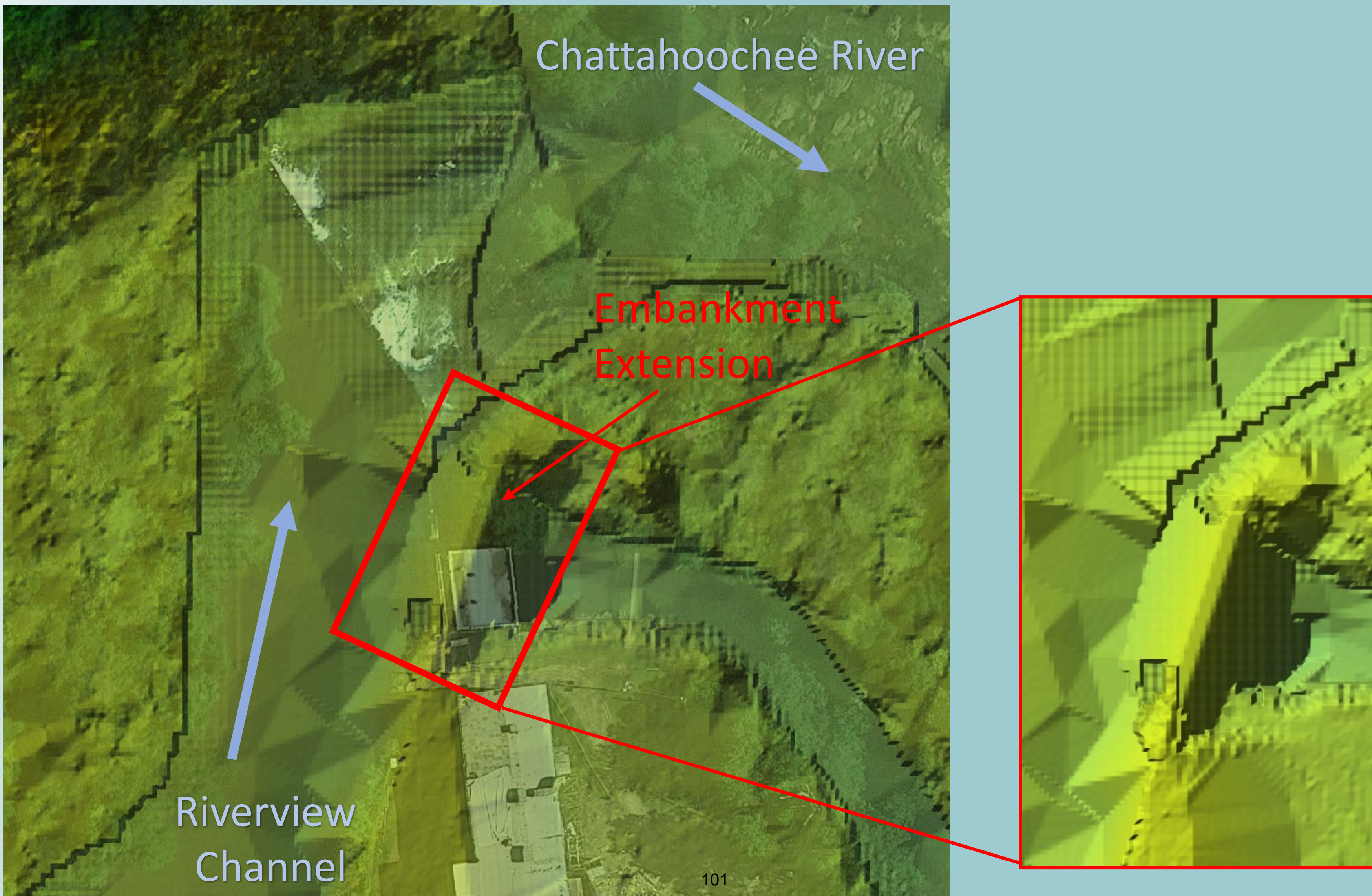
Previously Obtained Bathymetry Data at Dams



Langdale Tailrace Channel



Riverview Powerhouse Removal



Purpose of Crow Hop Cross Vanes

- Primary Purpose
  - Maintain flow in the Riverview channel by preventing degradation of rock weir—loss of rock weir may cause insufficient discharge in Riverview channel for users
    - Cross vanes will prevent a head cut from approaching rock weir and maintain flow in Riverview channel
- Secondary Purpose
  - Provide fish passage up channel (providing ~9” drop per weir)
  - Beneficial reuse of Crow Hop Dam demolition material
  - Concentrated flow in the center of each vane may allow boat passage at intermediate flows
  - Stabilize banks of connector channel

Example Cross Vanes at Crow Hop Dam

Langdale and Riverview Hydroelectric Projects
FERC Projects #2341 and #2350

Communication Date:

11/26/2019

Communication Type *(telephone, email, in-person meeting, other):*

In-person (Crowne Hotel, Charleston, SC)

List and attach pertinent written correspondence:

(i.e. letter, fax, meeting notes/handouts, printed materials, etc.)

R*E_ Langdale_Riverview Decommissioning Plan - Temporary Facilities Concepts*

Southern Company/Georgia Power:

Courtenay O'Mara, Melissa Crabbe- SCS
Kelly Schaeffer, Michael Hross & Tyler Kreider (by phone) - Kleinschmidt

List organization name and persons attending from other organization:

U.S. Fish and Wildlife Service – Tripp Bolton

Subject:

Mike Hross (modeler) and Tyler Kreider (design engineer) gave a joint presentation highlighting the revised model results and construction concept, moving from Langdale, Crow Hop and Riverview. Tripp had no comments on the modelling results. Tripp had some comments on the concept design, which are documented in the pdf titled *20191126 Langdale, Crow Hop, and Riverview TEMPORARY FACILITIES - Draft per call with Tripp.pdf*. Tripp also requested to review the concept design with the USFWS team for additional comment. Concept design topics included access approach, area of disturbance, potential spoil locations and trench construction.

Pending permission, Georgia Power would access from Georgia to breach the Georgia side of dam to dewater Alabama side. Then access from Georgia would be abandoned to protect the cultural resources in Georgia. Once dewatered USFWS would construct main access from the remainder of the project from Alabama. The plan is to take the dam down in linear lifts, approximately 2-3 feet in height at a time. Approximately 200 linear feet would be left to elevation 542 on the Georgia side to prevent a high-velocity channelization. If trench is built, the separating the island from the river will be removed from the trench location and south. To move forward with the construction drawings, Joey Charles will provide area of extent of the cultural site and Tripp will provide guidance to Tyler on preferred spoil locations.

Crow Hop topics included feasibility of cross veins. During this meeting the concept of the cross veins was abandoned in favor of constructing one berm to relieve travel time with dam material and time to construct. The ability to navigate through the channel with berm is less likely than with the cross-veins. The berm will be constructed to ensure adequate flow to the Riverview channel for EAWSFPD WWTP, in the event the rock weir in this channel is compromised after dam removal. Spoil locations will be in Alabama on SKWP/400 LLC property, the berm keyed into adjacent islands owned by the Bledsoe family (both spoil areas pending permission).

At Riverview items for discussion included raising the powerhouse to grade but leaving the foundation and constructing a berm to backfill the foundation wall. This will push flow back to the main stem of the Chattahoochee. Access in this location would be from Georgia, across the Riverview powerhouse tailrace, over the island and downstream the dam discharge wall and up the river to the dam. Tripp requested to keep the limits of disturbance open on the plans for flexibility. Tripp also requested to look into rock or log veins as a potential more environmentally friendly option to armor the bank upstream of the Riverview powerhouse.

Redlines on the *20191126 Langdale, Crow Hop, and Riverview TEMPORARY FACILITIES - Draft per call with Tripp.pdf* are representative of concept design changes during this meeting.

Follow-up Required:

Tripp Bouldin requested USFWS team review the draft concept plans prior to sharing externally. Concurrence was provided on 2/27/2020.

Form Completed By:

Melissa Crabbe

Georgia Power

Langdale and Riverview Hydroelectric Projects
FERC Projects #2341 and #2350

Communication Date:

12/2/2019

Communication Type *(telephone, email, in-person meeting, other):*

In-person

List and attach pertinent written correspondence:

(i.e. letter, fax, meeting notes/handouts, printed materials, etc.) – N/A

List persons attending from Southern Company/Georgia Power:

From Georgia Power: Joe E. Slaughter, IV; Dawson Ingram; Patrick O'Rouke
Karen Bennett, Alabama Power

List organization name and persons attending from other organization:

All from Chambers County Commission:
Charlie Williams; Douglas Jones, Jr.; James Williams; Samuel Bradford; David Eastridge; Debra Riley

Subject:

Overview of Langdale/Riverview surrender decision and future process

Comments/Discussions/Requests:

On Monday, December 2, 2019, representatives from the project team attended a work session of the Chambers County Commission to discuss the Langdale/Riverview surrender process with the current commissioners. Representing the project were Joe Slaughter, Natural Resources Manager, Dawson Ingram, Lake Resource Manager, and Patrick O'Rouke, Fisheries Biologist from Georgia Power as well as Karen Bennet, Area Manager from Alabama Power. Commissioners were provided a brief overview of the reasons for surrender, the project objectives, and a general outline of the FERC process. Commissioners were encouraged to contact Karen Bennett if any questions or concerns came up throughout the process.

Action Items/Follow-up Items:

N/A

Form Completed By:

Patrick O'Rouke

Georgia Power

Langdale and Riverview Hydroelectric Projects
FERC Projects #2341 and #2350

Communication Date:

1/14/2020

Communication Type *(telephone, email, in-person meeting, other):*

In-person; Mobile District USACE office

List and attach pertinent written correspondence:

(i.e. letter, fax, meeting notes/handouts, printed materials, etc.)

Southern Company/Georgia Power:

Courtenay O'Mara, Laurie Munn- SCS

List organization name and persons attending from other organization:

USACE – Cindy Donald, James Hathorn, Bailey Crane, Troy Ephriam, Gabe Wagner, Marshall Herald, J. George, Ashley (did not record last name) and Alison Fitzgerald (both interns)

Subject:

Courtenay gave a presentation highlighting the model results and construction concept, moving from Langdale, Crow Hop and Riverview. She also explained the history of Langdale and Riverview dams and the FERC process.

James Hathorn stated that he would get the real estate dept of USACE involved to determine if anything was needed for the foot path at Langdale. He will determine what regulatory action is needed and research the USACE easement.

Cindy Donald stated that there will be a drawdown at Walter F George from August – November of 2021.

Next Steps:

1. GPC to call and engage Savannah USACE.
2. GPC to add adjusted bathymetry to the presentation.
3. GPC to give USACE the model via the FTP site so they can start the review (to be led by Bailey's group).

4. GPC to give the USGS flow measurements to Cindy and James. Courtenay stated that GPC plans to submit the H & H report on January 31. GPC plans to submit the decommissioning plan at the end of July. The public meeting is March 10, and USACE wishes to attend.

USACE plans to:

1. Download the model
2. Review the action plan
3. Engage their real estate teams.

Form Completed By:

Laurie Munn

Georgia Power

Langdale/Riverview Adjacent Property Owners Meeting – January 23, 2020

NAME	ORGANIZATION NAME (Agency, Homeowner, etc.)	Did you receive a certified letter for this meeting? (YES OR NO)	Please provide your email address if you want to join the Georgia Power email list for these projects
JEFF HENDRIX	EMILY + ALLEN HENDRIX	YES	jah6806@gmail.com
LANNY BLEDSOE	OWN ISLANDS	YES	Lanny4005@CHARTER.NET
Tommy Bledsoe	HOME OWNER	NO	TBLEDSOE@RVCCHEMICAL.com
Jefferson Bledsoe	own Islands	N	Jebbledsoe@Gmail.com
Garnett Johnson Jr	Home owner	YES	G_JOHNSONJR@[illegible]
Amber Morris	home owner	yes	ambercarrollmorris2013@gmail.com
Kendall Andrews	Homeowner		-
M. J. Finlay	Homeowner		—
Donovan Campbell	Land owner	yes	
TERRY TANKERSLEY	LAND OWNER	YES	T.TANKERSLEY@[illegible].NET
Cindy Tankersley	" "	"	"
Kathy Maynard	owner	no	brukat0810@gmail.com
ALAN WHITMAN	OWNER	YES	bigal1010@wowway.com

Georgia Power

Langdale/Riverview Adjacent Property Owners Meeting – January 23, 2020

NAME	ORGANIZATION NAME (Agency, Homeowner, etc.)	Did you receive a certified letter for this meeting? (YES OR NO)	Please provide your email address if you want to join the Georgia Power email list for these projects
CHAROLETTE WHITMAN	OWNER	YES	bgac1010@wowway.com

WATER QUALITY STUDY REPORT

DRAFT

LANGDALE (FERC NO. 2341)
AND
RIVERVIEW (FERC NO. 2350)
HYDROELECTRIC PROJECTS

Prepared by:

Southern Company Generation Hydro Services
& Georgia Power Natural Resources

and

Kleinschmidt

FEBRUARY 2020

WATER QUALITY STUDY REPORT
LANGDALE (FERC NO. 2341) AND RIVERVIEW (FERC NO. 2350)
HYDROELECTRIC PROJECTS
DRAFT

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ACRONYMS AND ABBREVIATIONS

ADEM	Alabama Department of Environmental Management
AIR	additional information request
AL	State of Alabama
C.F.R.	Code of Federal Regulations
cfs	cubic feet per second
FERC	Federal Energy Regulatory Commission
FL	State of Florida
fps	feet per second
FPS	Final Study Plan
GA	State of Georgia
GDNR	Georgia Department of Natural Resources
Georgia Power	Georgia Power Company
GPS	Global Positioning System
HEC-RAS	Hydrologic Engineering Center River Analysis System
kW	kilowatt
PSP	Proposed Study Plan or Study Plan
RM	river mile
USACE	U.S. Army Corps of Engineers
USGS	United States Geological Survey

1.0 INTRODUCTION

Georgia Power Company (Georgia Power) is filing with the Federal Energy Regulatory Commission (FERC) this report in support of Georgia Power's applications for the license surrender and decommissioning of the Langdale Project (FERC No. 2341) and the Riverview Project (FERC No. 2350) (the Projects).

1.1 LANGDALE PROJECT

The Langdale Project is located on the Chattahoochee River in Harris County, Georgia and adjacent to the City of Valley, Alabama (Figure 1-1). The Langdale Project is located at River Mile (RM) 191.9, 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. The Project operated as a run of river hydroelectric plant. Over time, four horizontal generating units developed maintenance problems, and eventually were no longer operable. 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.

1.2 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 Riverview Project is located approximately 10.5 RM downstream of the 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 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. Georgia Power stopped operating the units in 2009.

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

On April 11, 2019, FERC issued a request for additional information (AIR) regarding decommissioning studies proposed by Georgia Power. Georgia Power prepared and filed a Proposed Study Plan (PSP) on May 24, 2019, to address a majority of the items requested by FERC in the AIR. Based on comments received, Georgia Power revised the PSP and filed a Final Study Plan (FSP) with FERC on July 24, 2019. In accordance with the FSP, Georgia Power prepared this report to evaluate baseline water quality data at the Projects.

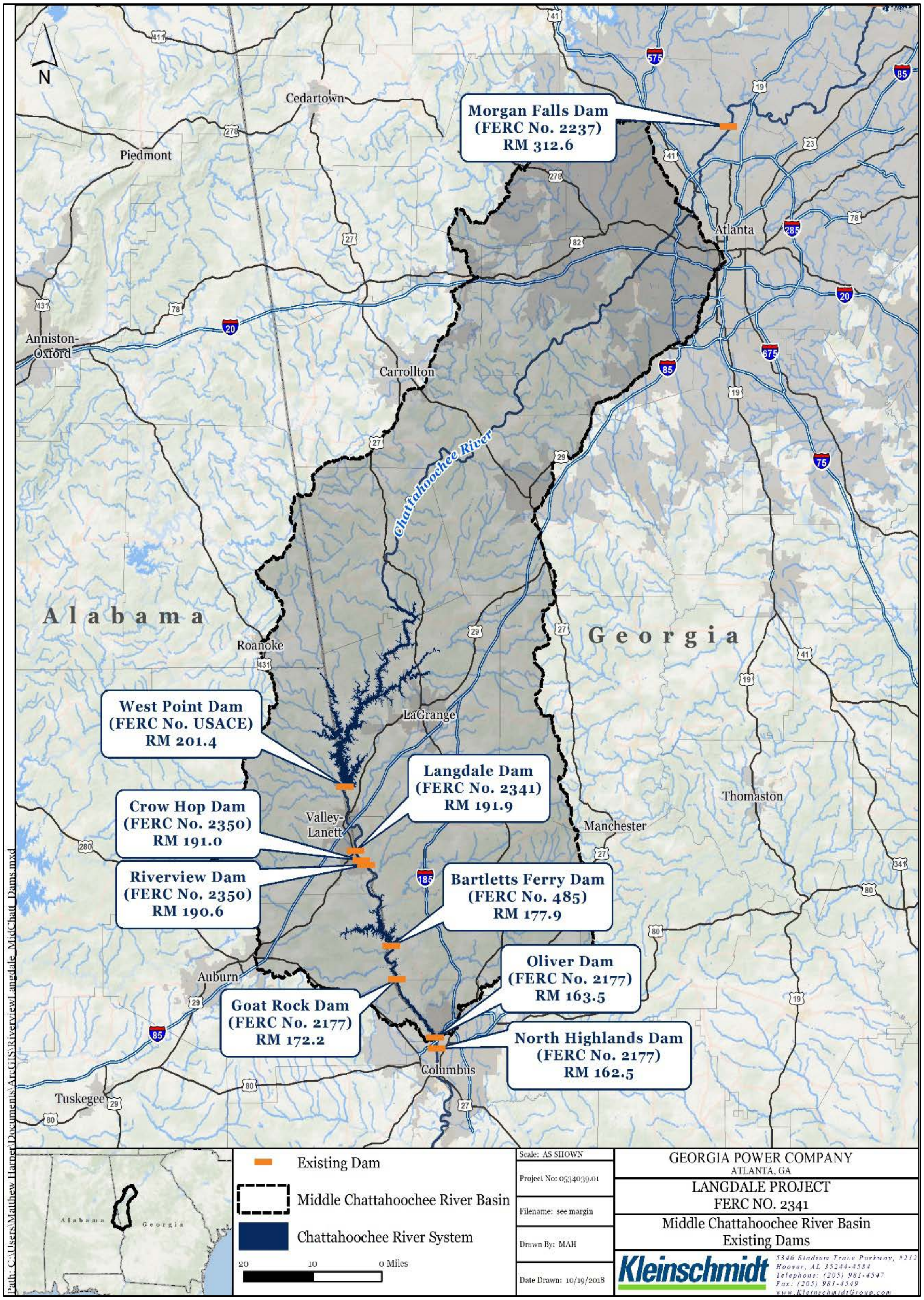

FIGURE 1-1 MIDDLE CHATTAHOOCHEE RIVER BASIN EXISTING DAMS

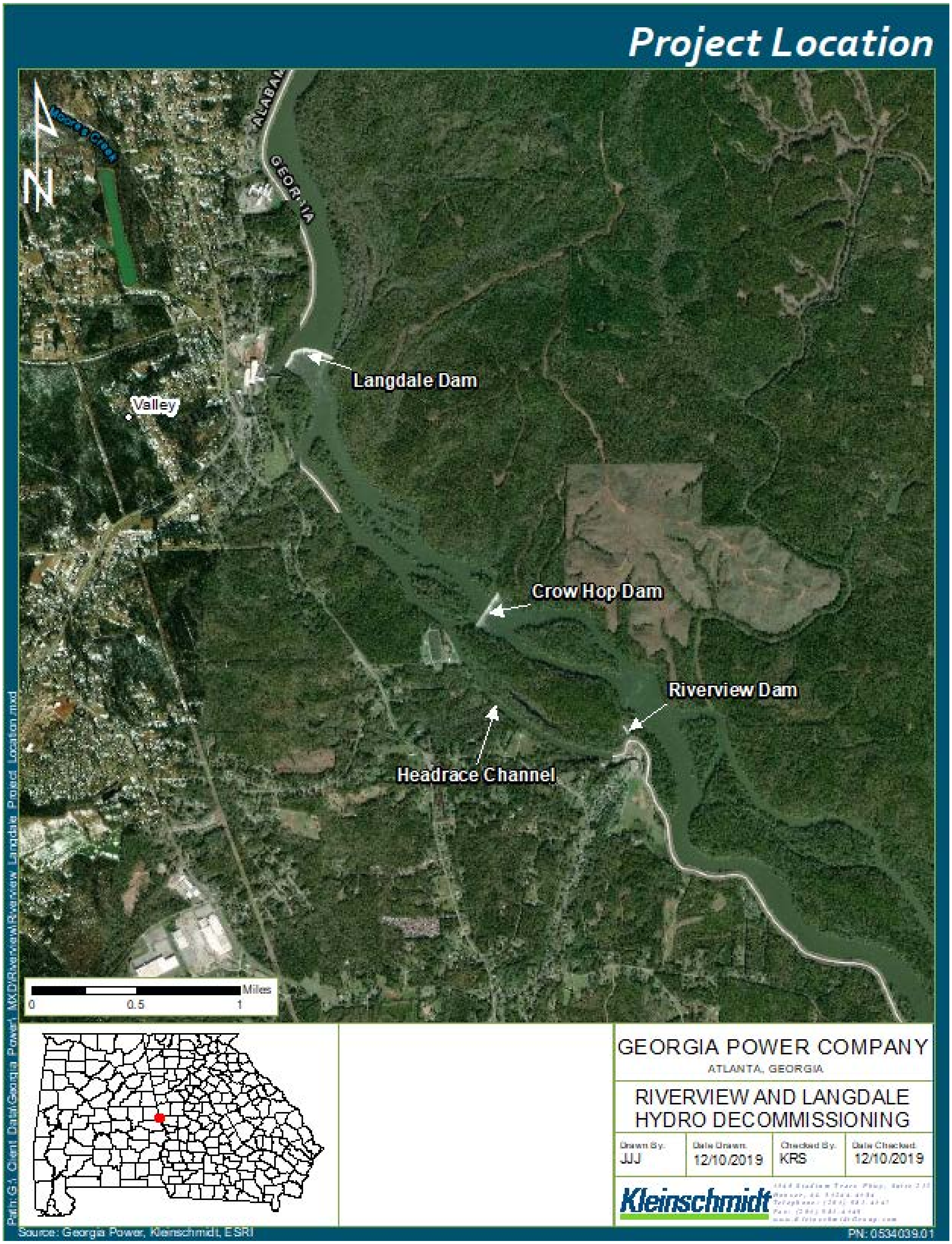

FIGURE 1-2 LANGDALE AND RIVERVIEW PROJECT LOCATIONS

2.0 METHODS

Georgia Power performed searches for available water quality data within the study area, which includes the Chattahoochee River within the FERC Project Boundary for the Langdale and Riverview Projects, as well as West Point Lake (upstream of the Projects) and Lake Harding (downstream of the Projects). Sources included United States Geological Survey (USGS), Georgia Environmental Protection Division (GEPD), Alabama Department of Environmental Management (ADEM), and Georgia Power Company (Georgia Power). GEPD and Georgia Power were sources of relevant contemporary (within the last 10 years) data, which were summarized and included in this report. Searches for relevant contemporary USGS and ADEM data were not found.

3.0 DESCRIPTION OF STUDY AREA

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.

The Projects lie within the Middle Chattahoochee River Basin (HUC 03130002). Langdale has a drainage area of 3,640 square miles (USGS 2018). The surface area of the water impounded by the Langdale Dam is approximately 152 acres (USACE 2016). Tributaries to the Langdale Project reservoir include Oseligee Creek (AL) and Long Cane Creek (GA). Riverview has a drainage area of 3,661 square miles (USACE 2016). The surface area of the water impounded by the Crow Hop and Riverview Dams is 75 acres. Moores Creek is the only significant tributary that drains into the Riverview Project reservoir. The Riverview Project releases water into the Chattahoochee River, also considered the headwaters of the Lake Harding, a reservoir created by the Bartletts Ferry Hydroelectric Project (FERC No. 485), located approximately 12 RM downstream of the Riverview Dam.

The Projects historically operated as run-of-river. Discharges from West Point Dam comprise 98 percent of the inflows to the Projects, with the remaining 2 percent contributed by local runoff from the intervening watershed. West Point Dam has a minimum continuous flow requirement of 670 cubic feet per second (cfs), also referred to as the “base flow”. West Point Dam is a peaking power plant and provides flood control for this region. Because most inflows into the Projects are comprised of releases from West Point, the operation of the upstream West Point Dam regulates the flow regime through the Projects ‘area.

Georgia’s use classification for the Chattahoochee River in the Project Area is “Drinking Water” (GEPD 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). The specific criteria applicable to these use classifications are presented in Table 3-1. The most recent 305(b) reports for Georgia and Alabama indicate that the Chattahoochee River in the Project Area is fully supporting its designated uses (GEPD 2016a and ADEM 2016).

TABLE 3-1 GEORGIA AND ALABAMA WATER QUALITY CRITERIA FOR APPLICABLE CLASSIFICATIONS IN THE STUDY AREA

PARAMETER	DRINKING WATER (GA)	PUBLIC WATER SUPPLY AND FISH AND WILDLIFE (AL)
Bacteria	May through October: < 200/100 milliliter (mL) November through April: < 1,000/100 ml	*E. coli*: Geometric mean < 548 colonies/100 mL; ≤ 2,507 colonies/100 ml in any sample
Dissolved Oxygen	≥ 5.0 mg/L daily average, and > 4 mg/L at all times	≥ 5.0 mg/L at all times
pH	6.0 – 8.5	6.0 – 8.5
Water Temperature	≤ 90° F	≤ 90° F

Source: GEPD 2015, ADEM 2017

4.0 RESULTS

The GEPD conducted forebay monitoring in West Point Lake since 1994 (Monitoring Location ID LK_12_4060). Vertical profiles of water temperature and dissolved oxygen collected at approximately 1-meter intervals indicate West Point Lake becomes stratified in spring and remains so through early fall (**Figure 4-1, Figure 4-2**). During this time, dissolved oxygen levels at depths greater than 10 meters are extremely low.

The GEPD also conducted monthly monitoring in the Chattahoochee River approximately 0.5 miles downstream of West Point Dam since January 2019 (Monitoring Location ID RV_12_4063). Data from that monitoring effort indicates low dissolved oxygen levels in the West Point tailrace in July and August (Table 4-1). This is due to the release of hypolimnetic water from the West Point Dam.

The GEPD conducted monthly monitoring in the Chattahoochee River at Highway 29, approximately 3 miles downstream of West Point Dam and 6.3 miles upstream of Langdale Dam, from 2010 to 2012 (Monitoring Location ID RV_12_4067). Mean monthly values for select parameters were calculated and are presented in Table 4-2. Similar to the data from the West Point tailrace, these data show dissolved oxygen levels are lowest during the summer months. The data also indicates relatively low levels of nutrients (nitrogen and phosphorus).

A Georgia Power study performed in 2009 and 2010 documented water quality in the Chattahoochee River approximately 1 mile downstream of the Riverview powerhouse. Monthly vertical profile samples at this location indicated dissolved oxygen levels exceed applicable criteria (Table 4-3). The 2009-2010 study also involved the collection of monthly discrete water chemistry samples. Analysis of these samples for 24 different parameters are summarized in Table 4-4.

4.1 EFFECTS OF DECOMMISSIONING ON WATER QUALITY

Based on a review of available data, the water quality at the Projects generally meets or exceeds applicable water quality criteria. Nutrient levels at the Projects are generally low, as the upstream West Point Lake serves as an effective “trap” for nitrogen and phosphorus inputs from its drainage area. Releases from the USACE’s West Point Dam exhibit low dissolved oxygen levels during the summer months. The duration and magnitude of these low dissolved oxygen releases likely varies from year to year based on hydrologic and climatic conditions, which can affect lake stratification processes.

Under existing conditions, dissolved oxygen levels recover as the releases from West Point Dam flow downstream, especially as they pass over the Projects' dams, which provide physical aeration. If the Projects' dams are removed, the resulting lower water levels and higher water velocities in the affected reach of the Chattahoochee River would provide an alternate means of physical aeration as the water passes through exposed shoals.

4.2 EFFECTS OF DECOMMISSIONING ON WATER QUANTITY

The East Alabama Lower Valley Wastewater Treatment Plant (Valley WWTP) discharges treated effluent to the Chattahoochee River at the upstream end of the Riverview Headrace Channel. ADEM has indicated that the National Pollution Discharge Elimination System (NPDES) permit for the Valley WWTP is based on the 7Q10 flow of 136 cfs. Based on modeling results, the decommissioning and removal of Crow Hop and Riverview Dams will result in a minimum flow of at least 193 cfs in the Headrace Channel (Kleinschmidt 2019, see River Reach 8) under the minimum flow discharge from the upstream West Point Dam. When West Point Dam's large turbine units are added during peaking there is significantly more flow than 193 cfs present in the Headrace Channel. These flows ensure that decommissioning and removal do not impact the permitted effluent from Valley WWTP and meet applicable water quality criteria. Georgia Power discussed these issues with ADEM in its consultations which occurred on September 5, 2019, November 7, 2019 and via a follow-up phone conference on November 13, 2019. Additionally, this item was the subject of discussion with the East Alabama Water and Sewer Authority on July 22, 2019 and December 16, 2019. All consultation documentation will be provided in the Final Decommissioning Plan filing

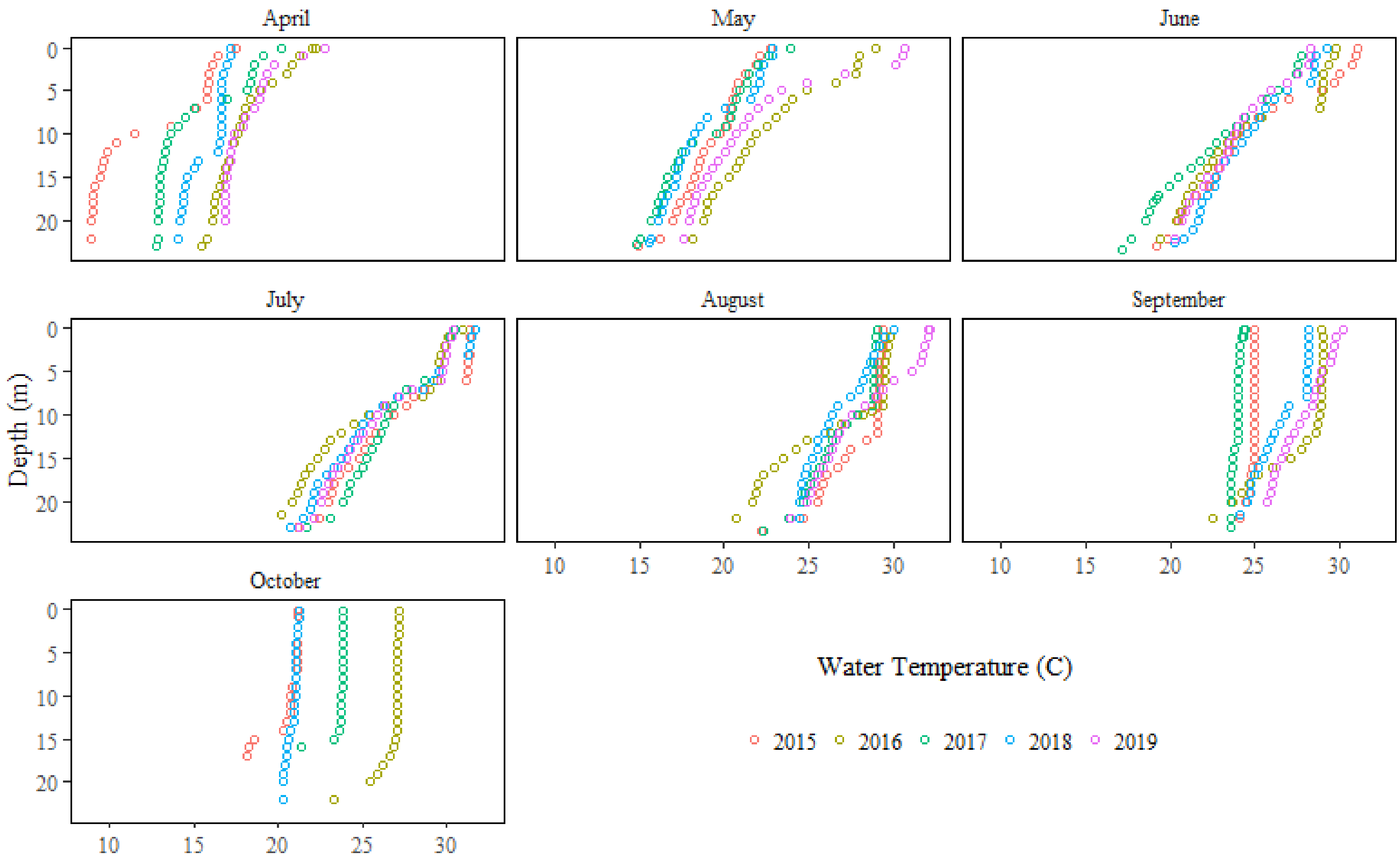

FIGURE 4-1 WEST POINT LAKE FOREBAY WATER TEMPERATURE PROFILES

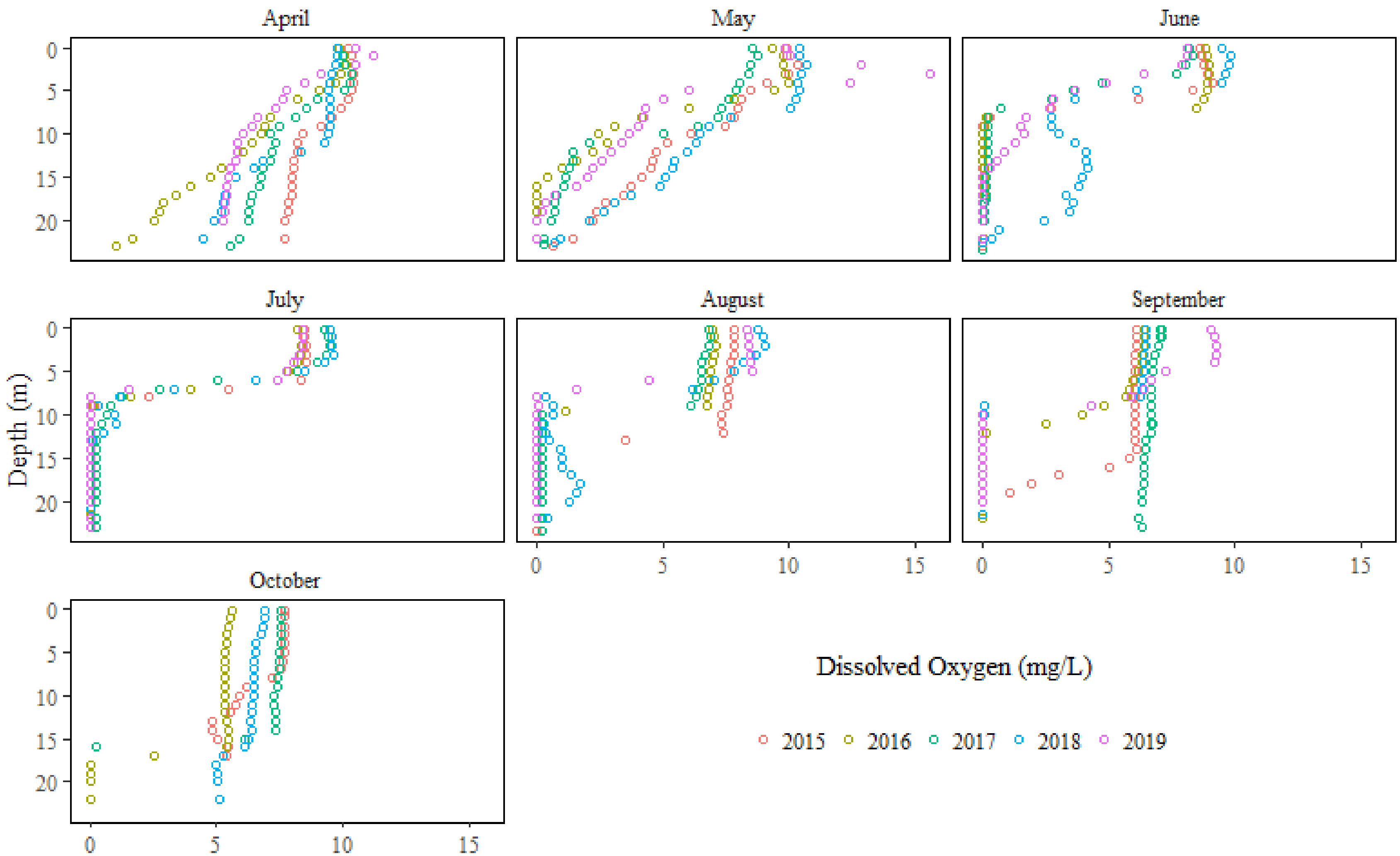

FIGURE 4-2 WEST POINT LAKE FOREBAY DISSOLVED OXYGEN PROFILES

TABLE 4-1 SUMMARY OF 2019 WATER QUALITY DATA FROM CHATTAHOOCHEE RIVER BELOW WEST POINT DAM

Month	Water Temp (C)	Conductivity (us/cm)	Dissolved Oxygen (mg/L)	pH	Turbidity (NTU)	NO^2-NO^3 (mg/L)	NH3 (mg/L)	TKN (mg/L)	Total Phosphorus (mg/L)
Jan	9.76	70.4	10.00	7.20	12.0	0.63	0.06	0.31	0.04
Feb	9.58	65.3	10.33	6.90	8.5	0.71	0	0.27	0.03
Mar	12.88	67.1	9.92	7.00	12.0	0.64	0	0.29	0.03
Apr	14.67	64.4	-	7.00	3.9	0.63	0	0.29	0.03
May	19.02	56.6	7.50	7.30	9.8	0.49	0.04	0.38	0.03
Jun	25.36	78.4	5.37	6.80	3.3	0.57	0.05	0.31	0
Jul	26.92	87.8	4.52	6.83	2.9	0.54	0.08	0.34	0
Aug	29.08	102.0	3.74	6.21	2.7	0.45	0.23	0.56	0.02
Sep	24.90	-	5.15	6.59	7.0	-	-	-	-

TABLE 4-2 SUMMARY OF WATER QUALITY PARAMETER MEANS FROM CHATTAHOOCHEE RIVER AT HWY 29 (2010 – 2012)

Month	Water Temp (C)	Conductivity (us/cm)	Dissolved Oxygen (mg/L)	pH	Turbidity (NTU)	NO^2-NO^3 (mg/L)	NH3 (mg/L)	TKN (mg/L)	Total Phosphorus (mg/L)
Jan	8.16	106.0	10.79	6.67	7.8	0.99	0.04	0.27	0.05
Feb	9.70	102.7	11.44	6.74	10.7	1.05	0.06	0.31	0.03
Mar	12.32	93.0	10.39	6.51	7.8	0.91	0.05	0.30	0.04
Apr	17.06	75.7	9.40	6.33	5.1	0.74	0.06	0.30	0.03
May	21.06	116.3	7.96	6.33	8.7	0.72	0.04	0.25	0.03
Jun	26.17	93.3	6.44	6.51	1.9	0.67	0.04	0.26	-
Jul	28.14	102.7	5.63	6.39	2.3	0.44	0.10	0.35	0.02
Aug	27.97	112.3	4.29	6.41	2.3	0.43	0.22	0.46	0.02
Sep	27.33	127.3	4.35	6.42	2.4	0.53	0.27	0.49	-
Oct	22.32	132.3	6.85	6.82	1.3	0.88	0.07	0.28	-
Nov	16.21	139.3	7.45	6.52	2.5	1.31	0.05	0.20	0.02
Dec	13.21	133.0	9.93	6.54	1.8	1.30	0.04	0.25	0.02

TABLE 4-3 RESULTS OF 2009-2010 WATER QUALITY MONITORING BELOW RIVERVIEW POWERHOUSE

PARAMETER	MINIMUM	MEAN	MAXIMUM
Dissolved Oxygen (mg/L)	7.54	9.57	11.90
Water Temperature (°C)	7.94	18.87	29.68
Specific Conductance (µs/cm)	57.70	92.10	128.70
pH (standard units)	6.61	7.26	7.70
Turbidity (NTU)	0.0	79.9	3000.0
Secchi Depth (ft)	2.00	4.51	8.50

Source: GPC 2011

TABLE 4-4 RESULTS OF 2009-2010 WATER SAMPLES COLLECTED BELOW RIVERVIEW POWERHOUSE

ANALYTE	NUMBER OF SAMPLES	NUMBER OF DETECTIONS	MINIMUM	MEAN	MAXIMUM
Alkalinity (mg/L)	19	19	15	22	31
Ammonia (mg/L)	16	12	0	0.13	0.4
Arsenic (mg/L)	24	24	0	0	0.01
BOD (mg/L)	17	16	0	1	3
COD (mg/L)	17	15	0	5	15
Cadmium (mg/L)	24	24	0	0	0.001
Calcium (mg/L)	24	24	2.6	6.3	8.8
Chlorophyll a (µg/L)	24	24	0.4	1	2.4
Copper (mg/L)	24	24	0	0	0.01
Fecal Coliform (col./100 mL)	23	21	2	14	>336
Hardness (mg/L as CaCO3)	24	24	13	23	30
Iron (mg/L)	24	24	0.06	0.64	2.2
Lead (mg/L)	24	24	0	0	0.02
Magnesium (mg/L)	24	24	1.4	1.75	2.2
Manganese (mg/L)	24	24	0.034	0.12	0.42
Mercury (mg/L)	23	23	0	0.0001	0.0002
Nickel (mg/L)	24	24	0	0.001	0.005
Nitrate (mg/L)	24	24	0.262	0.665	1.12
Nitrite (mg/L)	24	24	0	0.014	0.13
Selenium (mg/L)	24	24	0	0	0.02
TSI Chlorophyll a	24	24	21.6	29.8	39.2
TSI Total Phosphorus	24	24	27.36	52.81	90.55
Total Phosphorus (mg/L)	24	24	0.01	0.05	0.4
Turbidity (NTU)	19	19	1	8	24

Source: GPC 2011

5.0 CONCLUSIONS

Based on the results of this study and the post-removal physical conditions predicted by the hydraulic model, the following conclusions are evident:

- Water quality at the Projects currently meets applicable standards and supports existing designated uses;
- Water quality at the Projects should continue to meet applicable standards and support existing designated uses after decommissioning and removal; and
- Decommissioning and removal of the Projects will not impact the Valley WWTP permitted effluent discharge.

6.0 LITERATURE CITED

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Summary of the Documentation of Consultation
Water Quality Study

In response to the March 11, 2020[1] Federal Energy Regulatory Commission (FERC) letter, Georgia Power Company (Georgia Power) has prepared the following summary of consultation between Georgia Power and the stakeholders. The purpose of this consultation document is to provide an overview of all consultation to date on the Water Quality Study. The results of the Water Quality Study and other decommissioning studies will be presented and discussed in the October 5, 2020 Public Meeting, with an additional opportunity for stakeholders to comment in writing on the draft study reports on or before October 24, 2020.

Stakeholder comments on the draft study reports will be compiled for the final study reports which will be filed with FERC concurrent with the filing of the Langdale and Riverview Projects Dam Decommissioning Plan.

The following describes the overall consultation timeline leading to development and implementation of this Water Quality Study.

Georgia Power conducted pre-filing consultation beginning in 2018. This consultation was filed with the license surrender application in December 2018[2] (Appendix B to the surrender applications). At that time, no agency requested any studies; discussions included the agencies' specific interests for the Langdale and Riverview decommissioning and the development of a desktop study of water quality. Since water quality was closely tied to the Hydrology and Hydraulic (H&H) modeling, water quality concerns were also discussed during H&H modeling discussions.

After consultation, Georgia Power filed the Draft Study Plan with FERC on May 24, 2019[3]. Concurrent with filing the Draft Study Plan, Georgia Power requested that stakeholders provide written comment within 30 days, or by Monday, June 24, 2019, on the Draft Study Plan. Georgia

[1] Document Accession #: 20200311-3001 (Langdale); Document Accession #20181218-5452 (Riverview)
[2] Document Accession #20181218-5451
[3] Document Accession #20190525-5216 (Langdale); Document Accession #20190524-5217 (Riverview)

Power received comments from FERC and from Chattahoochee Riverkeeper and responded to them in the Final Study Plan, which was filed in the FERC docket July 24, 2019. No agency has requested additional studies or provided comments beyond what is reflected in the consultation document.

On February 20, 2020, Georgia Power filed a Progress Report with FERC on the decommissioning studies. Georgia Power continued to consult on the studies while the studies were ongoing, as described in the Final Study Plan. When the H&H modeling was complete along with the Water Quality Study, Georgia Power continued consulting with state and federal resource agencies, local governments and other stakeholders on the preliminary model results and discussed how these results relate to water quality. At this time, all studies are complete and Georgia Power is developing the Dam Decommissioning Plan for the Langdale and Riverview Projects.

In the final study reports, Georgia Power will insert a table showing the comments received on the draft study reports and how those comments were addressed. Final study reports will be filed with the Dam Decommissioning Plan.

Georgia Power

Langdale and Riverview Hydroelectric Projects

FERC Projects #2341 and #2350

Communication Date:
8/15/2018

Communication Type *(telephone, email, in-person meeting, other)*:
In-person

List and attach pertinent written correspondence:
(i.e. letter, fax, meeting notes/handouts, printed materials, etc.)

none

List persons attending from Southern Company/Georgia Power:
Courtenay O'Mara – Southern Company Hydro Services
Tony Dodd – Georgia Power Environmental and Natural Resources
Patrick O'Rouke - Georgia Power Environmental and Natural Resources
Melissa Crabbe - Southern Company Hydro Services

List organization name and persons attending from other organization:
Liz Booth – Georgia DNR EPD
Jeremy Smith - Georgia DNR EPD
Victoria Adams - Georgia DNR EPD

Subject:
Decommissioning of Langdale and Riverview FERC Projects and Potential Removal of Langdale Dam, Crowhop Dam, and Riverview Dam and Powerhouse

Comments/Discussions/Requests:
Courtenay O'Mara indicated that Georgia Power intends to surrender the FERC licenses for the Langdale and Riverview Projects and to remove the dams and the Riverview Project powerhouse. Courtenay reviewed the project vicinity, downstream and upstream dams, and a brief history of the dams. Courtenay explained that license surrenders are processed through FERC's Department of Hydro Administration and Compliance (DHAC) and that the schedule for a surrender is not necessarily as rigid as the relicense schedule. We (GPC) expect to file an application to surrender in December, conduct hydraulic modelling and analysis of the models, and then file the analysis with FERC. Courtenay shared that we are considering partnership with environmental resource agencies for the surrenders. Patrick O'Rouke mentioned that a goal will be to develop a partnership memorandum of understanding with one or more of the agencies.

EPD expressed an interest in staying informed about the surrenders.

Follow-up Requirements:

EPD review of meeting documentation and inclusion on the stakeholder mailing list.

Form Completed By:

Melissa Crabbe

From:	Adams, Victoria
To:	O"Mara, Courtenay R.; Dodd, Anthony Ray; Crabbe, Melissa C.; O"Rouke, Patrick Michael
Subject:	RE: Lloyd Shoals Project Scoping Meeting and Site Visit
Date:	Friday, August 17, 2018 9:47:59 AM
Attachments:	image001.gif image002.emz image004.jpg image008.jpg image009.png image010.jpg image011.jpg image012.jpg

I'm waiting on an answer to the documentation of the discussion on Langdale/Riverview. In the meantime, I'd say yes to the "let us review it" question, pending final approval. If I had to make a guess, I would say they will say yes…but I do not have the authority to say yes by myself. ☺

From: O'Mara, Courtenay R. [mailto:CROMARA@SOUTHERNCO.COM]
Sent: Wednesday, August 15, 2018 4:04 PM
To: Adams, Victoria; Dodd, Anthony Ray; Crabbe, Melissa C.; O'Rouke, Patrick Michael
Subject: RE: Lloyd Shoals Project Scoping Meeting and Site Visit

Yes, thanks for visiting with us as well; we covered a lot of ground.

The address for the Sept 13 meeting is
562 Old Bethel Rd, Jackson, GA 30233 (Pepper Sprout Barn)
I think FERC said they were planning to start at either 9 or 10 am. It will be in the Scoping document that they issue (August 24th ish)

The address for the dam/lake tour on Sept 14 is
180 Dam Road, Jackson, GA 30233
Tours through the powerhouse will occur between 9-12 and tours on the boat will be from 1-4 (each hour long). We were going to assign the times for that based on our RSVPs but certainly let us know if you have a time constraint/preference bc we will make it happen.

I also meant to ask you if y'all would be ok if we documented that we had a discussion on Langdale/Riverview. We would like to include in the December 2018 FERC filing that we consulted with y'all. In our summary we can mention that you asked about the water quality there. If it would make you feel more comfortable, we could write it up and let y'all review it first.

Thanks as always,

Courtenay R. O'Mara, P.E.
Hydro Licensing and Compliance Supervisor
Southern Company
241 Ralph McGill Blvd. – Bin 10193
Atlanta, Georgia 30308
Tel 404.506.7219

Mobile 404.797.9432
southerncompany.com [na01.safelinks.protection.outlook.com]

From: Adams, Victoria <Victoria.Adams@dnr.ga.gov>
Sent: Wednesday, August 15, 2018 2:50 PM
To: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>; Dodd, Anthony Ray <ARDODD@southernco.com>; Crabbe, Melissa C. <MCCRABBE@SOUTHERNCO.COM>; O'Rouke, Patrick Michael <PMOROUKE@southernco.com>
Subject: FW: Lloyd Shoals Project Scoping Meeting and Site Visit

Thanks for coming today to talk about Lloyd Shoals (and other items). I'm looking forward to working together as things develop further across all of the subjects we covered.

Could one of y'all please send the address for the scoping meeting on the 13th and where to meet for tour on the 14th? I can't find the notice online (I looked at https://www.ferc.gov/docs-filing/dec-not.asp [ferc.gov] [na01.safelinks.protection.outlook.com] and https://www.georgiapower.com/company/energy-industry/generating-plants/lloyd-shoals-dam-project.html [na01.safelinks.protection.outlook.com]).

Thanks again,
Victoria

From: Booth, Elizabeth
Sent: Thursday, August 9, 2018 5:05 PM
To: Lamarre, Paul; Adams, Victoria; Parsons, Tyler
Subject: FW: Lloyd Shoals Project Scoping Meeting and Site Visit

I will be out of the country when the tour of the facility and scoping meeting is taking place. Will one or more of you plan to attend. Thanks Liz

---

From: Jackson Relicense [mailto:G2JACKSONREL@southernco.com]
Sent: Thursday, August 09, 2018 3:49 PM
To: Booth, Elizabeth
Subject: Lloyd Shoals Project Scoping Meeting and Site Visit

From:	O"Rouke, Patrick Michael
To:	djmoore@adem.alabama.gov; jhaslbauer@adem.alabama.gov
Cc:	Dodd, Anthony Ray
Subject:	Langdale/Riverview Water Modeling
Date:	Thursday, April 18, 2019 1:27:53 PM

David and Jennifer:

We're hard at work on completing our water modeling scenarios for Langdale/Riverview removal/restoration. We'd like to get our agency partners together for a meeting once we have this ready to go to walk everyone through it and talk through any issues that may need to be addressed. Please fill out this Doodle poll to indicate your availability during the weeks of July 8 and July 15. I know it is summer and it's hard to find a day that doesn't hit someone's vacation, so I'm going to try to find a date that works where we can at least have representation from all of the resource agencies that have an interest in this project. Feel free to pass this invitation on to anyone else in ADEM who might be interested in attending.

Whichever day we choose, we'll meet from 10 AM-2 PM EDT at the Chattahoochee Hydro office on the Alabama side of Bartlett's Ferry Dam. Lunch will be provided.

Thank you, and we look forward to seeing everyone in July.

Patrick

Patrick O'Rouke
Fisheries Biologist
Georgia Power

pmorouke@southernco.com
241 Ralph McGill Blvd.
Atlanta, GA 30308
(404) 506-5025 (Office)
(470) 426-5322 (Cell)

From:	Adams, Victoria
To:	Dodd, Anthony Ray
Subject:	RE: Langdale Riverview
Date:	Thursday, April 18, 2019 1:48:12 PM
Attachments:	image001.gif

EXTERNAL MAIL: Caution Opening Links or Files

Tony,

It has been a while! I hope you are well. Yes, Jeremy moved to consulting. Yes, EPD can definitely still share downstream data from WPL. Just let me know what you need and when. Also, we are about to release to the public a water quality database filled with this sort of data. I will be sure to let you know when it is live. ☺ Be sure to check out the instructional video…you might recognize the voice in it.

Cheers,
Victoria

From: Dodd, Anthony Ray [mailto:ARDODD@southernco.com]
Sent: Thursday, April 18, 2019 2:39 PM
To: Adams, Victoria
Subject: Langdale Riverview

Hey Victoria,

I hope all is well with you. Long time no speak.
I'm trying to follow up on a conversion we had with you, Liz ad Jeremy a few months ago regarding GPC's intended plan to decommission the Langdale and Riverview dams.
The early project intent is still tracking forward. We'll know more after July about next potential steps forward.

In the meantime, I heard that Jeremy moved on to consulting. I mention that because at the time I think it was either Jeremy or Liz that indicated EPD might have and be able to share water quality data from the area just downstream of West Point Dam….Or do I not remember that correctly? For the benefit of early project planning details for Langdale Riverview, I'm hoping you can help me look into that possibility.
Please contact me if you wish to discuss.

Thank you!

Tony

Tony Dodd
Natural Resources Specialist
Georgia Power Company
241 Ralph McGill Blvd, NE
Atlanta, GA 30308

Desk: 404-506-5026
Cell: 404-434-9412
ardodd@southernco.com

From: Adams, Victoria
To: Dodd, Anthony Ray
Subject: RE: Langdale Riverview
Date: Friday, April 19, 2019 8:51:04 AM
Attachments: image001.gif
West Point Tailrace WQ.XLSX

EXTERNAL MAIL: Caution Opening Links or Files

Tony,

Enclosed is water quality data from the dam forebay which were collected from 01/01/2014 until now. Surrounding samples sites yielded no data under these parameters. I am not sure if this is what you need or what sort of header you are wanting. Can you confirm & clarify?

Thanks,
Victoria

From: Dodd, Anthony Ray [mailto:ARDODD@southernco.com]
Sent: Thursday, April 18, 2019 3:05 PM
To: Adams, Victoria
Subject: RE: Langdale Riverview

Thanks Victoria. Glad to hear about the anticipated video release.
As for the West Point tailrace data, I think that EPD WQ data as available collected during the past 5 to 10 year period would suffice…send more if you wish … especially data that is/has been "routinely" collected to represent trend. The objective is to have information that we in turn cite accordingly and present to FERC as part of the project description. Any format acceptable.

Thank for anything you can provide all those lines. If you find data to send, please include a simple header replying to our request so we can properly include and document project information in this public process.
Thanks very much and please call if any questions come up that I can help with.

Tony

From: Adams, Victoria <Victoria.Adams@dnr.ga.gov>
Sent: Thursday, April 18, 2019 2:45 PM
To: Dodd, Anthony Ray <ARDODD@southernco.com>
Subject: RE: Langdale Riverview

EXTERNAL MAIL: Caution Opening Links or Files

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Cheers,
Victoria

From: Dodd, Anthony Ray [mailto:ARDODD@southernco.com]
Sent: Thursday, April 18, 2019 2:39 PM
To: Adams, Victoria
Subject: Langdale Riverview

Hey Victoria,

I hope all is well with you. Long time no speak.
I'm trying to follow up on a conversion we had with you, Liz ad Jeremy a few months ago regarding GPC's intended plan to decommission the Langdale and Riverview dams.
The early project intent is still tracking forward. We'll know more after July about next potential steps forward.

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Please contact me if you wish to discuss.

Thank you!

Tony

Tony Dodd
Natural Resources Specialist
Georgia Power Company
241 Ralph McGill Blvd, NE
Atlanta, GA 30308

Desk: 404-506-5026
Cell: 404-434-9412
ardodd@southernco.com

From: Adams, Victoria
To: Dodd, Anthony Ray
Subject: RE: Langdale Riverview
Date: Tuesday, April 23, 2019 7:53:05 AM
Attachments: image004.gif
image003.jpg
Between WPL and Langdale Dams.xlsx

EXTERNAL MAIL: Caution Opening Links or Files

Tony,

Here is all of the data for surface water sites (as opposed to permitted facility effluent data or groundwater data) for our sites on the Chattahoochee (the yellow dots) between WP Dam and Langdale Dam (the green dot). Please let me know if you need additional data (e.g. discharging facilities, tributary WQ), or anything else to accompany this information.

Best,
Victoria

From: Dodd, Anthony Ray [mailto:ARDODD@southernco.com]
Sent: Monday, April 22, 2019 8:19 AM
To: Adams, Victoria
Subject: RE: Langdale Riverview

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hey Victoria,

Thanks very much for your prompt reply with data.
I do have one more question, please. Does EPD have any data collected between COE's West Point Dam and GPC's Langdale Dam that could be shared?

Tony

From: Adams, Victoria <Victoria.Adams@dnr.ga.gov>
Sent: Friday, April 19, 2019 9:46 AM
To: Dodd, Anthony Ray <ARDODD@southernco.com>
Subject: RE: Langdale Riverview

EXTERNAL MAIL: Caution Opening Links or Files

Tony,

Enclosed is water quality data from the dam forebay which were collected from 01/01/2014 until now. Surrounding samples sites yielded no data under these parameters. I am not sure if this is what you need or what sort of header you are wanting. Can you confirm & clarify?

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Victoria

From: Dodd, Anthony Ray [mailto:ARDODD@southernco.com]
Sent: Thursday, April 18, 2019 3:05 PM
To: Adams, Victoria
Subject: RE: Langdale Riverview

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Thanks Victoria. Glad to hear about the anticipated video release.
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Thank for anything you can provide all those lines. If you find data to send, please include a simple header replying to our request so we can properly include and document project information in this public process.
Thanks very much and please call if any questions come up that I can help with.

Tony

From: Adams, Victoria <Victoria.Adams@dnr.ga.gov>
Sent: Thursday, April 18, 2019 2:45 PM
To: Dodd, Anthony Ray <ARDODD@southernco.com>
Subject: RE: Langdale Riverview

EXTERNAL MAIL: Caution Opening Links or Files

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Cheers,
Victoria

From: Dodd, Anthony Ray [mailto:ARDODD@southernco.com]
Sent: Thursday, April 18, 2019 2:39 PM
To: Adams, Victoria
Subject: Langdale Riverview

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hey Victoria,

I hope all is well with you. Long time no speak.
I'm trying to follow up on a conversion we had with you, Liz ad Jeremy a few months ago regarding GPC's intended plan to decommission the Langdale and Riverview dams.
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Please contact me if you wish to discuss.

Thank you!

Tony

Tony Dodd
Natural Resources Specialist
Georgia Power Company
241 Ralph McGill Blvd, NE
Atlanta, GA 30308

Desk: 404-506-5026
Cell: 404-434-9412
ardodd@southernco.com

From:	Wiedl, Stephen
To:	Dodd, Anthony Ray
Subject:	RE: 401 Cert
Date:	Wednesday, May 15, 2019 2:38:48 PM
Attachments:	image001.gif

EXTERNAL MAIL: Caution Opening Links or Files

Mr. Dodd,

I tried to reach you just now but you were away from your phone(s). I'm only at the office today thru about 4:00, but I'll try to contact you tomorrow or Friday. Thanks.

Stephen C. Wiedl, PWS
Manager - Wetlands Unit
Georgia Environmental Protection Division
7 Martin Luther King, Jr. Drive, Suite 450
Atlanta, GA 30334

404-452-5060
Stephen.Wiedl@dnr.ga.gov

From: Dodd, Anthony Ray [mailto:ARDODD@southernco.com]
Sent: Wednesday, May 15, 2019 12:43 PM
To: Wiedl, Stephen
Subject: 401 Cert

Steve,

I hope this message finds you doing well.
I spoke with Victoria Adams earlier today and she referred me to you for my 401 Certification question.
I work in Georgia Power's (GPC) Natural Resources group – and am seeking guidance from you for 401 Certification for planned activities at GPC's Langdale and Riverview Hydro Projects (Chattahoochee below West Point).

I would like to have a chance to discuss with you. Might you have time after 3:00 today or perhaps another day /time before this week is out?

Thank you,

Tony

Tony Dodd
Natural Resources Specialist
Georgia Power Company
241 Ralph McGill Blvd, NE
Atlanta, GA 30308

Desk: 404-506-5026
Cell: 404-434-9412
ardodd@southernco.com

From:	Crabbe, Melissa C.
To:	Victoria.Adams@dnr.ga.gov
Cc:	Dodd, Anthony Ray
Subject:	RE: Riverview_Langdale Hydro Dams Decommissioning
Date:	Thursday, May 30, 2019 9:05:32 AM
Attachments:	image002.png image003.gif

Hi, Victoria.

I can help! The FERC docket for the Langdale Project Surrender is P-2341-033 (P-docket-subdocket). The FERC docket for the Riverview Project Surrender is P-2350-025. We have proposed a 30-day comment period, which would end on June 23. Please feel free to reach back out if you have additional questions.

Thank you,
Melissa Crabbe, PE

From: Dodd, Anthony Ray
Sent: Thursday, May 30, 2019 9:04 AM
To: Crabbe, Melissa C. <MCCRABBE@SOUTHERNCO.COM>
Subject: Fwd: Riverview_Langdale Hydro Dams Decommissioning

Melissa
See the EPD msg below. Can you help?
Tony
Get Outlook for iOS

From: Adams, Victoria <victoria.adams@dnr.ga.gov>
Sent: Thursday, May 30, 2019 8:43 AM
To: Dodd, Anthony Ray
Subject: RE: Riverview_Langdale Hydro Dams Decommissioning

EXTERNAL MAIL: Caution Opening Links or Files

Tony,

I'm having trouble finding the right docket number…do you have it handy to send? I plan to draft a comment letter of support and send it up through Liz. Does the docket say when the comment period ends? Liz is in Israel at the moment.

Thanks,

Victoria

From: Dodd, Anthony Ray [mailto:ARDODD@southernco.com]
Sent: Tuesday, May 28, 2019 8:16 AM
To: Adams, Victoria
Cc: Booth, Elizabeth
Subject: Riverview_Langdale Hydro Dams Decommissioning

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Victoria,

Georgia Power Company filed its study plan last Friday with FERC for the intended decommissioning of Langdale and Riverview Hydro Dams. As a component of the stakeholder and public process, you are invited to comment on the dockets and express your needs in addition to what has been proposed in order to issue a 401 for dam removal in the future.

Tony Dodd
Natural Resources Specialist
Georgia Power Company
241 Ralph McGill Blvd, NE
Atlanta, GA 30308

Desk: 404-506-5026
Cell: 404-434-9412
ardodd@southernco.com

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 nnder 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. **The Conservancy supports the surrender of the Langdale and Riverview hydropower licenses prior to the end of their license terms aud the eventual removal of these barriers, aloug with the Crow Hop diversion dam.** 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.

         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."

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;

---

[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.

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

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

[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

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 Companyâ€™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 Companyâ€™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 Damâ€™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 municipalitiesâ€™ raw water supply withdrawal points and the East Alabama Water, Sewer and Fire Protection Districtâ€™s wastewater discharge. There are other wastewater dischargesâ€”including West Point (Ga.), Lanett (Al.), and inflow from Long Cane Creek (which supports multiple wastewater discharges in Georgia)â€”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 Companyâ€™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.

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 structureâ€™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 damâ€™s physical condition?

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

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

Langdale and Riverview Hydroelectric Projects
FERC Projects #2341 and #2350

Communication Date:
7/22/2019

Communication Type *(telephone, email, in-person meeting, other):*
In-person

List and attach pertinent written correspondence:
(i.e. letter, fax, meeting notes/handouts, printed materials, etc.)

Handout: Copy of PowerPoint presentation entitled Langdale and Riverview Projects – Preliminary Hydrologic & Hydraulic Modeling, July 2019

Handout: Depth Change Model Results in the Riverview headrace channel

Resource Document: EAWSFPD provided a copy of their NPDES Permit and permit rationale

List persons attending from Southern Company/Georgia Power:
Courtenay O'Mara & Melissa Crabbe - SCS
Dawson Ingram & Nancy DeShazo - GPC
Kelly Schaffer - Kleinschmidt

List organization name and persons attending from other organization:
Tony Segrest, East Alabama Water Sewer and Fire Protection Division (East Alabama)
Neil Marbury – Fire Chief, Water Rescue
Wheeler Crook & Matt Cobb, Goodwynn Mills and Cawood – Engineering Consultants to East Alabama

Subject:
Review preliminary hydrologic and hydraulic modeling results for complete dam removal.

Comments/Discussions/Requests:
Courtenay provided a PowerPoint presentation overview of the complete dam removal scenario (all three dams and Riverview powerhouse) under base flow, base flow + one unit generation at West Point and base flow + two unit generation at West Point. Areas highlighted during the presentation included areas that are currently wetted that the model predicts will be dry following dam removal and changes that the model predicts will occur at the EAWSFPD properties, including the wastewater treatment plant and two lift stations. Courtenay provided a summary of resource agency priorities from the 7/16/2019 consultation meeting. Resource agencies requested that Georgia Power consider ways to eliminate the concentrated water channel that hugs the east bank of the Chattahoochee River, including engineering the riverbed characteristics to spread the west ward. GPC will conduct additional water modeling to spread the water westward and hope to review the revised models with

EAWSFPD in late August / early September. In lesser detail we reviewed the intakes and discharges upstream of I-85. Detailed review of these utilities will not be conducted until additional modelling is conducted with higher coverage bathymetry data (which is currently being collected upstream of I-85).

East Alabama stated that their discharge limit is 4MGD (~ 6 cfs) and is based on a 7Q10 flow of 136 cfs. They provided a copy of this permit during the meeting. GPC will review the details of the permit.

Concerns:

- The EAWSFPD lift station below Langdale Powerhouse is a major collector for the Valley area. During the flood of December 2009, the lift station was taken offline to protect the electrical system at the station.
- Their discharge pipe is already not fully submerged at base flow from West Point.
- They expect a new large industrial loading to be added to their system so they are concerned about what the impact will be to the ADEM modelling.
- Water treatment plant discharge assimilation. Current permit will need to be renewed in 2022.

Neil Marbury is interested in the change in flow velocities at the boat ramps that he uses to access the river during rescue operations.

Action Items/Follow-up Items:

GPC: Determine if the 100-year flood level changes.

EA: Provide GPC a copy of the Corps agreement that dictates maintenance of the shoreline protection at the EAWSFPD wastewater treatment property.

GPC: Review the NPDES permit for the wastewater treatment plant.

EA: Provide lat/long, pipe elevation (specify datum) and diameter of the EAWSFPD and Lanett WWTP discharges.

EA: Provide lat/long of lift stations.

EA: Provide critical submergence elevation of the Chattahoochee Valley Water Supply District intake pump. Additional details as available are a plus.

GPC: Provide model predicted base flow change post-dam removal in the Riverview headrace channel.

GPC: Provide a pdf or CAD file topo map of Campbell's island.

GPC: Schedule a follow-up meeting when new model results are available.

EA: Provide a contact for the Lanett WWTP for future consultation. The contact for West Point is Mike Criddle (who GPC recently added to the stakeholder list).

GPC: Will provide pre and post dam removal flow velocities at boat ramp/access points after final modelling is complete.

Form Completed By:

Melissa Crabbe

From:	Haslbauer, Jennifer
To:	Dodd, Anthony Ray
Cc:	Moore, David
Subject:	RE: Georgia Power Company Langdale_Riverview
Date:	Thursday, August 22, 2019 3:46:15 PM
Attachments:	image001.gif image002.png

EXTERNAL MAIL: Caution Opening Links or Files

How does 10 am CST on the 5th sound? I can reserve the conference room for 2 hours just in case. Also, how many folks are planning to attend from Georgia so I can ensure we get a big enough conference room?

From: Dodd, Anthony Ray <ARDODD@southernco.com>
Sent: Thursday, August 22, 2019 2:39 PM
To: Haslbauer, Jennifer <jhaslbauer@adem.alabama.gov>
Cc: Moore, David <djmoore@adem.alabama.gov>
Subject: RE: Georgia Power Company Langdale_Riverview

Jennifer,

We can meet with you on the 5th ? Will mid- to late-late morning hrs (CST) work? ~1 to 1.5 hrs?

Tony

From: Haslbauer, Jennifer <jhaslbauer@adem.alabama.gov>
Sent: Thursday, August 22, 2019 2:57 PM
To: Dodd, Anthony Ray <ARDODD@southernco.com>
Cc: Moore, David <djmoore@adem.alabama.gov>
Subject: RE: Georgia Power Company Langdale_Riverview

EXTERNAL MAIL: Caution Opening Links or Files

Hi Tony,

The 4th or 5th should work for us. Let me know the best date and time and I'll get a conference room reserved.

Thanks,

Jennifer

From: Dodd, Anthony Ray <ARDODD@southernco.com>
Sent: Thursday, August 22, 2019 6:24 AM
To: Haslbauer, Jennifer <jhaslbauer@adem.alabama.gov>
Cc: Moore, David <djmoore@adem.alabama.gov>; Johnson, Chris L <CLJohnson@adem.alabama.gov>
Subject: RE: Georgia Power Company Langdale_Riverview

Happy Thursday, Jennifer,

Following up about schedule possibilities, would y'all be able to meet with us during mid-to late-morning hours on either 4, 5 or 6 September ?

Tony

Tony Dodd
Natural Resources Specialist
Georgia Power Company
241 Ralph McGill Blvd, NE
Atlanta, GA 30308

Desk: 404-506-5026
Cell: 404-434-9412
ardodd@southernco.com

From: Haslbauer, Jennifer <jhaslbauer@adem.alabama.gov>
Sent: Wednesday, August 21, 2019 1:44 PM
To: Dodd, Anthony Ray <ARDODD@southernco.com>
Cc: Moore, David <djmoore@adem.alabama.gov>; Johnson, Chris L <CLJohnson@adem.alabama.gov>
Subject: RE: Georgia Power Company Langdale_Riverview

EXTERNAL MAIL: Caution Opening Links or Files

Tony,

We will need to reschedule for something after August 30th. Would September 3rd work?

From: Dodd, Anthony Ray <ARDODD@southernco.com>
Sent: Wednesday, August 21, 2019 11:30 AM
To: Haslbauer, Jennifer <jhaslbauer@adem.alabama.gov>
Cc: Moore, David <djmoore@adem.alabama.gov>; Johnson, Chris L <CLJohnson@adem.alabama.gov>
Subject: RE: Georgia Power Company Langdale_Riverview

Jennifer,

In follow-up, we'd like to try to meet with y'all during the mid-to late morning hrs on 28 Aug.
If that happens to not fit well with your schedules, please let me know and I'll round up an alternate date.

Thank you!
Tony

From: Haslbauer, Jennifer <jhaslbauer@adem.alabama.gov>
Sent: Tuesday, August 20, 2019 1:54 PM
To: Dodd, Anthony Ray <ARDODD@southernco.com>
Cc: Moore, David <djmoore@adem.alabama.gov>; Johnson, Chris L <CLJohnson@adem.alabama.gov>
Subject: RE: Georgia Power Company Langdale_Riverview

EXTERNAL MAIL: Caution Opening Links or Files

Hi Tony,

We can do a meeting at ADEM. We are mostly available the next 3 weeks so if there are there any particular days that are suitable for you, we can crosscheck with our calendars? Let me know and maybe we can narrow down a day that will work for everybody.

Thanks,

Jennifer Haslbauer, P.E.
Chief, Standards and Planning Section
Water Quality Branch – Water Division
Alabama Department of Environmental Management
P.O. Box 301463
Montgomery, Alabama 36130-1463
(334) 274-4250
adem.alabama.gov

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From: Dodd, Anthony Ray <ARDODD@southernco.com>
Sent: Tuesday, August 20, 2019 9:57 AM
To: Haslbauer, Jennifer <jhaslbauer@adem.alabama.gov>; Moore, David <djmoore@adem.alabama.gov>
Subject: Georgia Power Company Langdale_Riverview

Jennifer and David,
It's been quite a while since we last communicated about Georgia Power's intended project for decommissioning and removal of the Langdale and Riverview Dams for river restoration.
Currently, GPC and its consultants are steadily working on project planning details to fulfill the dam decommissioning plan required by FERC.
Over the past weeks, we've held conversations and meetings with involved agencies including GADNR Fisheries, GAEPD, USFWS and USACOE.
Key technical topics of recent include dam removal technique and project logistics, predictive hydraulic modeling for dam removal scenarios, sediment quality and aquatic habitat.

We feel like we're reaching a critical stage in detail development that will benefit from further direct communication and information exchange between GPC and ADEM about project status, FERC timeline, water quality and other timely details.

You would please consider meeting with us again at your office complex so we can provide this project update discussion?

If possible in your schedules, we'd like to try to meet within the next 3 weeks or so – maybe by 13 Sept?

We look forward to hearing from you. Please contact me if you have any questions.
Thank you!
Tony

Tony Dodd
Natural Resources Specialist
Georgia Power Company
241 Ralph McGill Blvd, NE
Atlanta, GA 30308

Desk: 404-506-5026
Cell: 404-434-9412
ardodd@southernco.com

From: Moore, David <djmoore@adem.alabama.gov>
Sent: Monday, November 19, 2018 11:09 AM
To: Dodd, Anthony Ray <ARDODD@southernco.com>
Cc: Haslbauer, Jennifer <jhaslbauer@adem.alabama.gov>
Subject: RE:

This email has been sent from an external address. Please use caution when clicking on links or opening attachments.

Tony,

We enjoyed meeting you all as well. Thanks again for keeping us updated on those projects.

We look forward to working with you in the future.

David

From: Dodd, Anthony Ray <ARDODD@southernco.com>
Sent: Monday, November 19, 2018 9:44 AM
To: Moore, David <djmoore@adem.alabama.gov>
Subject:

David
Thanks again for arranging some time to meet with us last week. We enjoyed meeting y'all and having the opportunity to talk about the Langdale and Riverview projects.
Tony

Get Outlook for iOS [aka.ms] [linkprotect.cudasvc.com]

Langdale and Riverview Hydroelectric Projects
FERC Projects #2341 and #2350

Communication Date:
September 5, 2019

Communication Type *(telephone, email, in-person meeting, other)***:**
In-person meeting

List and attach pertinent written correspondence:
(i.e. letter, fax, meeting notes/handouts, printed materials, etc.)
- emails were exchanged between Tony Dodd and ADEM prior to the meeting for the purpose of scheduling
-handouts were given to ADEM, specifically a copy of maps depicting predicted base river flows in the Langdale, Riverview project area with dams removed. The map was recognized in conversation as draft/preliminary as another modeling revision was underway at that time.

List persons attending from Southern Company/Georgia Power:
Melissa Crabbe – Hydro Engineer and Compliance Specialist
Courtenay O'Mara – Hydro Licensing Manager
Laura Munn - Hydro Engineer and Compliance Specialist
Tony Dodd – Aquatic Biologist

List organization name and persons attending from other organization:
Jennifer Haslbauer – Chief, Standards and Planning, Water Quality Branch, Alabama Department of Environmental Management (ADEM)
David Moore – Environmental Engineer, ADEM

Subject: Project Update for Langdale and Riverview FERC License Surrender and Chattahoochee River Restoration

Comments/Discussions/Requests:
Met at ADEM Headquarters in Montgomery, AL.
Courtenay O'Mara introduced the team and described Georgia Power's intent to update ADEM on project progress and to specifically request ADEM's review and input on wastewater mixing details for

the East Alabama Water and Sewer Authority's NDPES permitted outfall located in the project area - located just upstream of the Riverview powerhouse.

Courtenay described the point of current project progress within the FERC process. She described local stakeholders' interest in post dam removal river stage effects and the powerhouse facility at Langdale. The then most-recent results of GPC's hydraulic modeling (by Kleinschmidt Associates) were described. The discussion was aided by handouts of maps depicting projected river stage under base flow vs higher flows anticipated by Corps operations of Wests Point Dam upstream of Langdale and Riverview. Discussion included anticipated dam removal process via USFWS dam removal team and GPC's potential consideration of certain engineered features to achieve certain base flow river stage effects. Specifically, highlighted were GPC's awareness of wetted perimeter along the west bank features at the City of Valley as well as (water volume) at the East Alabama Water and Sewer and Fire Protection District (EAWSFPD) treatment plant discharge. Discussion further included GPC's then-on-going effort to collect additional stream-channel substrate and subsurface survey data to enhance model resolution with respect to sediment volume and flow effects. As related to projected base flow and compliance, SCS Hydro members raised questions and contributed to discussion about assimilation capacity within EAWSFPD's discharge permit allowance. At our team's request, ADEM agreed to have its NPDES group review the EAWSFDP permit limits and calculation, with respect to its 7Q2 mixing criteria, and reply to GPC with its analysis by mid-October 2019. GPC will continue dialogue with ADEM wand noted the next update opportunity this Fall in the form of a second multi-agency, hydraulic modeling update meeting.

Follow-up Requirements: None at this time.

Form Completed By: Tony Dodd

From: O"Mara, Courtenay R.
To: Haslbauer, Jennifer
Cc: Dodd, Anthony Ray; Munn, Laura S.; Crabbe, Melissa C.
Subject: Riverview/Langdale for ADEM
Date: Tuesday, September 24, 2019 11:51:38 AM
Attachments: Langdale-Riverview 2D Model Flow Distribution.xlsx
image001.png
Extracted Pages from 2018-12-18 FINAL Langdale Exhibit E .pdf
20170426_EAWSFPD ADEM Permit.pdf
20170124_EAWSFPD ADEM Permit Rationale.pdf
image002.gif

Hey Jennifer-
Sorry for the delay.

Attached are several items we still we you.

1. Langdale-Riverview 2D Model Flow Distribution.xlsx

This contains the map and table of values of the HEC-RAS model flow split in the Riverview channel with the before and after dam removal numbers (in cfs, highlighted in yellow). These are the numbers we used as the basis of comparison with the permit 7Q10 numbers and what I reference in my response #1 below.

2. Extracted Pages from 2018-12-18 FINAL Langdale Exhibit E.pdf

This comes from the December 2018 surrender filing and has a map of the discharge locations. All of these are upstream of I-85. The document also includes a description of the intakes, which would be above the discharge points. As mentioned in Response #1 below we think because these are all upstream of I-85 they will remain unaffected. Please let us know if you have different locations!

3. We realized that in the last meeting we also promised you our copy of the permit and the permit rationale for East Alabama, both of which are attached.

Hope these items help. Please call me if you have any questions.

Thanks so much,

Courtenay R. O'Mara, P.E.
Hydro Licensing and Compliance Supervisor
Southern Company
241 Ralph McGill Blvd. – Bin 10193
Atlanta, Georgia 30308
Tel 404.506.7219
Mobile 404.797.9432
southerncompany.com

From: O'Mara, Courtenay R.
Sent: Thursday, September 19, 2019 9:24 PM
To: Haslbauer, Jennifer <jhaslbauer@adem.alabama.gov>
Subject: RE: Riverview/Langdale

Yes, I totally missed it! Thanks for reaching out.

1. We have a HEC-RAS model that uses the flows from West Point as the there different flow scenarios. The flows we have for the channel are based on the HEC-RAS modelling results before and after dam removal.
2. The model extends all the way to the tailrace of West Point so it includes the other intakes.
3. East Alabama Water and Sewer and other publicly available data helped us to identify the intakes and discharges of the entities you mention. We identified that the intake and the other discharges were all north of the I-85 bridge and East Alabama was the only one south of it. We have a map that we submitted in the Surrender application to FERC last December. I'll export that and send it to you in the morning. So we may need to cross check these locations if you have something different. We have not contacted them because we were waiting to see what the additional multi-beam bathymetry data upstream of Langdale was input into the model to determine final impact. (i.e. we did not want to alarm them if there was really no impact). Those modelling results will be presented in that Nov meeting I just set up. But internally we just looked at it yesterday and we think there is insignificant impact. We'll go over that in the meeting. I want to make sure I have the locations correct though bc maybe we are incorrect on those, in which case we would have to change direction on our individual outreach.

I'll email you again in the morning with our map.

Thanks,
Courtenay

From: Haslbauer, Jennifer <jhaslbauer@adem.alabama.gov>
Sent: Thursday, September 19, 2019 5:07 PM
To: O'Mara, Courtenay R. <CROMARA@SOUTHERNCO.COM>
Subject: FW: Riverview/Langdale

EXTERNAL MAIL: Caution Opening Links or Files

Hi Courtenay,

Wasn't sure if you had received my email below. I just wanted to make sure we can get you info as quickly as possible.

Thanks,

Jennifer Haslbauer, P.E.
Chief, Standards and Planning Section
Water Quality Branch – Water Division
Alabama Department of Environmental Management
P.O. Box 301463
Montgomery, Alabama 36130-1463
(334) 274-4250
adem.alabama.gov

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From: Haslbauer, Jennifer
Sent: Friday, September 13, 2019 3:06 PM
To: CROMARA@SOUTHERNCO.COM
Subject: Riverview/Langdale

Courtenay,

I had a few questions regarding the Riverview/Langdale dam removal:

- How are you determining the flows found in the presentation?
- Have you or do you plan to model further upstream than what is recognized in the presentation?
- Has Lanett, Lagrange, and West Point WWTPs been notified about the dam removals? I noticed they are all located within the boundaries that may experience upstream effects due to flow changes (Lanett is about a mile upstream of I-85 while the other Georgia facilities are between 85 and the dams).

Also, would providing our modeling results help assist you all with your modeling? I believe they are available on our website in eFile for permit #AL0024724.

Thanks,

Jennifer Haslbauer, P.E.
Chief, Standards and Planning Section
Water Quality Branch – Water Division
Alabama Department of Environmental Management
P.O. Box 301463
Montgomery, Alabama 36130-1463
(334) 274-4250

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Langdale and Riverview Hydroelectric Projects
FERC Projects #2341 and #2350

Communication Date:
9/30/2019

Communication Type *(telephone, email, in-person meeting, other):*
In-person

List and attach pertinent written correspondence:
(i.e. letter, fax, meeting notes/handouts, printed materials, etc.)
Handout: Copy of PowerPoint presentation entitled Langdale and Riverview Projects – Preliminary Hydrologic & Hydraulic Modeling, July 2019

List persons attending from Southern Company/Georgia Power:
Courtenay O'Mara, Laurie Munn, and Melissa Crabbe - SCS

List organization name and persons attending from other organization:
All from EPD:

Victoria Adams (Water Quality Standards)

Liz Booth (Program Manager, Watershed Planning and Monitoring)

Lewis Hays (Program Manager, Watershed Compliance)

Anna Truszczynski (Assistant Branch Chief, Watershed Protection Branch)

Joanna Smith (Surface Water Supply), Tom Woosley (Safe Dams)

Hallian Liang (Water Supply, Hydrological Unit)

Paul Lamare (Hydrological Modeler)

Feng Jiang (Hydrological Modeler)

Subject:
Review preliminary hydrologic and hydraulic modeling results for complete dam removal.

Comments/Discussions/Requests:
Courtenay provided a project overview of the proposal to surrender the Langdale and Riverview FERC licenses and the FERC process involved in surrounding a license and decommissioning the dams and Riverview Powerhouse. Courtenay talked through a handout of presentation slides that provided an overview of the complete dam removal scenario (all three dams and Riverview powerhouse) under base flow, base flow + one unit generation at West Point and base flow + two unit generation at West Point. Areas highlighted during the presentation included:

- areas of concern for the City of Valley: area that are currently wetted that the model predicts will be dry following dam removal at the at properties upstream and downstream of the Langdale powerhouse
- the model has incorporated excavating a channel in the island abutting Langdale powerhouse to bring water to the tailrace channel
- resource agency priorities from the 7/16/2019 consultation meeting, including engineering as needed to keep post-removal velocities that meet the needs for upstream fish passage (approx.. 3-5 fps)
- East Alabama Water Sewer and Fire Protection District wastewater discharge

Moving forward we are making model revisions based on feedback received and plan to convene an resource agency revised model review meeting on November 7.

Courtenay reviewed the design for the Riverview powerhouse area as we plan to remove the powerhouse to the operating floor elevation, but the foundation in place. A berm would be built in the location of the powerhouse to divert water from the Riverview headrace channel back into the main stem of the Chattahoochee River rather than allowing it to pass to the Riverview tailrace channel. Courtenay specifically asked Tom Woosley if the berm would fall under EPD's Safe Dams regulatory program. Because the berm would not impound water Tom states the berm would not be regulated by Safe Dams.

Liz Booth inquired about how sediment will be handled. Courtenay explained that we have proposed to quantify sediment and determine composition and this information will be reported in the Hydraulics and Hydrology Study, which will be filed in December 2019. After review of the FERC proceeding for the dam removal of downstream FERC projects City Mills and Eagle and Phenix Dams, we have not proposed to sample to determine sediment quality. As a result of consultation with resource agencies regarding a 2008 sediment quality analysis for removal of these nearby and downstream dams, owner, UPtown Columbus, did not receive any recommendations for treatment of impounded sediments.

Courtenay asked what regulatory sediment quality standards or criteria would apply to the removal of dams. Anna Truszczynski stated that they would have to look into it, but Bio F and Bio M might be the criteria that would apply. They would consider habitat impacts, end of pipe limits and turbidity.

Courtenay discussed two water withdrawal facilities and three wastewater discharge points between West Point Dam and Riverview Dam. At this stage of modeling it appears that only East Alabama Water Sewer and Fire Protection District's wastewater treatment facility needs to be further analyzed for impacts due to flow changes in the discharge channel. Courtenay let everyone know that we are currently in consultation with EAWSFPD and ADEM on whether or not the flow changes in the Riverview headrace channel adversely impact EAWSFPD's point source discharge permit . The remaining 4 facilities are located upstream of where Interstate 85 crosses the Chattahoochee River and the model predicts negligible change in at and upstream of I-85. Lewis Hayes stated that he could provide the invert elevations of the City of West Point's water intake, which is located just upstream of I-85 on the eastern side of the Chattahoochee.

Courtenay invited attendees to participate in our next meeting with resource agency stakeholders that will take place on November 7 and asked if any attendees who are not already on the surrender mailing list would like to be added. Liz Booth requested that we add Steve Wiedl to the stakeholder mailing list. Steve will review our application for a 401 water quality certification for the decommissioning of project dams and Riverview powerhouse.

Action Items/Follow-up Items:

Send Victoria Adams instructions for filing comments on FERC's efiling system.

Add Steve Wiedl to the stakeholder mailing list.

Form Completed By:

Melissa Crabbe

Chris Manganiello, Atlanta, GA.
May 1, 2020
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 Companyâ€™s February 28, 2020 License Surrender Filings re 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 Companyâ€™s (Georgia Power) request for comments on the Progress Report, Draft Potential Effects of Dam Removal on Shoal Bass Study Report, and Draft Water Quality Report, dated February 28, 2020. We are submitting these comments despite Georgia Powerâ€™s cancellation due to COVID-19 social distancing measures of an April 1 public meeting to discuss this information. We contacted Georgia Powerâ€™s project contact twice by email (April 27) and telephone (April 29) to determine if the May 1 deadline was a hard deadline, and did we not get a response.

Established in 1994, Chattahoochee Riverkeeper (CRK) is an environmental advocacy and education organization with more than 10,000 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.

Progress Report
CRK looks forward to reading a draft of the Hydraulics and Hydrology Study to learn more about why some dams would be partially or entirely removed in some scenarios but not in others.

CRK is pleased to learn that the Cultural Resources Study will be â€œcompleted prior to and included with the Dam Decommissioning Plan filing.â€ [page 6-2]

Draft Potential Effects of Dam Removal on Shoal Bass Study Report
CRK agrees that dam removal can produce enhanced habitat. Georgia Powerâ€™s proposed removal will ultimately result in a natural streambed as opposed to a manufactured streambed as found downstream in some areas that were part of dam removal in the Columbus area. CRK anticipates improved aquatic function because the proposed removal will create an 11-mile stretch of natural river shoal habitat with connectivity to the Flat Shoals Creek tributary, which is known to support shoal bass populations.

As noted in the Draft Report, â€œIf the impoundment covers historic spawning habitat, benefits can be two-fold in that spawning shoals are restored with appropriate flows while access is then provided to isolated, adjacent populations downstream of a dam....Even in case where population equilibrium does not increase, population stability over multiple generations is likely to increase.â€ [Appendix A, no page number]

The Draft Report indicates removal may be good for adult shoal bass by providing optimal depth and velocity conditions. However, removal may not be so beneficial for young-of-year shoal bass because the main channelâ€™s depth may be optimal and the velocity may not be. Georgia Power asserts â€œRemoval of the Projectsâ€™ dams will result in a net increase in suitable habitat for Shoal Bass.â€ [page 11] We agree that overall removal will enhance connectivity between the newly exposed shoals and tributaries.

CRK agrees â€œit is critical that barrier removal projects do not impede passage of fish due to excessive velocities at newly-established points of connectivity.â€ According to a single post-removal assessment of the Eagle and Phenix dam, barrier removal and the constructed whitewater course in Columbus, Georgia may not have improved aquatic connectivity for shoal bass in the main channel, see: Steven M. Sammons (Auburn University) for Uptown Columbus, Inc., Responses of Fish Assemblages to Dam Removal on the Chattahoochee River, Georgia (September 13, 2017). Anecdotal stories from anglers indicate shoal bass and other species are present in this section of the river and have benefited from the damsâ€™ removal. Clearly more study and evaluation are necessary to determine the long-term implications of barrier removal for shoal bass and other species.

CRK agrees that barrier removal projects â€œshould be pursued in a cost-effective approach that prioritizes species recovery both across the range and within priority sub-basins.â€ However, this Draft Report does not indicate how Georgia Power will advance this approach or what specific tasks will take place to advance shoal bass habitat beyond removal of the Langdale and Riverview barriers. For example, is there a plan or schedule to re-stock shoal bass in the affected areas?

Draft Water Quality Report
CRK is pleased to learn that the Draft Water Quality Report indicates:

If the run-of-river dams are removed, â€œthe resulting lower water levels and higher water velocities in the affected reach of the Chattahoochee River would provide an alternative means of physical aeration as the water passes through the exposed shoals,â€ [9] and

That â€œdecommissioning and removal of the Projects will not impact theâ€ the East Alabama Lower Valley Wastewater Treatment Plant Valley WWTP permitted effluent discharge.â€ [14]

CRK remains concerned that sedimentation surveys upstream of the Langdale and Riverview barriers have not been, and may not be, conducted. When the Eagle and Phenix Mill Dam and City Mills Dam were removed, it was assumed that little sediment would be released. However, there are concerns that sediment transport did occur from upstream to a downstream area on river right (the west bank in Alabama) below the former Eagle and Phenix Dam.

What is Georgia Powerâ€™s justification for not conducting these sedimentation surveys and/or evaluations prior to removal of the Langdale and Riverview dams?

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

Sincerely,
/JU/
Jason Ulseth
Chattahoochee Riverkeeper

POTENTIAL EFFECTS OF DAM REMOVAL ON SHOAL BASS

DRAFT

LANGDALE (FERC NO. 2341)
AND
RIVERVIEW (FERC NO. 2350)
HYDROELECTRIC PROJECTS

Prepared by:

Southern Company Generation Hydro Services
& Georgia Power Natural Resources

and

Kleinschmidt

FEBRUARY 2020

POTENTIAL EFFECTS OF DAM REMOVAL ON SHOAL BASS
LANGDALE (FERC NO. 2341) AND
RIVERVIEW (FERC NO. 2350)
HYDROELECTRIC PROJECTS
DRAFT

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ACRONYMS AND ABBREVIATIONS

ACF	Apalachicola-Chattahoochee-Flint
ADCNR	Alabama Department of Conservation and Natural Resources
AIR	additional information request
AL	State of Alabama
C.F.R.	Code of Federal Regulations
cfs	cubic feet per second
FERC	Federal Energy Regulatory Commission
FL	State of Florida
fps	feet per second
FPS	Final Study Plan
GA	State of Georgia
GDNR	Georgia Department of Natural Resources
Georgia Power	Georgia Power Company
GPS	Global Positioning System
HEC-RAS	Hydrologic Engineering Center River Analysis System
kW	kilowatt
PSP	Proposed Study Plan or Study Plan
RM	river mile
USACE	U.S. Army Corps of Engineers
YOY	young-of-year

1.0 PROJECT OVERVIEW

Georgia Power Company (Georgia Power) is filing with the Federal Energy Regulatory Commission (FERC) this report in support of Georgia Power's applications for license surrender and decommissioning of the Langdale Project (FERC No. 2341) and the Riverview Project (FERC No. 2350) (the Projects).

Langdale Project

The Langdale Project is located on the Chattahoochee River, adjacent to the City of Valley, Alabama and in Harris County, Georgia at river mile (RM) 191.9. 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 (**FIGURE 1-1**).

The Langdale Project was constructed between 1904 and 1908 and purchased by Georgia Power from West Point Manufacturing Company in 1930. The Project operated as a run of river hydroelectric plant. Over time, the four horizontal generating units developed maintenance problems, and eventually were no longer operable. 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.

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. The Project is located approximately 10.5 RM downstream of the USACE West Point Project and 0.9 RM downstream of the Langdale Project.

The Riverview 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. The Project operated as a run of river hydroelectric plant. 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 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. Georgia Power stopped operating the units in 2009.

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

On April 11, 2019, FERC issued a request for additional information (AIR) regarding Georgia Power's applications. Georgia Power prepared and filed a Proposed Study Plan (PSP) on May 24, 2019. Based on comments on the PSP, the PSP was revised and filed as the Final Study Plan (FSP) on July 24, 2019. As part of implementing the FSP, Georgia Power prepared this report to provide a literature review on Shoal Bass and describe the potential effects of dam removal on Shoal Bass and their aquatic habitats in the study area.

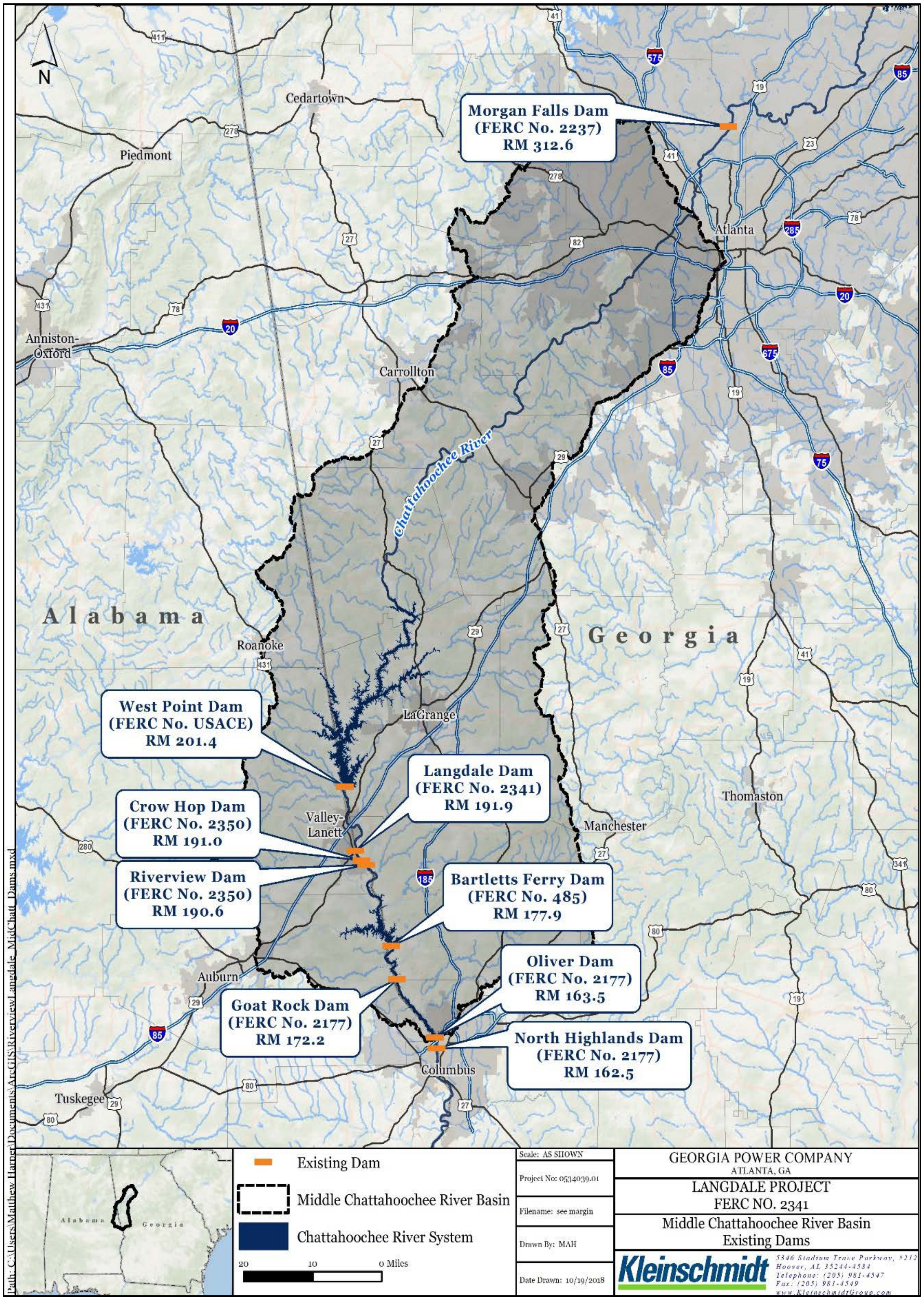


FIGURE 1-1 MIDDLE CHATTAHOOCHEE RIVER BASIN EXISTING DAMS

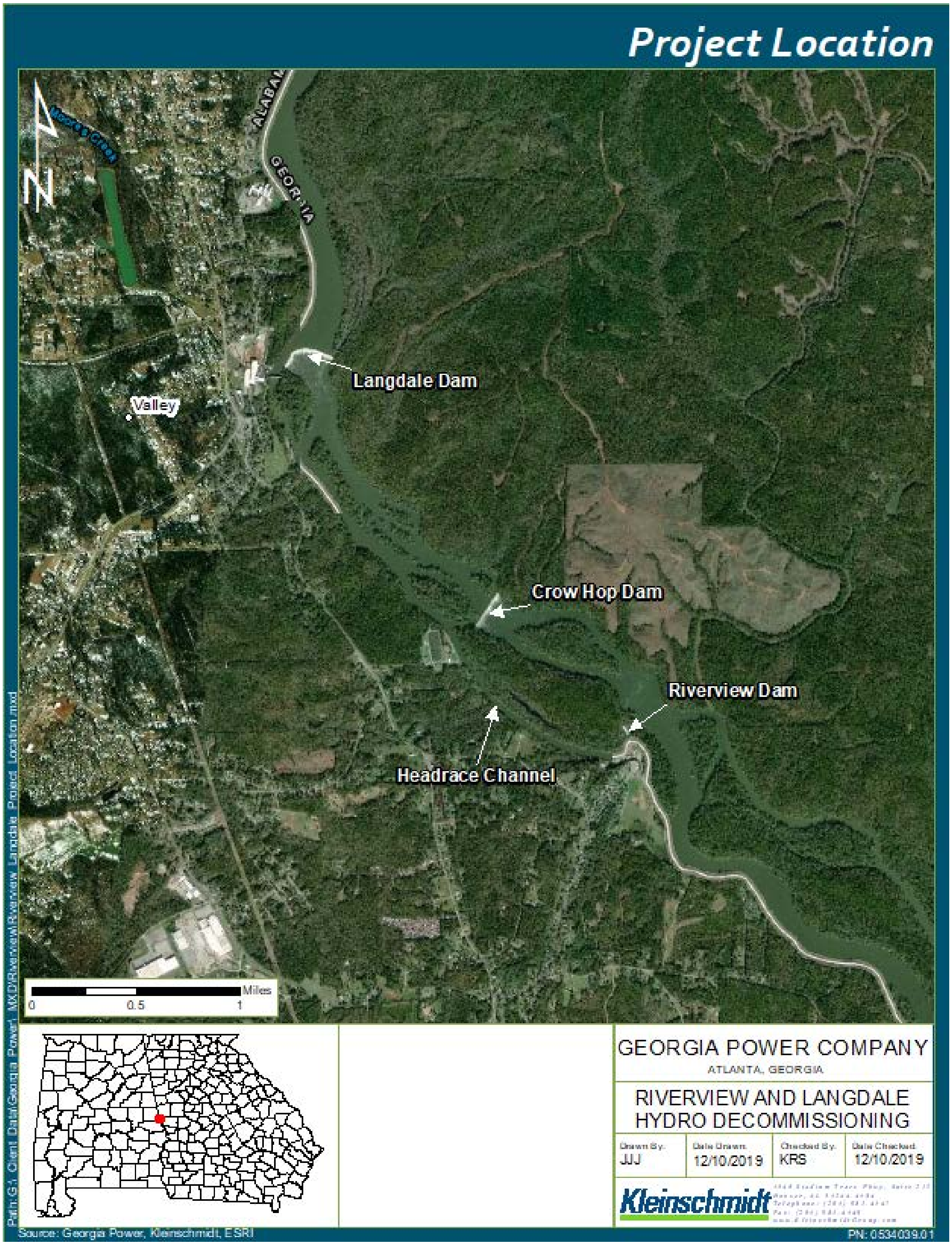


FIGURE 1-2 LANGDALE AND RIVERVIEW PROJECT LOCATIONS

2.0 EFFECTS OF DAM REMOVAL ON SHOAL BASS

2.1 INTRODUCTION

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 multiple 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.

Shoal Bass (*Micropterus cataractae*) is also a popular species for Chattahoochee River anglers in the vicinity of the Projects. Several stakeholders in the FERC surrender proceedings have commented that removing the Projects would be detrimental to the Shoal Bass population in this reach of the Chattahoochee River.

2.2 GOALS AND OBJECTIVES

The goal of this study is to provide a literature review of Shoal Bass and describe the potential effects of dam removal on Shoal Bass and their aquatic habitats in the study area.

2.3 STUDY AREA

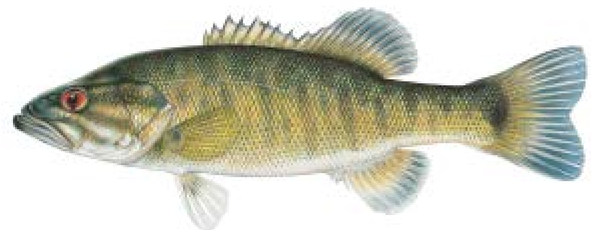
The study area includes the Chattahoochee River from West Point Dam downstream through the Langdale and Riverview Projects to the headwaters of Lake Harding (Bartletts Ferry Hydroelectric Project (FERC No. 485) reservoir).

2.4 METHODOLOGY

Literature consulted for this review consisted of peer-reviewed published journals. The studies referenced pertain to the biology and life history of Shoal Bass, the general effects of dam removal on fish species (occurring locally and non-locally), and the possible effects of dam removal on Shoal Bass. Georgia Power also considered the stakeholder comments filed in the FERC surrender proceedings for the Projects in developing this report. Additionally, Georgia Power prepared a brief entitled "Expected Outcomes of Barrier Removal on Shoal Bass

Micropterus cataractae Within their Native Range", which is included in Appendix A of this report.

2.5 SHOAL BASS LIFE HISTORY



SHOAL BASS (GEORGIAWILDLIFE.COM)

The Shoal Bass is a riverine, freshwater fish species endemic to the Apalachicola-Chattahoochee-Flint (ACF) river basin in Georgia, Alabama, and Florida (Williams and Burgess 1999). This species is typically found in mainstem rivers and their larger tributaries (Ramsey 1975). Across their entire range, Shoal Bass typically begin spawning in early April through mid or late June (Wright 1967; Hurst et al. 1975). They spawn in refuges from high water velocities such as boulders, rocks, or vegetation in the lower ends of pools and their eggs adhere to rocks and pebbles (Boschung and Mayden 2004; Johnston and Kennon 2007; Bitz et al. 2015). Johnston and Kennon (2007) observed two different size classes in Little Uchee Creek (AL) in June, suggesting that there may be more than one spawning bout, although it is unclear if the same individual fish can spawn more than once per season. Larval Shoal Bass hatch in water temperatures of 15 °C to 22 °C (Sammons et al. 2015) and inhabit deep areas with no water velocity (Johnston and Kennon 2007). Juveniles tend to inhabit more shallow areas of low velocity (Johnston and Kennon 2007) and higher-than-average percentages of rocky substrate in both shoals and pools (Wheeler and Allen 2003) and feed on insects such as mayflies, odonates and hellgrammites (Wheeler and Allen 2003; Sammons et al. 2015).

As adults, Shoal Bass have been found to inhabit rocky areas of moderate to high velocity and feed on fish and crayfish (Boschung and Mayden 2004; Goclowski et al. 2013; Wheeler and Allen 2003). Shoal Bass typically grow more rapidly after their second year and reach sexual maturity at 3 years. The mean sizes for fish ages 1 to 7 from the Chipola (FL) and Flint (GA) rivers and Halawakee Creek (AL) were 82, 179, 261, 326, 375, 424, and 468 mm, respectively. The life expectancy for Shoal Bass is approximately 8 years (Boschung and Mayden 2004; Parsons and Crittenden 1959).

2.6 GENERAL EFFECTS OF DAM REMOVAL

Dams can alter the flow, water temperature, water chemistry, nutrient transport, community structure, and fish movement in rivers (Kerr et al. 2010); therefore, potentially affecting aquatic species in a variety of ways. Dams may affect fish in particular by altering habitat and limiting mobility. The goal of dam removal is often to restore historic habitat and allow fish passage, which may increase fish diversity by allowing fish to migrate (Burroughs et al. 2010; Cooper et al. 2017). In some species, migration between freshwater and marine habitat is necessary for spawning. Anadromous fish species spawn in freshwater habitats and migrate to marine habitats to grow and mature, while catadromous species spawn in marine habitats and migrate to freshwater to grow and mature. Potamodromous species migrate solely within freshwater systems to forage, breed, or seek refuge. Examples of potamodromous fish in the southeastern U.S.A. include Shoal Bass, Lake Sturgeon, and Flathead Catfish.

In some cases, reducing barriers to fish passage can be complex and may have unexpected results on fish species. For example, increasing fish passage on the Connecticut River (1975-1981) allowed American Shad to migrate more than 100 stream miles into historic upper watershed habitat and disperse throughout the upper reaches (Leggett et al. 2004). However, fish passage construction did not affect the shad population, presumably because the small population of adults may have been too dispersed during spawning season, and the reduction of barriers caused an increased migration distance and therefore increased bioenergetic cost of spawning, causing mortality (Leggett et al. 2004). The authors attributed the delayed restoration of the shad population to migration barriers being removed too rapidly for such a large watershed and small remnant population (Leggett et al. 2004).

Macroinvertebrate species may also be impacted by dams and benefit from their removal. For example, sessile species of mussels require host fish to disperse their larvae. Habitat connectivity and the unimpeded ability of fish to migrate throughout river systems is therefore an important factor influencing the distribution and abundance of mussels (Watters 1996). The removal of a barrier can have a variety of effects. In one case, community density, generic richness, and Shannon-Wiener diversity initially decreased for several months after the removal of a dam before consistently increasing thereafter, depending on location of the reach (Mažeika et al. 2017). Another study found no influence of a barrier on assemblage composition and structure, likely due to dispersal mechanisms not being entirely dependent on water (Milesi and Melo 2017).

2.7 POTENTIAL EFFECTS ON SHOAL BASS

In the state of Georgia, Shoal Bass are considered to be a High Priority Species and a Species of Concern (Georgia Department of Natural Resources 2015). The factors that threaten Shoal Bass populations include habitat fragmentation (Dakin et al. 2015; Sammons and Early 2015; Taylor et al. 2018a), hybridization with other *Micropterus* species (Dakin et al. 2015; Taylor et al. 2018b), and forms of habitat degradation such as sedimentation (Walser and Bart 1999), temperature alteration (Porta 2011), and flow manipulation (Stormer and Maceina 2009). In response to the proposed surrender of the Langdale and Riverview Projects, some stakeholders have commented that removing the dams would result in: 1) Shoal Bass migrating out of the area; 2) Striped Bass moving upstream and reducing the Shoal Bass population; and 3) decreased suitable habitat for Shoal Bass.

Although it is likely that Shoal Bass would migrate after dam removal, migration can be a natural part of the Shoal Bass life cycle. Prior to the construction of dams, Shoal Bass were able to move freely within the free-flowing ACF basin. In the unregulated portion of the Flint River, Shoal Bass have been recorded migrating as far as 197 km to spawn (Sammons 2015), but spawning migrations are often impeded or shortened in sections with dams or reservoirs (Stormer and Maceina 2009; Sammons and Early 2015; Cottrell 2018). Restoring connectivity within the river system may also reduce inbreeding and random genetic drift, which can lower the fitness of individuals in segments of stream with little effective reach (Dakin et al. 2015; Taylor et al. 2018c).

The other threat to Shoal Bass populations is habitat degradation. Dams and other habitat-altering barriers may pose a threat to Shoal Bass because they are habitat specialists and are more selective in their habitat than other species, such as Spotted Bass (Goclowski et al. 2013; Williams and Burgess 1999). Shoal Bass require different types of habitat at different life stages: deep areas with no velocity as larvae (Johnston and Kennon 2007), more shallow and rocky areas of low velocity as juveniles to avoid predation (Johnston and Kennon 2007), and rocky areas of moderate to high velocity as adults (Boschung and Mayden 2004; Goclowski et al. 2013; Wheeler and Allen 2003). Alterations to these habitats could affect the life cycle of this species.

Furthermore, Shoal Bass avoid lentic habitats such as reservoirs and backwaters. Sammons and Early (2015) reported that Shoal Bass from Flat Shoals Creek entered the Chattahoochee River mainstem and settled just below Crowhop Dam rather than moving into Bartlett's Ferry reservoir (Lake Harding) downstream.

Removing the Langdale and Riverview Dams has the potential to restore aquatic habitats to a free-flowing condition and have a long-term positive effect on Shoal Bass. Dam removal will allow better migration of Shoal Bass to spawning habitats and reduce inbreeding. It may also reduce the homogeneity of habitat and restore the variety of habitats used by Shoal Bass during different life stages. Shoal Bass inhabiting this currently fragmented section of the Chattahoochee River would have unimpeded access to tributaries in the reach, including Flat Shoals Creek, which has an abundant population and a fairly large spawning shoal.

In order to compare the effects of removing the dams on physical habitat, habitat suitability criteria from an instream flow study conducted on the Ocmulgee River (GA) was examined. In that study, optimal habitat conditions for adult and young-of-year (YOY) Shoal Bass were determined. For adult Shoal Bass, optimal depths ranged from 3.08 to 4.62 feet and optimal water velocities ranged from 0.51 to 0.77 feet per second (fps). For YOY Shoal Bass, optimal depths ranged from 1.09 to 1.45 feet, and optimal velocities ranged from 0 to 0.14 fps.

Results from Georgia Power's Hydrologic Engineering Center - River Analysis System (HEC-RAS) modeling (Kleinschmidt 2019) were used to analyze the effects of dam removal on the amount of optimal habitat available for adult and YOY Shoal Bass in the study area. Existing and post-removal water depths and velocities under base flow conditions (minimum flow of 675 cubic feet per second (cfs) out of West Point) were output from the HEC-RAS model and analyzed using GIS to determine the total area meeting the optimal criteria for each scenario.

Based on this analysis, the amount of habitat with optimal depth and velocity conditions for adult Shoal Bass are predicted to increase after dam removal. The amount of habitat with optimal depth conditions for YOY is predicted to increase, although amount of habitat with optimal velocity conditions for YOY is predicted to decrease after dam removal (**FIGURE 2-1**). However, the amount of ideal habitat to be gained from dam removal exceeds the amount lost, suggesting Shoal Bass could benefit from the habitat changes caused by dam removal, in addition to the benefits afforded by increased habitat connectivity.

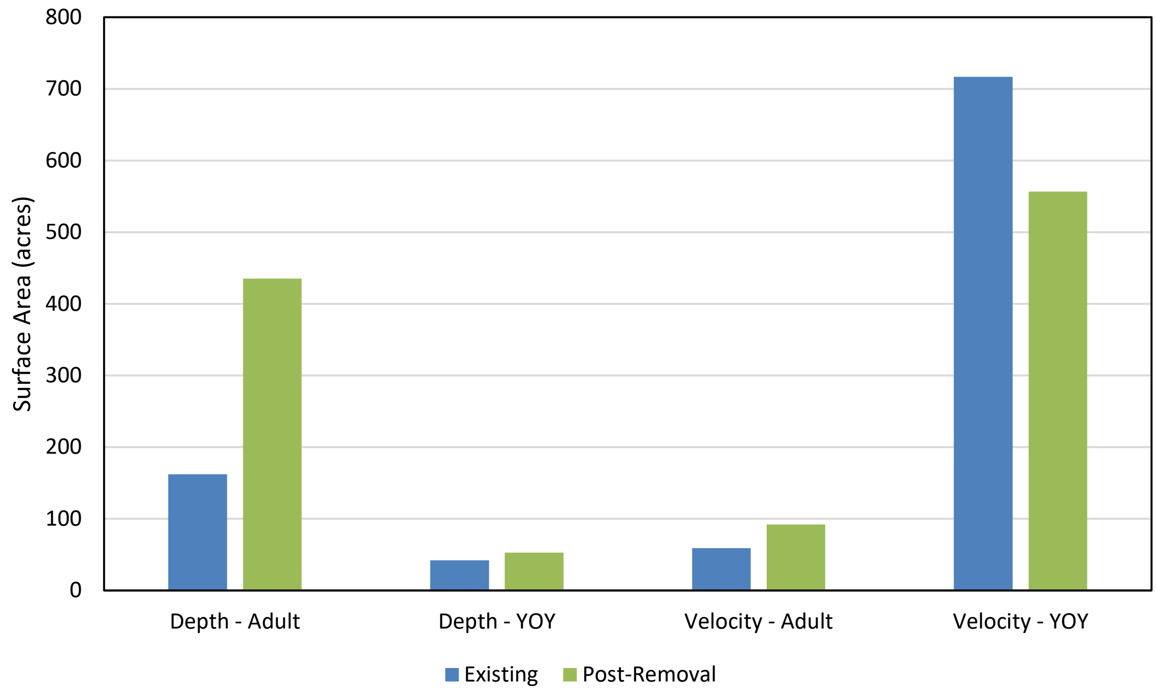


FIGURE 2-1 EXISTING AND POST-REMOVAL AMOUNT OF OPTIMAL HABITAT FOR SHOAL BASS

3.0 CONCLUSIONS

Based on the results of this literature review and analysis of changes to physical habitat predicted by the hydraulic model, the following conclusions are evident:

- Adult Shoal Bass prefer lotic (flowing water) environments with rocky bottoms and moderate to swift currents, and do not prefer impoundments;
- Removal of the Projects' dams will restore aquatic habitats to a free-flowing condition, provide greater connectivity among habitat types, and increase genetic diversity of Shoal Bass and other riverine species inhabiting the reach; and
- Removal of the Projects' dams will result in a net increase in suitable habitat for Shoal Bass.

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APPENDIX A

GEORGIA POWER BRIEF:
EXPECTED OUTCOMES OF BARRIER REMOVAL ON SHOAL BASS MICROPTERUS CATARACTAE WITHIN THEIR NATIVE RANGE

Expected Outcomes of Barrier Removal on Shoal Bass *Micropterus cataractae* Within their Native Range

The removal of barriers to migration is one of the actions that resource managers have commonly focused on to further Shoal Bass *Micropterus cataractae* conservation. This briefing is intended to summarize existing research and literature to approximate expected outcomes from removals of dams, culverts, and other barriers to fish passage on Shoal Bass populations. While research needs remain regarding the natural history and habitat needs of the species, recent research helps shine light on the potential for future barrier removal projects.

Background

The Shoal Bass is a riverine, freshwater fish species endemic to the Apalachicola-Chattahoochee-Flint (ACF) river basin in Georgia, Alabama, and Florida (Williams and Burgess 1999). This fish is typically found in mainstem rivers and their larger tributaries (Ramsey 1975). True to its name, the Shoal Bass typically prefers swift, rocky habitat when available (Williams and Burgess 1999; Wheeler and Allen 2003; Stormer and Maceina 2009; Gocklowski et al. 2013; Sammons et al. 2015). Seasonal habitat use varies, with adult Shoal Bass often congregating in large shoal complexes to spawn in spring (Gocklowski et al. 2013; Bitz et al. 2015; Sammons 2015; Cottrell 2018), then dispersing to diverse habitats, including coastal plain river segments with little, if any, shoal habitat (Sammons 2015).

The Shoal Bass is a popular sportfish across its range (Taylor and Peterson 2014; Sammons et al. 2015), but threats from multiple factors include habitat fragmentation (Dakin et al. 2015; Sammons and Early 2015; Taylor et al. 2018a) and degradation (e.g. sediment, Walser and Bart 1999; temperature, Porta 2011; and flow, Stormer and Maceina 2009) as well as hybridization with other *Micropterus* species (Dakin et al. 2015; Alvarez et al. 2015; Taylor et al. 2018b). Because of these factors, the Shoal Bass is considered a species of conservation concern by multiple groups. The State of Georgia considers the Shoal Bass both a High Priority Species and a Species of Concern (Georgia Department of Natural Resources 2015). Stormer and Maceina (2008) found declining abundance in three of four known populations in Alabama from 2005-2007. The state of Alabama now ranks Shoal Bass as a Level 1 Species of Greatest Conservation Need, with only one known population remaining (Alabama Department of Conservation and Natural Resources 2015). However, recent sampling efforts suggest that this population may now also be extirpated in Uchee Creek (AL) (S. Sammons, personal communication). The International Union for Conservation of Nature Red List considers them “Near Threatened”, while the Endangered Species Committee of the American Fisheries Society considers it a species of special concern (Jelks et al. 2008). However, the shoal bass currently is not listed or petitioned for federal protection under the Endangered Species Act (ESA). Projects which enhance connectivity such as dam removals could help prevent a future ESA listing.

Prior to European settlement, the ACF basin was a free-flowing, interconnected system. The presence of Shoal Bass from mountainous reaches of the Upper Chattahoochee through the Piedmont, across the fall line, and into the Coastal Plain suggests a high degree of connectivity, though there do appear to be some natural genetic differences among populations across the range (Taylor et al. 2018c). Shoal Bass spawning migrations as far as 197 km (122 mi) have been recorded in the unregulated section of the Flint River (Sammons 2015), though these can be much shorter in sections of the basin with reduced effective distance due to dams or reservoirs (Stormer and Maceina 2009; Sammons and Early 2015; Cottrell 2018). A species distribution modeling exercise suggested that the distance of available free-flowing, interconnected stream length (comprised of third-order streams and larger) was important in explaining the current distribution of Shoal Bass, and that interconnected reaches (i.e. cumulative miles of all connected tributaries) of less than approximately 100 km rapidly lost their suitability for Shoal Bass presence (Taylor et al. 2018a). Fragmented tributary streams showed the greatest loss in Shoal Bass suitability, likely because longer free-flowing fragments connected to mainstem rivers confer access to critical habitats that are unevenly distributed within stream systems (e.g., spawning shoals or drought refugia; Taylor et al. 2018a). In stream segments with little effective reach, inbreeding depression and random genetic drift can result (Dakin et al. 2015; Taylor et al. 2018c), perhaps lowering fitness of remaining individuals. Where barriers to fish passage block smaller tributary populations from access to mainstem refugia, increased variability in year class strength (Taylor 2017) and high mortality during drought (Stormer and Maceina 2009) have also been documented. It is important to note, however, that Taylor et al. (2018a) did not differentiate between stream sizes in their analysis, and it is likely that connectivity to large, mainstem rivers with higher discharge could reduce the effective reach threshold at which shoal bass populations would reach sustainability/stability.

Shoal bass are a fluvial specialist, requiring swift water and rocky outcrops throughout their life cycles (Williams and Burgess 2019; Taylor and Peterson 2013). Shoal Bass do not appear to prefer to utilize lentic habitats (e.g. reservoirs and backwaters). Sammons and Early (2015) found that fish from a large tributary of the Chattahoochee River entered the mainstem but remained immediately below a dam where flow was present rather than entering a downstream reservoir. When Shoal Bass are released into reservoirs (e.g. following fishing tournaments), they typically return to lotic environments upstream of the reservoir (Taylor and Peterson 2015), and Ingram et al. (2013) found that survival of translocated shoal bass was 92% after 90 days, with most fish returning upstream to flowing portions of the headwaters river. Shoal Bass populations exist within some small impoundments on the Middle Chattahoochee River, though each of these systems typically receives some flow due to their high inflow to storage ratios (J. Slaughter, personal communication) in comparison with larger impoundments. In contrast, populations of Shoal Bass are abundant and concentrated during spawning in the unregulated Upper Flint River (Sammons and Goclowski 2012) and populations in unregulated reaches above Lake Lanier on the Chattahoochee and Chestatee Rivers appear stable (Taylor 2017). In the Upper Flint and Upper Chattahoochee Rivers, professional guides offer Shoal Bass trips, supporting the presence of healthy fisheries.

Discussion

Removal of barriers should generally benefit shoal bass populations for multiple reasons. Providing fish passage allows the effective reach available to a population to increase, which can open up access to quality habitat and resolve genetic diversity concerns across currently isolated populations. Therefore, the removal of barriers that open up the highest amount of quality habitat should be prioritized. In areas where non-native congener species (e.g. Alabama Bass *Micropterus henshalli*) exist below a barrier but not above it, however, managers should consider the potential impacts of hybridization and/or interspecific competition on shoal bass as a factor. Removal of barriers can also make populations more resilient in the face of environmental stressors by offering refugia during periods of drought or due to habitat degradation in a localized area as a result of land use impacts, particularly if access to mainstem rivers that are not as susceptible to critical reductions in flow is made available. This may include the restoration of impounded reaches to more suitable, flowing habitat that shoal bass are more likely to utilize.

It is critical that barrier removal projects do not impede passage of fish due to excessive velocities at newly-established points of connectivity. While no published literature exists on the critical swim velocities of Shoal Bass, several studies have looked at similar criteria for Smallmouth Bass *Micropterus dolomieu*. Published U_{crit} values for various sizes of Smallmouth Bass range from 63 to 117 cm/s (Bunt et al. 1999; Cooke and Bunt 2001; Peake 2004). Peake (2004) also studied the ability of Smallmouth Bass to pass through culvert-style raceways and found that a high proportion of individuals (82-95%) were able to make complete ascents at velocities ranging from 40-120 cm/s. Smallmouth Bass are known to use riverine habitats throughout their range, and therefore should stand as a suitable, conservative proxy for Shoal Bass critical swim velocities.

Restoration of impounded reaches can also increase access to historic habitat. While removal of larger dams that create these impoundments is not always a feasible option, where possible, it could potentially increase the biological carrying capacity of a basin. If the impoundment covers historic spawning habitat, benefits can be two-fold in that spawning shoals are restored with appropriate flows while access is then provided to isolated, adjacent populations downstream of a dam. For instance, removal of a low-head dam on the Milwaukee River resulted in increased abundance of native smallmouth bass and decreased abundance of invasive common carp, not only within the footprint of the former reservoir, but also in adjacent study reaches (Kanehl et al. 1997). Even in cases where population equilibrium does not increase, population stability over multiple generations is likely to increase.

Barrier removal projects should always consider the biological needs of the species in concern and be based in sound science. If removals can ameliorate known threats to Shoal Bass populations (e.g. isolation, impoundment, habitat degradation, genetic isolation or hydridization) without creating a larger problem due to one of these threats, these projects should be pursued in a cost-effective approach that prioritizes species recovery both across the range and within priority sub-basins.

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Summary of the Documentation of Consultation
Potential Effects of Dam Removal on Shoal Bass

In response to the March 11, 2020[1] Federal Energy Regulatory Commission (FERC) letter, Georgia Power Company (Georgia Power) has prepared the following summary of consultation between Georgia Power and the stakeholders. The purpose of this consultation document is to provide an overview of all consultation to date on the Potential Effects of Dam Removal on Shoal Basse (Shoal Bass Study). The results of the Shoal Bass Study and other decommissioning studies will be presented and discussed in the October 5, 2020 Public Meeting, with an additional opportunity for stakeholders to comment in writing on the draft study reports on or before October 24, 2020.

Stakeholder comments on the draft study reports will be compiled for the final study reports which will be filed with FERC concurrent with the filing of the Langdale and Riverview Projects Dam Decommissioning Plan.

The following describes the overall consultation timeline leading to development and implementation of this Shoal Bass Study.

Georgia Power conducted pre-filing consultation beginning in 2018. This consultation was filed with the license surrender application in December 2018[2] (Appendix B to the surrender applications). At that time, no agency requested any studies; discussions included the agencies' and other stakeholders' specific interests for the Langdale and Riverview decommissioning and the development of study to assess the potential effect of dam removal on shoal bass.

After consultation, Georgia Power filed the Draft Study Plan with FERC on May 24, 2019[3]. Concurrent with filing the Draft Study Plan, Georgia Power requested that stakeholders provide written comment within 30 days, or by Monday, June 24, 2019, on the Draft Study Plan. Georgia Power received comments from FERC and from Chattahoochee Riverkeeper and responded to

[1] Document Accession #: 20200311-3001 (Langdale); Document Accession #20181218-5452 (Riverview)
[2] Document Accession #20181218-5451
[3] Document Accession #20190525-5216 (Langdale); Document Accession #20190524-5217 (Riverview)

them in the Final Study Plan, which was filed in the FERC docket July 24, 2019. No agency has requested additional studies or provided comments beyond what is reflected in the consultation document.

On February 20, 2020, Georgia Power filed a Progress Report with FERC on the decommissioning studies. Georgia Power continued to consult on the studies while the studies were ongoing, as described in the Final Study Plan. When the Hydrologic and Hydraulic (H&H) modeling was complete along with the Shoal Bass Study, Georgia Power continued consulting with state and federal resource agencies, local governments and other stakeholders on the preliminary model results and discussed how these results relate to shoal bass. At this time, all studies are complete and Georgia Power is developing the Dam Decommissioning Plan for the Langdale and Riverview Projects.

In the final study reports, Georgia Power will insert a table showing the comments received on the draft study reports and how those comments were addressed. Final study reports will be filed with the Dam Decommissioning Plan.

Brant Duncan, LaGrange, GA.
These dams are a historical landmark for this community. Further the two dams in question (Docket P-2341 & P-2350) isolate a very complex and thriving eco system due to being protected waters. Many of the marine life would be adversely effected by the removal of these dams. It would allow the larger striped bass held out by the dams to release into these upper portions. Years of stocking efforts above and below have greatly increased their population beyond natural reproduction rates and would decimate a thriving shoal bass habitat. The shoal bass are protected in Alabama and should be in Georgia. Only natural to several stretches of the rivers in the Southeast. The rapids and high oxygen levels from the Langdale dam provide a healthy environment. The removal would release centuries of sediment into the area destroying the eco system. Beyond this with the fluctuation of water levels due to generating it would make these shoals inaccessible for recreation as well. Perhaps a portage or comprise can be made with a natural fish ladder in the area rather than total removal. I hope that consideration is made for the general public that lives and enjoys this stretch of river and that studies are done extensively on the negative effects of this removal. Since the removal of such dams in Columbus, Ga. the Shoal bass have pushed further down stream and it has become a Striped Bass fishery now. It is a prime example of what would happen here as well.

Tim Retzlaff, Opelika, AL.
I live in the area and kayak this section of the river on a regular basis. The dams create reservoirs that make this possible. Even with the dams there are many places where the water is barely deep enough for even a shallow draft kayak to navigate. Removal of the dams will lower the water level. The sections that are shallow now will be dry. The only time this section of the river will be navigable will be when the West Point Dam is generating.

James Sorrells, Valley, AL.
The dams need to stay. So many draw happiness in the fishing and boating that they provide. If the dams are removed, the fishing that everyone knows and enjoys on this stretch of the river will cease to exist. The abundance of aquatic life will no longer be able to thrive as it does now. These dams provide fishing opportunities that are second to none in this area with many species of fish to fish for. The shoal bass alone are worth leaving them in place. Many men, women and children enjoy the fishing and scenery offered by the dams that will be lost forever if they are removed. I ask that things be left as they are for the sake of the aquatic life that depend on the dams for survival and habitat and for the ones that love the river and dams as they are. Thank you for your time.

Larry Bryant, Carrollton, GA.
This is in response to the Georgia Power proposal for Langdale and Riverview, Crowhop dam decommissioning.

My first thoughts on removing the Langdale and Riverview, Crow Hop dams, without thinking it through, were to go ahead and remove them.
I am an avid shoal (shoalie) bass fisherman among many others, and there’s no doubt in our minds that we would prefer what is best for the river and the survival of this scarce population of shoal bass.
I understand the reasoning in this plan for the dams to be decommissioned and taken down to have the river closer to its original state, but I’m not so sure that is possible, or at least, not anytime soon.

Generations of people have seen a century of the Earth reclaiming itself in this stretch of the river as the dams were built over a century ago, and now, this stretch of river is world-class fishing water.
The largemouth populations are impressive, but the shoal bass’ impressive but limited population also teeters in this fragile balance of important gamefish.
It will take a very long time for the largemouth and shoal bass to adjust to the changes and the entire area will be in ecological shock because it will enable the stripers to move up and decimate an old, ancient population of shoal bass up to Westpoint Dam.
Ultimately, we all know that West Point filters out of the damage done from metro Atlanta, flowing out of West Point Dam as a fresh, re-conditioned river.

Perhaps an alternate plan could be to delay the removal of the dams in order to fit, or redesign them in a certain way that would benefit the wider range of thriving fish populations...especially the indigenous shoal bass species.
It’s a chance for us to develop a more viable compromise...maybe only removing one dam and creating tail races to increase shoal bass populations...maybe an incremental plan would be a better idea.
The last thing we want to do is to make a hasty decision resulting in destroying this ancient population of shoalies. One thing for sure, the more input, the better.
No one organization is smarter than all of us.

Mitchell smallwood, Lanett, AL.
Hello, I am a young 25 year old that has been blessed enough to grow up on the Chattahoochee River stretch from West Point Dam to Blanton Creek. For years now I have heard rumor of the dams being removed and I always thought "no way anyone would want these dams gone." Myself along with all the locals are now faced with the hard truth that it's in the works.

I am an avid fisherman and have always been amazed at the quality of all aquatic life that thrives in our river. It is unlike any other stretch of the Chattahoochee river. I have personally caught and released countless largemouth bass over 5 pounds. In recent years spotted bass have become more abundant and seem to be thriving as good or better than the largemouth. It's quite rare to find a thriving population of both.

These dams create an oxygen rich Reservoir capable of holding trophy sized bass. On February 8th, 2015 my brother in law, Mitch White of lanett Alabama caught a largemouth bass weighing in at 14.2 pounds. It was such a remarkable specimen that auburn university took fin samples for study. While the middle Chattahoochee is home to home to impressive largemouth and spotted bass, the shoal bass are the icing on the cake.

Shoal bass are native only to a couple of rivers in the U.S. What I find most interesting is that from westpoint dam to langdale there are no shoal bass that I've ever seen or heard of. However, from langdale to crowhop the shoal bass thrive to the extent of being able to target that specific species. Just like all of the middle Chattahoochee you can find record sized shoal bass as well. The only other place we find shoal bass are just below Crowhop dam. I believe that the dams are the only reason shoal bass are able to survive in this section of river. The dams act as a huge areators providing enough oxygen rich water to host she shoal bass and enough forage to grow record sized fish. Without the dams the shoal bass will slowly decline and eventually we won't see them in our section of the river. The state has many rules and regulations reguarding shoal bass. These rules are set to protect the population. I feel that leaving the dams alone will save the population.

I don't know how much pull a young fisherman such as myself might have on stopping the dam removal. I do know that I truly love and respect the middle Chattahoochee River. It has become a big part of my life as well as thousands of us locals that love to enjoy it's beauty. Removing the dams will drop the water to a level unsustainable for boats to recreate. Please consider this as well as all comments like it. We love this place and want it preserved. Thank you for your time and God bless.

Anthony Caldwell, Valley, AL.
My name is Anthony Caldwell and I live in Valley, Alabama. The purpose for this writing to put into words just how devastating removal of Langdale and Riverview Dams (P-2350, P-2341) would be to my community. The following paragraphs are meant to illustrate the connection felt between the community and the structures. A connection that includes, but is not limited to fishing.

Let me start off by saying I am an avid fisherman. There is nowhere I'd rather be in the whole world than below Langdale Dam chasing Shoal Bass on a cool Spring morning. The beauty of the dam is unmatched. The thick fog and loud roar that the water creates as it crashes below is captivating to say the least. That captivation has been felt by my family since the dam's original construction in 1908. Whether they were working in the factories they powered, or fishing their tailraces, my family has always relied on these dams in some way. My family is just one of many.

The fish species that thrive as a result of the dams are numerous. I have fished rivers all over the state of Georgia and have never found a location comparable to the section of the Chattahoochee from the West Point Dam to the head waters of Lake Harding. The abundance of trophy class fish contained within this stretch rivals any in the southeast in my opinion. I can stand in one place and point to the spot I caught a 9-pound Largemouth Bass, and a 22" Shoal Bass within 10 feet of each other. That doesn't happen anywhere else.

These dams represent much more than just a backwater impoundment or a cascading whitewater shoot, they represent a way of life. Thousands of families in this area were fed, clothed, and housed by the factories that these dams supplied electricity to. The factories supplied Chambers and Troup Counties with jobs for decades and were the center of the communities. Everyone's Dad worked there, everyone's Grandfather used to, and everyone was hopeful that one day they would too.

Those factories are gone now. Reduced to piles of rat-infested rubble and red mud lots. Within weeks in some cases they disappeared, never to be seen again. The textile industry moved on and left us in its dust. All we have left to remind us of those prideful and prosperous days are the dams that powered them. We enjoy our heritage by marveling at the power of our river and the beauty of the structures that control it.

Removal of the Langdale and Riverview Dams will change the communities around it forever. No longer will we introduce visitors to our river by a trip to the overhead dams they've heard so much about. We won't have the opportunity to tell stories about just how those dams were built, or point out holes drilled into rocks for anchor bolts over 100 years ago. The craftsmanship of a time long forgotten will be lost forever. Not a trace of it remaining.

All of these historical and cultural artifacts seem to be expendable to Georgia Power and its investors. Yet, I cannot remove a rock shaped like an arrowhead from the river without fear of prosecution. Like beauty, I guess “protection” is a word which is defined by the eye of the beholder. Some things are just beyond my understanding.

Thank you,

Anthony G. Caldwell

Kathy Maynard, Lanett, AL.
I have property located on the Chattahoochee River in Valley, AL. Our land is directly across from the island that has Crow Hop dam at the north end and the Riverview Mill dam at the southern end on the Alabama side. After viewing the proposal to destroy both of these dams, I have to protect my property and my family's heritage. This land has been in my family for 5 generations now, and taking these dams out will make our property almost worthless. We have enjoyed the river frontage, and the fishing from our land, and if this is done, we will be left without water access from our property. We disagree with what Georgia Power is saying about the advantages to wildlife, and will do everything we can to protect our property and the life my family has enjoyed.
Also, by looking at the proposed access to the dam, it looks like they are either planning to have equipment either on our land or directly beside it, and we cannot have this happen! Losing the life we have lived on this river is unacceptable. I have called the manager of the county listed in Georgia to discuss this and was told by a lady that answered the phone that he would not speak to me since he did not have any real information on the proposal.
I look forward to hearing from you as soon as possible.

Kathy Maynard

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
WILDLIFE RESOURCES DIVISION

MARK WILLIAMS
COMMISSIONER

RUSTY GARRISON
DIRECTOR

February 27, 2019

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

RE: Comments on the Notice of Application for Surrender of License, Soliciting Comments, Motions to Intervene and Protests, Langdale Project, FERC # 2341 and Riverview Project FERC # 2350

Dear Secretary Bose:

The Georgia Department of Natural Resources, Wildlife Resources Division (WRD) has reviewed Notice of Application for Surrender of License, Soliciting Comments, Motions to Intervene and Protests, Langdale Project, FERC # 2341 and Riverview Project FERC # 2350 filed by the Southern Company, on behalf of Georgia Power. Georgia Power proposes to decommission and remove Langdale Dam (RM 192) and Riverview Dam (RM 190.6), as well as its diversion dam, Crow Hop (RM 191). These small, run-of-river, hydroelectric projects (≤ 5 MW) are located on the Chattahoochee River between Bartlett's Ferry Dam (FERC No. 485) and West Point Dam (FERC No. US Army Corp of Engineers) and have not generated power since 2009.

Georgia Power has proposed a series of studies that include accurately defining impounded surface area and volume of these relatively shallow (<10ft mean depth) impoundments using LiDAR, conducting mussel surveys in the immediate vicinity of the dam removal areas, and collecting water quality data upstream of the dams prior to demolition for post-removal comparison. Georgia Power also proposes to develop hydrologic and hydraulic models of the Chattahoochee River from the I-85 bridge crossing to Bartlett's Ferry to inform the process and stakeholders of the range of possible river and flow characteristics that may occur once the dams are removed. A sediment study is not currently proposed as the removal of Eagle-Phenix and City Mills dam on the Chattahoochee River demonstrated that "significant amounts of sediment do not accumulate at small run-of river projects". However, bathymetry collected to develop the hydrologic model will be used to determine sediment volume behind each dam.

FISHERIES MANAGEMENT SECTION
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Both project applications address shoal bass under Rare, Threatened, and Endangered Species headings. In Georgia, shoal bass are recognized as a high priority, rare species (S2) in the WRD State Wildlife Action Plan due to several factors including limited range, habitat connectivity and others. To clarify, this game fish does not hold conservation status under the Federal Endangered Species Act or the Georgia Endangered Wildlife Act.

Georgia Power has been 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 remain engaged 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.

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,

Rusty Garrison
Director

cc. Jon Ambrose
Matt Thomas

Travis Carter, Valley, AL.
Langdale and Riverview Dams

As a local canoer/kayaker/fisherman who's been going down this stretch of river from West Point Lake to Lake Harding for over 30 years, I'd like to share some thoughts. This stretch is approximately 11 miles in length and is mostly shallow with a rocky bottom, and it's beautiful. For the most part the flow in this stretch of river is determined by power generation needs and there's two schedules, regular power generation (high water) and minimum power generation (low water). When they are running minimum power generation (typically mornings and weekends) there's a fair amount of class 1 shoals throughout this stretch making it a good canoe/kayak float trip or fishing trip, this is when the majority of folks get out on the river. During high water most of the shoals are covered up and you hardly see any canoes or kayaks.

There are three dams on this stretch, the Langdale Dam (approximately 9 miles below West Point Lake) which backs up water almost two miles, the Riverview Dam (a little over 10 miles below the lake) which backs water up almost a half a mile and the third is a small dam at the end of the headrace at the Riverview Power House (approximately eleven miles below the lake).

Anyone going over these dams in a canoe or kayak during high water stands a good chance of not surviving. During high water the dams create a hydraulic backwash below that can hold you there against the dam, tossing and tumbling you which can be hard to escape. There are buoy lines across the river five to six hundred feet up river from these dams that state Georgia law prohibiting boats beyond these lines. However, in all my years going down the river I've never seen anyone in a canoe/kayak stop at this line. The reason being, most folks going down the river are familiar with these dams, the generating schedules and most importantly, they know how to safely portage over them.

In the last six years we've had a couple of changes close by that are bringing a large number of out of towners to the area. One is Point University which has a campus in West Point Georgia, just two blocks from the river, the other is the Whitewater Course built in Columbus Georgia. The Whitewater Course draws thousands of folks to the area each year who enjoy water recreational activities. The Lands for Public Trust are also working on the Chattahoochee Blueway (a canoe/kayak course) from Lake West Point to Lake Harding.

I see a real danger for anyone that wants to enjoy the river that doesn't recognize the difference between high and low water levels and may not be aware of the dams. In fact, at the boat ramps in West Point and Shawmut (both above the dams) during high water levels the river looks like one would expect, no obvious signs of danger. Also, if you're on the river and they start generating it is real hard to notice the water level rising if you're several miles below the Lake. The water rises very slow, taking hours to reach its maximum generating height. Even when there's low water, anyone going over the dams would fall 10 feet or more into a shallow pool situated on solid granite rock, still very dangerous.

With regards to fishing, I know that there’s a lot of concern for the Shoal Bass between these two dams. However, it seems logical that removing these dams will almost certainly expose more shoals, create more areas of rapid moving water, the natural habitat of the Shoal Bass.

In conclusion, I believe removing the dams and restoring this stretch of river to its original state would have multiple positive effects. I believe the river would be safer and more enjoyable and likely attract more people to the area to enjoy its natural beauty. I also believe in the long run, this would be beneficial to fishing.

Travis Carter

chris funk, smiths, AL.
I have been in love with the Chattahoochee river since moving to the area in 1986. My father and I enjoyed fishing these waters together till cancer took him from me and I have raised my son with the same opportunities he gave me. my wife, son and I regularly paddle our kayaks or run our powerboat on the river either fishing, photographing or helping out with the local swim teams or outdoor shops as a safety boat. I raised up fishing the city mill pond and fell in love with the beautiful brown bass we all know locally as the "shoalie" and while we readily eat spotted bass or an occasional largemouth, from day one shoal bass were admired, thanked for the opportunity of the catch and released to live another day. They are special without a doubt. When the whitewater project was brought to us under the guise of enhancing the shoal bass habitat, I had high hopes, but was a bit suspicious. There was nothing wrong with the river, or its healthy shoal bass population but people who supposedly knew better had a plan. now we have a river that is only accessible if you are a white water paddler and almost NO shoal bass.... so much for habitat enhancement!!! These dams that are proposed to be removed are no different than the thousands of fish habitat enhancers that are sunk off of the Alabama coast or in our freshwater lakes every year. they are an integral part in our fishing and enjoyment of the river giving places for the fish to congregate and lay eggs in spring that will not be washed away by the current. ask anyone that fishes these places, the best spots to find healthy populations of shoal bass are directly in front of or behind the dams! generations of shoalies have grown up and adapted to these dams and while yes, they are not "natural" in a sense they are all we, and they have ever known and they are a great asset for our river just like they are. please don't let flawed science, or the greed for money take away these dams. we already lost the history and wonderful fishing areas in downtown Columbus, please don't take these away from us. part of the wonder of these areas is the difficulty in paddling and portaging to get to them. this will keep it wild for anyone committed enough to work hard enough to get there. those that do will catch fish, see eagles, otters, deer and turkeys and have an experience to last a lifetime. if the dams are gone it will just be another river, ruined by an onslaught of tourists, rafts and tubers that don't care for, or appreciate the gift they are floating through. please leave the dams alone for the shoal bass, my family, my friends and our future! Chris Funk

Kendall J Andrews, Valley, AL.
This comment is in response to Georgia Power’s filings under FERC docket number P-2350-025 & P-2341-033. For this comment, “dams” shall refer to the Langdale, Riverview, and Crowhop dams. I would like to note that at this time the hydrologic survey contracted by Georgia Power has not been completed and released. Without the information from the survey, comments from every submitter should be considered opinion based.
My name is Kendall Andrews and I am a resident of Valley, AL. I own river front property located upstream from the Riverview dam and powerhouse. I do not oppose Georgia Power’s proposal not to seek re-licensure for the Langdale, Riverview, and Crow Hop dams. I do, however, strongly oppose the suggested removal of these dams.
A driving force behind the decision to propose removal has been enhancing the shoal bass populations that are found in this stretch of river. There are no published studies of the shoal bass population located in the impoundment between Langdale and Crow Hop dams, which is the primary location of shoal bass in the Chattahoochee River below West Point Lake and above Lake Harding. Without a baseline for comparison, I question the accuracy of those who claim shoal bass are on the decline here. This area has been noted for its world class shoal bass fishing, both in terms of quality and quantity. Prior to the removal of the Eagle Phoenix and City Mills dams in Columbus, GA, a notable shoal bass population existed below the dams. Proponents of removing those dams claimed it would restore the fishery and allow the populations to thrive. What happened was exactly the opposite; shoal bass are practically non-existent in that portion of the Chattahoochee now. Without tangible scientific research backing the claim, I do not believe the proposal to remove the dams should be approved on the basis of improving an already thriving population of shoal bass.
A major concern that I have is that if the dams are removed, access to the river will be lost. West Point dam controls the flow rate in this section of river. During periods of no generation, the public boat ramps that are available are very shallow. Navigability of the river will also be affected as the river in its current state is difficult in areas with abundant shoals. This portion of the river is highly utilized by locals and non-locals alike. All will suffer should these concerns come to fruition.
As a river front property owner, I stand to lose a great deal with the removal of the dams. The location of my property is in an area that will possibly be the most negatively affected. I am located upstream from Riverview dam and downstream from the Crow Hop diversion dam. While it is still unknown the exact changes that will occur without the completed hydrologic survey, it is certain that the depth of water adjacent to my property will be lower. I stand a high risk of not having any water at all. This would be detrimental to my property value. As an avid fisherman, I would also lose the recreation that the river affords me on a daily basis.
Georgia Power did not propose any sediment study in their submittals. These dams have been in place for nearly 100 years. I have personally seen the amount of sediment trapped behind each of them. Since the dams were here long before environmental agencies regulated what could be dumped or discharged into the river, it is very possible that the

sediment contains harmful contaminants. I believe every possible environmental study should be conducted prior to a decision being reached concerning removal of the dams.

Recent discussions about the future of the Langdale mill area have included repurposing it for economic development. While I would love nothing more than to see this area revitalized, I do not believe that locals that have enjoyed the river for generations should suffer. A solution that allows development while not reducing access and navigability should be the goal.

The high flow rates created by West Point dam are responsible for the dangerous environment of this section of river. While removing the dams may eliminate the risks they pose, it will potentially create others. More shoals will be exposed and more areas of super critical flow will be produced. Alternative solutions should be considered such as portages around the dams.

I would like to respectfully ask the Commission to re-open the comment period after the hydraulic survey has been completed. This will allow all stakeholders to have a better understanding of the magnitude of the effects removing these dams will have. Thank you for all consideration given to my comments.

Alan Simmons, Opelika, AL.

To whom it may concern: My name is AJ Simmons, and I am a private sector Fisheries Biologist that specializes in the management of trophy Largemouth bass. While providing management strategies on how to grow trophy bass is my job, my hobby is fishing for bass in public and private waters alike. While I have access to many private bodies of water that promise big bass, there is no place I would rather go to catch wild, giant bass than the Chattahoochee River. More specifically, the stretches of river below Langdale and Crowhop dam are the waters I frequent the most. These dams are located below West Point dam and above the headwaters of Bartlett’s Ferry (Lake Harding). This specific stretch of the Chattahoochee River is a highly diverse ecosystem that teems with life. It is arguably the most diverse portion of the river as there are thriving populations of Striped, Largemouth, Spotted, and native Shoal bass amongst many other species. Along this specific portion of the river several low head dams were created over 100 years ago as a method to generate power for local textile factories. These dams back the river up to create unique reservoir- like portions of river that enhances aquatic life. When the Corps of Engineers generate water from West Point dam, this naturally shallow river has adequate water for recreational fisherman to navigate the river from kayaks or boats. These low head dams are the only reason that anglers like me and many others have the opportunity to fish these incredible stretches of river. Without the dams backing up the river, navigating this portion of river would extremely arduous.

The proposed removal of these dams is not being taken very lightly by locals and tourists who already utilize this public recreational opportunity. The City of West Point Georgia, City of Valley, and the Chambers County Commission have both spent significant funds in the last 12 months to increase the already limited access to the parts of river in question. I personally invested in an aluminum boat with a special jet driven motor to access this shallow river. These new and revamped boat ramps are many peoples lifeline to the river. The removal of these dams will not only limit access to those that fish by boat, but will inhibit even the best kayak anglers. The river will be inundated with rocky, shallow water that will be grueling to navigate. Not only will it make the river less navigable, but the removal of these dams will likely eliminate the newly provided public access, ultimately wasting tax payer’s dollars.

One of the driving forces behind the removal of these dams is a possible economic boost the local communities may receive from newfound tourists. Those in favor of removing these dams are not accounting for the economic impact made by the anglers that already fish this river. These anglers directly impact the local economies as they purchase gas, food, fishing supplies and use local hotels when staying overnight. The removal of these dams would directly impact the amount of fishing and other non-paddling recreational activities on the river. The biggest issue that local stewards of the river, including myself, have with the removal of these dams is that the well-being of the fish and wildlife is not truly the driving force behind their removal. The removals of these dams favor the few people that plan to create white-water rafting courses where the dams currently exist. The true motive behind those in favor of

removing these dams is the profits they seek, not the wellbeing of the wildlife that will be affected.
There has been affirmation from the parties favoring the removal of the dams that it will afford anglers greater fishing opportunities while also benefitting the native fish and wildlife. These claims are backed with no scientific evidence. Water flow studies that project future water levels after dam removals have yet to be published. How can claims be made that the river will actually flourish after the removal of these dams if it is unknown just what the river will even look like? No baseline has ever been established as to how the fish populations were over 100 years ago before the dams were ever built. Locals know that these dams have not harmed the native species that call these waters home, and many believe that the dams provide fish increased dissolved oxygen content.
Disregarding opinion, it is fact that this stretch of river affords all anglers the opportunity to catch trophy size fish from public water. Year after year this stretch of river yields many 10 pound plus largemouth bass, 6 pound plus shoal bass and an innumerable amount of line peeling striped bass. The removal of these dams will eliminate access to an already thriving population of sport-fish. Additionally, those in favor of the dam removal state that a potentially improved paddling experience will be beneficial to the local economy. What might be gained in recreational paddling will be lost in angler access. Instead, local recreational paddling outfitters stand to be the only ones to benefit from such alterations to the river. The newly created whitewater rafting course in in Columbus Georgia has sparked the interest of local kayak guide companies who claim to have the rivers best interest at heart. Personally, I have seen first hand that these paddling outfitters contribute to the pollution of the river.
The biggest threat the removal of these dams pose is to the fish populations that are supposed to thrive from such action. The anglers that fish these stretches of river are the ones who clean up after others, and go out of their way to keep these fish thriving year after year. Removing these dams will likely eliminate public access to these already thriving stretches of river. It would be a travesty to take away a public resource that is rightfully theirs in favor of lining the pockets of a few. It is due to these reasons that I hope the removal of these dams does not come to fruition. Thank you for your time.

AJ Simmons

jody simms, Lanett, AL.
i think everything that can be said, has been said.Please reconsider the breaching of these dams,it will ruin a whole community way of life...and devastate the shoal bass population....thank you for your time

Donavan Carroll, Valley, AL.
Here is my comment on the De-commissioning of Riverview Dam. I am reading about the purpose of taking down the dam and one reason is to connect to Wolf Creek and making it into an amusement ride. Well isn't that targeting a specific age group. How many 65-85 year old people have you seen floating down the river? Yeah, me either. How many smaller kids do you see paddling down the rapids? Yeah, Me either. So you are proposing to take down A legacy of generations Of fishing, hunting, boating, Swimming, camping And etc. For the whole family. not just for the few in this proposal. This is an active river and it serves many different functions and activities and there is even less about the end result other than kyacks and shoal bass. Well shoal bass are already in all of these areas but yes the ones between Langdale and Riverview being probably the Largest in the world and need harvest protection, and not habitat expansion because under the recipicle water act, they can be harvested. If anything it should be designated as a no harvest zone for Trophey Shoal Bass. This is a unique habitat, a craddle for them and must be protected. The dams are the most protection they have due to the Riverine Habitat. To even consider busting these dams for the gain of money is a outrage, and nothing has been scientifically proven for it to be better for the environment. Riverine Habitat has been scientificaly proven to be the most productive far exceeding that if a river or lake and to try to say you will be reverting it back to natural water flow is propstrus considering they are Permanent Major dams within ten Miles in both directions so please stop using the term “Natural Flow” and say what its really about. The only people we are hearing from in favor of dam removal I have never once seen on this river. And I am on it 200 days a year on average.

You can go back in history of these dam removal projects Throughout the country in the past few decades and see how many have been environmental Disaster s Espically the ones involving industrial areas on the river, ours being the most potential starting at Industrial Drive in Atlanta to Riverview Mill. Your purposing to unleash over 100 years of this sediment into Lake Harding. I don't think that people that live on or use Lake Harding have taken into consideration that they do not have a shipping channel that is regularly dredged in other words all of this will be deposited into the lake. After looking At the sediment flow estimates for Columbus I did not see any Factors that the river channel just downstream is constantly dredged for the shipping channel. In other words Lake Harding won't have that luxury. Why has this not been addressed to the public.I just do not see any justification for a kyack run that will only be used by a limited group of people for a very limited portion of the year. The economics mentioned about revenue being generated for the area don't seem to be logical. You are still only talking about a limited group of people when we already have people coming from across the country to sample this part of the river, from duck hunters to people targeting the large Shoal Bass that are only in this part of the river. I can find multiple reasons of why this should not be done and I can't find any why it should be. This should have more public attention to what the facts of all previous dam removals and what the outcomes were so they are knowledgeable about what this dam removal outcome could possibly be.

Sincerely,
Donavan Carroll
7571 School Street
Valley, AL 36854

Donavan Carroll

7571 School Street

Valley, AL 36854

Paige, Valley, AL.
Federal Energy Regulatory Commission
888 First Street, NE
Room 1-A-Dockets Room
Washington, DC 20427

Reference: Project# P-2350
Riverview Mill Surrender Application and
Decommission the project

COMMENT

With all due respect to Georgia Power for the surrendering of Licence (Exhibit A), and the decommissioning of the project (Exhibit E) Due to simple fact that What very little information that was supplied to you was, in fact, just that very little information. I am hoping that when this goes under your Consideration for approval that you will hear the small amount of letters you received. If nothing else but to require that more information be provided. We know that we are small in numbers but for those of us that grew up on this river or discovered this part of the river have alot more information to share.
My name is Paige Thorn and I grew up in Riverview. When I got old enough to buy my first home to one day have a family, I stayed with Riverview. So I have seen things come and go around here. This has always been a thriving town, friendly people and full of small town charm. if you ask about the fishing here, well lets just say you would get very little cooperation. Our fishing on this part of the river is and always has been abundant. Recognition Is not something any one here wanted but now it feels more like, “A Fight for our lives”. Why I say fight for our lives is because that is what it is to me, and here are just a few things that I hope will make you take a closer look at what all could be destroyed. You know I am trying to find the words to put in front of you that really might grab your attention and all I keep coming up with is this. SImple, That's what this place is...Had a bad day-SIMPLY take it to the river. You always come back feeling refreshed or have a big story of a big fish you caught or the baby eagles coming down in front of you to eat Or you could discover a eagle nest, a Blue Heron Catching a fish, maybe the quiet stroll(float) down river when you can see deer. turkeys. Birds of all kinds of birds(some rare), an occasional alligator, muskrats, Minks, bobcats, hawks, shad running up the dams are just a few Things you will more than likely see. The dams are alluring to the animals here because they provide a great source of food. With generation Of West Point Riverview Dam becomes a source of aeration, A Bigger source of Food, to just name a few things our Dam provides. You see we already have here what people try to build or the Purpose of Why people Build bird sanctuaries, Or release fish that will later be for game fishing.

Now that's just a few things due to only having 600 words to make you understand that we know we have something special here that has adapted to the Environment that was created over a hundred years ago. And if you destroy the habitat then you displace the animal. When did that become a way of making anything better. Its the habitat that attracted all of these animals to start with. We have a Biird Sanctuary on the Georgia side a Wildlife Management area ,Forever Wild Land So someone already knows in fact that this area should be preserved just as it is. The draft for de-commissioning Plan should stay with the building of portages around the dams. They can have the connection for kyackers and also not disrupt the animal habitat that made this their home and are thriving due to the already perfect conditions surrounding them. Please help us save this area. We don't want it to be like Phenix City. It would be a wastewater overflow. Please don't take my life away by taking everything great this place already has and De-commissioning It.

James K Cantrell, Valley, AL.

I am the President of the Chattahoochee Foundation. Below is our Mission:

The Chattahoochee Foundation is a public, non-profit non-member Corporation managed by our Board of Trustee with offices at City Hall in Valley, Alabama. We stand ready to assist and participate in any way we can. From our Articles of Incorporation, Article 6:

The purpose of the Foundation shall be to:

(a) To promote for the benefit of the general public the preservation of natural resources primarily located in, but not limited to, the Chattahoochee River basin and abutting counties in the State of Alabama. The resources shall include land and water resources the plant and animal life thereon, and unique scenic, agricultural, natural and historic sites;

(b) To promote and provide for the scientific study and broad public education regarding natural resources, including water, soil, plant and animal life, and amenity resources.

(c) To use all property held or controlled by the Foundation and the net earnings thereof for the benefit of the general public and for charitable, educational, recreational, conservation, scientific or historical purposes.

I along with most all of the citizens of the communities bordering the Chattahoochee River are vitally interested in the river's future. Specifically the 23 Mile run of the river from the West Point Dam to Lake Harding is of great interest and concern with the changes being brought by Georgia Power's de-commissioning of The Langdale (AL) and Riverview Hydro plants.

What is the best long term use/future of this portion of the river in our area? There are and will be many proposals forthcoming. Our Chattahoochee Foundation will be one of the players and will be providing much input in this process. This will be an important and interesting process and we look forward to it.

Thank you,

James K (Jim) Cantrell

25 years of stewardship from the mountains to the sea est. 1994

ORIGINAL

March 4, 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: COMMENT regarding Georgia Power Company, Project Number P-2350-025 (Riverview hydroelectric dam & Crow Hop diversion dam), and Project Number P-2341-033 (Langdale hydroelectric dam)

Dear Secretary Bose,

Chattahoochee Riverkeeper appreciates the opportunity to file a **COMMENT** in response to the Federal Regulatory Energy Commission's (FERC) Notice of Application for Surrender of License, Soliciting Comments, Motions to Intervene, and Protests issued on January 24, 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.

CRK generally supports barrier free creeks, streams, and rivers. Removing barriers reduces liability, enhances connectivity for aquatic species, and provides safe recreational opportunities. Removal may improve recreational opportunities and make a long proposed water trail project more viable.

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.

Additionally, CRK recognizes that every barrier removal project is different and will result in significant change. CRK wishes to direct all involved parties to two resources. American Rivers produced two videos over a decade ago highlighting barrier removals in different parts of the United States. The videos document why the structures were removed, and the level of citizen and local government involvement. Additionally, there is significant testimony from individuals who did not initially support barrier removal. Upon removal and reflection these individuals realized their concerns and fears were not realized. You may find the videos online:

Taking a Second Look: Communities and Dam Removal (2010)
https://youtu.be/cCQiaT1KcPo

Restoring America's River: Preparing for the Future (2010)
https://vimeo.com/11111432

CRK does have two concerns. First, a robust and transparent study of flow and hydrodynamics must be completed and publically released to ensure enough flow will remain in the river for municipal water supply and wastewater assimilation. The proposed barrier removals will 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 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.

Second, a more detailed analysis of the amount and necessary management of legacy sediment may be necessary. 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.

CRK supports the request to surrender the license and decommission the projects prior to the end of their license terms. Furthermore, CRK supports the 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 for cultural and historic purposes if reasonable, feasible, and safe.

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

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

Expected Impacts of Barrier Removal on Shoal Bass *Micropterus cataractae* Within their Native Range

The Southeast Aquatic Resources Partnership's Southeast Aquatic Connectivity Program helps identify opportunities for barrier removals across the region. The removal of barriers to migration is one of the actions that resource managers have commonly focused on to further Shoal Bass *Micropterus cataractae* conservation. This briefing is intended to summarize existing research and literature to approximate expected impacts from removals of dams, culverts, and other barriers to fish passage on Shoal Bass population status. While research needs remain regarding the natural history and habitat needs of the species, recent research helps shine light on the potential for future barrier removal projects.

Background

The Shoal Bass is a riverine, freshwater fish species endemic to the Apalachicola-Chattahoochee-Flint (ACF) river basin in Georgia, Alabama, and Florida (Williams and Burgess 1999). This fish is typically found in mainstem rivers and their larger tributaries (Ramsey 1975). True to its name, the Shoal Bass typically prefers swift, rocky habitat when available (Williams and Burgess 1999; Wheeler and Allen 2003; Stormer and Maceina 2009; Gocklowski et al. 2013; Sammons et al. 2015). Seasonal habitat use varies, with adult Shoal Bass often congregating in large shoal complexes to spawn in spring (Gocklowski et al. 2013; Bitz et al. 2015; Sammons 2015; Cottrell 2018), then dispersing to diverse habitats, including coastal plain river segments with little, if any, shoal habitat (Sammons 2015).

While the Shoal Bass is a popular sportfish species across its range (Taylor and Peterson 2014; Sammons et al. 2015), threats from multiple factors include habitat fragmentation (Dakin et al. 2015; Sammons and Early 2015; Taylor et al. 2018a) and degradation (e.g. sediment, Walser and Bart 1999; temperature, Porta 2011; and flow, Stormer and Maceina 2009) as well as hybridization with other *Micropterus* species (Dakin et al. 2015; Alvarez et al. 2015; Taylor et al. 2018b). Because of these factors, the Shoal Bass is considered a species of conservation concern by multiple groups. The State of Georgia considers the Shoal Bass both a High Priority Species and a Species of Concern (Georgia Department of Natural Resources 2015). Stormer and Maceina (2008) found declining abundance in three of four known populations in Alabama from 2005-2007. The state of Alabama now ranks Shoal Bass as a Level 1 Species of Greatest Conservation Need, with only one known population remaining (Alabama Department of Conservation and Natural Resources 2015). However, recent sampling efforts suggest that this population may now also be extirpated (S. Sammons, personal communication). The State of Florida considers the Shoal Bass Rare and Biologically Vulnerable (Florida Fish and Wildlife Conservation Commission 2012). The International Union for Conservation of Nature Red List considers them "Near Threatened", while the Endangered Species Committee of the American Fisheries Society considers it a species of special concern (Jelks et al. 2008). However, the shoal bass currently is not listed or petitioned for federal protection under the Endangered Species Act.

Prior to European settlement, the ACF basin was a free-flowing, interconnected system. The presence of Shoal Bass from mountainous reaches of the Upper Chattahoochee through the Piedmont, across the fall line, and into the Coastal Plain suggests some degree of connectivity, though there do appear to be some natural genetic differences among populations across the range (Taylor et al. 2018c). Shoal Bass spawning migrations as far as 197 km have been recorded in the unregulated section of the Flint River (Sammons 2015), though these can be much shorter in sections of the basin with reduced effective distance due to dams or reservoirs (Stormer and Maceina 2009; Sammons and Early 2015; Cottrell 2018). A species distribution modeling exercise suggested that the distance of available free-flowing, interconnected stream length (comprised of third-order streams and larger) was important in explaining the current distribution of Shoal Bass, and that interconnected reaches of less than approximately 100 km rapidly lost their suitability for Shoal Bass presence (Taylor et al. 2018a). Fragmented tributary streams showed the greatest loss in Shoal Bass suitability, likely because longer free-flowing fragments connected to mainstem rivers confer access to critical habitats that are unevenly distributed within stream systems (e.g., spawning shoals or drought refugia; Taylor et al. 2018a). In stream segments with little effective reach, inbreeding depression and random genetic drift can result (Dakin et al. 2015; Taylor et al. 2018c), perhaps lowering fitness of remaining individuals. Where barriers to fish passage block smaller tributary populations from access to mainstem refugia, increased variability in year class strength (Taylor 2017) and high mortality during drought (Stormer and Maceina 2009) have also been documented.

Shoal Bass do not appear to prefer to utilize lentic habitats (e.g. reservoirs and backwaters). Sammons and Early (2015) found that fish from a large tributary of the Chattahoochee River entered the mainstem, but remained immediately below a dam where flow was present rather than entering a downstream reservoir. When Shoal Bass are released into reservoirs (e.g. following fishing tournaments), they typically return to lotic environments upstream of the reservoir (Taylor and Peterson 2015), and Ingram et al. (2013) found that survival of translocated shoal bass was 92% after 90 days, with most fish returning upstream to flowing portions of the headwaters river. Shoal Bass populations do exist/previously existed within some small impoundments on the Middle Chattahoochee River, though each of these systems typically receives some flow due to their high inflow to storage ratios (J. Slaughter, personal communication) in comparison with larger impoundments. In contrast, populations of Shoal Bass are so abundant and concentrated during spawning in the unregulated Upper Flint River that questions have actually been raised about potential angler overexploitation (Sammons and Goclowski 2012).

Discussion

Removal of barriers should generally benefit shoal bass populations for multiple reasons. Providing fish passage allows the effective reach available to a population to increase, which can open up access to quality habitat and resolve genetic diversity concerns across currently isolated populations. Therefore, the removal of barriers that open up the highest amount of quality habitat should be prioritized. In areas where non-native congener species (e.g. Alabama Bass *Micropterus henshalli*) exist below a barrier but not above it, however, managers should consider the potential impacts of hybridization and/or interspecific competition on shoal bass as a factor. Removal of barriers can also make populations more tolerant of environmental stressors by offering refugia during periods of drought or due to habitat degradation in a localized area as a result of land use impacts, particularly if access to mainstem rivers that are not as susceptible to critical reductions in flow is made available. This may include the restoration of impounded reaches to more suitable, flowing habitat that shoal bass are more likely to utilize.

It is critical that barrier removal projects do not impede passage of fish due to excessive velocities at newly-established points of connectivity. While no published literature exists on the critical swim velocities of Shoal Bass, several studies have looked at similar criteria for Smallmouth Bass *Micropterus dolomieu*. Published U_{crit} values for various sizes of Smallmouth Bass range from 63 to 117 cm/s (Bunt et al. 1999; Cooke and Bunt 2001; Peake 2004). Peake (2004) also studied the ability of Smallmouth Bass to pass through culvert-style raceways and found that a high proportion of individuals (82-95%) were able to make complete ascents at velocities ranging from 40-120 cm/s. Smallmouth Bass are known to use riverine habitats throughout their range, and therefore should stand as a suitable, conservative proxy for Shoal Bass critical swim velocities.

Restoration of impounded reaches can also increase access to historic habitat. While removal of larger dams that create these impoundments is not always a feasible option, where possible, it could potentially increase the biological carrying capacity of a basin. If the impoundment covers historic spawning habitat, benefits can be two-fold in that spawning shoals are restored with appropriate flows while access is then provided to isolated, adjacent populations downstream of a dam. Even in cases where population equilibrium does not increase, population stability over multiple generations is likely to increase.

Barrier removal projects should always consider the biological needs of the species in concern and be based in sound science. If removals can ameliorate known threats to Shoal Bass populations (e.g. isolation, impoundment, habitat degradation, genetic isolation or hydridization) without creating a larger problem due to one of these threats, these projects should be pursued in a cost-effective approach that prioritizes species recovery both across the range and within priority sub-basins.

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007 Agriculture Hall
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Follow me on ResearchGate [researchgate.net]
"Like" the Black Bass Conservation Committee's Facebook page [facebook.com]

On Mon, Jun 17, 2019 at 8:52 AM O'Rouke, Patrick Michael <PMOROUKE@southernco.com> wrote:

> Thanks!
>
> ---
>
> **From:** Taylor, Andrew <tandret@ostatemail.okstate.edu>
> **Sent:** Monday, June 17, 2019 9:30 AM
> **To:** O'Rouke, Patrick Michael <PMOROUKE@southernco.com>
> **Subject:** Re: Shoal Bass White Paper
>
> **EXTERNAL MAIL: Caution Opening Links or Files**
>
> ---
>
> Hi Patrick,
>
> Sounds great...I'll do my best to get this back to you by the end of the week.
>
> Thank you,
> Andrew
> **---------------------------------**
> **Andrew Taylor, Ph.D.**
> **Senior Research Specialist**
> Oklahoma State University
> OK Cooperative Fish and Wildlife Research Unit
> 007 Agriculture Hall
> Stillwater, OK 74078
> Email: Andrew.t.taylor@okstate.edu
> Website: www.andrewtaylor.fish [andrewtaylor.fish]
>
> *Follow me on ResearchGate [researchgate.net]*
> *"Like" the Black Bass Conservation Committee's Facebook page [facebook.com]*

On Thu, Jun 13, 2019 at 2:09 PM O'Rouke, Patrick Michael
<PMOROUKE@southernco.com> wrote:

> Andrew, here is the document I texted you about last month. Fortunately it's only a couple of pages of text. Since you're probably the most up-to-speed on the current state of shoal bass literature after having gone through academic hazing, I've got a specific request for you. Can you please take a look at the references and 1) make sure I'm not misstating anything in there as far as you're aware (particularly the part where I editorialize a bit on your presence/absence model), and 2) make sure I'm not missing any references that you think need to be in there to bolster the substance of the paper? I don't need a ton of editorial help (unless you've got the time and desire), mostly just a quick check to make sure nothing throws up any red flags right out of the gate.
>
> For context, the plan here is to send this to the core NBBI folks for peer review, and, if the SARP Steering Committee is comfortable with it, have Vance put this out as a NBBI document that generally supports barrier removal and gives people a quick overview of the existing science on the subject.
>
> Thanks a bunch in advance for your help. Hope everything is going well this summer as you transition to the new gig.
>
> Patrick

From: O"Rouke, Patrick Michael
To: Kelly Schaeffer
Subject: FW: Shoal Bass White Paper
Date: Tuesday, August 18, 2020 10:22:50 AM
Attachments: Expected Impacts of Barrier Removal on Shoal Bass Micropterus cataractae Within their Native Range_ATedits.docx

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From: Taylor, Andrew <tandret@ostatemail.okstate.edu>
Sent: Tuesday, June 18, 2019 11:54 AM
To: O'Rouke, Patrick Michael <PMOROUKE@southernco.com>
Subject: Re: Shoal Bass White Paper

EXTERNAL MAIL: Caution Opening Links or Files

Hi Patrick,

Here is what I came up with. I edited the section about the distribution models a good bit, mainly for accuracy as it relates to interpreting the modeling exercise and its results. I also added the citation for the published manuscript. Feel free to take or leave the rest.

I understand that there has been a great deal of pushback from local anglers on some of these planned dam removals. I think one thing to consider is that the shoal bass is just one example of a number of riverine species that are impacted negatively by habitat fragmentation. Many of the findings you highlight in your statement are grounded in classic metapopulation dynamics, the extinction vortex, and other fundamental concepts in population ecology and conservation biology. As an angler myself, I can understand the frustration in losing a local "honey hole" for fishing trips. What we can't lose sight of is the bigger picture of conserving the species across as much of its native range as possible.

Let me know if I can be of any further help.

Regards,
Andrew

Andrew Taylor, Ph.D.
Senior Research Specialist
Oklahoma State University

The Nature Conservancy
Protecting nature. Preserving life.

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100 Peachtree St
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Atlanta, GA 30303

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Nature.org/Georgia

June 21, 2019

ORIGINAL

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 nnder 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. **The Conservancy supports the surrender of the Langdale and Riverview hydropower licenses prior to the end of their license terms aud the eventual removal of these barriers, aloug with the Crow Hop diversion dam.** 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. **<u>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</u>:**

   a. Hydraulic & Hydrologic (H&H) Modeling

      i. The applicant should include a <u>visual rendering of the river post de-commissioning and structural removal, using the H&H results</u> 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.

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

   b. Water Quality (WQ) Study

      i. <u>This portion of the study must address the quantity, quality and composition of the sediment contained in the reservoir area above each structure.</u> 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."

         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. <u>The Conservancy supports the study and methodology proposed.</u> 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;

---

[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. <u>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</u>. 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.

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

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

---

[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
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 1A
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

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 Companyâ€™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 Companyâ€™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 Damâ€™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 municipalitiesâ€™ raw water supply withdrawal points and the East Alabama Water, Sewer and Fire Protection Districtâ€™s wastewater discharge. There are other wastewater dischargesâ€”including West Point (Ga.), Lanett (Al.), and inflow from Long Cane Creek (which supports multiple wastewater discharges in Georgia)â€”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 Companyâ€™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.

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 structureâ€™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 damâ€™s physical condition?

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

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

From: O"Rouke, Patrick Michael
To: Kelly Schaeffer
Subject: FW: Shoal bass white bass
Date: Tuesday, August 18, 2020 10:24:20 AM
Attachments: Expected Impacts of Barrier Removal on Shoal Bass Micropterus cataractae Within their Native Range V2.docx

Here are the comments from the former Chief of Fisheries at Georgia WRD on this document.

From: Thomas, Matt <Matt.Thomas@dnr.ga.gov>
Sent: Friday, June 28, 2019 10:36 AM
To: Slaughter, Joe Ernest <JESLAUGH@southernco.com>
Cc: O'Rouke, Patrick Michael <PMOROUKE@southernco.com>
Subject: Shoal bass white bass

EXTERNAL MAIL: Caution Opening Links or Files

Thanks for providing the shoal bass paper. Overall looks good. Thom and I reviewed and a few minor suggestions for consideration are on the attached.

Thanks, Matt

Hey,

Attached is the whitepaper that the NBBI is working on to help answer some of the public questions about benefits to shoal bass. Wanted you to take a look at it and make any comments you see fit, particularly about the overall tone and direction.

Let us know what you think. Thanks!

Joey

From:	O"Rouke, Patrick Michael
To:	Kelly Schaeffer
Subject:	FW: Shoal Bass Summary-Request for Peer Review
Date:	Tuesday, August 18, 2020 10:28:58 AM

This is correspondence I had with Vance Crain from NBBI. I think the original email I sent to the agency folks on June 27 (seen below) has disappeared from our server, as I can't find it.

From: O'Rouke, Patrick Michael
Sent: Thursday, August 29, 2019 3:18 PM
To: Vance Crain <vance@southeastaquatics.net>
Cc: Slaughter, Joe Ernest <JESLAUGH@southernco.com>
Subject: RE: Shoal Bass Summary-Request for Peer Review

Hey, following back up on this…I got a few minor edits from Matt Thomas and Thom Litts that I'll work in. Never heard anything back from Steve Ryder or Andy Strickland nor were any edits provided. Brent Hess got me a copy of a flow study on the Ocmulgee that referenced shoal bass, and I'll probably integrate that with one of Matt/Thom's comments to bolster the species as a fluvial specialist.

Copying Joey to see what we may want to do here as a next step. We've got a little more time than initially expected as we've pushed our meeting back later in the fall due to some FERC questions.

Patrick

From: Vance Crain <vance@southeastaquatics.net>
Sent: Friday, July 26, 2019 8:20 AM
To: O'Rouke, Patrick Michael <PMOROUKE@southernco.com>
Subject: Re: Shoal Bass Summary-Request for Peer Review

EXTERNAL MAIL: Caution Opening Links or Files

Hey Patrick, I'm so sorry that this slipped away from me. We had a baby come along and I'm just now getting back up to speed. Given I am not the species expert like the others in this email I am hoping I didn't mess you up too much.

I was able to skim the document yesterday, but when I tried to open it again this morning it said I no longer had permission. In regards to the citations and missing information, I didn't have any major comments based on my first scan. We have already discussed the organization feedback question, and as long as our reps are good with it then we should be good. I think it's well written, sticks to the facts, and leaves out anything that could be controversial. If you want me to take another look please let me know, and again I apologize for missing this.

Thank you,
Vance

On Thu, Jun 27, 2019 at 3:58 PM O'Rouke, Patrick Michael <PMOROUKE@southernco.com> wrote:

> Folks:
>
> If you'll recall, I talked about this concept at the NBBI meeting in Tallahassee last month. First, some background/recap.
>
> One of the major environmental reasons that Georgia Power proposed the surrender and expected removal of our Langdale and Riverview projects is the expected benefit it would have on shoal bass populations in that section of the Chattahoochee River. Since filing with FERC, our dockets have received a surprising number of comments from anglers disputing that thinking and calling into question the science behind it. In an effort to respond, it was quickly evident that despite a lot of research done on shoal bass in the past, particularly over the last decade, there wasn't a single place to point them to help synthesize the existing science in this area. Beyond just this particular FERC process, I think that shows a need for some sort of document that can be given to regulators (FERC, USACOE, etc.) or stakeholders to explain the issues succinctly yet scientifically.
>
> The link below will take you to a draft document that is intended to provide a synthesis of the existing science around shoal bass and barriers as well as a discussion about the impacts we would expect from removal of those barriers. While this document would ultimately be filed on the FERC docket for Langdale and Riverview proceedings, I think you'll see that it is written to apply to a number of situations, from small culverts to FERC-regulated dams and everything in between.
>
> https://soco365-

my.sharepoint.com:443/:w:/g/personal/pmorouke_southernco_com/EVQmMHe_dixNs3W5JwNgJuABfezuOCvmi8I2nYD_RD7xog?e=j4Vumh [soco365-my.sharepoint.com]

My request to the four of you is to provide a basic peer/agency review of the document. It's short (two and a half pages plus citations) and hopefully direct, so it shouldn't take long to review. Please let me know if you think this is something you could tackle within the next few weeks. When we can get this to a point where everyone feels comfortable, the revised version will then be forwarded to the SARP steering committee to decide whether or not this is something the NBBI can put out as a white paper and would ultimately be available for reference. The goal isn't to get to something that would be published in Transactions or NAJFM, but just to pull everything together in one place to help others who aren't as immersed in the black bass literature as we are to understand the reason anyone would pursue barrier removal in the name of shoal bass. I think the three biggest things to keep in mind while reviewing are 1) is anything inaccurately cited or are any statements unsupported?; 2) are any sources or other information that you're aware of missing?; 3) is there anything in there that would be problematic for your respective agency?

Thanks in advance for your help. I'm fairly certain the cloud link will work for everyone, but please let me know if you're able to open it since y'all are outside of my corporate organization. Click "Open in Word" in the center of the top gray ribbon, and then turn on track changes. When you close out, it will automatically save everything back to the cloud. If this doesn't work, I'll send the document via attachment and consolidate reviews, but this should make it easier for us to collaborate. Hopefully you'll have as much fun as I did with this...it's fairly awesome to work on a literature review where you know so many of the people you're citing and have had a small hand in some of the foundational science for a species.

Thank you,
Patrick

Patrick O'Rouke
Fisheries Biologist
Georgia Power

pmorouke@southernco.com
241 Ralph McGill Blvd.
Atlanta, GA 30308
(404) 506-5025 (Office)
(470) 426-5322 (Cell)

--
Vance Crain
NBBI/Watershed Coordinator
Southeast Aquatic Resources Partnership
http://southeastaquatics.net [southeastaquatics.net]
757-292-6718

Langdale and Riverview Hydroelectric Projects
FERC Projects #2341 and #2350

Communication Date:

10/10/19

Communication Type *(telephone, email, in-person meeting, other):*

In-person (Chattahoochee River Conservancy office – Spencer Environmental Center)

List and attach pertinent written correspondence:

(i.e. letter, fax, meeting notes/handouts, printed materials, etc.)

Printed materials and general discussion

List persons attending from Southern Company/Georgia Power:

Joey Slaughter – GPC

Dawson Ingram – GPC

List organization name and persons attending from other organization:

Chattahoochee Rver Conservancy – Henry Jackson; Auburn University – Steve Sammons; Adjacent Landowner/Local Fisherman – Kendall Andrews; Local Fisherman – Chris Funk.

Subject:

Review and discuss the Langdale and Riverview Decomissiong Projects; H&H surveying and modeling activities; discuss fishing and access concerns.

Comments/Discussions/Requests:

- Joey opened the meeting with introductions, provided a project overview, discussed the efforts taken to date, and then opened discussion with the attendees.
- Kendall Andrews asked about the 2 rounds of surveys. Joey explained that the surveys were for modeling purposes and the second round was for more detailed survey data.
- Kendall Andrews also asked about the status of the December filing and it was acknowledged that the final decommissioning plan was still a work in progress and that more discussion/meetings with landowners and other agencies would take place before finalizing the plan.
- Kendall Andrews asked about the public meeting delay. It was explained that this was due to the additional work on the modeling referenced earlier.

- Kendall Andrews was concerned about his property value, especially if he loses boat access to the river.
- Kendall Andrews and Chris Funk were concerned about negatively impacting the Shoal Bass population contained between Riverview and Langdale Dams.
- Chris Funk asked about sedimentation impacts from the removal on the dams.
- Kendall Andrews asked to be included on future stakeholder communication.

Form Completed By:

Dawson Ingram

Chris Manganiello, Atlanta, GA.
May 1, 2020
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 Companyâ€™s February 28, 2020 License Surrender Filings re 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 Companyâ€™s (Georgia Power) request for comments on the Progress Report, Draft Potential Effects of Dam Removal on Shoal Bass Study Report, and Draft Water Quality Report, dated February 28, 2020. We are submitting these comments despite Georgia Powerâ€™s cancellation due to COVID-19 social distancing measures of an April 1 public meeting to discuss this information. We contacted Georgia Powerâ€™s project contact twice by email (April 27) and telephone (April 29) to determine if the May 1 deadline was a hard deadline, and did we not get a response.

Established in 1994, Chattahoochee Riverkeeper (CRK) is an environmental advocacy and education organization with more than 10,000 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.

Progress Report
CRK looks forward to reading a draft of the Hydraulics and Hydrology Study to learn more about why some dams would be partially or entirely removed in some scenarios but not in others.

CRK is pleased to learn that the Cultural Resources Study will be â€œcompleted prior to and included with the Dam Decommissioning Plan filing.â€ [page 6-2]

Draft Potential Effects of Dam Removal on Shoal Bass Study Report
CRK agrees that dam removal can produce enhanced habitat. Georgia Powerâ€™s proposed removal will ultimately result in a natural streambed as opposed to a manufactured streambed as found downstream in some areas that were part of dam removal in the Columbus area. CRK anticipates improved aquatic function because the proposed removal will create an 11-mile stretch of natural river shoal habitat with connectivity to the Flat Shoals Creek tributary, which is known to support shoal bass populations.

As noted in the Draft Report, â€œIf the impoundment covers historic spawning habitat, benefits can be two-fold in that spawning shoals are restored with appropriate flows while access is then provided to isolated, adjacent populations downstream of a dam....Even in case where population equilibrium does not increase, population stability over multiple generations is likely to increase.â€ [Appendix A, no page number]

The Draft Report indicates removal may be good for adult shoal bass by providing optimal depth and velocity conditions. However, removal may not be so beneficial for young-of-year shoal bass because the main channelâ€™s depth may be optimal and the velocity may not be. Georgia Power asserts â€œRemoval of the Projectsâ€™ dams will result in a net increase in suitable habitat for Shoal Bass.â€ [page 11] We agree that overall removal will enhance connectivity between the newly exposed shoals and tributaries.

CRK agrees â€œit is critical that barrier removal projects do not impede passage of fish due to excessive velocities at newly-established points of connectivity.â€ According to a single post-removal assessment of the Eagle and Phenix dam, barrier removal and the constructed whitewater course in Columbus, Georgia may not have improved aquatic connectivity for shoal bass in the main channel, see: Steven M. Sammons (Auburn University) for Uptown Columbus, Inc., Responses of Fish Assemblages to Dam Removal on the Chattahoochee River, Georgia (September 13, 2017). Anecdotal stories from anglers indicate shoal bass and other species are present in this section of the river and have benefited from the damsâ€™ removal. Clearly more study and evaluation are necessary to determine the long-term implications of barrier removal for shoal bass and other species.

CRK agrees that barrier removal projects â€œshould be pursued in a cost-effective approach that prioritizes species recovery both across the range and within priority sub-basins.â€ However, this Draft Report does not indicate how Georgia Power will advance this approach or what specific tasks will take place to advance shoal bass habitat beyond removal of the Langdale and Riverview barriers. For example, is there a plan or schedule to re-stock shoal bass in the affected areas?

Draft Water Quality Report
CRK is pleased to learn that the Draft Water Quality Report indicates:

If the run-of-river dams are removed, â€œthe resulting lower water levels and higher water velocities in the affected reach of the Chattahoochee River would provide an alternative means of physical aeration as the water passes through the exposed shoals,â€ [9] and

That â€œdecommissioning and removal of the Projects will not impact theâ€ the East Alabama Lower Valley Wastewater Treatment Plant Valley WWTP permitted effluent discharge.â€ [14]

CRK remains concerned that sedimentation surveys upstream of the Langdale and Riverview barriers have not been, and may not be, conducted. When the Eagle and Phenix Mill Dam and City Mills Dam were removed, it was assumed that little sediment would be released. However, there are concerns that sediment transport did occur from upstream to a downstream area on river right (the west bank in Alabama) below the former Eagle and Phenix Dam.

What is Georgia Powerâ€™s justification for not conducting these sedimentation surveys and/or evaluations prior to removal of the Langdale and Riverview dams?

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

Sincerely,
/JU/
Jason Ulseth
Chattahoochee Riverkeeper

Freshwater Mussel Survey Report

Langdale (FERC No. 2341) and Riverview (FERC No. 2350) Hydroelectric Projects

September 2020

Prepared by:
Ecological Solutions, Inc.
630 Colonial Park Dr., Suite 200
Roswell, GA 30075

Prepared for:
Georgia Power Corporation
241 Ralph McGill Blvd NE
Atlanta, GA 30308

Report Author: Dean Wilder
Dean Wilder, Sr. Ecologist

Consultant Reviewer: David W. Smith
David Smith, Vice President

Table of Contents

I. AQUATIC SURVEY OVERVIEW

A. Executive Summary

Georgia Power Company (Georgia Power) has conducted a mussel survey 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) for the mussel survey with the Federal Energy Regulatory Commission (FERC or Commission) on May 24, 2019, and provided a 30-day public and agency review and comment period. Following the comment period, a Final Study Plan (FSP) was filed on July 24, 2019.

Section 3.0 of the SP stipulates that the mussel survey will be conducted on the Chattahoochee River in the immediate areas downstream of the Projects where localized construction activity is proposed to effectuate dam removal. The freshwater mussel survey was conducted on June 16 – 18, 2020.

No state or federal listed mussels were observed during the survey. A total of 31 mussels were collected and released. All species collected are considered stable throughout their current range.

B. Target Species

The following freshwater mussel species are potentially occurring within the survey area and are considered target species for the survey.

Scientific Name	Common Name	USFWS HUC 10	County IPaC	GNAHRGIS	Protection Status	Suitable Habitat Present?	Target Species of Survey?
Pleurobema pyriforme	oval pigtoe	No	Yes Chambers,AL	No	FT	Yes	Yes
Elliptoideus sloatianus	purple bankclimber	No	Yes Chambers,AL	No	FT	Yes	Yes
Lampsilis altilis	finelined pocketbook	No	Yes Chambers,AL	No	FT	Yes	No
Pleurobema perovatum	ovate clubshell	No	Yes Chambers,AL	No	FE	Yes	No
Medionidus penicillatus	Gulf moccasinshell	No	No	No	FE	Yes	Yes
Elliptio arctata	delicate spike	Yes	No	Yes	SE	Yes	Yes
Alasmidonata triangulata	southern elktoe	No	No	No	SE	Yes	No

Key: Federal Endangered (FE), Federal Threatened (FT), State Endangered (SE)

II. SURVEY BACKGROUND INFORMATION

A. Purpose and Background Information

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. On May 24, 2019, Georgia Power filed the Proposed Study Plan (PSP) to provide more information on the studies Georgia Power proposed to conduct to support the license surrender and decommissioning of the Langdale Project (FERC No. 2341) and the Riverview Project (FERC No. 2350) (the Projects) (Figures 1-3). Following a 30-day public and agency review and comment period, Georgia Power filed a Final Study Plan (FSP) on July 24, 2019. The objective of the study as outlined in the FSP was to characterize the existing mussel community in the immediate downstream vicinity of the dams using field surveys to determine if the presence of those communities would be impacted by proposed construction activities.

Langdale Project

The Langdale Project is located on the Chattahoochee River, adjacent to the City of Valley, Alabama (Figure 4). The Langdale Project is located approximately 9.5 river miles (RM) 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 in which the Langdale Project is located.

The Langdale Project was constructed between 1904 and 1908 and purchased by Georgia Power from West Point Manufacturing Company in 1930. The Project operated as a run of river project.
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 two 520 kilowatt (kW) vertical units in the powerhouse that have not operated since 2009.

Riverview Project

The Riverview Project is located on the Chattahoochee River, downstream of the City of Valley, Alabama and in Harris County, Georgia (Figures 5 and 6). The Project is approximately 10.5 RM downstream of the USACE West Point Project and 0.9 RM downstream of the Langdale Project. The Project consists of two separate dams, Riverview Dam (located approximately at RM 190.6) and Crow Hop Dam (located approximately at RM 191.0), 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 3). 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 as a run of river project. Over time, the units developed maintenance problems, and eventually were no longer operable or repairable.

B. Survey Methodology

The survey methodology is based on the *Freshwater Mussel Survey Protocol for Transportation Projects within the State of Georgia* (November 2018). This protocol was created by the Georgia Department of Natural Resources (DNR), Georgia Department of Transportation (GDOT), and U.S. Fish and Wildlife Service (USFWS) to establish a standardized mussel survey protocol that could be used across physiographic provinces. This protocol provides precise application of the sampling methods for wadeable and non-wadeable streams and provides a measure of certainty in the presence/absence of state and federally protected freshwater mussel species at a project site.

West Point Dam Operations, at the request of Southern Company Hydro Services and based on precipitation forecast and other system operation considerations, agreed to manage the hydro release schedule at West Point Dam to facilitate low daytime flows to accommodate the mussel survey. Pre-survey planning as coordinated by Georgia Power included agency informal study plan review with USFWS Regional Ecological Services and GDNR's Wildlife Conservation Section. Prior to the initiation of fieldwork, the survey crew coordinated a daily survey plan with Georgia Power for overall safety diligence and awareness of upstream USACE West Point Dam operations for the day. The survey team was equipped with a hand-held communication device and was in constant contact with the field coordinator.

Each survey area, as depicted on the attached Figures 4 through 6, was divided into 50-meter long segments with 25% of the search area located upstream of the proposed project and 75% of the search located downstream of the proposed project. Each of the 50-meter segments was surveyed by a minimum of 4 searchers for a minimum of 2 person-hours (i.e. 4 searchers X 30 minutes = 2 p-hours) to reduce surveyor bias. Each searcher carefully searched all habitats, from bank to bank, using tactile and visual searches within each segment of the survey area. Searchers did not overlap search areas in order to ensure independence of searches. All surveying was conducted from the downstream reach to the upstream reach to minimize potential increases in searcher induced turbidity. All animals collected were retained by the individual searcher that collected them.

The survey began by conducting a visual search to examine dead shells along river shorelines and all exposed areas. The visual search on the bank(s) was conducted in addition to a tactile (hand-grubbing 1-2 inches into substrate to increase detection of more deeply buried mussels) search and visual searches for individuals within the water. For tactile and visual searches within the stream channel, searchers were spaced equidistant across the stream channel and slowly moved upstream in longitudinal transects; if a substantial amount of space existed between them, searchers progressed upstream in a zig-zag pattern to cover a larger area. The following techniques were used during the surveys: 1) for areas less than 1.5 meters in depth, mask and snorkel combined with tactile search were used. If mask and snorkel were not feasible, only tactile searches were used; 2) for areas greater than 1.5 meters in depth, SCUBA diving equipment was used. Two divers conduct the search while being assisted by at least one support person each.

Collected mussels awaiting identification were temporarily held in mesh bags suspended in the stream. Specimens were held for the minimum time necessary in bags that allowed free movement of water over the mussels. All mussels were returned to the point of capture and hand placed with their anterior ends in the substrate and posterior end exposed to the water with siphon facing upstream.

Information relevant to the survey site was collected and recorded on the field data form. Of importance are water quality parameters (water temperature, stream flow, turbidity, pH, conductivity, etc.) and instream features. Locations of suitable habitats will be shown in the sketch map and indicate the level of suitability for the species being surveyed for (marginal, suitable, or preferred).

For the 1.3-mile section between the Langdale and Crow Hop Dams, the river was traversed using a boat to identify potential suitable mussel habitat. When identified, these areas were surveyed using visual and tactile search methodologies outlined above. Rather than detailed transects, identified mussel habitat in this reach of the river was surveyed by a 4-person team utilizing a random, non-overlapping pattern across the suitable habitat.

The sources used to compile a list of protected aquatic species and target species potentially occurring within the survey area were: USFWS Information for Planning and Consultation (IPaC) system species list; the USFWS HUC 10 Watershed list; the Georgia Natural Heritage Program (GNHP) on-line quarter-quad list of protected species; previous studies conducted by Georgia Power; on-line information from the Alabama Department of Natural Resources Nongame Wildlife Program; and Georgia's Natural, Archaeological, and Historic Resources GIS (GNAHRGIS) Early Coordination letter dated November 25, 2019 (Appendix II). Based on the information obtained from the above sources, target species were identified and an aquatic survey was conducted to determine the potential presence/absence of the protected species within the survey area and identify areas of high-quality habitat that could be impacted during construction activities. Target species for the survey are highlighted below.

Protected Aquatic Species Potentially Occurring within the Survey Area

Scientific Name	Common Name	USFWS HUC 10	County IPaC	GNAHRGIS	Protection Status	Suitable Habitat Present?	Target Species of Survey?
Pleurobema pyriforme	oval pigtoe	No	Yes Chambers,AL	No	FT	Yes	Yes
Elliptoideus sloatianus	purple bankclimber	No	Yes Chambers,AL	No	FT	Yes	Yes
Lampsilis altilis	finelined pocketbook	No	Yes Chambers,AL	No	FT	Yes	No
Pleurobema perovatum	ovate clubshell	No	Yes Chambers,AL	No	FE	Yes	No
Medionidus penicillatus	gulf moccasinshell	No	No	No	FE	Yes	Yes
Elliptio arctata	delicate spike	Yes	No	Yes	SE	Yes	Yes
Alasmidonata triangulata	southern elktoe	No	No	No	SE	Yes	No

Key: Federal Endangered (FE), Federal Threatened (FT), State Endangered (SE)

C. Study Location

Nearest City or Other Defining Feature	Valley, AL at Chattahoochee River Mile 191.9
County(ies)	Harris County, Georgia and Chambers County, Alabama
Approximate Project Midpoint	32.800742°N 85.153408°W
Level IV Ecoregion	45b Southern Outer Piedmont
HUC 10 Watershed	Chattahoochee River, Lower North 3 (HUC 0313000209)
Nearest Hydrologically-Connected USGS Stream Gage	USGS 02339500 Chattahoochee River at West Point GA

D. Weather Conditions Summary

Dates of Surveys	6/16/20 – 6/18/20
Average Air Temperature	85° F
Weather Conditions	Sunny
Date of Most Recent Precipitation Event	6/10/20
Amount of Most Recent Precipitation Event	1.1"
Cumulative Precipitation since June 1st	≈ 1.50"
Surveyor Name, Affiliation	Dean Wilder, Ecological Solutions, Inc. (ESI)* David Smith, ESI Michael Nugent, ESI Andrew Croy, ESI Connor Breedlove, ESI
Resources Surveyed	Chattahoochee River at Langdale, Crow Hop, and Riverview low water dams

* - Surveyor responsible for verification of species identification

E. Individual Resources Surveyed

Resource Name	Chattahoochee River (above Langdale Dam)
Date(s) surveyed	6/16/20
Time(s) surveyed	8:00 AM to 12:30 PM
Survey method	Mussels - hand grubbing, snorkeling, and SCUBA
Survey length	300 m above Langdale Dam
Water temperature (°C)	23.47
Dissolved oxygen (mg/L)	5.38
pH level	5.36
Conductivity (µS/cm)	0.045
Salinity (ppt)	0.0
Turbidity (NTU)	0.0
Wetted width (range and/or average)	800' to 900' Avg. 850'
Water depth (range and average)	2' to ≈ 15.0' Avg. 8.0'
Stream substrate	Right bank: 80% mixed sand, 15% gravel, 5% clay Left bank: 40% boulder, 20% mixed sand, 20% clay, 10% cobble, 10% silt
Stream geomorphology	straight channel with right side and middle of channel consisting primarily of mixed sands; left side of channel contained more rock/boulder and a deeper channel
Flow rate	low – 675 cubic feet per second (cfs)
Discharge	moderate
Vegetative buffer width	75+ feet each side
Bank/channel condition	incised in places and showing some signs of active erosion
Amount of woody debris	light
Target species surveyed for	oval pigtoe, purple bankclimber, Gulf moccasinshell, and delicate spike

* No target species captured during survey

<u>Chattahoochee River above Langdale Dam</u>

The Chattahoochee River (above Langdale Dam) (Figure 2) provides poor to moderate quality habitat for the seven species (four target species): oval pigtoe, purple bankclimber, finelined pocketbook, ovate clubshell, Gulf moccasinshell, delicate spike, and southern elktoe. The substrate throughout most of the surveyed reach consists primarily of mixed sands with areas of varying mixtures of sand, cobble, and clay. Most of those areas consist of loosely packed sand. On the east side of the river, there is a somewhat more defined channel consisting of more boulders with sand and clay mixed in the interstitial spaces. Water discharge volume was dropped to 675 cfs at the West Point Lake Dam to aid in the survey. There is a light amount of woody debris, river weeds, and undercut banks scattered throughout the survey area. The water was very clear and had a moderate flow.

Two mussel species: Gulf spike (*Elliptio pullata*) and southern rainbow (*Villosa vibex*), as well as one invasive clam species: Asian clam (*Corbicula fluminea*) were collected during the survey. Three individuals of the Gulf spike and nine individuals of the southern rainbow were collected at the locations within the surveyed area as shown in Figure 7. The Asian clam was observed throughout the surveyed area in quantities too numerous to count (TNTC). No target species were collected during the survey effort.

Representative habitat photographs of Chattahoochee River (above Langdale Dam)

Photograph 1 - Western shoreline, upstream of dam

Photograph 2 - Eastern shoreline, upstream of dam

Photograph 3 - Western shoreline, upstream of dam

Resource Name	Chattahoochee River (below Langdale Dam)
Date(s) surveyed	6/16/20
Time(s) surveyed	12:30 PM to 4:00 PM
Survey method	Mussels - hand grubbing and snorkeling
Survey length	300 m below Langdale Dam 450 m side channel below Langdale Dam
Water temperature (°C)	23.47
Dissolved oxygen (mg/L)	5.38
pH level	5.36
Conductivity (µS/cm)	0.045
Salinity (ppt)	0.0
Turbidity (NTU)	0.0
Wetted width (range and average)	Main channel: 415' to 840' Avg. 500' Side channel: ≈ 75'
Water depth (range and/or average)	Main channel: 1' to ≈ 12.0' Avg. 3' Side channel: 6" to 3' Avg. 1.5'
Stream substrate	Side channel: 90% mixed sands, 10% clay Main channel: 60% bedrock/boulder, 15% cobble, 25% mixed sands
Stream geomorphology	side channel consists primarily of mixed sands and few other features; main channel consists of rock shoals across the width of the river; left side of channel contains a deeper channel while the right side consists of more shallow shoal areas
Flow rate	low – 675 cfs
Discharge	moderate
Vegetative buffer width	75+ feet each side
Bank/channel condition	Incised in places and showing some signs of active erosion
Amount of woody debris	moderate
Target species surveyed for	oval pigtoe, purple bankclimber, Gulf moccasinshell, and delicate spike

* No target species captured during survey

Chattahoochee River below Langdale Dam

The Chattahoochee River (below Langdale Dam) (Figure 2) provides poor to moderate quality habitat for the seven species (four target species): oval pigtoe, purple bankclimber, finelined pocketbook, ovate clubshell, Gulf moccasinshell, delicate spike, and southern elktoe. The substrate throughout the area immediately below the dam consists of primarily a mix of bedrock, boulders, and sands in the interstitial spaces. Most of those areas consist of loosely packed sand. On the east side of the river, there is a somewhat deeper channel consisting of more boulders with sand and clay mixed in the interstitial spaces. The side channel below the powerhouse dam consists of loosely packed sand/silt/and clay. Water discharge volume was dropped to 675 cfs at the West Point Lake Dam to aid in the survey. There is very little woody debris in the main channel while the side channel contains more fallen trees and branches. The water was very clear and had moderate to strong flow in the main channel and very low water levels with moderate flow in the side channel.

Only the invasive Asian clam was collected from the surveyed area. It was observed throughout the surveyed area in quantities TNTC. No target species were collected during the survey effort.

Representative habitat photographs of Chattahoochee River (below Langdale Dam)

Photograph 1 - Area adjacent to dam.

Photograph 2 - Shoals below dam.

Photograph 3 - Langdale Dam generation facility.

Resource Name	Chattahoochee River (above Crow Hop Dam)
Date(s) surveyed	6/17/20
Time(s) surveyed	8:22 AM to 12:30 PM
Survey method	Mussels - hand grubbing, snorkeling, and SCUBA
Survey length	180 m above Crow Hop Dam 200 m side channel above Crow Hop Dam
Water temperature (°C)	23.09
Dissolved oxygen (mg/L)	7.47
pH level	6.12
Conductivity (µS/cm)	0.047
Salinity (ppt)	0.0
Turbidity (NTU)	0.0
Wetted width (range and/or average)	Main channel: Avg. 450' Side channel: 70' to 145' Avg. 100'
Water depth (range and average)	Main channel: 3' to 12' Avg. 10' Side channel: 3' to 6' Avg. 4'
Stream substrate	Right bank: 80% mixed sand, 15% gravel, 5% clay Left bank: 40% boulder, 20% mixed sand, 20% clay, 10% cobble, 10% silt
Stream geomorphology	straight channel with right side and middle of channel consisting primarily of mixed sands; left side of channel contained more rock/boulder and a deeper channel
Flow rate	low – 675 cfs
Discharge	moderate
Vegetative buffer width	75+ feet each side
Bank/channel condition	Incised in places and showing some signs of active erosion
Amount of woody debris	moderate
Target species surveyed for	oval pigtoe, purple bankclimber, Gulf moccasinshell, and delicate spike

* No target species captured during survey

Chattahoochee River above Crow Hop Dam

The Chattahoochee River (above Crow Hop Dam) (Figure 3) provides poor to moderate quality habitat for the seven species (four target species): oval pigtoe, purple bankclimber, finelined pocketbook, ovate clubshell, Gulf moccasinshell, delicate spike, and southern elktoe. The substrate throughout most of the surveyed reaches in the side channel and main channel consists primarily of mixed sands with areas of varying mixtures of sand, cobble, and clay. Most of those areas consist of loosely packed sand. On the east side of the river, there is a somewhat more defined channel consisting of more boulders with sand and clay mixed in the interstitial spaces. Water discharge volume was dropped to 675 cfs at the West Point Lake Dam to aid in the survey. There is a moderate amount of woody debris and undercut banks scattered throughout the survey area. The water was very clear and had a moderate flow.

One mussel species, southern rainbow, as well as one invasive clam species, Asian clam, were collected during the survey. Five individuals of the southern rainbow were collected at the locations within the surveyed area as shown in Figure 8. The Asian clam was observed throughout the surveyed area in quantities TNTC. No target species were collected during the survey effort.

Representative habitat photographs of Chattahoochee River (above Crow Hop Dam)

Photograph 1 - Western shoreline, upstream of dam.

Photograph 2 - Eastern shoreline, upstream of dam.

Photograph 3 - Western channel above dam, facing upstream.

Photograph 4 - Western channel above dam, facing downstream.

Resource Name	Chattahoochee River (below Crow Hop Dam)
Date(s) surveyed	6/17/20
Time(s) surveyed	12:30 PM to 3:45 PM
Survey Method	Mussels - hand grubbing and snorkeling
Survey Length	300 m below Crow Hop Dam
Water temperature (°C)	23.09
Dissolved oxygen (mg/L)	7.47
pH level	6.12
Conductivity (µS/cm)	0.047
Salinity (ppt)	0.0
Turbidity (NTU)	0.0
Wetted width (range and/or average)	Channel at dam: 450' to 750' Avg. 500' Split channels: Avg. 200'
Water depth (range and average)	Main channel: 1' to 15' Avg. 3' Split channels: 2' to 12' Avg. 3'
Stream substrate	50% bedrock/boulder, 20% cobble/gravel, 20% mixed sand, 10% clay
Stream geomorphology	channel consists of rock shoals across the width of the river at the dam; left channel contains a deeper channel while the right channel consists of more shallow shoal areas
Flow rate	low – 675 cfs
Discharge	moderate
Vegetative buffer width	75+ feet each side
Bank/channel condition	Incised in places and showing some signs of active erosion
Amount of woody debris	light
Target species surveyed for	oval pigtoe, purple bankclimber, Gulf moccasinshell, and delicate spike

* No target species captured during survey

Chattahoochee River below Crow Hop Dam

The Chattahoochee River (below Crow Hop Dam) (Figure 3) provides poor to moderate quality habitat for the seven species (four target species): oval pigtoe, purple bankclimber, finelined pocketbook, ovate clubshell, Gulf moccasinshell, delicate spike, and southern elktoe. The substrate throughout the area immediately below the dam consists of primarily a mix of bedrock, boulders, and sands in the interstitial spaces. Most of those areas consist of loosely packed sand. On the east side of the river, there is a somewhat deeper channel consisting of more boulders with sand and clay mixed in the interstitial spaces. The west side channel below the dam consists of more cobble with loosely packed sand/silt/and clay. Water discharge volume was dropped to 675 cfs at the West Point Lake Dam to aid in the survey. There is very little woody debris in the channels. The water was very clear and had moderate to strong flow in the main channel below the dam.

One mussel species, southern rainbow, as well as one invasive clam species, Asian clam, were collected during the survey. Two individuals of the southern rainbow were collected at the locations within the surveyed area as shown in Figure 8. The Asian clam was observed throughout the surveyed area in quantities TNTC. No target species were collected during the survey effort.

Representative habitat photographs of Chattahoochee River (below Crow Hop Dam)

Photograph 1 - Western shoreline, downstream of dam.

Photograph 2 - Eastern shoreline, downstream of dam.

Photograph 3 - Crow Hop Dam.

Photograph 4 - Shoals downstream of dam.

Resource Name	Chattahoochee River (above Riverview Dam)
Date(s) surveyed	6/18/20
Time(s) surveyed	9:00 AM to 11:30 AM
Survey method	Mussels - hand grubbing and snorkeling
Survey length	200 m in channel above Riverview Dam
Water temperature (°C)	23.08
Dissolved oxygen (mg/L)	7.89
pH level	5.89
Conductivity (µS/cm)	0.045
Salinity (ppt)	0.0
Turbidity (NTU)	0.0
Wetted width (range and/or average)	Channel: 100' to 300' Avg. 110'
Water depth (range and average)	Channel: 2' to 12' Avg. 7'
Stream substrate	60% boulder/cobble (rip-rap), 30% mixed sand, 5% clay, 5% silt
Stream geomorphology	straight channel with sides consisting primarily of rock and rip-rap; center of channel contained a little more sand mixed with clay and silt
Flow rate	low – 675 cfs
Discharge	Moderate to swift
Vegetative buffer width	75+ feet each side
Bank/channel condition	Incised in places and showing some signs of active erosion
Amount of woody debris	light
Target species surveyed for	oval pigtoe, purple bankclimber, Gulf moccasinshell, and delicate spike

* No target species captured during survey

Side Channel of Chattahoochee River above Riverview Dam

The side channel of the Chattahoochee River (above Riverview Dam) (Figure 3) provides poor quality habitat for the seven species (four target species): oval pigtoe, purple bankclimber, finelined pocketbook, ovate clubshell, Gulf moccasinshell, delicate spike, and southern elktoe. The substrate throughout most of the surveyed reach in the side channel consists primarily of rock and rip-rap along the sides of the channel while the middle consists of mixed sands with areas of varying mixtures of sand, cobble, clay, and silt. Most of those areas consist of loosely packed sand. The flow rate in the channel increased significantly closer to the dam and the channel could not be surveyed safely. Water discharge volume was dropped to 675 cfs at the West Point Lake Dam to aid in the survey. There is a light amount of woody debris, over hanging limbs, and undercut banks scattered throughout the survey area. The water was very clear and had a moderate to swift flow.

Two mussel species: Gulf spike and southern rainbow, as well as one invasive clam species, Asian clam, were collected during the survey. Nine individuals of the Gulf spike and three individuals of the southern rainbow were collected at the locations within the surveyed area as shown in Figure 9. The Asian clam was observed throughout the surveyed area in quantities TNTC. No target species were collected during the survey effort.

Representative habitat photograph of Chattahoochee River (above Riverview Dam)

Photograph 1 - Western shoreline, upstream of dam.

Resource Name	Channel at dam, Side Channel and Chattahoochee River (below Riverview Dam)
Date(s) surveyed	6/18/20
Time(s) surveyed	11:30 AM to 3:00 PM
Survey method	Mussels - hand grubbing, Aqua-Viewers, snorkeling, and SCUBA
Survey length	230 m in channel below powerhouse 275 m below Crow Hop Dam
Water temperature (°C)	23.08
Dissolved oxygen (mg/L)	7.89
pH level	5.89
Conductivity (µS/cm)	0.045
Salinity (ppt)	0.0
Turbidity (NTU)	0.0
Wetted width (range and/or average)	Channel at dam: Avg. 150' funnels down to a 50' wide very swift flowing section Side Channel below powerhouse: Avg. 35' Main River: Avg. 600'
Water depth (range and average)	Channel at dam: 1' to 12' Avg. 4' Side channel: 2' to 4' Avg. 3' Main river: 2' to 10' Avg. 5'
Stream substrate	Channel at dam: 60% bedrock/boulder, 20% cobble/gravel, 20% mixed sand/clay Side channel: 70% silty clay, 25% mixed sands, 5% cobble Main river: 40% mixed sands, 30% bedrock/boulder, 20% cobble/gravel, 10% clay
Stream geomorphology	channel consists of rock shoals across the width of the river at the dam and funnels down to deeper channel to the Main River; channel below powerhouse is a shallow channel with uniform soft substrates
Flow rate	low – 675 cfs
Discharge	Channel at dam: swift Side channel: slow Main river: moderate
Vegetative buffer width	75+ feet each side
Bank/channel condition	Incised in places and showing some signs of active erosion
Amount of woody debris	light
Target species surveyed for	oval pigtoe, purple bankclimber, Gulf moccasinshell, and delicate spike

* No target species captured during survey

Channel at dam, Side Channel and Chattahoochee River below Riverview Dam

The channel (below Riverview Dam) (Figure 3) provides poor to moderate quality habitat for the seven species (four target species): oval pigtoe, purple bankclimber, finelined pocketbook, ovate clubshell, Gulf moccasinshell, delicate spike, and southern elktoe. The substrate throughout the area immediately below the dam consists of primarily a mix of bedrock, boulders, and sands in the interstitial spaces. Most of those areas consist of loosely packed sand. This area funnels down and creates a swift flowing channel down to the main river channel. Overflow on both the east and west sides create shallow rocky shoals with loose sand between the rocks. The side channel discharging from the powerhouse consists almost entirely of soft loose substrate. There is a light amount of woody debris along this channel. The main stem of the Chattahoochee River consists of shoals of bedrock and boulders. Further downstream, the channel substrate changes to mostly sand with scattered boulders throughout. On the east side of the river, there is a somewhat deeper channel consisting of more boulders with sand and clay mixed in the interstitial spaces. Water discharge volume was dropped to 675 cfs at the West Point Lake Dam to aid in the survey. There is very little woody debris in the main channel. The water was very clear and had moderate to strong flow in the main channel below the dam.

Only the invasive Asian clam was collected from the surveyed area. It was observed throughout the surveyed area in quantities TNTC. No target species were collected during the survey effort.

Representative habitat photographs of Chattahoochee River (below Riverview Dam)

Photograph 1 - Western shoreline, downstream of dam.

Photograph 2 - Chattahoochee River Eastern shoreline, downstream of dam.

Photograph 3 - Below Riverview Dam.

Photograph 4 - Below Riverview Dam.

III. AQUATIC SURVEY FINDINGS

A. Target Species Survey Results

No target species were identified during the surveys. Poor to marginal habitat for the target species was observed.

B. Full Survey Results (non-target species included)

See Appendix III for photo vouchers of non-target species.

Stream	Scientific name	Common name	Federally listed	State listed	# Collected (June 16-18, 2020)
Chattahoochee River (above Langdale Dam)	*Elliptio pullata*	Gulf spike	No	No	3
	Villosa vibex	southern rainbow	No	No	9
	Corbicula fluminea	Asian clam	No	No	TNTC*
Chattahoochee River (below Langdale Dam)	*Corbicula fluminea*	Asian clam	No	No	TNTC
Chattahoochee River (above Crow Hop Dam)	*Villosa vibex*	southern rainbow	No	No	5
	Corbicula fluminea	Asian clam	No	No	TNTC
Chattahoochee River (below Crow Hop Dam)	*Villosa vibex*	southern rainbow	No	No	2
	Corbicula fluminea	Asian clam	No	No	TNTC
Chattahoochee River (above Riverview Dam)	*Elliptio pullata*	Gulf spike	No	No	9
	Villosa vibex	southern rainbow	No	No	3
	Corbicula fluminea	Asian clam	No	No	TNTC
Chattahoochee River (below Riverview Dam)	*Corbicula fluminea*	Asian clam	No	No	TNTC

*** - Too numerous to count (TNTC)**

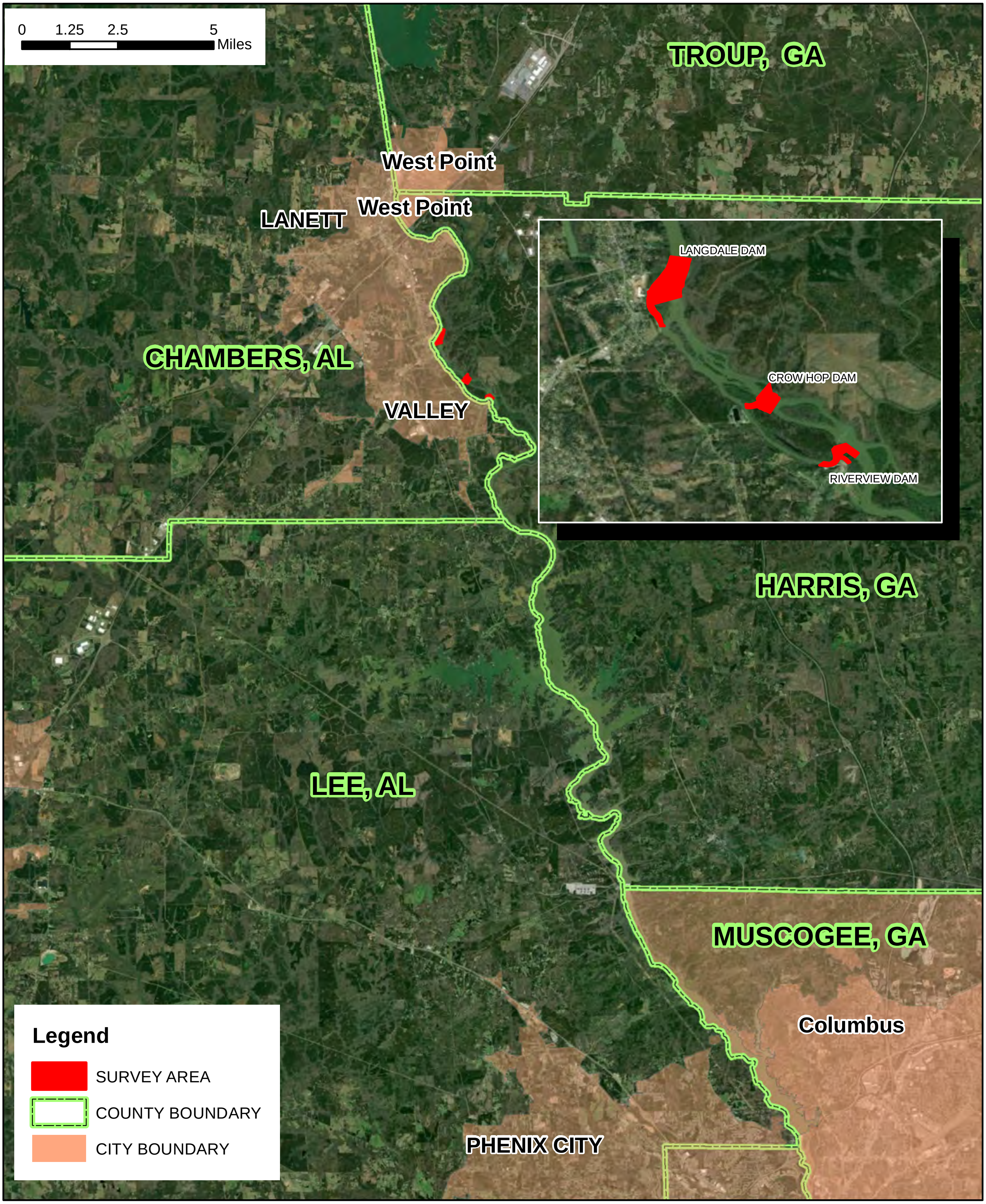
C. Results of Study

No target species were identified during the surveys. Two mussel species totaling 31 individuals were collected and released. Twelve Gulf spike (*Elliptio pullata*) and 19 southern rainbow (*Villosa vibex*) mussels were collected. All species collected are considered stable throughout their current range.

IV. Appendices

Appendix I: Figures

Freshwater Mussel Survey Report
Langdale and Riverview Hydroelectric Projects
FERC Project Numbers 2341 and 2350
September 2020



Ecological Solutions Inc.

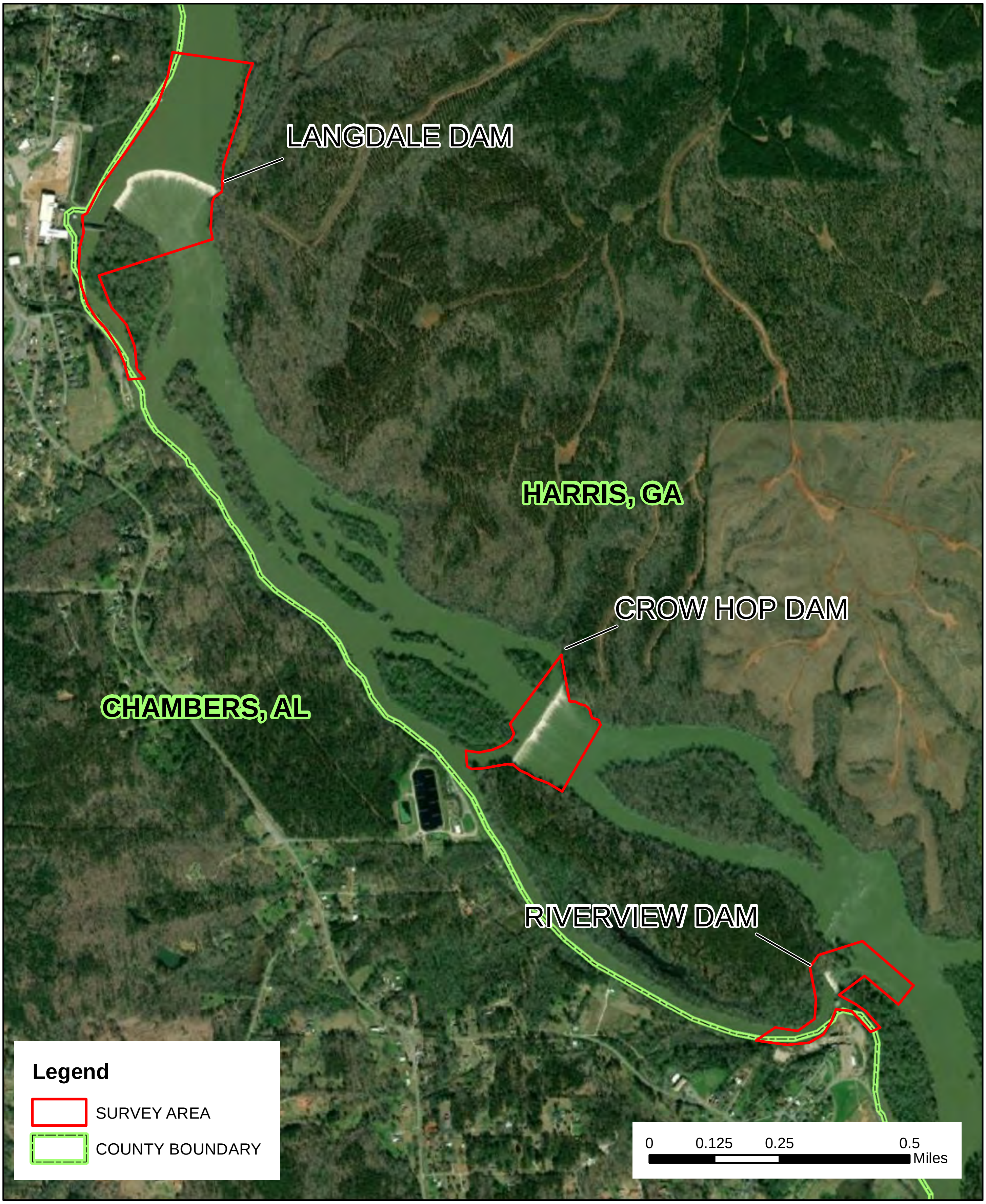
Georgia Power Company
Langdale, Riverview and Crow Hop Dam Removal Mussel Survey
Harris County, Georgia

N W E S

20236-675
September 2020

Project Location

Figure 1



Ecological Solutions Inc.

Georgia Power Company
Langdale, Riverview and Crow Hop Dam Removal Mussel Survey
Harris County, Georgia

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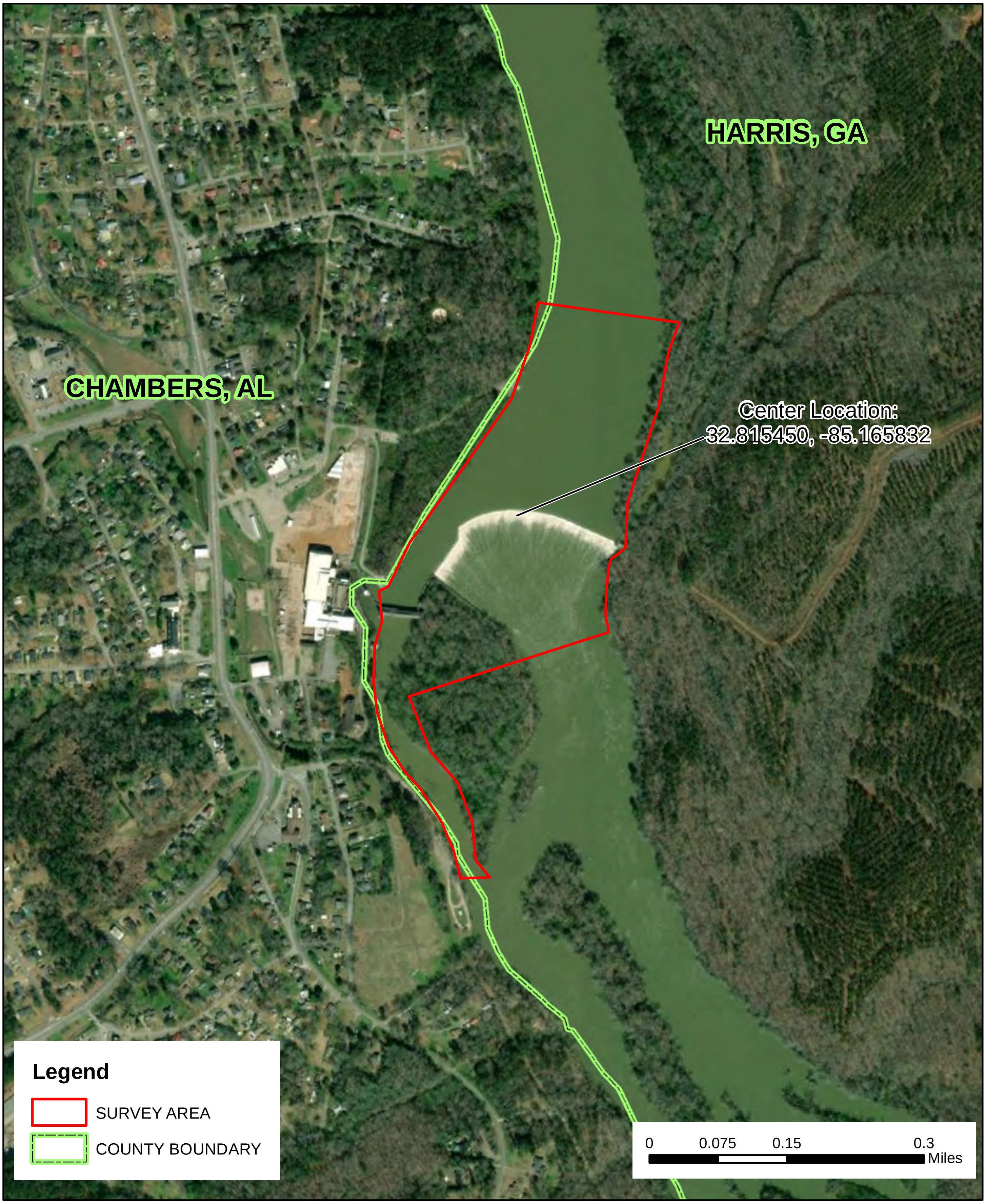
20236-675
September 2020

Project Location

Figure 1A



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Harris County, Georgia

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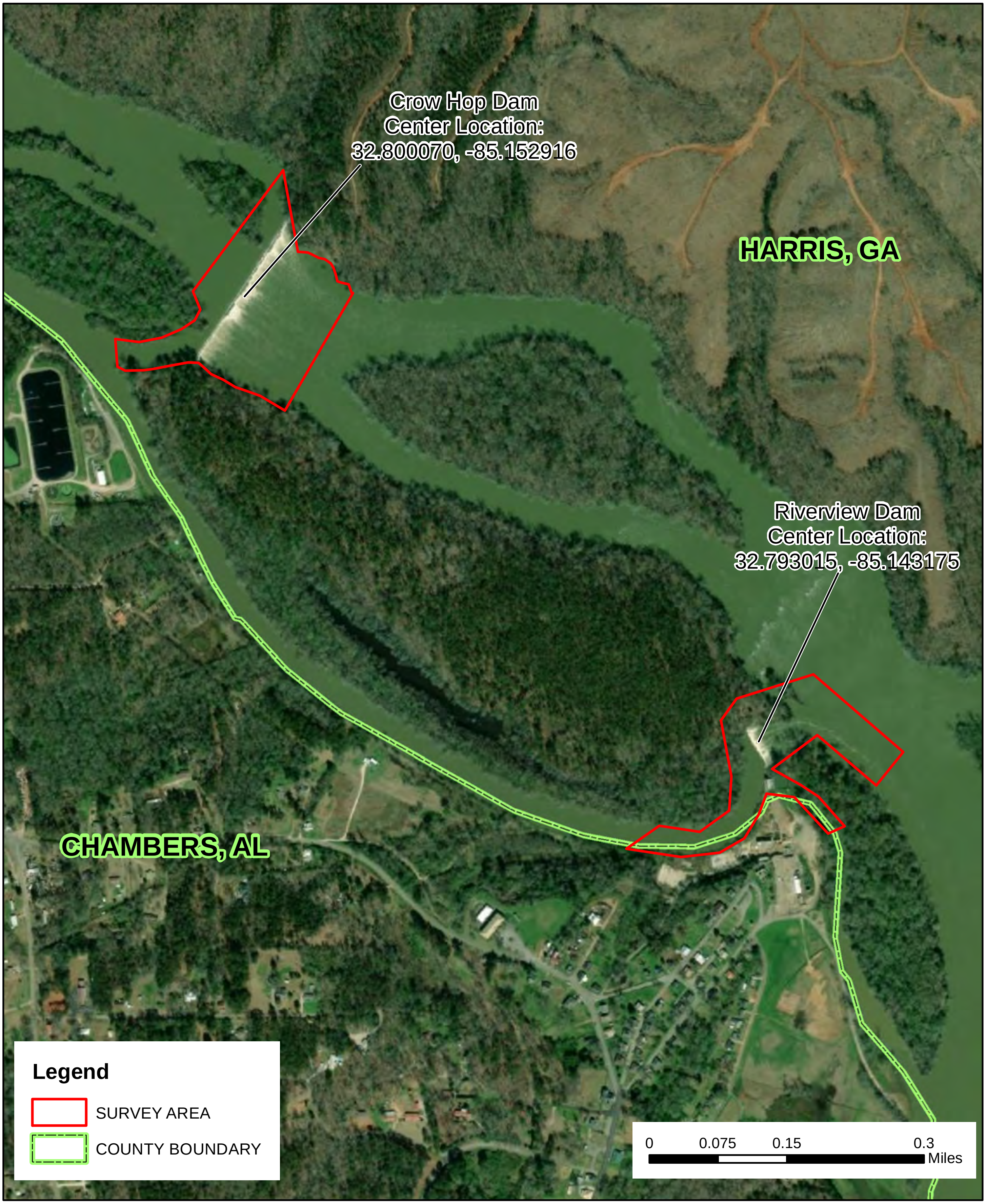
September 2020

Langdale Dam Location

Figure 2



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Langdale, Riverview and Crow Hop Dam Removal Mussel Survey
Harris County, Georgia

Crow Hop & Riverview Dam Location

20236-675
September 2020

Figure 3

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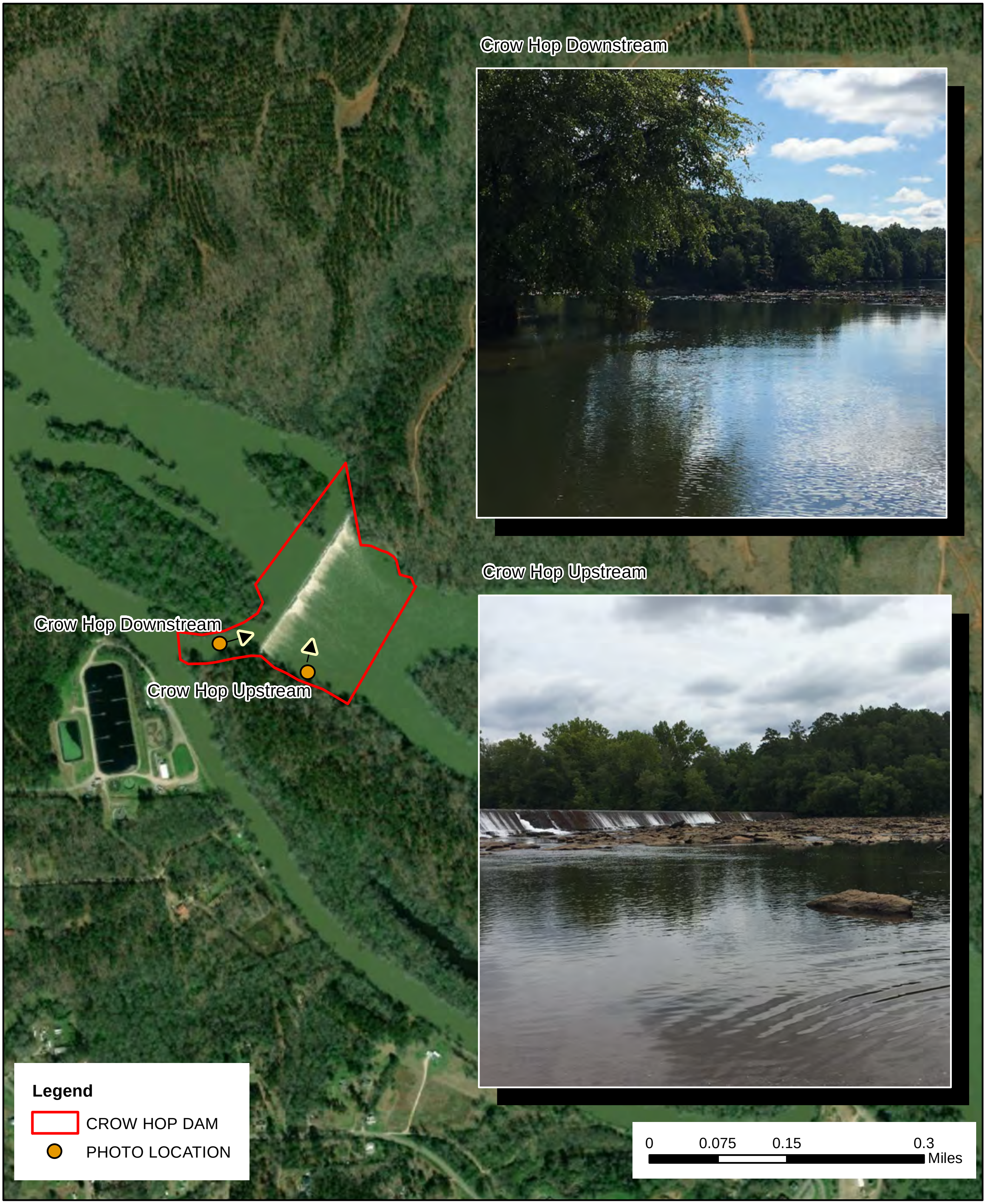
Langdale, Riverview and Crow Hop Dam Removal Mussel Survey
Harris County, Georgia Chambers County, Alabama

N W E S

20236-675
September 2020

Landgale Dam Photo Representation

Figure 4



Georgia Power Company
Langdale, Riverview and Crow Hop Dam Removal Mussel Survey
Harris County, Georgia Chambers County, Alabama

20236-675
September 2020

Crow Hop Dam Photo Representation

Figure 5

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Georgia Power Company
Langdale, Riverview and Crow Hop Dam Removal Mussel Survey
Harris County, Georgia Chambers County, Alabama

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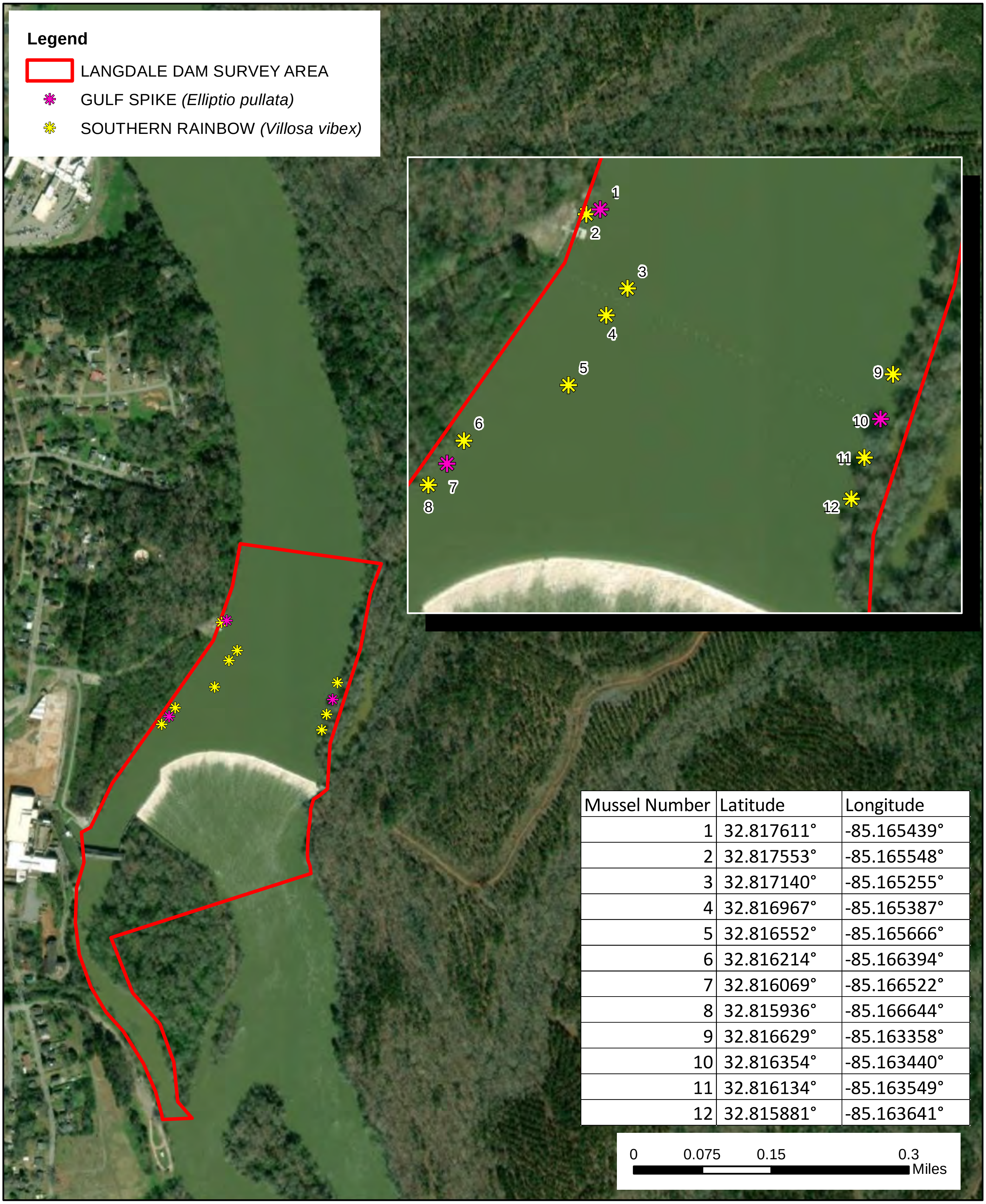
September 2020

Riverview Dam Photo Representation

Figure 6



Mussel Number	Latitude	Longitude
1	32.817611°	-85.165439°
2	32.817553°	-85.165548°
3	32.817140°	-85.165255°
4	32.816967°	-85.165387°
5	32.816552°	-85.165666°
6	32.816214°	-85.166394°
7	32.816069°	-85.166522°
8	32.815936°	-85.166644°
9	32.816629°	-85.163358°
10	32.816354°	-85.163440°
11	32.816134°	-85.163549°
12	32.815881°	-85.163641°

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Langdale, Riverview and Crow Hop Dam Removal Mussel Survey
Harris County, Georgia Chambers County, Alabama

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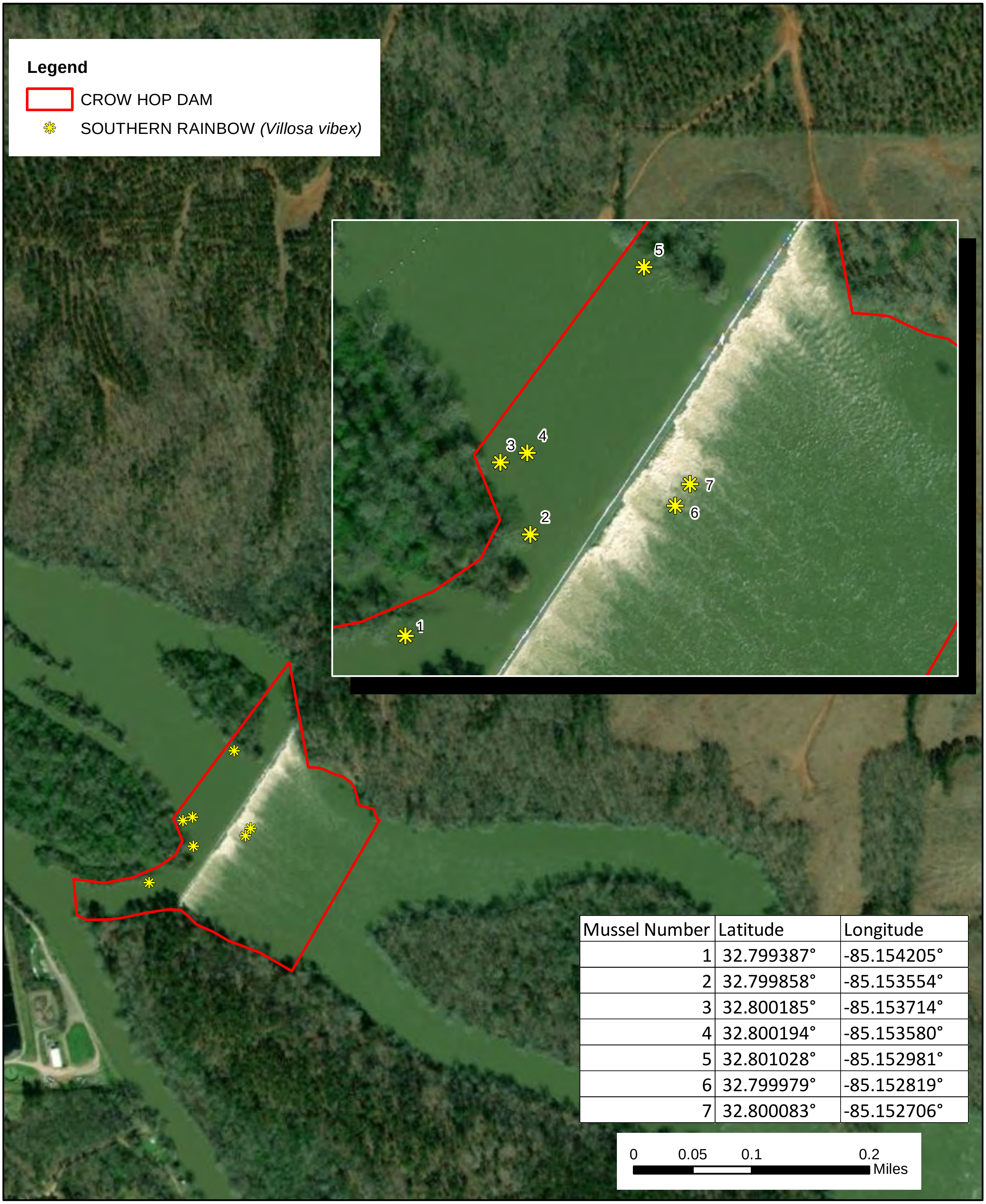
September 2020

Landgale Dam Mussel Collection Areas

Figure 7



Mussel Number	Latitude	Longitude
1	32.799387°	-85.154205°
2	32.799858°	-85.153554°
3	32.800185°	-85.153714°
4	32.800194°	-85.153580°
5	32.801028°	-85.152981°
6	32.799979°	-85.152819°
7	32.800083°	-85.152706°

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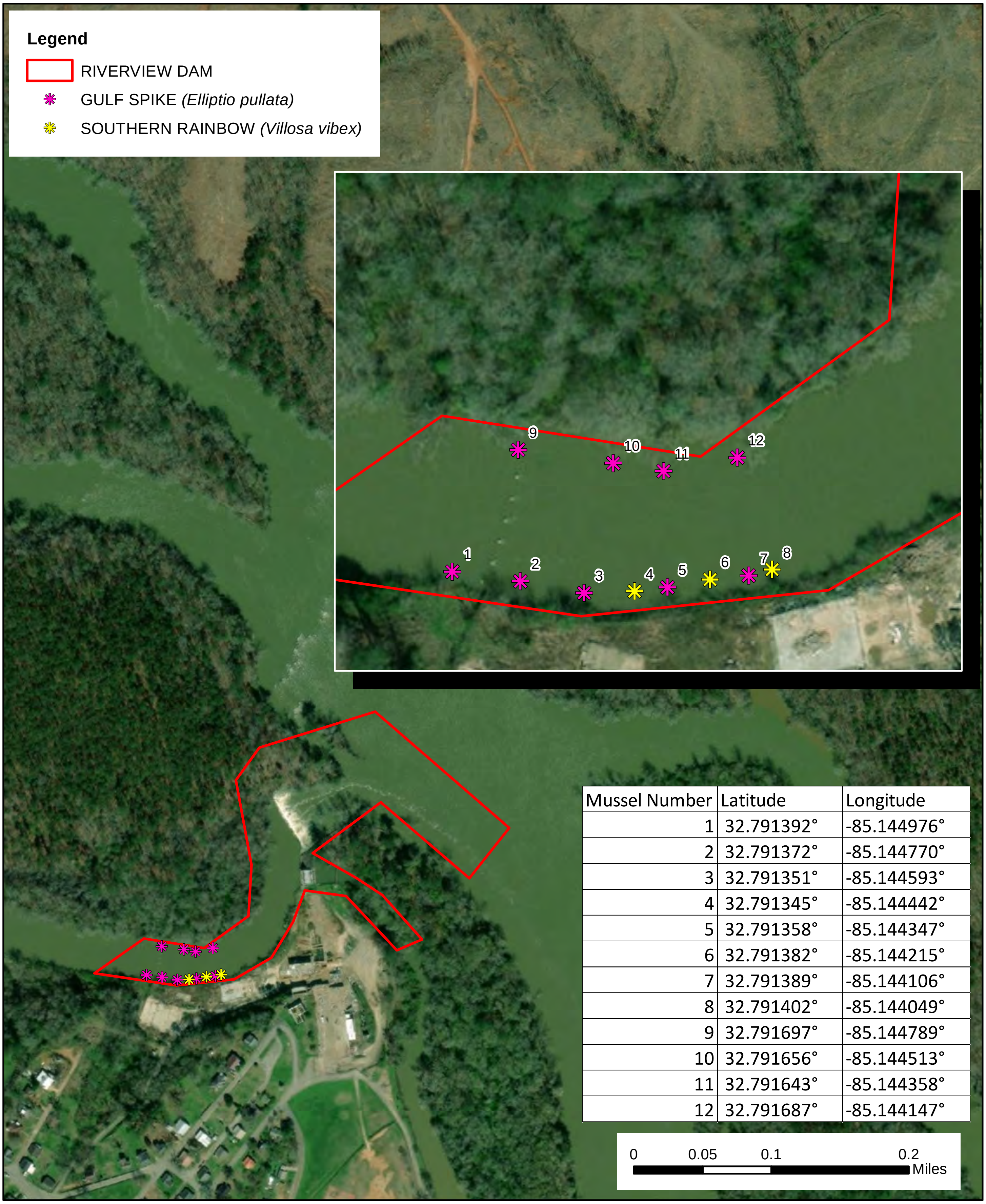
Langdale, Riverview and Crow Hop Dam Removal Mussel Survey
Harris County, Georgia Chambers County, Alabama

N W E S

20236-675
September 2020

Crow Hop Dam Mussel Collection Areas

Figure 8



Mussel Number	Latitude	Longitude
1	32.791392°	-85.144976°
2	32.791372°	-85.144770°
3	32.791351°	-85.144593°
4	32.791345°	-85.144442°
5	32.791358°	-85.144347°
6	32.791382°	-85.144215°
7	32.791389°	-85.144106°
8	32.791402°	-85.144049°
9	32.791697°	-85.144789°
10	32.791656°	-85.144513°
11	32.791643°	-85.144358°
12	32.791687°	-85.144147°

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Georgia Power Company
Langdale, Riverview and Crow Hop Dam Removal Mussel Survey
Harris County, Georgia Chambers County, Alabama

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20236-675
September 2020

Riverview Dam Mussel Collection Areas

Figure 9

Appendix II: Agency Coordination

Freshwater Mussel Survey Report
Langdale and Riverview Hydroelectric Projects
FERC Project Numbers 2341 and 2350
September 2020

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Georgia Ecological Services Field Office
355 East Hancock Avenue
Room 320
Athens, GA 30601
Phone: (706) 613-9493 Fax: (706) 613-6059

In Reply Refer To: August 06, 2020
Consultation Code: 04EG1000-2020-SLI-3175
Event Code: 04EG1000-2020-E-05856
Project Name: Langdale, Crow Hop, Riverview Dam Removal

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

Thank you for your recent request for information on federally listed species and important wildlife habitats that may occur in your project area. The U.S. Fish and Wildlife Service (Service) has responsibility for certain species of wildlife under the Endangered Species Act (ESA) of 1973 as amended (16 USC 1531 et seq.), the Migratory Bird Treaty Act (MBTA) as amended (16 USC 701-715), and the Bald and Golden Eagle Protection Act (BGEPA) as amended (16 USC 668-668c). We are providing the following guidance to assist you in determining which federally imperiled species may or may not occur within your project area and to recommend some conservation measures that can be included in your project design if you determine those species or designated critical habitat may be affected by your proposed project.

FEDERALLY-LISTED SPECIES AND DESIGNATED CRITICAL HABITAT

Attached is a list of endangered, threatened, and proposed species that may occur in your project area. Your project area may not necessarily include all or any of these species. Under the ESA, it is the responsibility of the Federal action agency or its designated representative to determine if a proposed action "may affect" endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with the Service further. Similarly, it is the responsibility of the Federal action agency or project proponent, not the Service, to make “no effect” determinations. If you determine that your proposed action will have “no effect” on threatened or endangered species or their respective critical habitat, you do not need to seek concurrence with the Service. Nevertheless, it is a violation of Federal law to harm or harass any federally-listed threatened or endangered fish or wildlife species without the appropriate permit.

If you determine that your proposed action may affect federally listed species, please consult with the Service. Through the consultation process, we will analyze information contained in a biological assessment or equivalent document that you provide. If your proposed action is associated with Federal funding or permitting, consultation will occur with the Federal agency under section 7(a)(2) of the ESA. Otherwise, an incidental take permit pursuant to section 10(a)(1)(B) of the ESA (also known as a Habitat Conservation Plan) may be necessary to exempt harm or harass federally listed threatened or endangered fish or wildlife species. For more information regarding formal consultation and HCPs, please see the Service's Consultation Handbook and Habitat Conservation Plans at www.fws.gov/endangered/esa-library/index.html#consultations.

Action Area. The scope of federally listed species compliance not only includes direct effects, but also any indirect effects of project activities (e.g., equipment staging areas, offsite borrow material areas, or utility relocations). The action area is the spatial extent of an action's direct and indirect modifications to the land, water, or air (50 CFR 402.02). Large projects may have effects to land, water, or air outside the immediate footprint of the project, and these areas should be included as part of the action area. Effects to land, water, or air outside of a project footprint could include things like lighting, dust, smoke, and noise. To obtain a complete list of species, the action area should be uploaded or drawn in IPaC rather than just the project footprint.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

If you determine that your action may affect any federally listed species and would like technical assistance from our office please provide the following information (reference to these items can be found in 50 CFR402.13 and 402.14):

A description of the proposed action, including any measures intended to avoid, minimize, or offset effects of the action. Consistent with the nature and scope of the proposed action, the description shall provide sufficient detail to assess the effects of the action on listed species and critical habitat, including:

1. The purpose of the action;

2. The duration and timing of the action;

3. The location of the action;

4. The specific components of the action and how they will be carried out;

5. Description of areas to be affected directly or indirectly by the action;

6. Information on the presence of listed species in the action area;

7. Description of effects of the action on species in the action area;

8. Maps, drawings, blueprints, or similar schematics of the action; and

9. Any other available information related to the nature and scope of the proposed action relevant to its effects on listed species or designated critical habitat (examples include: stormwater plans, management plans, erosion and sediment plans).

Please submit all consultation documents via email to gaes_assistance@fws.gov or by using IPaC, uploaded documents, and sharing the project with a specific Georgia Ecological Services staff member. If the project is on-going, documents can also be sent to the Georgia ES staff member currently working with you on your project. For Georgia Department of Transportation-related projects, please work with the Office of Environmental Services ecologist to determine the appropriate USFWS transportation liaison.

WETLANDS AND FLOODPLAINS

Under Executive Orders 11988 and 11990, Federal agencies are required to minimize the destruction, loss, or degradation of wetlands and floodplains, and preserve and enhance their natural and beneficial values. These habitats should be conserved through avoidance, or mitigated to ensure that there would be no net loss of wetlands function and value.

We encourage you to use the National Wetland Inventory (NWI) maps in conjunction with ground-truthing to identify wetlands occurring in your project area. The Service's NWI program website, www.fws.gov/wetlands/Data/Mapper.html integrates digital map data with other resource information. We also recommend you contact the U.S. Army Corps of Engineers for permitting requirements under section 404 of the Clean Water Act if your proposed action could impact floodplains or wetlands.

MIGRATORY BIRDS

The MBTA prohibits the taking of migratory birds, nests, and eggs, except as permitted by the Service's Migratory Bird Office. To minimize the likelihood of adverse impacts to migratory birds, we recommend construction activities occur outside the general bird nesting season from March through August, or that areas proposed for construction during the nesting season be surveyed, and when occupied, avoided until the young have fledged.

We recommend review of Birds of Conservation Concern at website www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BCC.html to fully evaluate the effects to the birds at your site. This list identifies birds that are potentially threatened by disturbance and construction.

Information related to wind energy development and migratory birds can be found at this location: https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/guidance-documents/wind-energy.php.

BALD AND GOLDEN EAGLES

The bald eagle (*Haliaeetus leucocephalus*) was delisted under the ESA on August 9, 2007. Both the bald eagle and golden eagle (*Aquila chrysaetos*) are still protected under the MBTA and BGEPA. The BGEPA affords both eagles protection in addition to that provided by the MBTA, in particular, by making it unlawful to “disturb” eagles. Under the BGEPA, the Service may issue limited permits to incidentally “take” eagles (e.g., injury, interfering with normal breeding, feeding, or sheltering behavior nest abandonment). For information on bald and golden eagle management guidelines, we recommend you review information provided at https://www.fws.gov/birds/management/managed-species/bald-and-golden-eagle-information.php and https://www.fws.gov/birds/management/managed-species/eagle-management.php. Additionally the following site will help you determine if your activity is likely to take or disturb bald eagles in the southeast (https://www.fws.gov/southeast/our-services/eagle-technical-assistance).

NATIVE BAT COMMENTS

If your species list includes Indiana bat or northern long-eared bat and the project is expected to impact forested habitat that is appropriate for maternity colonies of these species, forest clearing during the winter. Federally listed bats could be actively present in forested landscapes from April 1 to October 15 of any year and have non-volant pups from May 15 to July 31 in any year. Non-volant pups are incapable of flight and are vulnerable to disturbance during that time. Additional information on bat avoidance and minimization can be found at the following link: https://www.fws.gov/athens/transportation/pdfs/Bat_AMMs.pdf.

Additional information that addresses at-risk or high priority natural resources can be found in the State Wildlife Action Plan (https://georgiawildlife.com/WildlifeActionPlan), at Georgia Department of Natural Resources, Wildlife Resources Division Rare Species and Natural Community Portal (https://georgiawildlife.com/conservation/species-of-concern), Georgia's Natural, Archaeological, and Historic Resources GIS portal (https://www.gnahrgis.org/gnahrgis/index.do), and Georgia Ecological Services Watershed Guidance portal (https://www.fws.gov/athens/transportation/coordination.html).

Thank you for your concern for endangered and threatened species. We appreciate your efforts to identify and avoid impacts to listed and sensitive species in your project area. For further

consultation on your proposed activity, please email gaes_assistance@fws.gov and reference your Service Consultation Tracking Number (Consultation Code).

This letter constitutes Georgia Ecological Services' general comments under the authority of the Endangered Species Act.

Attachment(s):

- Official Species List
- Migratory Birds

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Georgia Ecological Services Field Office
355 East Hancock Avenue
Room 320
Athens, GA 30601
(706) 613-9493

Project Summary

Consultation Code: 04EG1000-2020-SLI-3175

Event Code: 04EG1000-2020-E-05856

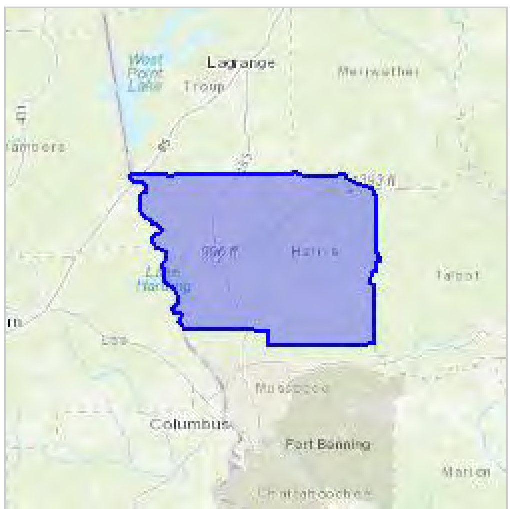
Project Name: Langdale, Crow Hop, Riverview Dam Removal

Project Type: DAM

Project Description: Removal of Langdale, crow hop, and riverview dams along the Chattahoochee river.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/32.728535192391746N84.89907053566674W



Counties: Harris, GA

Endangered Species Act Species

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Red-cockaded Woodpecker *Picoides borealis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7614	Endangered

Flowering Plants

NAME	STATUS
Fringed Campion *Silene polypetala* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3738	Endangered
Georgia Rockcress *Arabis georgiana* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4535	Threatened
Little Amphianthus *Amphianthus pusillus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6445	Threatened
Relict Trillium *Trillium reliquum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8489	Endangered

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Georgia Rockcress *Arabis georgiana* https://ecos.fws.gov/ecp/species/4535#crithab	Final

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

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

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

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

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

NAME	BREEDING SEASON
American Kestrel *Falco sparverius paulus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 1 to Aug 31
Bachman's Sparrow *Aimophila aestivalis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6177	Breeds May 1 to Sep 30

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Blue-winged Warbler *Vermivora pinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jun 30
Cerulean Warbler *Dendroica cerulea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 26 to Jul 20
Common Ground-dove *Columbina passerina exigua* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Feb 1 to Dec 31
Eastern Whip-poor-will *Antrostomus vociferus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Kentucky Warbler *Oporornis formosus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird *Euphagus carolinus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Swallow-tailed Kite *Elanoides forficatus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8938	Breeds Mar 10 to Jun 30

NAME	BREEDING SEASON
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability Of Presence Summary

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

Probability of Presence (■)

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

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

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

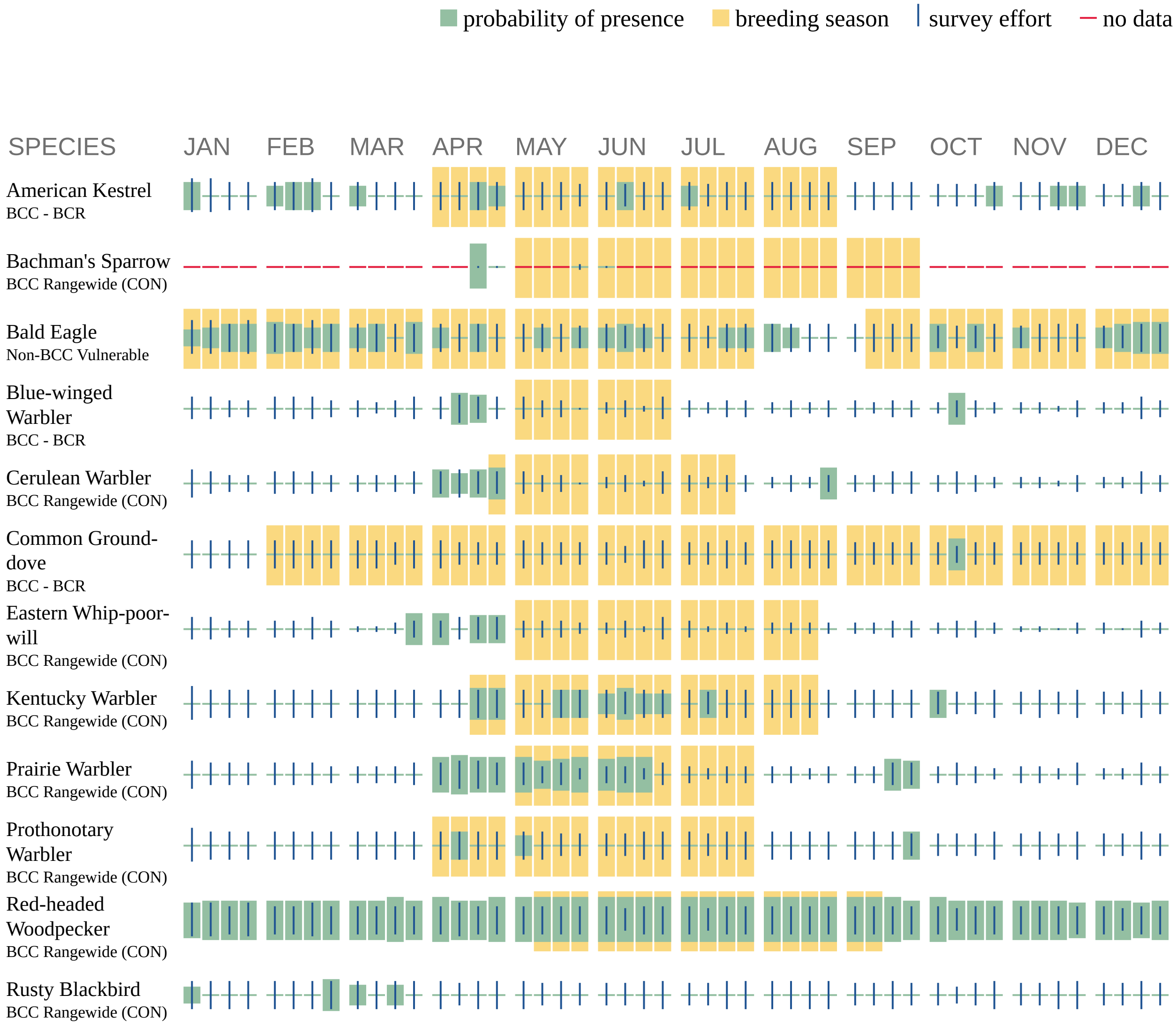
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

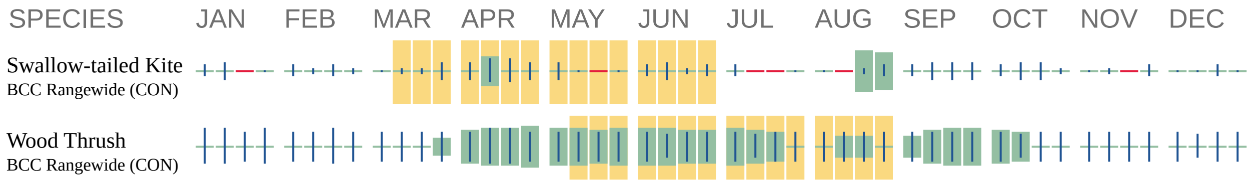
Survey Effort (|)

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

No Data (–)
A week is marked as having no data if there were no survey events for that week.

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





Additional information can be found using the following links:

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

Migratory Birds FAQ

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

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

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

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

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

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

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

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

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

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

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

Details about birds that are potentially affected by offshore projects

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

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

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

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

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419
Phone: (251) 441-5181 Fax: (251) 441-6222

In Reply Refer To:
Consultation Code: 04EA1000-2020-SLI-1324
Event Code: 04EA1000-2020-E-03446
Project Name: Langdale, Crow Hop, Riverview Dam Removal

August 06, 2020

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. Please note that new information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

Note that due to the volume of emails received by our office, we cannot accept project consultation requests by email.

Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Also note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the process and consultation under the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs

for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at:

http://www.fws.gov/migratorybirds/pdf/management/usfwscommunicationtowerguidance.pdf

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

We can be reached at:

US Fish and Wildlife Service

1208 Main Street

Daphne, AL 36526

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419
(251) 441-5181

Project Summary

Consultation Code: 04EA1000-2020-SLI-1324

Event Code: 04EA1000-2020-E-03446

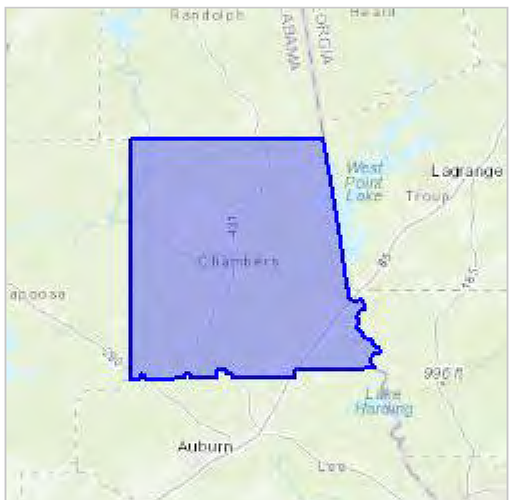
Project Name: Langdale, Crow Hop, Riverview Dam Removal

Project Type: DAM

Project Description: Removal of Langdale, crow hop, and riverview dams along the Chattahoochee river.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/32.918793242089514N85.39392192212806W



Counties: Chambers, AL

Endangered Species Act Species

There is a total of 9 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Wood Stork *Mycteria americana* Population: AL, FL, GA, MS, NC, SC No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8477	Threatened

Clams

NAME	STATUS
Finelined Pocketbook *Lampsilis altilis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1393	Threatened
Oval Pigtoe *Pleurobema pyriforme* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4132	Endangered
Ovate Clubshell *Pleurobema perovatum* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5430	Endangered
Purple Bankclimber (mussel) *Elliptoideus sloatianus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7660	Threatened

Flowering Plants

NAME	STATUS
Little Amphianthus *Amphianthus pusillus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6445	Threatened
White Fringeless Orchid *Platanthera integrilabia* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1889	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Georgia Ecological Services Field Office
355 East Hancock Avenue
Room 320
Athens, GA 30601
Phone: (706) 613-9493 Fax: (706) 613-6059

In Reply Refer To: August 05, 2020
Consultation Code: 04EG1000-2020-SLI-0284
Event Code: 04EG1000-2020-E-05831
Project Name: Langdale Dam ESI:20236-675

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

Thank you for your recent request for information on federally listed species and important wildlife habitats that may occur in your project area. The U.S. Fish and Wildlife Service (Service) has responsibility for certain species of wildlife under the Endangered Species Act (ESA) of 1973 as amended (16 USC 1531 et seq.), the Migratory Bird Treaty Act (MBTA) as amended (16 USC 701-715), and the Bald and Golden Eagle Protection Act (BGEPA) as amended (16 USC 668-668c). We are providing the following guidance to assist you in determining which federally imperiled species may or may not occur within your project area and to recommend some conservation measures that can be included in your project design if you determine those species or designated critical habitat may be affected by your proposed project.

FEDERALLY-LISTED SPECIES AND DESIGNATED CRITICAL HABITAT

Attached is a list of endangered, threatened, and proposed species that may occur in your project area. Your project area may not necessarily include all or any of these species. Under the ESA, it is the responsibility of the Federal action agency or its designated representative to determine if a proposed action "may affect" endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with the Service further. Similarly, it is the responsibility of the Federal action agency or project proponent, not the Service, to make “no effect” determinations. If you determine that your proposed action will have “no effect” on threatened or endangered species or their respective critical habitat, you do not need to seek concurrence with the Service. Nevertheless, it is a violation of Federal law to harm or harass any federally-listed threatened or endangered fish or wildlife species without the appropriate permit.

If you determine that your proposed action may affect federally listed species, please consult with the Service. Through the consultation process, we will analyze information contained in a biological assessment or equivalent document that you provide. If your proposed action is associated with Federal funding or permitting, consultation will occur with the Federal agency under section 7(a)(2) of the ESA. Otherwise, an incidental take permit pursuant to section 10(a)(1)(B) of the ESA (also known as a Habitat Conservation Plan) may be necessary to exempt harm or harass federally listed threatened or endangered fish or wildlife species. For more information regarding formal consultation and HCPs, please see the Service's Consultation Handbook and Habitat Conservation Plans at www.fws.gov/endangered/esa-library/index.html#consultations.

Action Area. The scope of federally listed species compliance not only includes direct effects, but also any indirect effects of project activities (e.g., equipment staging areas, offsite borrow material areas, or utility relocations). The action area is the spatial extent of an action's direct and indirect modifications to the land, water, or air (50 CFR 402.02). Large projects may have effects to land, water, or air outside the immediate footprint of the project, and these areas should be included as part of the action area. Effects to land, water, or air outside of a project footprint could include things like lighting, dust, smoke, and noise. To obtain a complete list of species, the action area should be uploaded or drawn in IPaC rather than just the project footprint.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

If you determine that your action may affect any federally listed species and would like technical assistance from our office please provide the following information (reference to these items can be found in 50 CFR402.13 and 402.14):

A description of the proposed action, including any measures intended to avoid, minimize, or offset effects of the action. Consistent with the nature and scope of the proposed action, the description shall provide sufficient detail to assess the effects of the action on listed species and critical habitat, including:

1. The purpose of the action;

2. The duration and timing of the action;

3. The location of the action;

4. The specific components of the action and how they will be carried out;

5. Description of areas to be affected directly or indirectly by the action;

6. Information on the presence of listed species in the action area;

7. Description of effects of the action on species in the action area;

8. Maps, drawings, blueprints, or similar schematics of the action; and

9. Any other available information related to the nature and scope of the proposed action relevant to its effects on listed species or designated critical habitat (examples include: stormwater plans, management plans, erosion and sediment plans).

Please submit all consultation documents via email to gaes_assistance@fws.gov or by using IPaC, uploaded documents, and sharing the project with a specific Georgia Ecological Services staff member. If the project is on-going, documents can also be sent to the Georgia ES staff member currently working with you on your project. For Georgia Department of Transportation-related projects, please work with the Office of Environmental Services ecologist to determine the appropriate USFWS transportation liaison.

WETLANDS AND FLOODPLAINS

Under Executive Orders 11988 and 11990, Federal agencies are required to minimize the destruction, loss, or degradation of wetlands and floodplains, and preserve and enhance their natural and beneficial values. These habitats should be conserved through avoidance, or mitigated to ensure that there would be no net loss of wetlands function and value.

We encourage you to use the National Wetland Inventory (NWI) maps in conjunction with ground-truthing to identify wetlands occurring in your project area. The Service's NWI program website, www.fws.gov/wetlands/Data/Mapper.html integrates digital map data with other resource information. We also recommend you contact the U.S. Army Corps of Engineers for permitting requirements under section 404 of the Clean Water Act if your proposed action could impact floodplains or wetlands.

MIGRATORY BIRDS

The MBTA prohibits the taking of migratory birds, nests, and eggs, except as permitted by the Service's Migratory Bird Office. To minimize the likelihood of adverse impacts to migratory birds, we recommend construction activities occur outside the general bird nesting season from March through August, or that areas proposed for construction during the nesting season be surveyed, and when occupied, avoided until the young have fledged.

We recommend review of Birds of Conservation Concern at website www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BCC.html to fully evaluate the effects to the birds at your site. This list identifies birds that are potentially threatened by disturbance and construction.

Information related to wind energy development and migratory birds can be found at this location: https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/guidance-documents/wind-energy.php.

BALD AND GOLDEN EAGLES

The bald eagle (*Haliaeetus leucocephalus*) was delisted under the ESA on August 9, 2007. Both the bald eagle and golden eagle (*Aquila chrysaetos*) are still protected under the MBTA and BGEPA. The BGEPA affords both eagles protection in addition to that provided by the MBTA, in particular, by making it unlawful to “disturb” eagles. Under the BGEPA, the Service may issue limited permits to incidentally “take” eagles (e.g., injury, interfering with normal breeding, feeding, or sheltering behavior nest abandonment). For information on bald and golden eagle management guidelines, we recommend you review information provided at https://www.fws.gov/birds/management/managed-species/bald-and-golden-eagle-information.php and https://www.fws.gov/birds/management/managed-species/eagle-management.php. Additionally the following site will help you determine if your activity is likely to take or disturb bald eagles in the southeast (https://www.fws.gov/southeast/our-services/eagle-technical-assistance).

NATIVE BAT COMMENTS

If your species list includes Indiana bat or northern long-eared bat and the project is expected to impact forested habitat that is appropriate for maternity colonies of these species, forest clearing during the winter. Federally listed bats could be actively present in forested landscapes from April 1 to October 15 of any year and have non-volant pups from May 15 to July 31 in any year. Non-volant pups are incapable of flight and are vulnerable to disturbance during that time. Additional information on bat avoidance and minimization can be found at the following link: https://www.fws.gov/athens/transportation/pdfs/Bat_AMMs.pdf.

Additional information that addresses at-risk or high priority natural resources can be found in the State Wildlife Action Plan (https://georgiawildlife.com/WildlifeActionPlan), at Georgia Department of Natural Resources, Wildlife Resources Division Rare Species and Natural Community Portal (https://georgiawildlife.com/conservation/species-of-concern), Georgia's Natural, Archaeological, and Historic Resources GIS portal (https://www.gnahrgis.org/gnahrgis/index.do), and Georgia Ecological Services Watershed Guidance portal (https://www.fws.gov/athens/transportation/coordination.html).

Thank you for your concern for endangered and threatened species. We appreciate your efforts to identify and avoid impacts to listed and sensitive species in your project area. For further

consultation on your proposed activity, please email gaes_assistance@fws.gov and reference your Service Consultation Tracking Number (Consultation Code).

This letter constitutes Georgia Ecological Services' general comments under the authority of the Endangered Species Act.

Attachment(s):

- Official Species List
- Migratory Birds

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Georgia Ecological Services Field Office
355 East Hancock Avenue
Room 320
Athens, GA 30601
(706) 613-9493

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419
(251) 441-5181

Project Summary

Consultation Code: 04EG1000-2020-SLI-0284

Event Code: 04EG1000-2020-E-05831

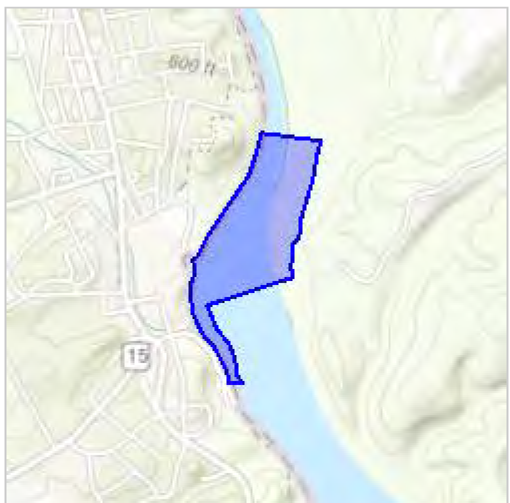
Project Name: Langdale Dam ESI:20236-675

Project Type: DAM

Project Description: Removal of Langdale Dam, on the Chattahoochee River, Harris County, Georgia.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/32.81421884283096N85.16596436831735W



Counties: Chambers, AL | Harris, GA

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Flowering Plants

NAME	STATUS
Georgia Rockcress *Arabis georgiana* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4535	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

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

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

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

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

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31

NAME	BREEDING SEASON
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability Of Presence Summary

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

Probability of Presence (■)

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

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

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

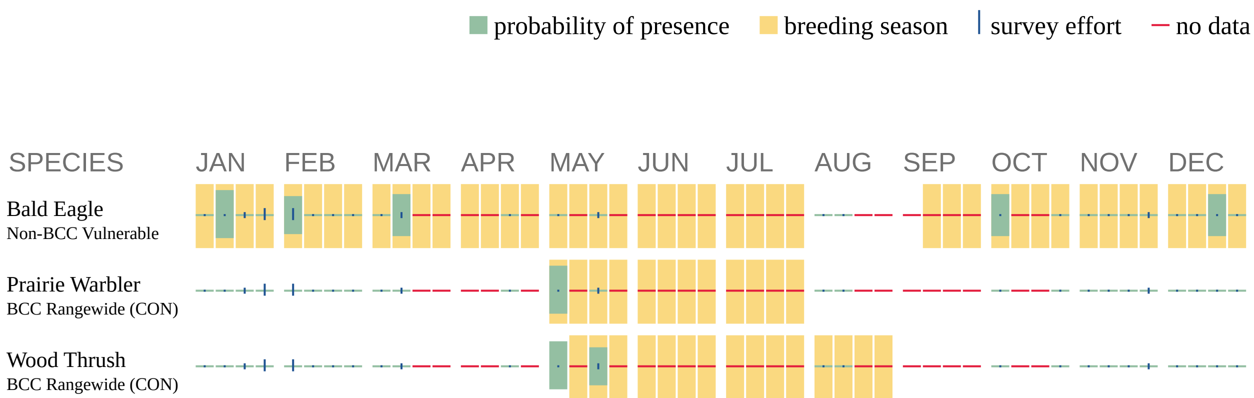
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

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

No Data (–)
A week is marked as having no data if there were no survey events for that week.

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



Additional information can be found using the following links:

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

Migratory Birds FAQ

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

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

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

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

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

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

What are the levels of concern for migratory birds?

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

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

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

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

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

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In

contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ “Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419
Phone: (251) 441-5181 Fax: (251) 441-6222

In Reply Refer To: August 05, 2020
Consultation Code: 04EA1000-2020-SLI-0124
Event Code: 04EA1000-2020-E-03419
Project Name: Langdale Dam ESI:20236-675

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. Please note that new information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

Note that due to the volume of emails received by our office, we cannot accept project consultation requests by email.

Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Also note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the process and consultation under the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs

for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at:

http://www.fws.gov/migratorybirds/pdf/management/usfwscommunicationtowerguidance.pdf

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

We can be reached at:

US Fish and Wildlife Service

1208 Main Street

Daphne, AL 36526

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419
(251) 441-5181

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Georgia Ecological Services Field Office
355 East Hancock Avenue
Room 320
Athens, GA 30601
(706) 613-9493

Project Summary

Consultation Code: 04EA1000-2020-SLI-0124

Event Code: 04EA1000-2020-E-03419

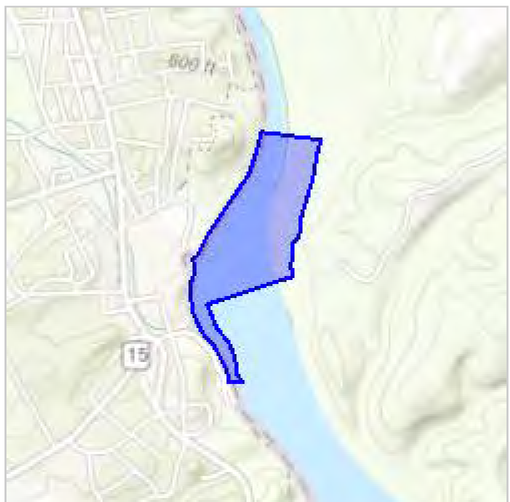
Project Name: Langdale Dam ESI:20236-675

Project Type: DAM

Project Description: Removal of Langdale Dam, on the Chattahoochee River, Harris County, Georgia.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/32.81421884283096N85.16596436831735W



Counties: Chambers, AL | Harris, GA

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Clams

NAME	STATUS
Oval Pigtoe *Pleurobema pyriforme* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4132	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Georgia Ecological Services Field Office
355 East Hancock Avenue
Room 320
Athens, GA 30601
Phone: (706) 613-9493 Fax: (706) 613-6059

In Reply Refer To: August 05, 2020
Consultation Code: 04EG1000-2020-SLI-0286
Event Code: 04EG1000-2020-E-05827
Project Name: Riverview Dam ESI: 20236-675

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

Thank you for your recent request for information on federally listed species and important wildlife habitats that may occur in your project area. The U.S. Fish and Wildlife Service (Service) has responsibility for certain species of wildlife under the Endangered Species Act (ESA) of 1973 as amended (16 USC 1531 et seq.), the Migratory Bird Treaty Act (MBTA) as amended (16 USC 701-715), and the Bald and Golden Eagle Protection Act (BGEPA) as amended (16 USC 668-668c). We are providing the following guidance to assist you in determining which federally imperiled species may or may not occur within your project area and to recommend some conservation measures that can be included in your project design if you determine those species or designated critical habitat may be affected by your proposed project.

FEDERALLY-LISTED SPECIES AND DESIGNATED CRITICAL HABITAT

Attached is a list of endangered, threatened, and proposed species that may occur in your project area. Your project area may not necessarily include all or any of these species. Under the ESA, it is the responsibility of the Federal action agency or its designated representative to determine if a proposed action "may affect" endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with the Service further. Similarly, it is the responsibility of the Federal action agency or project proponent, not the Service, to make “no effect” determinations. If you determine that your proposed action will have “no effect” on threatened or endangered species or their respective critical habitat, you do not need to seek concurrence with the Service. Nevertheless, it is a violation of Federal law to harm or harass any federally-listed threatened or endangered fish or wildlife species without the appropriate permit.

If you determine that your proposed action may affect federally listed species, please consult with the Service. Through the consultation process, we will analyze information contained in a biological assessment or equivalent document that you provide. If your proposed action is associated with Federal funding or permitting, consultation will occur with the Federal agency under section 7(a)(2) of the ESA. Otherwise, an incidental take permit pursuant to section 10(a)(1)(B) of the ESA (also known as a Habitat Conservation Plan) may be necessary to exempt harm or harass federally listed threatened or endangered fish or wildlife species. For more information regarding formal consultation and HCPs, please see the Service's Consultation Handbook and Habitat Conservation Plans at www.fws.gov/endangered/esa-library/index.html#consultations.

Action Area. The scope of federally listed species compliance not only includes direct effects, but also any indirect effects of project activities (e.g., equipment staging areas, offsite borrow material areas, or utility relocations). The action area is the spatial extent of an action's direct and indirect modifications to the land, water, or air (50 CFR 402.02). Large projects may have effects to land, water, or air outside the immediate footprint of the project, and these areas should be included as part of the action area. Effects to land, water, or air outside of a project footprint could include things like lighting, dust, smoke, and noise. To obtain a complete list of species, the action area should be uploaded or drawn in IPaC rather than just the project footprint.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

If you determine that your action may affect any federally listed species and would like technical assistance from our office please provide the following information (reference to these items can be found in 50 CFR402.13 and 402.14):

A description of the proposed action, including any measures intended to avoid, minimize, or offset effects of the action. Consistent with the nature and scope of the proposed action, the description shall provide sufficient detail to assess the effects of the action on listed species and critical habitat, including:

1. The purpose of the action;

2. The duration and timing of the action;

3. The location of the action;

4. The specific components of the action and how they will be carried out;

5. Description of areas to be affected directly or indirectly by the action;

6. Information on the presence of listed species in the action area;

7. Description of effects of the action on species in the action area;

8. Maps, drawings, blueprints, or similar schematics of the action; and

9. Any other available information related to the nature and scope of the proposed action relevant to its effects on listed species or designated critical habitat (examples include: stormwater plans, management plans, erosion and sediment plans).

Please submit all consultation documents via email to gaes_assistance@fws.gov or by using IPaC, uploaded documents, and sharing the project with a specific Georgia Ecological Services staff member. If the project is on-going, documents can also be sent to the Georgia ES staff member currently working with you on your project. For Georgia Department of Transportation-related projects, please work with the Office of Environmental Services ecologist to determine the appropriate USFWS transportation liaison.

WETLANDS AND FLOODPLAINS

Under Executive Orders 11988 and 11990, Federal agencies are required to minimize the destruction, loss, or degradation of wetlands and floodplains, and preserve and enhance their natural and beneficial values. These habitats should be conserved through avoidance, or mitigated to ensure that there would be no net loss of wetlands function and value.

We encourage you to use the National Wetland Inventory (NWI) maps in conjunction with ground-truthing to identify wetlands occurring in your project area. The Service's NWI program website, www.fws.gov/wetlands/Data/Mapper.html integrates digital map data with other resource information. We also recommend you contact the U.S. Army Corps of Engineers for permitting requirements under section 404 of the Clean Water Act if your proposed action could impact floodplains or wetlands.

MIGRATORY BIRDS

The MBTA prohibits the taking of migratory birds, nests, and eggs, except as permitted by the Service's Migratory Bird Office. To minimize the likelihood of adverse impacts to migratory birds, we recommend construction activities occur outside the general bird nesting season from March through August, or that areas proposed for construction during the nesting season be surveyed, and when occupied, avoided until the young have fledged.

We recommend review of Birds of Conservation Concern at website www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BCC.html to fully evaluate the effects to the birds at your site. This list identifies birds that are potentially threatened by disturbance and construction.

Information related to wind energy development and migratory birds can be found at this location: https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/guidance-documents/wind-energy.php.

BALD AND GOLDEN EAGLES

The bald eagle (*Haliaeetus leucocephalus*) was delisted under the ESA on August 9, 2007. Both the bald eagle and golden eagle (*Aquila chrysaetos*) are still protected under the MBTA and BGEPA. The BGEPA affords both eagles protection in addition to that provided by the MBTA, in particular, by making it unlawful to “disturb” eagles. Under the BGEPA, the Service may issue limited permits to incidentally “take” eagles (e.g., injury, interfering with normal breeding, feeding, or sheltering behavior nest abandonment). For information on bald and golden eagle management guidelines, we recommend you review information provided at https://www.fws.gov/birds/management/managed-species/bald-and-golden-eagle-information.php and https://www.fws.gov/birds/management/managed-species/eagle-management.php. Additionally the following site will help you determine if your activity is likely to take or disturb bald eagles in the southeast (https://www.fws.gov/southeast/our-services/eagle-technical-assistance).

NATIVE BAT COMMENTS

If your species list includes Indiana bat or northern long-eared bat and the project is expected to impact forested habitat that is appropriate for maternity colonies of these species, forest clearing during the winter. Federally listed bats could be actively present in forested landscapes from April 1 to October 15 of any year and have non-volant pups from May 15 to July 31 in any year. Non-volant pups are incapable of flight and are vulnerable to disturbance during that time. Additional information on bat avoidance and minimization can be found at the following link: https://www.fws.gov/athens/transportation/pdfs/Bat_AMMs.pdf.

Additional information that addresses at-risk or high priority natural resources can be found in the State Wildlife Action Plan (https://georgiawildlife.com/WildlifeActionPlan), at Georgia Department of Natural Resources, Wildlife Resources Division Rare Species and Natural Community Portal (https://georgiawildlife.com/conservation/species-of-concern), Georgia's Natural, Archaeological, and Historic Resources GIS portal (https://www.gnahrgis.org/gnahrgis/index.do), and Georgia Ecological Services Watershed Guidance portal (https://www.fws.gov/athens/transportation/coordination.html).

Thank you for your concern for endangered and threatened species. We appreciate your efforts to identify and avoid impacts to listed and sensitive species in your project area. For further

consultation on your proposed activity, please email gaes_assistance@fws.gov and reference your Service Consultation Tracking Number (Consultation Code).

This letter constitutes Georgia Ecological Services' general comments under the authority of the Endangered Species Act.

Attachment(s):

- Official Species List
- Migratory Birds

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Georgia Ecological Services Field Office
355 East Hancock Avenue
Room 320
Athens, GA 30601
(706) 613-9493

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419
(251) 441-5181

Project Summary

Consultation Code: 04EG1000-2020-SLI-0286

Event Code: 04EG1000-2020-E-05827

Project Name: Riverview Dam ESI: 20236-675

Project Type: DAM

Project Description: Removal of Riverview Dam, on the Chattahoochee River, Harris County, Georgia.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/32.79272207497864N85.14327291145155W

Counties: Chambers, AL | Harris, GA

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Flowering Plants

NAME	STATUS
Georgia Rockcress *Arabis georgiana* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4535	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

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

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

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

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

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31

NAME	BREEDING SEASON
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability Of Presence Summary

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

Probability of Presence (■)

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

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

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

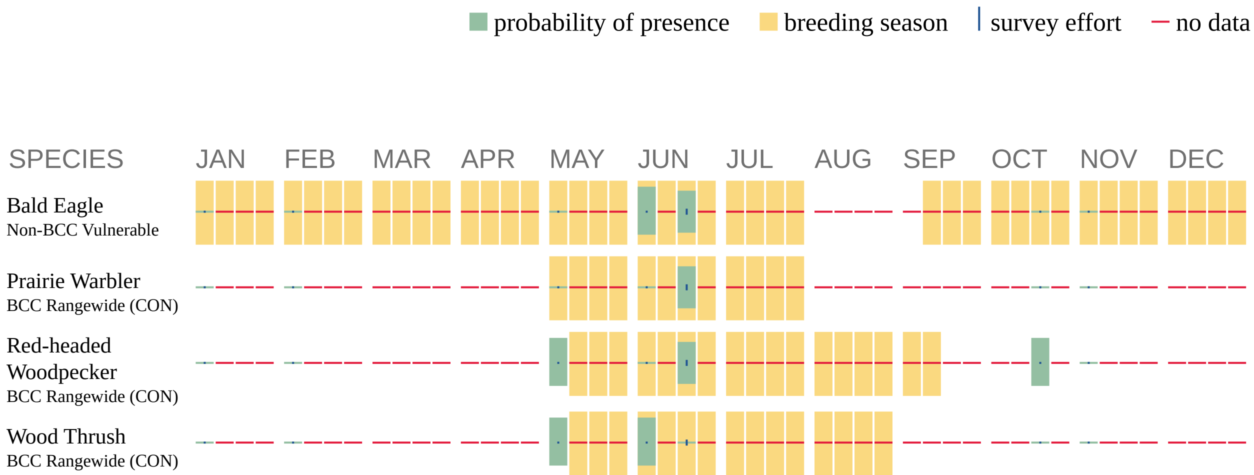
Breeding Season (■)

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

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

No Data (–)
A week is marked as having no data if there were no survey events for that week.

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



Additional information can be found using the following links:

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

Migratory Birds FAQ

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

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

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

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

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

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

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

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

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

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

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

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

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

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

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

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

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC

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

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419
Phone: (251) 441-5181 Fax: (251) 441-6222

In Reply Refer To: August 05, 2020
Consultation Code: 04EA1000-2020-SLI-0125
Event Code: 04EA1000-2020-E-03418
Project Name: Riverview Dam ESI: 20236-675

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. Please note that new information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

Note that due to the volume of emails received by our office, we cannot accept project consultation requests by email.

Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Also note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the process and consultation under the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs

for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at:

http://www.fws.gov/migratorybirds/pdf/management/usfwscommunicationtowerguidance.pdf

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

We can be reached at:

US Fish and Wildlife Service

1208 Main Street

Daphne, AL 36526

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Alabama Ecological Services Field Office
1208 B Main Street
Daphne, AL 36526-4419
(251) 441-5181

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Georgia Ecological Services Field Office
355 East Hancock Avenue
Room 320
Athens, GA 30601
(706) 613-9493

Project Summary

Consultation Code: 04EA1000-2020-SLI-0125

Event Code: 04EA1000-2020-E-03418

Project Name: Riverview Dam ESI: 20236-675

Project Type: DAM

Project Description: Removal of Riverview Dam, on the Chattahoochee River, Harris County, Georgia.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/32.79272207497864N85.14327291145155W

Counties: Chambers, AL | Harris, GA

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Clams

NAME	STATUS
Oval Pigtoe *Pleurobema pyriforme* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4132	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Georgia Ecological Services Field Office
355 East Hancock Avenue
Room 320
Athens, GA 30601
Phone: (706) 613-9493 Fax: (706) 613-6059

In Reply Refer To: August 05, 2020
Consultation Code: 04EG1000-2020-SLI-0285
Event Code: 04EG1000-2020-E-05829
Project Name: Crow Hop Dam ESI:20236-675

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

Thank you for your recent request for information on federally listed species and important wildlife habitats that may occur in your project area. The U.S. Fish and Wildlife Service (Service) has responsibility for certain species of wildlife under the Endangered Species Act (ESA) of 1973 as amended (16 USC 1531 et seq.), the Migratory Bird Treaty Act (MBTA) as amended (16 USC 701-715), and the Bald and Golden Eagle Protection Act (BGEPA) as amended (16 USC 668-668c). We are providing the following guidance to assist you in determining which federally imperiled species may or may not occur within your project area and to recommend some conservation measures that can be included in your project design if you determine those species or designated critical habitat may be affected by your proposed project.

FEDERALLY-LISTED SPECIES AND DESIGNATED CRITICAL HABITAT

Attached is a list of endangered, threatened, and proposed species that may occur in your project area. Your project area may not necessarily include all or any of these species. Under the ESA, it is the responsibility of the Federal action agency or its designated representative to determine if a proposed action "may affect" endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with the Service further. Similarly, it is the responsibility of the Federal action agency or project proponent, not the Service, to make “no effect” determinations. If you determine that your proposed action will have “no effect” on threatened or endangered species or their respective critical habitat, you do not need to seek concurrence with the Service. Nevertheless, it is a violation of Federal law to harm or harass any federally-listed threatened or endangered fish or wildlife species without the appropriate permit.

If you determine that your proposed action may affect federally listed species, please consult with the Service. Through the consultation process, we will analyze information contained in a biological assessment or equivalent document that you provide. If your proposed action is associated with Federal funding or permitting, consultation will occur with the Federal agency under section 7(a)(2) of the ESA. Otherwise, an incidental take permit pursuant to section 10(a)(1)(B) of the ESA (also known as a Habitat Conservation Plan) may be necessary to exempt harm or harass federally listed threatened or endangered fish or wildlife species. For more information regarding formal consultation and HCPs, please see the Service's Consultation Handbook and Habitat Conservation Plans at www.fws.gov/endangered/esa-library/index.html#consultations.

Action Area. The scope of federally listed species compliance not only includes direct effects, but also any indirect effects of project activities (e.g., equipment staging areas, offsite borrow material areas, or utility relocations). The action area is the spatial extent of an action's direct and indirect modifications to the land, water, or air (50 CFR 402.02). Large projects may have effects to land, water, or air outside the immediate footprint of the project, and these areas should be included as part of the action area. Effects to land, water, or air outside of a project footprint could include things like lighting, dust, smoke, and noise. To obtain a complete list of species, the action area should be uploaded or drawn in IPaC rather than just the project footprint.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

If you determine that your action may affect any federally listed species and would like technical assistance from our office please provide the following information (reference to these items can be found in 50 CFR402.13 and 402.14):

A description of the proposed action, including any measures intended to avoid, minimize, or offset effects of the action. Consistent with the nature and scope of the proposed action, the description shall provide sufficient detail to assess the effects of the action on listed species and critical habitat, including:

1. The purpose of the action;

2. The duration and timing of the action;

3. The location of the action;

4. The specific components of the action and how they will be carried out;

5. Description of areas to be affected directly or indirectly by the action;

6. Information on the presence of listed species in the action area;

7. Description of effects of the action on species in the action area;

8. Maps, drawings, blueprints, or similar schematics of the action; and

9. Any other available information related to the nature and scope of the proposed action relevant to its effects on listed species or designated critical habitat (examples include: stormwater plans, management plans, erosion and sediment plans).

Please submit all consultation documents via email to gaes_assistance@fws.gov or by using IPaC, uploaded documents, and sharing the project with a specific Georgia Ecological Services staff member. If the project is on-going, documents can also be sent to the Georgia ES staff member currently working with you on your project. For Georgia Department of Transportation-related projects, please work with the Office of Environmental Services ecologist to determine the appropriate USFWS transportation liaison.

WETLANDS AND FLOODPLAINS

Under Executive Orders 11988 and 11990, Federal agencies are required to minimize the destruction, loss, or degradation of wetlands and floodplains, and preserve and enhance their natural and beneficial values. These habitats should be conserved through avoidance, or mitigated to ensure that there would be no net loss of wetlands function and value.

We encourage you to use the National Wetland Inventory (NWI) maps in conjunction with ground-truthing to identify wetlands occurring in your project area. The Service's NWI program website, www.fws.gov/wetlands/Data/Mapper.html integrates digital map data with other resource information. We also recommend you contact the U.S. Army Corps of Engineers for permitting requirements under section 404 of the Clean Water Act if your proposed action could impact floodplains or wetlands.

MIGRATORY BIRDS

The MBTA prohibits the taking of migratory birds, nests, and eggs, except as permitted by the Service's Migratory Bird Office. To minimize the likelihood of adverse impacts to migratory birds, we recommend construction activities occur outside the general bird nesting season from March through August, or that areas proposed for construction during the nesting season be surveyed, and when occupied, avoided until the young have fledged.

We recommend review of Birds of Conservation Concern at website www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BCC.html to fully evaluate the effects to the birds at your site. This list identifies birds that are potentially threatened by disturbance and construction.

Information related to wind energy development and migratory birds can be found at this location: https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/guidance-documents/wind-energy.php.

BALD AND GOLDEN EAGLES

The bald eagle (*Haliaeetus leucocephalus*) was delisted under the ESA on August 9, 2007. Both the bald eagle and golden eagle (*Aquila chrysaetos*) are still protected under the MBTA and BGEPA. The BGEPA affords both eagles protection in addition to that provided by the MBTA, in particular, by making it unlawful to "disturb" eagles. Under the BGEPA, the Service may issue limited permits to incidentally "take" eagles (e.g., injury, interfering with normal breeding, feeding, or sheltering behavior nest abandonment). For information on bald and golden eagle management guidelines, we recommend you review information provided at https://www.fws.gov/birds/management/managed-species/bald-and-golden-eagle-information.php and https://www.fws.gov/birds/management/managed-species/eagle-management.php. Additionally the following site will help you determine if your activity is likely to take or disturb bald eagles in the southeast (https://www.fws.gov/southeast/our-services/eagle-technical-assistance).

NATIVE BAT COMMENTS

If your species list includes Indiana bat or northern long-eared bat and the project is expected to impact forested habitat that is appropriate for maternity colonies of these species, forest clearing during the winter. Federally listed bats could be actively present in forested landscapes from April 1 to October 15 of any year and have non-volant pups from May 15 to July 31 in any year. Non-volant pups are incapable of flight and are vulnerable to disturbance during that time. Additional information on bat avoidance and minimization can be found at the following link: https://www.fws.gov/athens/transportation/pdfs/Bat_AMMs.pdf.

Additional information that addresses at-risk or high priority natural resources can be found in the State Wildlife Action Plan (https://georgiawildlife.com/WildlifeActionPlan), at Georgia Department of Natural Resources, Wildlife Resources Division Rare Species and Natural Community Portal (https://georgiawildlife.com/conservation/species-of-concern), Georgia's Natural, Archaeological, and Historic Resources GIS portal (https://www.gnahrgis.org/gnahrgis/index.do), and Georgia Ecological Services Watershed Guidance portal (https://www.fws.gov/athens/transportation/coordination.html).

Thank you for your concern for endangered and threatened species. We appreciate your efforts to identify and avoid impacts to listed and sensitive species in your project area. For further

consultation on your proposed activity, please email gaes_assistance@fws.gov and reference your Service Consultation Tracking Number (Consultation Code).

This letter constitutes Georgia Ecological Services' general comments under the authority of the Endangered Species Act.

Attachment(s):

- Official Species List
- Migratory Birds

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Georgia Ecological Services Field Office
355 East Hancock Avenue
Room 320
Athens, GA 30601
(706) 613-9493

Project Summary

Consultation Code: 04EG1000-2020-SLI-0285

Event Code: 04EG1000-2020-E-05829

Project Name: Crow Hop Dam ESI:20236-675

Project Type: DAM

Project Description: Removal of Crow Hop Dam, on the Chattahoochee River, Harris County, Georgia

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/32.80018278023347N85.1523546683683W

Counties: Harris, GA

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Flowering Plants

NAME	STATUS
Georgia Rockcress *Arabis georgiana* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4535	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

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

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

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

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

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31

NAME	BREEDING SEASON
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability Of Presence Summary

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

Probability of Presence (■)

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

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

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

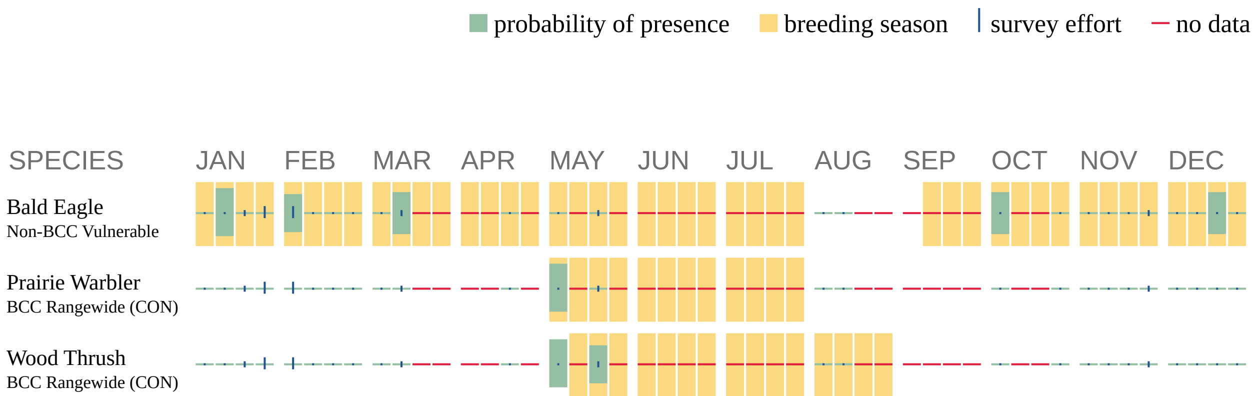
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

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

No Data (–)
A week is marked as having no data if there were no survey events for that week.

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



Additional information can be found using the following links:

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

Migratory Birds FAQ

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

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

What does IPaC use to generate the migratory birds potentially occurring in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

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

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

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

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

What are the levels of concern for migratory birds?

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

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

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

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

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

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

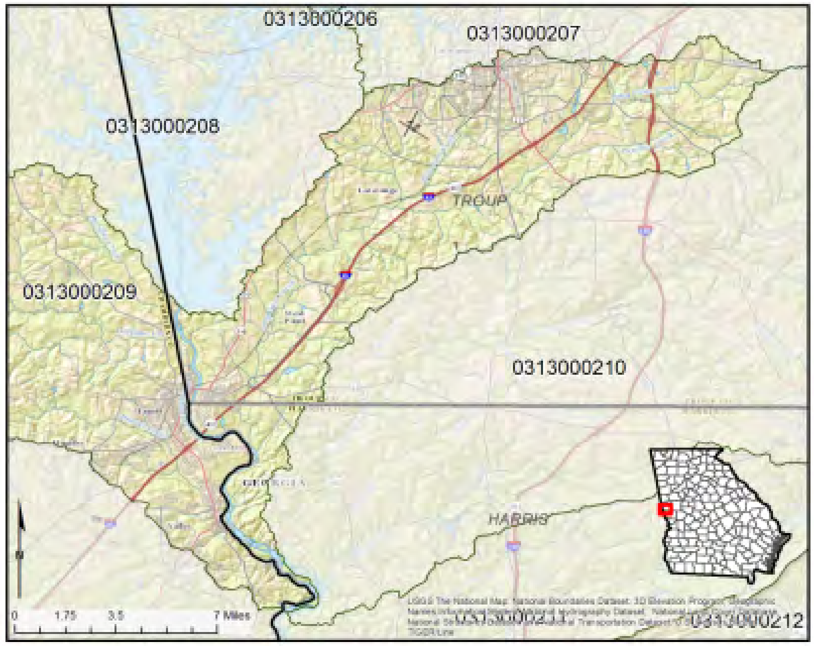
Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In

contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ “Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

Georgia Ecological Services U.S. Fish & Wildlife Service
HUC 10 Watershed Report

0313000209 Long Cane Creek-Chattahoochee River

***HUC 8 Watershed**: Middle Chattahoochee-Lake Harding*



Counties:

Harris, Troup

***Major Waterbodies** (in GA):*

Long Cane Creek, Chattahoochee River, Blue John Creek, Panther Creek, Oseligee Creek, Harrell Lake

Federal Listed Species:
(historic, known occurrence, or likely to occur in the watershed)

E - Endangered, T - Threatened, C - Candidate, CCA - Candidate Conservation species, PE - Proposed Endangered, PT - Proposed Threatened, Pet - Petitioned, R - Rare, U - Uncommon, SC - Species of Concern.

Red-cockaded Woodpecker (Picoides borealis) US: E; GA: E

Potential Range (county); Survey period: habitat any time of year or foraging individuals: 1 Apr - 31 May.

Little Amphianthus (Amphianthus pusillus) US: T; GA: T

Potential Range (county); Survey period: flowering 1 Mar - early May.

Georgia Rockcress (Arabis georgiana) US: T; GA: T

Potential Range (county); Survey period: 1 May - early July.

Federal Candidate, Candidate Conservation, or Petitioned Species:
(likely or known to occur in the watershed)

Delicate Spike (Elliptio arctata) US: Pet; GA: E

Occurrence; Survey period: year round, when water temperatures are above 10° C and excluding when stage is increasing or above normal.

Apalachicola Wild Indigo (Baptisia megacarpa) US: Pet

Occurrence; Surveys are best conducted during flowering and fruiting period (late April - early June).

Georgia Aster (Symphyotrichum georgianum) US: CCA; GA: T

Potential Range (county); Survey period: habitat any time of year or foraging individuals: 1 Apr - 31 May.

State Listed or Other At-risk Species:

(likely or known to occur in the watershed)

Bluestripe Shiner (Cyprinella callitaenia) GA: R

Occurrence; Please consult with GDNR for survey efforts.

Highscale Shiner (Notropis hypsilepis) GA: R

Occurrence; Please consult with GDNR for survey efforts.

Bald Eagle (Haliaeetus leucocephalus) GA: T

Occurrence; Survey period: year-round.

Croomia (Croomia pauciflora) GA: T

Occurrence; Please consult with GDNR for survey efforts.

Shoals Spiderlily (Hymenocallis coronaria) GA: T

Occurrence; Please consult with GDNR for survey efforts.

Any of the above species may occur in suitable habitat in this HUC 10 watershed. Survey dates are provided for reference only. Please coordinate with your lead federal agency, Georgia Department of Natural Resources, or USFWS to determine if surveys will help assess project impacts to species of concern.

Watershed Specific Concerns:

There are federally listed aquatic/wetland and terrestrial species that occur or could occur in this watershed. If the project contains suitable habitat for listed species, please contact your lead federal agency to determine the appropriate next step for those species to inform their NEPA and ESA decisions. Coordination with Georgia Department of Natural Resources may also be helpful in those decisions.

Bald Eagle: Bald Eagles and their nests are protected from take, including disturbance, under the federal Bald and Golden Eagle Protection Act. For information about Bald and Golden Eagles see the Service's regional web page: https://www.fws.gov/southeast/our-services/permits/eagles/

Red-cockaded Woodpecker: Red-cockaded Woodpecker requires large expanses of mature (approximately 60-80 years old or older), open pine forest, preferably longleaf, slash, or loblolly pine or younger forests with artificial nesting cavities. Natural nest cavities are excavated in mature living pines and may take several years to complete. Red-cockaded woodpecker colonies require large, contiguous tracts of habitat, ranging in size from approximately 60-600 acres per family group, depending upon the quality of the habitat. Currently, its range is fragmented and most populations are found on public lands where timber harvesting has not been maximized.

Georgia Rockcress: Georgia Rockcress occurs in shallow soils of rocky slopes/bluffs and river banks, over limestone or granite. This species is identifiable when fruiting, from May to early July.

Granite Outcrops: The geology in this watershed is favorable for granite outcrops harboring federally listed plants within this watershed. Listed granite outcrop species typically occur on exposed areas of granite or granitic-gnesis that have full sun exposure in the Piedmont physiographic province. All of these species occur in isolated "solution pits" (pools) that contain a thin layer of soil and will hold water in the spring when blooming and seeds are developed for Little Amphianthus and in the mid-summer storms for the spore-producing quillworts. During dry periods of the year, these pools will be completely dry with little to no plant life visible.

Georgia Aster: This watershed is within the range of candidate conservation species Georgia Aster. Georgia Aster can be found in open forests or forest edges and right-of-ways. Use of prescribed fire or mowing in winter or early spring to create or maintain sunny openings, avoiding the use of herbicides, and avoiding clear-cutting and soil disturbance can help protect areas where this species occurs.

Freshwater Mussels: There are historic occurrences of federally protected freshwater mussels in watersheds of the Middle Chattahoochee River Basin above Lake Harding. These species are considered extirpated from HUC10 watersheds in this part of the basin and no aquatic surveys are recommended. Please refer to GADNR's coordination letter to determine if aquatic surveys are requested for state-protected species.

Species and Habitat Concerns

***Bridges / Culverts / Structures**: Bridges, culverts, and structures (barns, buildings, etc.) can be used by migratory bird species for nesting and roosting and by federally listed and sensitive bat species for roosting. To comply with the national programmatic agreement between FHWA, FRA, and FWS and to assess risk and potential impacts to species protected under the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 et seq.), or state protected bat species, inspections of all bridges, culverts, and structures will help determine if there is evidence of roosting bats. If an inspection is conducted, please fill out the "Georgia Bats in Bridges"datasheet and submit the data online to GA DNR (a website address is provided on the datasheet) and a scanned copy with any report to the lead federal agency. Please note that there is an updated version of the datasheet and new link to the website (https://ee.kobotoolbox.org/x/#YVhJ). Please follow any previous coordination with the Service and/or Georgia Department of Natural Resources related to activities impacting roosting bats or nesting migratory birds.*

***Erosion Control Netting**: Monofilament or plastic mesh commonly used for slope stabilization can ensnare snakes and other wildlife, including listed species. The use of alternative natural fibers (e.g., coir, jute, or wood fiber) and moveable mesh strands can reduce impacts to wildlife.*

Fish and Wildlife Coordination Act and additional Endangered Species Act Considerations

The Fish and Wildlife Coordination Act (FWCA) requires federal agencies to consider the effects of their water-related actions (that modify or control natural streams or waterbodies) on fish and wildlife resources. Many of the following recommendations are also specific to endangered or threatened aquatic species protected under the Endangered Species Act. The following may be applicable to proposed project actions.

Riparian Buffer, Streambank, and Stream Channel Protection

Minimize disturbance to stream banks and riparian areas during project work. Do not operate equipment in the stream channel or ford the channel during work. Service recommendations for riparian buffer protection are consistent with those of the Metropolitan North Georgia Water Planning District requiring maintenance of a 50 ft. undisturbed buffer and an additional 25 ft. impervious setback on all streams. Any staging areas, the storage of materials and equipment, borrow pits, or waste sites should not occur in buffer areas or other environmentally sensitive areas. Additionally, when impacts to streambanks and/or stream channel occur, the Service recommends a biotechnical approach to streambank and channel stabilization and restoration where feasible. The use of hard armoring of streambanks or channels should be minimized except where necessary for safety or the protection of structures or property.

Wetland Protection

Wetland losses diminish important wetland values including: the provision of habitat which wetland and terrestrial fauna need for reproduction and/or survival, the storage of storm and flood waters with resultant moderation of flow extremes to receiving waters, and the natural filtration processes that enhance water quality. Wetlands along riparian corridors can provide important connectivity for wildlife movement at the landscape-level. Bridge or culvert construction associated with wetland impacts can alter stream hydrology, degrade water quality, create fish passage barriers, and result in the loss of stream bottom habitat. Measures to avoid and reduce impacts to wetlands and wetland hydrology should be considered during project design.

Water Quality Protection

The Service recommends use of erosion control practices, post construction stormwater management, and other best management practices to protect water quality. The Service's recommendations can be found below.

***Erosion and Sedimentation** Sedimentation from construction sites is regulated through Georgia's Erosion and Sedimentation Act, which in most cases is administered by local jurisdictions that have been delegated enforcement authority. We recommend all projects ensure compliance with the Georgia Erosion and Sedimentation Act and encourage consistent communication with the local issuing authority or Georgia Environmental Protection Division*

both in the design phase and during construction.

***Stormwater** Post construction stormwater management recommendations are consistent with performance standards for Water Quality protection (WQv) and Channel Protection (CPv) found in the Georgia Stormwater Management Manual, otherwise known as the Blue Book (https://atlantaregional.org/georgia-stormwater-management-manual/). The Service recommends both the Water Quality and Channel Protection performance standards be met on all projects when applicable under the Blue Book, to minimize impacts to water quality associated with stormwater runoff. For projects that drain to streams or wetlands with federally protected species, we would recommend that additional water quality protection be provided through implementation of the Runoff Reduction performance standard, also found in the Blue Book.*

***Other Protections** For all project types, the Service recommends equipment storage, equipment maintenance, supply storage, and use of pesticides, herbicides, and/or other chemicals not occur within the 100-year floodplain or 200 feet from the stream banks or wetland edge, whichever is greater. All storage and maintenance areas should be protected with secondary containment. Material utilized in, or adjacent to aquatic resources for temporary fill, permanent fill, or bank protection shall consist of suitable material, free from toxic contaminants in other than trace quantities. Materials that contain toxic contaminants, such as used asphalt, pressure treated lumber, and uncured concrete, should not be used because it can alter water quality causing mortality in aquatic organisms and can be harmful to public health. For projects authorized by the U.S. Army Corps of Engineers, please ensure that all permit conditions are followed.*

Road Stream Crossings (Bridges, Culverts)

Many road stream crossings, especially where pipe culverts are used, limit aquatic organism passage upstream and downstream, leading to fragmentation of aquatic populations. The construction, repair, and replacement of stream crossings can also increase turbidity and sedimentation downstream of road crossings leading to degradation of aquatic habitat. The Service recommends designs that provide habitat continuity through the crossing by maintaining or recreating natural stream reach geomorphic elements including slope, channel width, bed material, and bedform.

Bridges and arch spans are the preferred option for stream crossings from an aquatic habitat continuity perspective. However, when spanning the stream is prohibitively expensive, use of culverts at stream crossings must be designed and implemented in a way that ensures the structures do not become barriers to aquatic organism passage. Making culverts suitable for aquatic organism passage requires preventing excessive water velocities in culverts at base flow conditions, preventing drops resulting from scour in and around the culvert, and providing adequate depth in the culvert at base flows.

The Service recommends following the U.S. Army Corps of Engineers, Savannah District Regional Conditions for Nationwide Permits when designing culverts. The Regional Conditions contain specific guidelines for designing and constructing culverts to promote the safe passage of fish and other aquatic organisms.

Additional information about regional conditions can be found at the following web address: http://www.sas.usace.army.mil/Missions/Regulatory/Permitting/General-Permits/Regional-General-Permits/

For culvert replacements or extensions involving less than 100 feet of all stream impacts in total, FWCA coordination is not required where no federally listed aquatic species occur. When modifying the design of a culvert that was previously consulted on under FWCA (but excluding those previously exempt from past coordination), new consultation would not be required unless stream impacts have been increased by more than 10% or 50 feet (whichever is less), or the change results in modifications to the morphology or flow of the waterbody.

When bridges or arch spans are the chosen construction method, the Service recommends minimizing the number of in-stream piles or structures and aligning them with the natural stream flow. Additionally, the use of bridge scuppers that directly discharge stormwater to streams should be minimized, except where necessary for safety. For bridge construction activities that require the use of temporary in-stream construction access (e.g., jetties, work bridges, barges, etc.), the Service recommends performing all work in a manner that does not inhibit aquatic organism passage, including minimizing river constriction. For situations where river constriction is greater than 25% of the cross sectional area of the critical flow, we would recommend a flow analysis to evaluate water velocity alterations and development of a contingency plan in the event channel scour, bank erosion, or undesirable conditions occur. Upon completion of activities, temporary fills should be entirely removed and the site restored to pre-existing elevation. Equipment should not be stored on any in-stream structure to reduce equipment loss if flows exceed the height of the in-stream structure and reduce contamination from pollutant leakage during off-use times.

Direct all stormwater runoff from road approaches toward floodplains, letting the runoff discharge as sheet flow across the floodplain or into stormwater management structures. When road approaches are composed of unpaved

surfaces, consider paving the road approaches to improve the water quality of stormwater runoff around stream crossing locations. If spread footers, containment structures, or other structures require the use of dry or poured concrete, flowable fill, or similar materials and are elected for use in the construction within any waterway, such methods shall be constructed using cofferdams or similar containment structures. If uncured, dry or wet concrete will be used, the water used for curing shall not be allowed into the waterways. The use of uncured concrete in a waterway can raise the pH of the surrounding water causing mortality in aquatic organisms and potential public health concerns.

The Service also recommends incorporating measures to provide connectivity and reduce mortality to terrestrial wildlife species during project design. Opportunities for terrestrial species to cross under road crossings at stream crossing locations exist both within the banks of the stream along constructed benches, as well as, in the floodplain when additional structures are used to pass flood flows.

Utility Stream Crossings ***Construction, relocation, and maintenance of powerlines and other utilities can disturb aquatic systems and affect fish and other populations. To minimize impacts from these activities, use best management practices to control stormwater runoff from the project area during construction. Direct runoff via sheetflow to vegetated areas or stormwater treatment basins and utilize rolling dips or water bars to divert water from the utility right-of-way (ROW) into vegetated areas on slopes to minimize erosion.***

Underground Utilities ***Directional boring is preferred when a utility line must be installed across a perennial stream that supports federally protected aquatic species. Bore pits should be located as far away from the stream channel as possible.***

Dry open trench pipe installation using isolation crossing diversions, such as coffer dams, are preferred for all other perennial stream crossings. The diversions should not dewater downstream reaches or create excessive water velocity that could scour downstream reaches. Wet open trench construction should be avoided in all perennial streams unless no other method is feasible, or if it can be shown that alternative methods would cause greater sedimentation and environmental harm. For both wet and dry open trench installation, stream banks and channels should be restored to their original contours and the banks stabilized with native vegetation (except in areas where permanent road crossings are to be maintained). In-channel stream restoration techniques should be considered to stabilize the channel elevation and protect buried utility lines. In-channel restoration techniques can also effectively prevent downstream scour or upstream head cutting which can result from open trenching.

Wet open trench installation should not be conducted during the sensitive reproductive periods of federally-listed aquatic species, when eggs and newly-hatched larvae are most likely to be buried or harmed by increased turbidity and sedimentation. Only directional boring or isolation crossing methods should be used during these times of year. Please consult the Service for timing of sensitive reproductive periods for aquatic species in this watershed.

Aerial Utilities ***Maintain a 100-foot undisturbed riparian buffer within the powerline's ROW on both sides of all streams with endangered or threatened aquatic species. No crossings, either temporary or permanent, via culverts, fords, or other methods should be constructed and all access roads should end at the buffer's edge farthest from the streambank. The buffer, where possible, should be retained in or planted with native vegetation of at least shrub size.***

Within the powerline's ROW, maintain a 50-foot riparian buffer on both sides of other perennial and intermittent streams that will be crossed. Some vegetation within these buffer zones may be temporarily disturbed if culverts, fords, or other stream crossings are necessary, but streambanks should be restored to normal contours and stabilized after the crossing is removed.

Impoundments/Farm Ponds

For proposed impoundments, the Service recommends excavated ponds be constructed where feasible. Though the volume of material requiring excavation is greater to construct an excavated pond, they have fewer problems than dammed ponds, which can be plagued with muddy water, rapid filling with silt, flow rate fluctuations, aquatic weeds, temperature fluctuations, and wild fish invasions.

The Service recommends consulting the county Natural Resources Conservation Service office (https://www.nrcs.usda.gov/wps/portal/nrcs/site/ga/home/) or the Georgia Department of Natural Resources for advice regarding pond construction and avoiding or minimizing downstream impacts from sediment and toxicant input into aquatic systems.

Stream Gage Replacement

If a U.S. Geological Survey (USGS) stream gage will potentially be impacted by a proposed project, the Service recommends assessing what coordination or compensation may need to occur with the USGS related to the

disturbance, moving, and recalibration of the gage structure prior to project implementation.

Conservation Lands in Georgia and within the Watershed:

Blanton Creek Wildlife Management Area

Callaway Stadium

Easement / Mitigation - U.S. Army Corps of Engineers / Troup County (Blue John Creek)

Grey Hill Park/Bartley Bldg

Harris Baseball Complex

LaGrange Rec Center

Shuford Softball Complex

Troup County Soccer Complex

U.S. Army Corps of Engineers - West Point Lake

West Point City Park

Whitesvill Road Track

William Griggs Rec Center

If your project crosses watershed boundaries, please use the appropriate guidance document for each portion of the project area.

Your agency or lead federal agency may have coordination procedures in place or determination keys for urban areas or activities with classified as having "no effect" on listed species. Please use those guidelines to help determine impacts to federally listed species.

If you have questions relating to this guidance, please contact our office at gaes_assistance@fws.gov or 706-613-9493.

Data provided in this document is for guidance only and applies to portions of the watershed within the Georgia State Boundary. Please contact the appropriate FWS Field Office for coordination outside of the state. This document does not replace any requirements for consultation under the Endangered Species Act.

As written in 50 CFR § 402.16 of the Endangered Species Act, obligations under the Act must be reconsidered if a new species is listed or critical habitat is determined that may be affected by the project, or new information indicates that the project may affect listed species or critical habitat in a manner not previously considered. We will continue to update these documents to help project proponents meet their obligations under the Endangered Species Act.

MARK WILLIAMS
COMMISSIONER

RUSTY GARRISON
DIRECTOR

November 25, 2019

Connor Breedlove
Aquatic
Ecological Solutions Inc.
630 Colonial Park Dr
Suite 200
Roswell, GA 30075

Subject: Known occurrences of natural communities, plants and animals of highest priority conservation status on or near Langdale Dam Removal: ESI 20236-675 in Harris County, GA.

Dear Connor Breedlove:

This is in response to your request of October 30, 2019. The following Georgia natural heritage database element occurrences (EOs) were selected for the current site using the local HUC10 watershed for elements whose range distribution is limited by aquatic systems and within 3 miles for all other EOs:

Langdale Dam Removal: ESI 20236-675 Point 1 (Site Center: -85.165475, 32.815144 , WGS84)

Cyclonaias infucata (Sculptured Pigtoe) [HISTORIC] 2.4 miles N of site in Chattahoochee River Near West Point

GA *Cyprinella callitaenia* (Bluestripe Shiner) 2.2 miles SE of site in Chattahoochee River Downstream of River View Dam Huc 10 - 0313000209

GA *Cyprinella callitaenia* (Bluestripe Shiner) [HISTORIC] 6.6 miles N of site in Chattahoochee River Huc 10 - 0313000209

Elimia boykiniana (Flaxen Elimia) [HISTORIC] 4.3 miles N of site in Oseligee Ck

Elimia boykiniana (Flaxen Elimia) [HISTORIC] 1.7 miles NE of site in Flat Shoals Creek

Elimia boykiniana (Flaxen Elimia) [HISTORIC] 3.4 miles N of site in Chattahoochee River

Elimia boykiniana (Flaxen Elimia) [HISTORIC] 5.2 miles N of site in Chattahoochee River

GA *Elliptio arctata* (Delicate Spike) 1.8 miles SE of site in Chattahoochee River

Lampsilis binominata (Lined Pocketbook) [HISTORIC] 3.8 miles N of site in Chattahoochee River Huc 10 - 0313000209

Micropterus cataractae (Shoal Bass) 1 mile SE of site in Chattahoochee River Huc 10 - 0313000209 Chattahoochee River Lower North 3

Moxostoma sp. 1 (Apalachicola Redhorse) 1.1 miles SE of site in Chattahoochee River Huc 10 - 0313000209 Chattahoochee River Lower North 3

GA *Notropis hypsilepis* (Highscale Shiner) 14.1 miles NE of site in Blue John Creek

GA *Notropis hypsilepis* (Highscale Shiner) 3.3 miles N of site in Long Cane Creek

GA *Notropis hypsilepis* (Highscale Shiner) 15.3 miles NE of site in Panther Creek, Tributary to Long Cane Creek

GA *Haliaeetus leucocephalus* (Bald Eagle) 1.9 miles N of site

GA *Haliaeetus leucocephalus* (Bald Eagle) 1.9 miles SE of site

GA *Hymenocallis coronaria* (Shoals Spiderlily) 1.7 miles SE of site

Blanton Creek Wildlife Management Area 2.1 miles SE of site

Flat Shoal Creek - Johnson 2.9 miles NE of site

Recommendations:

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

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to bald eagles that could violate the Eagle Act, download the National Bald Eagle Management Guidelines:
http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf.

Disclaimer:

Please keep in mind the limitations of our database. The data collected by the Wildlife Conservation Section comes from a variety of sources, including museum and herbarium records, literature, and reports from individuals and organizations, as well as field surveys by our staff biologists. In most cases the information is not the result of a recent on-site survey by our staff. Many areas of Georgia have never been surveyed thoroughly. Therefore, the Wildlife Conservation Section can only occasionally provide definitive information on the presence or absence of rare species on a given site. Our files are updated constantly as new information is received. **Thus, information provided by our program represents the existing data in our files at the time of the request and should not be considered a final statement on the species or area under consideration.**

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Laci Pattavina

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

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MARK WILLIAMS
COMMISSIONER

RUSTY GARRISON
DIRECTOR

November 25, 2019

Connor Breedlove
Ecologist
ESI
630 Colonial Park Dr
Suite 200
Roswell, GA 30075

Subject: Known occurrences of natural communities, plants and animals of highest priority conservation status on or near Riverview Dam Removal ESI:20236-675 in Harris County, GA.

Dear Connor Breedlove:

This is in response to your request of October 30, 2019. The following Georgia natural heritage database element occurrences (EOs) were selected for the current site using the local HUC10 watershed for elements whose range distribution is limited by aquatic systems and within 3 miles for all other EOs:

Riverview Dam Removal ESI:20236-675 Point 1 (Site Center: -85.142788, 32.792815 , WGS84)

- *Cyclonaias infucata* (Sculptured Pigtoe) [HISTORIC] 4.4 miles N of site in Chattahoochee River Near West Point
- GA *Cyprinella callitaenia* (Bluestripe Shiner) [HISTORIC] 8.6 miles N of site in Chattahoochee River Huc 10 - 0313000209
- GA *Cyprinella callitaenia* (Bluestripe Shiner) 0.3 mile S of site in Chattahoochee River Downstream of River View Dam Huc 10 - 0313000209
- *Elimia boykiniana* (Flaxen Elimia) [HISTORIC] 6.4 miles N of site in Oseligee Creek
- *Elimia boykiniana* (Flaxen Elimia) [HISTORIC] 2.1 miles NE of site in Flat Shoals Creek
- *Elimia boykiniana* (Flaxen Elimia) [HISTORIC] 5.4 miles N of site in Chattahoochee River
- *Elimia boykiniana* (Flaxen Elimia) [HISTORIC] 7.2 miles N of site in Chattahoochee River
- **GA *Elliptio arctata* (Delicate Spike) in the Chattahoochee River near the subject project**
- *Lampsilis binominata* (Lined Pocketbook) [HISTORIC] 5.9 miles N of site in Chattahoochee River Huc 10 – 0313000209

Micropterus cataractae (Shoal Bass) 0.5 mile NW of site in Chattahoochee River Huc 10 - 0313000209 Chattahoochee River Lower North 3
Moxostoma sp. 1 (Apalachicola Redhorse) 0.5 mile NW of site in Chattahoochee River Huc 10 - 0313000209 Chattahoochee River Lower North 3
GA *Notropis hypsilepis* (Highscale Shiner) 15.1 miles N of site in Blue John Creek
GA *Notropis hypsilepis* (Highscale Shiner) 16 miles NE of site in Panther Creek, Tributary to Long Cane Creek
GA *Notropis hypsilepis* (Highscale Shiner) 5.1 miles N of site in Long Cane Creek

Baptisia megacarpa (Bigpod Wild Indigo) 1.8 miles S of site
GA *Croomia pauciflora* (Croomia) 2 miles S of site
GA *Haliaeetus leucocephalus* (Bald Eagle) 0.3 mile NE of site
GA *Haliaeetus leucocephalus* (Bald Eagle) 1.6 miles SE of site
GA *Hymenocallis coronaria* (Shoals Spiderlily) on site, 32.793891, -85.141659
US *Trillium reliquum* (Relict Trillium) 2.1 miles SE of site
Blanton Creek Wildlife Management Area 0.3 mile SE of site
Blanton Creek Wildlife Management Area 1.8 miles S of site

Recommendations:

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

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

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This project is unlikely to negatively impact rare species or habitats if best management practices are used. We are concerned about stream habitats that could be impacted by demolition activities. To protect aquatic habitats and water quality, we recommend that all machinery be kept out of streams during demolition. We urge you to use stringent erosion control practices during these activities. Further, we strongly advocate leaving vegetation intact within 100 feet of streams, which will reduce inputs of sediments, assist with maintaining riverbank integrity, and provide shade and habitat for aquatic species. We realize that some trees may have to be remove but recommend that shrubs and ground vegetation be left in place.

Records of nesting Bald Eagles (*Haliaeetus leucocephalus*) are within three miles of the proposed project. Although Bald Eagles are no longer considered an endangered species, they are still protected by the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act and the Georgia Endangered Species Act. These Acts continue to protect bald eagles from potentially harmful human activities. For more information on how to prevent impacts to bald eagles that could violate the Eagle Act, download the National Bald Eagle Management Guidelines:
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MARK WILLIAMS
COMMISSIONER

RUSTY GARRISON
DIRECTOR

November 25, 2019

Connor Breedlove
Ecologist
Ecological Solutions Inc.
630 Colonial Park Dr
Suite 200
Roswell, GA 30075

Subject: Known occurrences of natural communities, plants and animals of highest priority conservation status on or near Crow Hop Dam Removal ESI: 20236-675 in Harris County, GA.

Dear Connor Breedlove:

This is in response to your request of October 30, 2019. The following Georgia natural heritage database element occurrences (EOs) were selected for the current site using the local HUC10 watershed for elements whose range distribution is limited by aquatic systems and within 3 miles for all other EOs:

Crow Hop Dam Removal ESI: 20236-675 Point 1 (Site Center: -85.152698, 32.799872 , WGS84)

Cyclonaias infucata (Sculptured Pigtoe) [HISTORIC] 3.7 miles N of site in Chattahoochee River Near West Point

GA *Cyprinella callitaenia* (Bluestripe Shiner) [HISTORIC] 7.9 miles N of site in Chattahoochee River Huc 10 - 0313000209

GA *Cyprinella callitaenia* (Bluestripe Shiner) 1 mile SE of site in Chattahoochee River Downstream of Riverview Dam Huc 10 - 0313000209

Elimia boykiniana (Flaxen Elimia) [HISTORIC] 5.7 miles N of site in Oseligee Creek

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Elimia boykiniana (Flaxen Elimia) [HISTORIC] 6.5 miles N of site in Chattahoochee River

GA *Elliptio arctata* (Delicate Spike) 0.7 mile SE of site in Chattahoochee River

Lampsilis binominata (Lined Pocketbook) [HISTORIC] 5.1 miles N of site in Chattahoochee River Huc 10 – 0313000209

***Micropterus cataractae* (Shoal Bass) in the Chattahoochee River near the subject project**
***Moxostoma sp. 1* (Apalachicola Redhorse) in the Chattahoochee River near the subject project**
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GA *Notropis hypsilepis* (Highscale Shiner) 4.4 miles N of site in Long Cane Creek

Baptisia megacarpa (Bigpod Wild Indigo) 2.4 miles SE of site
GA *Croomia pauciflora* (Croomia) 2.7 miles SE of site
GA *Haliaeetus leucocephalus* (Bald Eagle) 0.9 mile E of site
GA *Haliaeetus leucocephalus* (Bald Eagle) 2.4 miles SE of site
GA *Haliaeetus leucocephalus* (Bald Eagle) 2.9 miles N of site
GA *Hymenocallis coronaria* (Shoals Spiderlily) 0.6 mile SE of site
US *Trillium reliquum* (Relict Trillium) 2.8 miles SE of site
Blanton Creek Wildlife Management Area 1 miles SE of site
Blanton Creek Wildlife Management Area 2.4 miles SE of site

Recommendations:

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

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Appendix III: Photo Vouchers

Freshwater Mussel Survey Report
Langdale and Riverview Hydroelectric Projects
FERC Project Numbers 2341 and 2350
September 2020

Non-target Species Vouchers

southern rainbow (*Villosa vibex*)

Gulf spike (*Elliptio pullata*)

Asian clam (*Corbicula fluminea*)

gulf spike (left), southern rainbow (top right), Asian clam (bottom right)

Appendix IV: Field Data

Freshwater Mussel Survey Report
Langdale and Riverview Hydroelectric Projects
FERC Project Numbers 2341 and 2350
September 2020

ES # 20236-675

LANGDALE DAM

HARRIS CO., GA
CHAMBERS CO., AL

PAGE 1 OF 9

Site Number: Field Number:	Time Beg: 8:00 AM	Date: 6/16/20
Watershed/Drainage: CHATT. NORTH 3	End: 4:00 PM	State:
Waterbody: CHATTAHOOCHEE R.	Latitude:	Long:
Location: LANGDALE DAM	Stream Order:	Stream Type:
Gage Station: 02339400 WEST POINT	Surveyor(s): CB, AC, MN, DS, DW	

Determining PSA		Survey Technique	
	Distance upstream: 300 m		Tactile Only ☐ Tactile With Snorkel ☐
	Distance downstream: 300 - 450 m		Tactile With SCUBA ☑

Instream Features Quantitative

Please specify all units of measurement

% Canopy Cover: ______ Wetted Width: 850' UP ~~500~~ DOWN

Surface Velocity (at thalweg): 675 cfs

Water Depth (at thalweg): 2' - 15'

Bank Height (rt/lt*): ______ Bank Angle(rt/lt*): ______

Water Quality

Water Temp: 23.47 °C

Dissolved Oxygen: 5.38 mg/L

Conductivity 0.045 mS/cm

pH 5.36 Other: TURB. 0.2

303d Listed: ☐ yes ☑ no

Water Clarity
- ☑ Clear
- ☐ Slightly turbid
- ☐ Turbid
- ☐ Opaque

Designated Use:

Violated Criteria:

Heavy Rain in past 7 days: Yes ☑ No ☐ 1.1"

Air Temperature: 85 Est. ☐ Act. ☐

Survey Weather Conditions: Scattered showers ☐

Heavy rain ☐ Clear/sunny ☑

Steady rain ☐ % Cloud cover____

Instream Features Qualitative

Channel Alteration: ☑ No ☐ Yes

Describe:

Shoring Structures: ☑ None ☐ Limerock ☐ Gabion

☐ Concrete ☐ Rip-rap ☐ Other:______ Extent:

Substrate composition (% est.): Gravel___ Silt____ Clay 10

Clay Marl___ ~~Fine sand~~ 40 Coarse s.______ ~~Medium s.~~______

Boulder 40 ~~Bedrock~~ Cobble 10

Channel Stability (Check one box for each column):

	Deposition/Aggradation	Incision/Degradation
Excellent	Large, fresh deposits *absent*; High number of deep pools ☐	No mass-wasting or significant erosion of banks; Channel slightly entrenched; High number of deep pools ☐
Good	Large, fresh deposits *uncommon*; Moderate number of deep pools ☐	Some bank erosion apparent, no mass wasting; Channel slightly-moderately entrenched; Moderate number of deep pools ☑
Fair	Large, fresh deposits *common*; Low-moderate number of deep pools ☑	Active bank erosion, potential mass-wasting; Channel moderately-highly entrenched; Low-moderate number of deep pools ☐
Poor	Large, fresh deposits *very common*; Few, if any, deep pools ☐	Active bank erosion, frequent mass-wasting; Channel moderately-highly entrenched; Few, if any, deep pools ☐

Impoundments: ☐ None ☑ yes (Describe): LOW WATER DAMS

Fish Passage: Blocked? ☑ yes ☐ no

Describe: DAM

Fish Presence: ☐ Absent ☐ Rare ☑ Common ☐ Abundant

Woody Material: ☑ None/infreq. ☐ Moderate ☐ Extensive

Riparian Features Quantitative

Rt* Buffer width(ft): ☐ 10-25 ☑ 25-75 ☐ 78-150 ☐ 150+

Lt* Buffer width(ft): ☐ 10-25 ☑ 25-75 ☐ 78-150 ☐ 150+

Landuse Characterization: (100 feet to either side of the stream)

	Rt Bk	Lt Bk	
Natural Forest	90	100	%
Silviculture			%
Pasture			%
Agricultural			%
Residential			%
Commercial			%
Industrial	10		%

Site Road Crossing

Road Type: ☐ Paved ☐ Unpaved

Name (if known): N/A

Crossing Type: ☐ Pipe culvert ☐ Box culvert ☐ Bridge ☐ Paved box culvert N/A

Riparian Features Qual.

Local Non-Point Source Pollution Potential:
☐ No evidence ☑ Slight
☐ Moderate potential ☐ Obvious sources
☐ Livestock access

Describe:

Floodplain Access:

	Rt*	Lt*
None	☐	☐
Partial	☑	☑
Full	☐	☐

Bank Erosion:
- ☐ Non-eroding
- ☑ Active Erosion
- ☐ Mass-wasting

VERY SLIGHT

Notes

ES # 2023G-675

LANGDALE DAM

Mussel Measurement Data Sheet

page 2 of 9

Field Number:

Date: 6/16/20

County: HARRIS, GA & CHAMBERS, AL Locality: CHATT. RIVER NEAR VALLEY, AL

Surveyors: CB, AC, MN, DS, DW

Species Name	Length (mm)	Width* (mm)	Height* (mm)	Sex* (m/f/u)**	Comments*
ABOVE DAM					
VILLOSA VIBEX	HHT	IIII		RELICS V. VIBEX	PIECES OF WASHBOARDS?
ELLIPTIO pullata		III			
CORBICULA		MILLIONS			
	BELOW DAM				
CORBICULA		TNTC			

*= Optional

**= Male, female, undetermined

ES# 2023G-075
6/16/20

LANGDALE DAM
HARRIS CO., GA &
CHAMBERS CO., AL

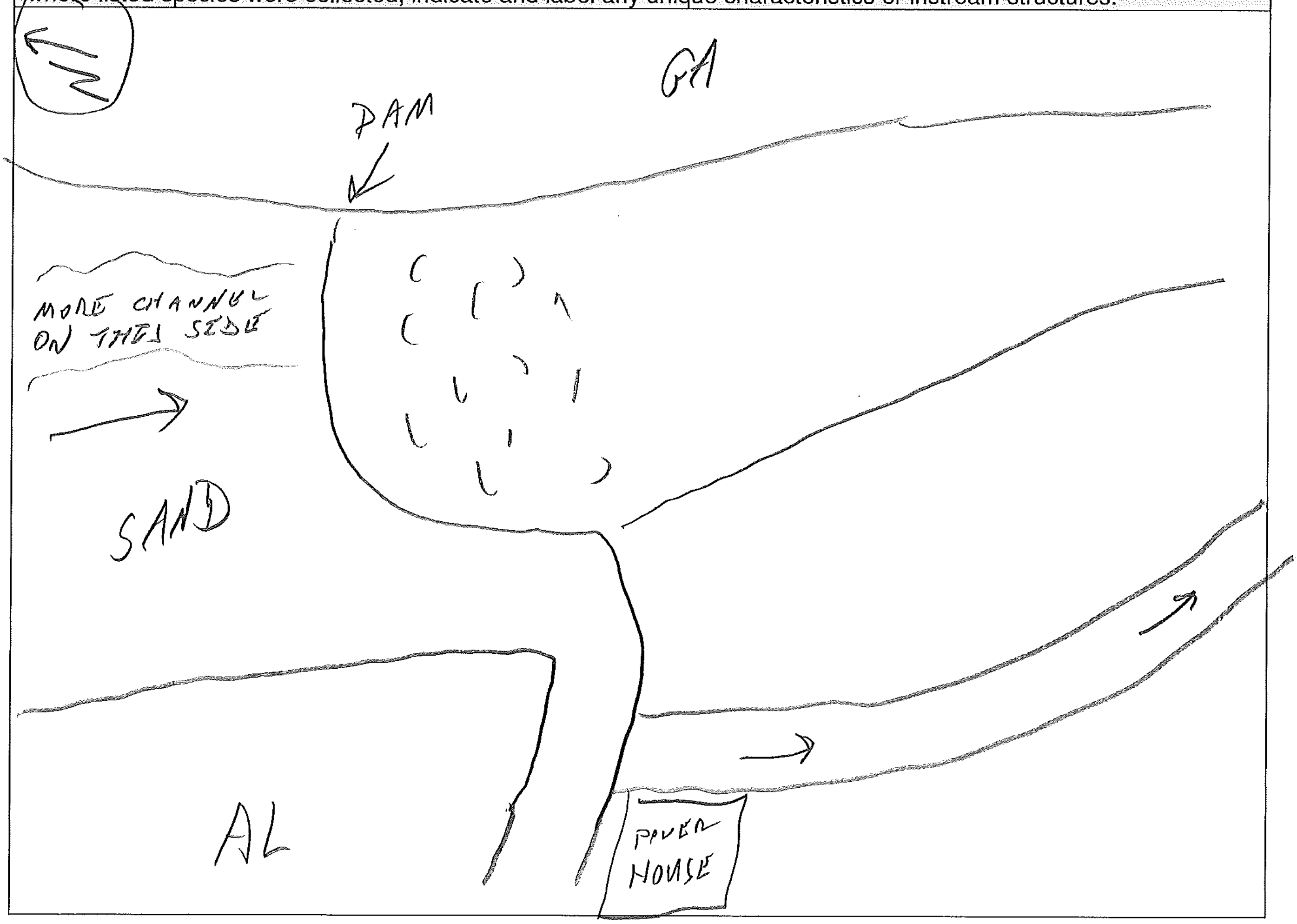
CB, AC, MN, DS, DW

List of other aquatic species observed, including invasive species, and their abundance:

FISH
CRAYFISH

Explain/describe any deviations from protocol:

Include sketch map, using back of page if necessary. Include north arrow, flow directions, label any locations where listed species were collected, indicate and label any unique characteristics or instream structures.



(,) – SHOALS

ES # 20236-675

CROW HOP DAM

HARRIS Co., GA

CHAMBERS Co., AL

PAGE 4 of 9

Site Number:	Field Number:	Time Beg: 8:22 AM	Date: 6/17/20
Watershed/Drainage: CHATTA NORTH 3		End: 3:45 PM	State:
Waterbody: CHATTAHOOCHEE		Latitude:	Long:
Location: CROW HOP DAM	WEST POINT	Stream Order:	Stream Type:
Gage Station: 02339400		Surveyor(s): CB, AC, DS, DW	

Determining PSA	Distance upstream: 180-200 m Distance downstream: 300 m	**Survey Technique**	Tactile Only ☐ Tactile With Snorkel ☐ Tactile With SCUBA ☑

Instream Features Quantitative

Please specify all units of measurement

% Canopy Cover: ________ Wetted Width: ≈500'

Surface Velocity (at thalweg): 675 cfs

Water Depth (at thalweg): 3'-15'

Bank Height (rt/lt*): ________ Bank Angle(rt/lt*): ________

Water Quality

Water Temp: 23.09°C

Dissolved Oxygen: 7.47 mg/L

Conductivity 0.047 mS/cm

pH 6.12 Other: TURB 0.0

303d Listed: ☐ yes ☑ no

Water Clarity: ☑ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque

Designated Use:

Violated Criteria:

Heavy Rain in past 7 days: Yes ☑ No ☐ 1.1"

Air Temperature: 83 Est. ☐ Act. ☐

Survey Weather Conditions: Scattered showers ☐ Heavy rain ☐ Clear/sunny ☑ Steady rain ☐ % Cloud cover____

Instream Features Qualitative

Channel Alteration: ☐ No ☐ Yes

Describe:

Shoring Structures: ☐ None ☐ Limerock ☐ Gabion ☐ Concrete ☑ Rip-rap ☐ Other:______ Extent:

Substrate composition (% est.): Gravel____ Silt ✓ Clay 10 Clay Marl____ Fine sand____ Coarse s. 40 Medium s. Boulder 40 Bedrock Cobble 10

Channel Stability (Check one box for each column):

	Deposition/Aggradation	Incision/Degradation
Excellent	Large, fresh deposits *absent* High number of deep pools ☐	No mass-wasting or significant erosion of banks Channel slightly entrenched High number of deep pools ☐
Good	Large, fresh deposits *uncommon* Moderate number of deep pools ☐	Some bank erosion apparent, no mass wasting Channel slightly-moderately entrenched Moderate number of deep pools ☑
Fair	Large, fresh deposits *common* Low-moderate number of deep pools ☑	Active bank erosion, potential mass-wasting Channel moderately-highly entrenched Low-moderate number of deep pools ☐
Poor	Large, fresh deposits *very common* Few, if any, deep pools ☐	Active bank erosion, frequent mass-wasting Channel moderately-highly entrenched Few, if any, deep pools ☐

Impoundments: ☐ None ☑ yes (Describe): DAM

Fish Passage: Blocked? ☑ yes ☐ no Describe: DAM

Fish Presence: ☐ Absent ☐ Rare ☑ Common ☐ Abundant

Woody Material: ☐ None/infreq. ☑ Moderate ☐ Extensive

Riparian Features Quantitative

Rt* Buffer width(ft):	Landuse Characterization: (100 feet to either side of the stream)	Rt Bk	Lt Bk	
☐ 10-25				
☐ 25-75				
☐ 78-150	Natural Forest	80	100	%
☐ 150+	Silviculture			%
Lt* Buffer width(ft):	Pasture			%
☐ 10-25	Agricultural			%
☐ 25-75	Residential	10		%
☐ 78-150	Commercial			%
☐ 150+	Industrial	10		%

Site Road Crossing

Road Type: ☐ Paved ☐ Unpaved N/A

Name (if known): ________

Crossing Type: ☐ Pipe culvert ☐ Box culvert ☐ Bridge ☐ Paved box culvert N/A

Riparian Features Qual.

Local Non-Point Source Pollution Potential: ☐ No evidence ☐ Slight ☑ Moderate potential ☐ Obvious sources ☐ Livestock access

Describe: WATER TREATMENT PLANT

Floodplain Access:

	Rt*	Lt*
None	☐	☐
Partial	☑	☑
Full	☐	☐

Bank Erosion: ☐ Non-eroding ☑ Active Erosion ☐ Mass-wasting SLIGHT

Notes

ES # 20236-675 CROW HOP DAM

Mussel Measurement Data Sheet

Field Number: Date: 6/18/20

County: HARRIS GA + CHAMBERS, AL Locality: CHATT. R, NEAR VALLEY, AL

Surveyors: CB, AC, DS, DW

Species Name	Length (mm)	Width* (mm)	Height* (mm)	Sex* (m/f/u)**	Comments*
ABOVE DAM					
V. VEBEX			VZEEX RELECT		
HH					
CORBICULA		TNTC			
BELOW DAM					
V. VIBEX	||				
RIGHT BELOW DAM					
CORBICULA		TNTC			

*= Optional
**= Male, female, undetermined

ES # 20236-675
6/17/20

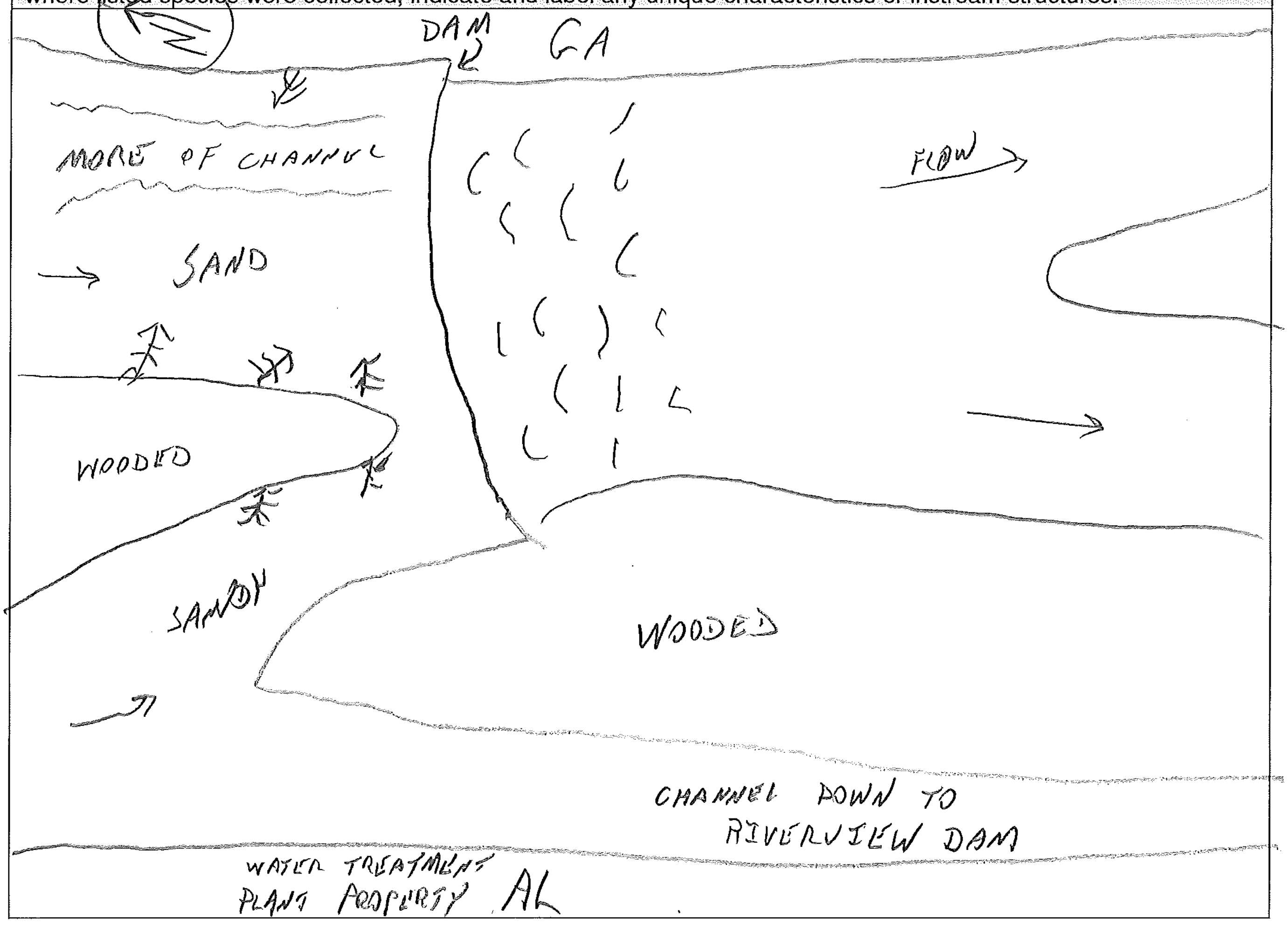
CROW HOP DAM
HARRIS Co. GA
CHAMBERS Co. AL

CB, AC, DS, DW

List of other aquatic species observed, including invasive species, and their abundance:
DARTERS, SHINERS, CRAYFISH

Explain/describe any deviations from protocol:

Include sketch map, using back of page if necessary. Include north arrow, flow directions, label any locations where listed species were collected, indicate and label any unique characteristics or instream structures.



- SHOALS

- WOODY DEBRIS

ES # 20236-675

RIVERVIEW DAM

HARRIS Co. GA
CHAMBERS Co. AL

PAGE 7 OF 9

Site Number: Field Number: Time Beg: 9:00 AM Date: 6/18/20
Watershed/Drainage: CHATT. NORTH 3 End: 3:00 PM State:
Waterbody: CHATTAHOOCHEE RIVER Latitude: Long:
Location: RIVERVIEW DAM Stream Order: Stream Type:
Gage Station: 02339400 WEST POINT Surveyor(s): CB, AC, MN, DS, DW

Determining PSA Distance upstream: 200 m Distance downstream:
Survey Technique Tactile Only ☐ Tactile With Snorkel ☐ Tactile With SCUBA ☑

Instream Features Quantitative

Please specify all units of measurement
% Canopy Cover: ____ **Wetted Width:** 100'-300'
Surface Velocity (at thalweg): 675 cfs
Water Depth (at thalweg): 12'
Bank Height (rt/lt*): ____ **Bank Angle(rt/lt*):** ____

Instream Features Qualitative

Channel Alteration: ☐ No ☐ Yes
Describe:
Shoring Structures: ☐ None ☐ Limerock ☐ Gabion
☐ Concrete ☑ Rip-rap ☐ Other:____ Extent:
Substrate composition (% est.): Gravel____ Silt ✓ Clay 10
Clay Marl____ Fine sand ~~Coarse s.~~ 30 ~~Medium s.~~ ____
~~Boulder~~ 60 ~~Bedrock~~ Cobble 10

Water Quality

Water Temp: 23.08 C
Dissolved Oxygen: 7.89 mg/L
Conductivity 0.045
pH 5.89 **Other:** TURB 0.0
303d Listed: ☐ yes ☑ no
Designated Use:
Violated Criteria:

Water Clarity
☑ Clear
☐ Slightly turbid
☐ Turbid
☐ Opaque

Heavy Rain in past 7 days: Yes ☑ No ☐ 1.1"
Air Temperature: ____ Est. ☐ Act. ☐
Survey Weather Conditions: Scattered showers ☐
Heavy rain ☐ Clear/sunny ☑
Steady rain ☐ % Cloud cover____

Channel Stability (Check one box for each column):

	Deposition/Aggradation	Incision/Degradation
Excellent	Large, fresh deposits *absent* High number of deep pools ☐	No mass-wasting or significant erosion of banks Channel slightly entrenched High number of deep pools ☐
Good	Large, fresh deposits *uncommon* Moderate number of deep pools ☐	Some bank erosion apparent, no mass wasting Channel slightly-moderately entrenched Moderate number of deep pools ☑
Fair	Large, fresh deposits *common* Low-moderate number of deep pools ☑	Active bank erosion, potential mass-wasting Channel moderately-highly entrenched Low-moderate number of deep pools ☐
Poor	Large, fresh deposits *very common* Few, if any, deep pools ☐	Active bank erosion, frequent mass-wasting Channel moderately-highly entrenched Few, if any, deep pools ☐

Impoundments: ☐ None ☑ yes (Describe): DAM

Fish Passage: Blocked? ☑ yes ☐ no
Describe: DAM

Fish Presence: ☐ Absent ☐ Rare ☑ Common ☐ Abundant

Woody Material: ☑ None/infreq. ☐ Moderate ☐ Extensive

Riparian Features Quantitative

Rt* Buffer width(ft): ☐ 10-25 ☑ 25-75 ☐ 78-150 ☐ 150+
Lt* Buffer width(ft): ☐ 10-25 ☑ 25-75 ☐ 78-150 ☐ 150+

Landuse Characterization: (100 feet to either side of the stream)

	Rt Bk	Lt Bk	
Natural Forest	90	100	%
Silviculture			%
Pasture			%
Agricultural			%
Residential			%
Commercial			%
Industrial	10		%

Site Road Crossing

Road Type: ☐ Paved ☐ Unpaved N/A
Name (if known): ____
Crossing Type: ☐ Pipe culvert ☐ Box culvert ☐ Bridge ☐ Paved box culvert N/A

Riparian Features Qual.

Local Non-Point Source Pollution Potential:
☐ No evidence ☑ Slight
☐ Moderate potential ☐ Obvious sources
☐ Livestock access
Describe:

Floodplain Access:

	Rt*	Lt*
None	☐	☐
Partial	☑	☑
Full	☐	☐

Bank Erosion: ☐ Non-eroding ☑ Active Erosion ☐ Mass-wasting

Notes

ES# 20236-675 RIVERVIEW DAM

Mussel Measurement Data Sheet

Field Number: Date: 6/18/20

County: HARRIS GA & CHAMBERS, AL Locality: CHATTAHOOCHEE RIVER NEAR VALLEY, AL

Surveyors: CB, AC, MN, DS, DW

Species Name	Length (mm)	Width* (mm)	Height* (mm)	Sex* (m/f/u)**	Comments*
ABOVE DAM					
ELLIPTIO PULLATA		~~||||~~ ||||		VILLOSA ROSEIC	
VILLOSA VIBEX	|||				
CORBICULA		TNTC			
BELOW DAM					
CORBICULA		TNTC			

*= Optional

**= Male, female, undetermined

ES # 20236-675
6/18/20

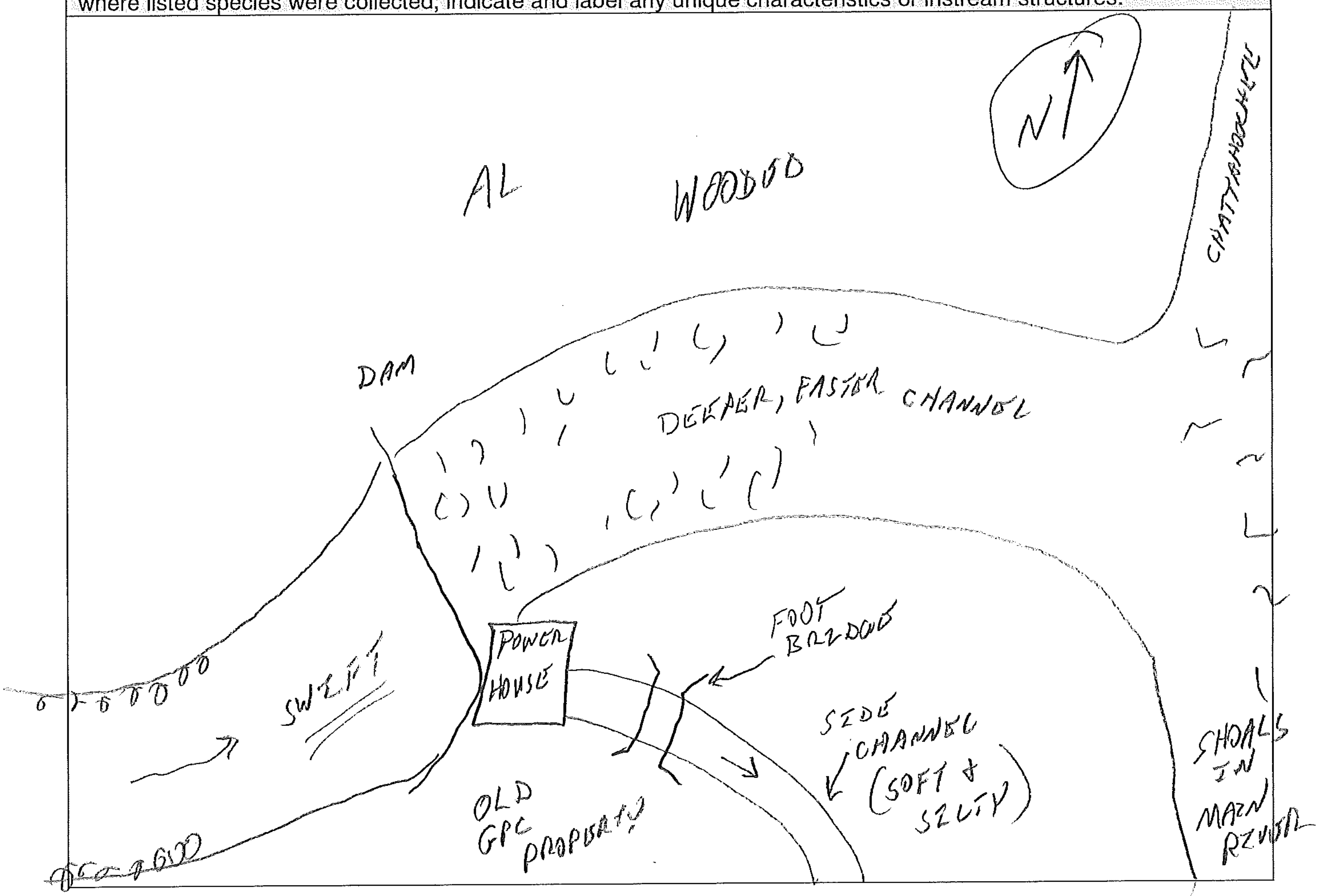
RIVERVIEW DAM
HARRIS CO. GA
CHAMBERS CO. AL
CB, AC, MN, DJ, DW

List of other aquatic species observed, including invasive species, and their abundance:

LOTS OF CRAYFISH
LARGE CATFISH BELOW DAM

Explain/describe any deviations from protocol:

Include sketch map, using back of page if necessary. Include north arrow, flow directions, label any locations where listed species were collected, indicate and label any unique characteristics or instream structures.



OOOO - RIP-RAP
~~ - SHOALS

Appendix V: Supporting Documentation

Freshwater Mussel Survey Report
Langdale and Riverview Hydroelectric Projects
FERC Project Numbers 2341 and 2350
September 2020

2014 Integrated 305(b)/303(d) List

Streams - Supporting Designated Uses

Reach Name/ ID #/ Data Source	Reach Location/ County	River Basin/ Use	Criterion Violated	Potential Causes	Extent		Category	Priority	Notes
Chattahoochee River R031300020906 1	West Point Dam to Johnson Island Troup/ Harris County	Chattahoochee Drinking Water/ Fishing			13	miles	1		TMDL completed DO 2000.
Chattahoochee River R031300030605 1,10,37	Chattahoochee/Stewart Co. line to Hannahatchee Creek Stewart County	Chattahoochee Fishing			10	miles	1		TMDL completed FC 2008.
Chattahoochee River R031300030902 10	Hannahatchee Creek to Hatchechubbee Creek (Alabama) Stewart County	Chattahoochee Fishing			3	miles	1		
Chattahoochee River R031300040705 1	Lake Andrews Lock & Dam to U.S. Hwy. 84 Early/ Seminole County	Chattahoochee Fishing			11	miles	1		
Chattahoochee River R031300040801 1,10	U.S. Hwy. 84 to Lake Seminole Early/ Seminole County	Chattahoochee Recreation/ Fishing			17	miles	1		
Chestatee River R031300010511 1	Boggs Creek to Tate Creek Lumpkin County	Chattahoochee Fishing			6	miles	1		
Colochee/Frog Bottom Creek R031300030702 4	Hightower Branch to Hannahatchee Creek Stewart County	Chattahoochee Fishing			5	miles	1		

Summary of the Documentation of Consultation
Freshwater Mussels Survey

In response to the March 11, 2020[1] Federal Energy Regulatory Commission (FERC) letter, Georgia Power Company (Georgia Power) has prepared the following summary of consultation between Georgia Power and the stakeholders. The purpose of this consultation document is to provide an overview of all consultation to date on the Freshwater Mussels Survey (Mussels Study). The results of the Mussels Study and other decommissioning studies will be presented and discussed in the October 5, 2020 Public Meeting, with an additional opportunity for stakeholders to comment in writing on the draft study reports on or before October 24, 2020.

Stakeholder comments on the draft study reports will be compiled for the final study reports which will be filed with FERC concurrent with the filing of the Langdale and Riverview Projects Dam Decommissioning Plan.

The following describes the overall consultation timeline leading to development and implementation of this Mussels Study.

Georgia Power conducted pre-filing consultation beginning in 2018. This consultation was filed with the license surrender application in December 2018[2] (Appendix B to the surrender applications). At that time, no agency requested any studies; discussions included the agencies' specific interests for the Langdale and Riverview decommissioning and the development of a Mussels Study to survey the Chattahoochee River in the immediate areas downstream of the Projects where localized construction activity is proposed to effectuate dam removal.

After consultation, Georgia Power filed the Draft Study Plan with FERC on May 24, 2019[3]. Concurrent with filing the Draft Study Plan, Georgia Power requested that stakeholders provide written comment within 30 days, or by Monday, June 24, 2019, on the Draft Study Plan. Georgia Power received comments from FERC and from Chattahoochee Riverkeeper and responded to

[1] Document Accession #: 20200311-3001 (Langdale); Document Accession #20181218-5452 (Riverview)
[2] Document Accession #20181218-5451
[3] Document Accession #20190525-5216 (Langdale); Document Accession #20190524-5217 (Riverview)

them in the Final Study Plan, which was filed in the FERC docket July 24, 2019. No agency has requested additional studies or provided comments beyond what is reflected in the consultation document.

On February 20, 2020, Georgia Power filed a Progress Report with FERC on the decommissioning studies. Georgia Power continued to consult on the studies while the studies were ongoing, as described in the Final Study Plan. The Mussels Survey is only recently completed. At this time, all studies are complete and Georgia Power is developing the Dam Decommissioning Plan for the Langdale and Riverview Projects.

In the final study reports, Georgia Power will insert a table showing the comments received on the draft study reports and how those comments were addressed. Final study reports will be filed with the Dam Decommissioning Plan.

Georgia Power

Langdale and Riverview Hydroelectric Projects
FERC Projects #2341 and #2350

Communication Date: 9 January 2018; 10 a.m.

Communication Type: in-person meeting at Region 4, USFWS Region 4 ES Office at 105 West Park Drive, Athens, GA 30606

List and attach pertinent written correspondence: no hand-outs or e-files

List persons attending from Southern Company/Georgia Power:

Melissa Crabbe, Southern Company Services (SCS) Hydro Generation

Courtenay O'Mara, SCS Hydro Generation Services, Supervisor

Patrick O'Rouke, Georgia Power Company (GPC)

Jim Ozier, Georgia Power Company (GPC)

Tony Dodd, Georgia Power Company (GPC)

List organization name and persons attending from other organization:

Don Imm, PhD, Supervisor, USFWS Region 4 Ecological Services Unit

Tamara Johnson, Utilities Biologist, USFWS Region 4 Ecological Services Unit

Subject: Discussion about possible surrender of hydro licenses for Langdale and/or Riverview

Comments/Discussions/Requests:

Project description, physical features, hydro operations, and briefing about potential license surrender and rationale for Langdale and/or Riverview.

Potential conservation project outcomes for any jurisdictional protected species.

General early rationale and knowledge of FERC needs and schedule timeline.

Follow-up Requirements: no specific requirements at this stage

Form Completed By: Tony Dodd

Ecological Solutions Inc.

630 Colonial Park Drive
Suite 200
Roswell, Georgia 30075
P 770.998.7848 • F 770.998.5606
www.ecologicalsolutions.net

October 14, 2019

Mr. Anthony Dodd
Natural Resource Specialist
Georgia Power Company
241 Ralph McGill Boulevard
Atlanta, Georgia 30308

RE: Revised Project Proposal – Langdale and Riverview/Crow Hop Dam Removal Mussel Survey
Harris County, Georgia and Chambers County, Alabama

Dear Mr. Dodd:

Thank you for the opportunity to be of further assistance to Georgia Power Company (Georgia Power). Georgia Power is coordinating with the Federal Energy Regulation Commission (FERC) to remove the Langdale, Riverview and Crow Hop Dams on the Chattahoochee River. There is approximately 1.3 river miles between the Langdale and Crow Hop Dams. It is our understanding that mussel surveys for federal and state listed species are required in association with removal of the dams. Georgia Power has provided maps depicting approximate boundaries for the focal areas of the surveys (Figures 1 - 3). The focal areas consist of locations where active disturbance activities could occur during the dam removal process. It is our understanding the focal areas could shift as final designs are prepared for the dam removals.

In addition to the primary focal areas, Ecological Solutions will assess the quality of mussel habitat within the approximately 1.3 miles of river between the Langdale and Crow Hop Dams. Identified areas between the two proposed dam removal sites that exhibit potential quality mussel habitat will be surveyed as well. The proposed scope of work includes hand grubbing and snorkeling, SCUBA searches (where and if needed), GPS locations of any state and/or federally listed mussel species collected, and a report summarizing the findings of the surveys.

A detailed scope of work, fee, and proposed schedule is presented below for your consideration.

SCOPE OF WORK

Based on our communications with Georgia Power, tasks to be completed include:

- Mussel surveys (utilizing hand grubbing, snorkeling, and SCUBA)
- Photographic documentation of surveyed aquatic resources
- Threatened and endangered species research and findings
- GPS recording of protected species locations
- Report summarizing all findings

Prior to stream surveys, existing available information regarding potential threatened and endangered mussel species will be gathered for the study area. Resources to be reviewed include the United States Fish and Wildlife Service on-line Information for Planning and Conservation (IPaC) data base, the Georgia Natural Heritage Program (GNHP) on-line quarter-quad list of protected species, previous studies conducted by Georgia Power, on-line information from the Alabama Department of Natural Resources Nongame Wildlife Program, and Georgia's Natural, Archaeological, and Historic Resources GIS (GNAHRGIS) database. Initial review of these resources indicates that federal and state listed mussel species of potential occurrence in the vicinity of the dam removal projects include:

- Oval pigtoe (*Pleurobema pyriforme*) – federal endangered
- Purple bankclimber (*Elliptoideus sloatianus*) – federal threatened
- Fineline pocketbook (*Lampsilis altilis*) – federal threatened
- Ovate clubshell (*Pleurobema perovatum*) – federal endangered
- Gulf moccasinshell (*Medionidus penicillatus*) – federal endangered
- Delicate spike (*Elliptio arctata*) – state endangered (Georgia)
- Southern elktoe (*Alasmidonata triangulata*) – state endangered (Georgia)

Data gathered during the office review will be used to assess the potential occurrence of protected species during field surveys.

The proposed survey methodology is based on the *Freshwater Mussel Survey Protocol for Transportation Projects within the State of Georgia* (November 2018). This protocol was created by the Georgia Department of Natural Resources (DNR), Georgia Department of Transportation (GDOT), and U.S. Fish and Wildlife Service (USFWS) to establish a standardized mussel survey protocol that could be used across physiographic provinces. This protocol provides precise application of the sampling methods for wadeable and non-wadeable streams and provides a measure of certainty in the presence/absence of state and federally protected freshwater mussel species at a project site.

Each survey area, as depicted on the attached Figures, will be divided into 50-meter long segments with 25% of the search area located upstream of the proposed project and 75% of the search located downstream of the proposed project. The survey areas may be modified as final plans for the dam removals are finalized. Each of the 50-meter segments will be surveyed by a minimum of 4 searchers for a minimum of 2 person-hours (i.e. 4 searchers X 30 minutes = 2 p-hours) to reduce surveyor bias. Each searcher must carefully search all habitats, from bank to bank, using tactile and visual searches within each segment of the survey area. Searchers will not overlap search areas in order to ensure independence of searches. All surveying will be conducted from the downstream reach to the upstream reach to minimize potential increases in searcher induced turbidity. All animals collected will be retained by the individual searcher that collected them.

The survey will begin by conducting a visual search to examine dead shells along river shorelines and all exposed areas. The visual search on the bank(s) will be conducted in addition to a tactile (hand-grubbing 1-2 inches into substrate to increase detection of more deeply buried mussels) search and, if possible, visual search for individuals within the water. For tactile and visual searches within the stream channel, searchers will be spaced equidistant across the stream channel and slowly move upstream in longitudinal transects; if a substantial amount of space exists between them, searchers will progress upstream in in a zig-zag pattern to cover a larger area. The following techniques will be used during the surveys: 1) for areas less than 1.5 meters in depth, mask and snorkel combined with tactile search will be used. If mask and snorkel are not feasible, only tactile searches will be used. The use of view buckets may be appropriate when visibility permits; 2) for areas greater than 1.5 meters in depth, SCUBA diving equipment will be used. Two divers will conduct the search while being assisted by one support person each.

The survey area includes upstream areas immediately adjacent to both the Crow Hop and Langdale Dams. Survey methodology, transects locations may be altered during the field survey in the area immediately adjacent to the dams in consideration of diver safety.

Collected mussels awaiting identification and data collection shall be temporarily held in mesh bags suspended in the stream. Specimens may be held for up to 3 hours provided they are held in the stream in bags that allow free movement of water over the mussels. All mussels will be returned to the point of capture and hand placed with their anterior ends in the substrate and posterior end exposed to the water with siphon facing upstream.

Information relevant to the survey site will be collected and recorded on the field data form. Of particular importance are water quality parameters (water temperature, stream flow, turbidity, pH, conductivity, etc.) and instream features. Locations of suitable habitats will be shown in the sketch map and indicate the level of suitability for the species being surveyed for (marginal, suitable, or preferred).

For the 1.3-mile section between the Langdale and Crow Hop Dams, the river will be traversed using a boat/canoe to identify potential suitable mussel habitat. If identified, these areas will be surveyed using visual and tactile search methodologies outlined above. Rather than detailed transects, identified mussel habitat in this reach of the river will be surveyed by a 4-person team utilizing a random, non-overlapping pattern across the suitable habitat.

Should state or federal listed mussel species or specialized habitat be identified during the aquatic surveys, their location will be recorded using GPS technology.

Project Deliverables

Project deliverables include a report describing field methodology, findings, and shapefiles documenting the location of any identified state or federally listed mussel species.

Project Schedule

It is estimated that 5 field days for a 4-person crew will be required to complete the mussel surveys. We are prepared to conduct the field surveys within 10 business days of notice to proceed. It is our understanding that the project goal is to submit a draft report for FERC by December 1, 2019. To meet that schedule, field surveys would need to be conducted in October 2019. Assuming field surveys are conducted in October, the draft report would be submitted for Georgia Power review no later than November 15, 2019.

Itemized Not to Exceed Budget

Please refer to the attached spreadsheet for the proposed fee. Projected expenses include mileage and field supplies. Actual expenses will be passed thru with no mark-up.

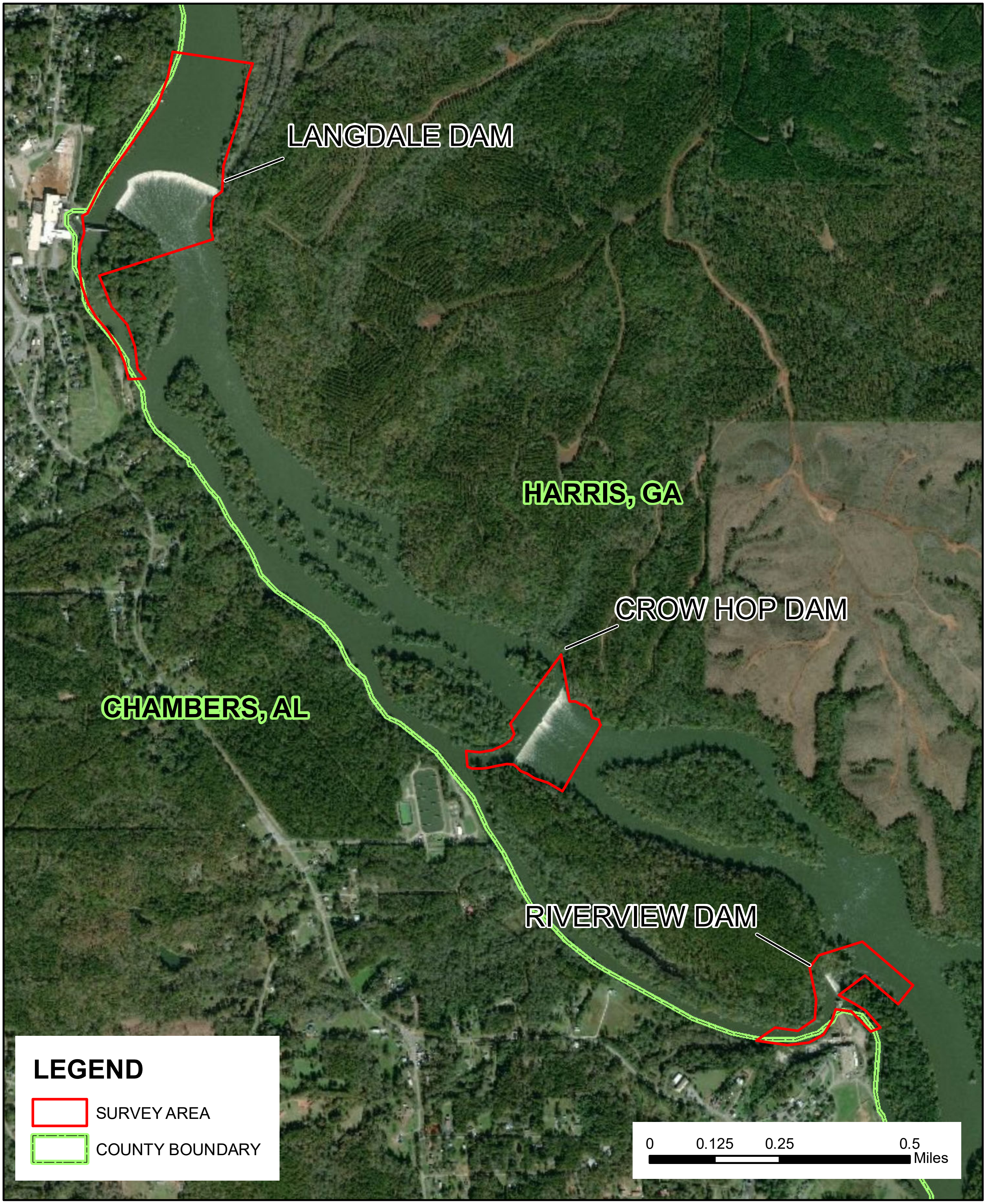
Thank you for the opportunity to be of continued service to Georgia Power Company. Should you have any questions or need additional information regarding this proposal, please contact me at 404-915-8823.

Thank You,

ECOLOGICAL SOLUTIONS, INC.

Mark Ballard, PWS
President

Dean Wilder
Aquatic Biologist



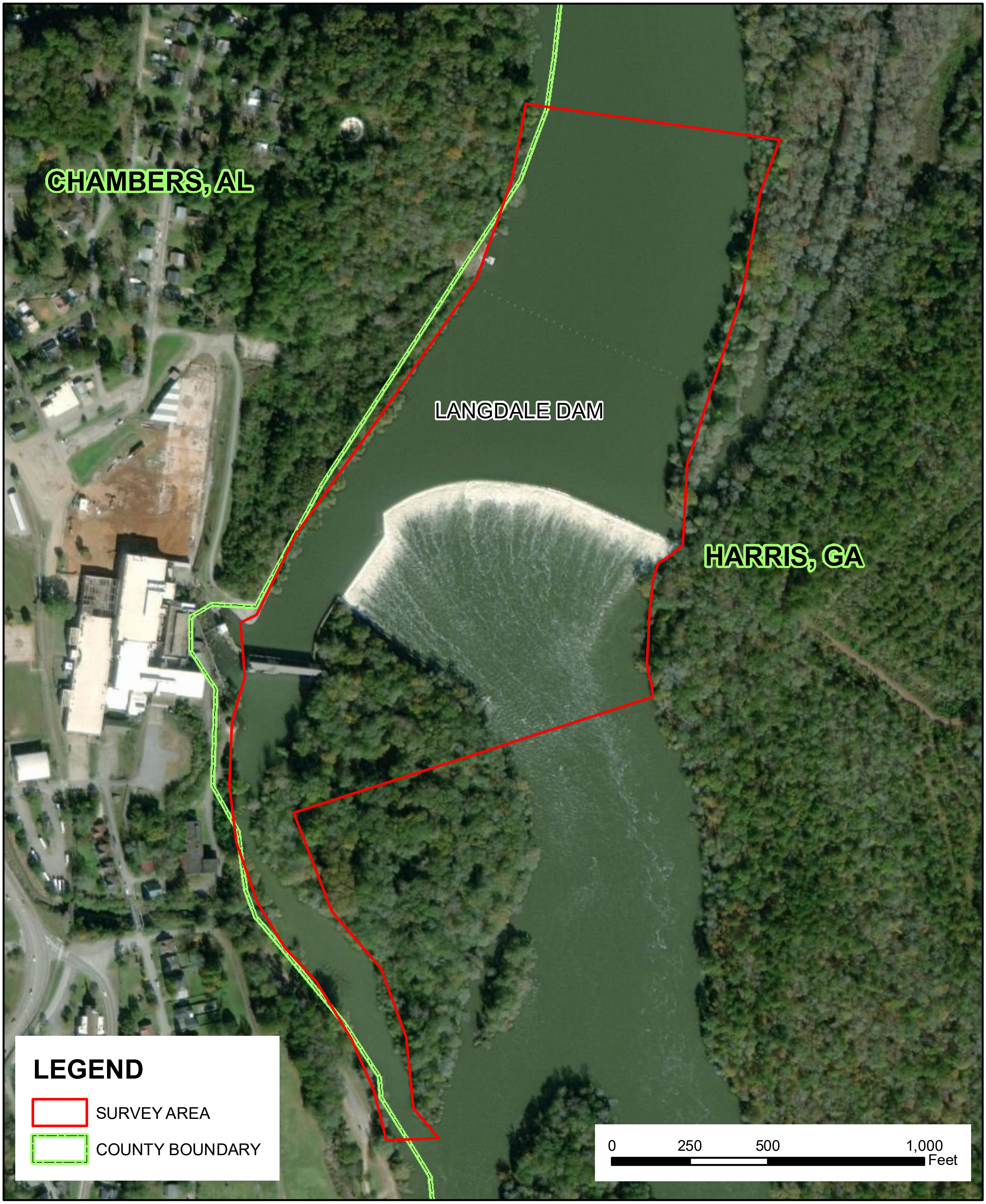
Ecological Solutions Inc.

Georgia Power Company
Langdale, Riverview and Crow Hop Dam Removal Mussel Survey
Harris County, Georgia

N W E S

20236-675
October 2019

FIGURE 1



Ecological Solutions Inc.

Georgia Power Company
Langdale, Riverview and Crow Hop Dam Removal Mussel Survey
Harris County, Georgia

N
W
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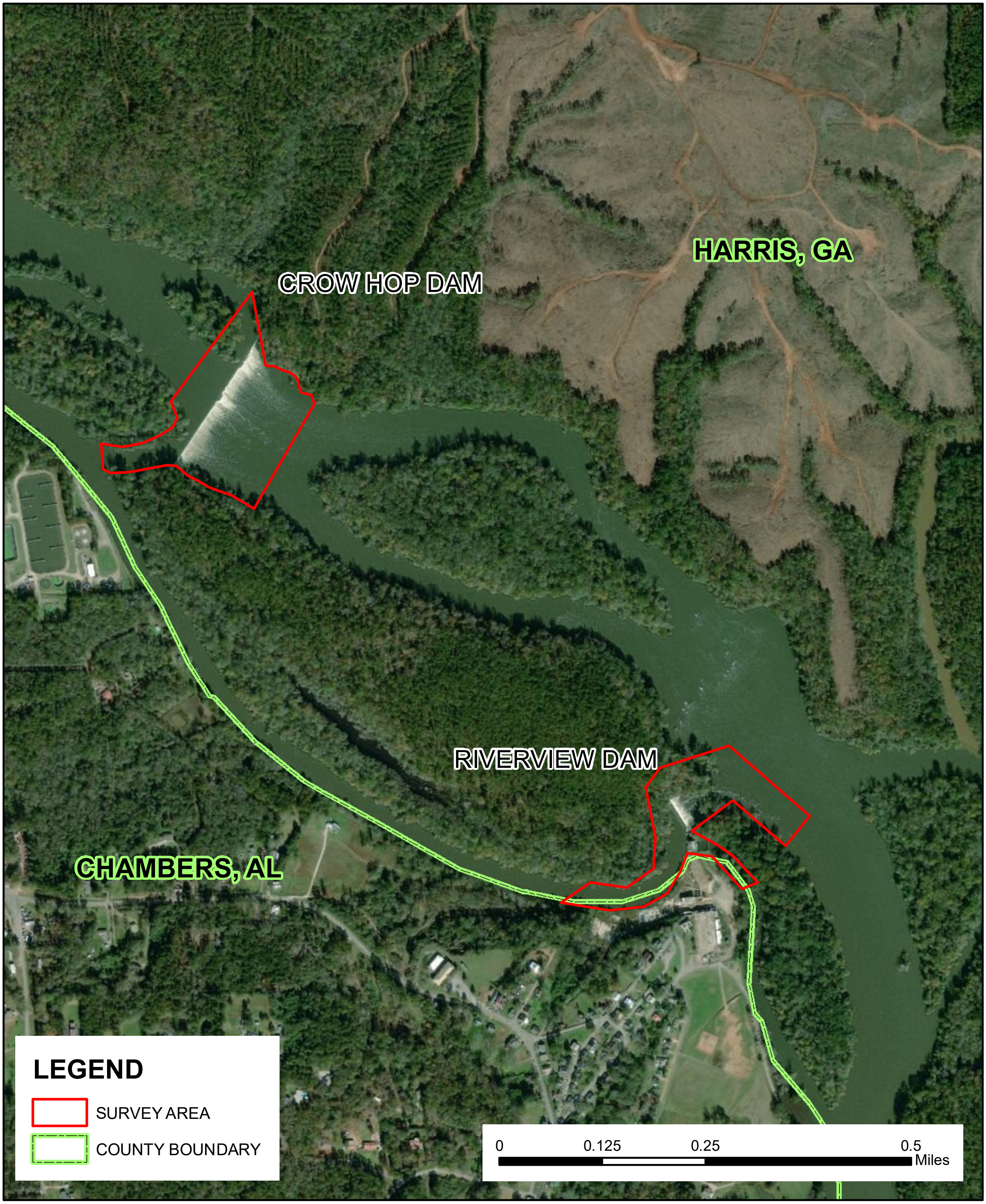
20236-675
October 2019

FIGURE 2



Ecological Solutions Inc.

Georgia Power Company
Langdale, Riverview and Crow Hop Dam Removal Mussel Survey
Harris County, Georgia

N W E S

20236-675
October 2019

FIGURE 3

From:	Dodd, Anthony Ray
To:	Dodd, Anthony Ray
Subject:	FW: [EXTERNAL] Langdale/Riverview Mussel Survey
Date:	Tuesday, June 23, 2020 9:26:48 AM
Attachments:	Ecological Solutions Proposal - Langsdale & Riverview Dam Removal Mussel Survey revised.pdf

From: Imm, Donald <donald_imm@fws.gov>
Sent: Thursday, October 17, 2019 3:14 PM
To: Sandy Abbott <sandy_abbott@fws.gov>; Dodd, Anthony Ray <ARDODD@southernco.com>
Cc: John Doresky <John_Doresky@fws.gov>
Subject: Re: [EXTERNAL] Langdale/Riverview Mussel Survey

EXTERNAL MAIL: Caution Opening Links or Files

Hi Tony, Sandy is our mussel expert, so I'll rely on her opinion. I looked it over, and it seems appropriate to me, Sandy?

On Tue, Oct 15, 2019 at 5:20 PM Dodd, Anthony Ray <ARDODD@southernco.com> wrote:

> Don,
> I hope all is well with you.
> Here is a project task update and oversight request for GPC's Langdale/Riverview Dam Decommissioning project.
> In response to FERC's input, GPC is prepared now to conduct a mussel survey of the project area this month (Oct). GPC is requesting USFWS review and approval of the proposed scope of work before initiating the field work. Included here is a copy of the proposed work plan. For the sake of successfully surveying under suitable flows and temperature with remaining time this Fall (before early November), the task timeline is very compressed. Depending on the results of the survey this Fall will provide an opportunity for the project team to formulate additional survey needs or remedy response before Summer 2020.
> We greatly appreciate any consideration for rapid review.
> Please contact me if you have any questions.
>
> Thank you,
>
> Tony Dodd
> Natural Resources Specialist
> Georgia Power Company
> 241 Ralph McGill Blvd, NE
> Atanta, GA 30308
> Ph: 404-506-5026
> Cell:404-434-9412

--

Donald W. Imm, PhD.
Field Supervisor
U.S.Fish & Wildlife Service, Georgia Ecological Service
355 East Hancock Avenue, Room 320 [maps.google.com] Box 7
Athens, GA 30601 [maps.google.com]

cell: 850/532-2046
office: 706/208-7501
fax: 706/613-6059

From:	Dodd, Anthony Ray
To:	Dodd, Anthony Ray
Subject:	FW: [EXTERNAL] Langdale/Riverview Mussel Survey
Date:	Tuesday, June 23, 2020 9:26:48 AM
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Subject: Re: [EXTERNAL] Langdale/Riverview Mussel Survey

EXTERNAL MAIL: Caution Opening Links or Files

Hi Tony, Sandy is our mussel expert, so I'll rely on her opinion. I looked it over, and it seems appropriate to me, Sandy?

On Tue, Oct 15, 2019 at 5:20 PM Dodd, Anthony Ray <ARDODD@southernco.com> wrote:

> Don,
> I hope all is well with you.
> Here is a project task update and oversight request for GPC's Langdale/Riverview Dam Decommissioning project.
> In response to FERC's input, GPC is prepared now to conduct a mussel survey of the project area this month (Oct). GPC is requesting USFWS review and approval of the proposed scope of work before initiating the field work. Included here is a copy of the proposed work plan. For the sake of successfully surveying under suitable flows and temperature with remaining time this Fall (before early November), the task timeline is very compressed. Depending on the results of the survey this Fall will provide an opportunity for the project team to formulate additional survey needs or remedy response before Summer 2020.
> We greatly appreciate any consideration for rapid review.
> Please contact me if you have any questions.
>
> Thank you,
>
> Tony Dodd
> Natural Resources Specialist
> Georgia Power Company
> 241 Ralph McGill Blvd, NE
> Atanta, GA 30308
> Ph: 404-506-5026
> Cell:404-434-9412

--

Donald W. Imm, PhD.
Field Supervisor
U.S.Fish & Wildlife Service, Georgia Ecological Service
355 East Hancock Avenue, Room 320 [maps.google.com] Box 7
Athens, GA 30601 [maps.google.com]

cell: 850/532-2046
office: 706/208-7501
fax: 706/613-6059

From:	Dodd, Anthony Ray
To:	Dodd, Anthony Ray
Subject:	FW: [EXTERNAL] Langdale/Riverview Mussel Survey
Date:	Tuesday, June 23, 2020 9:20:00 AM

From: Rowe, Matthew <matthew.rowe@dnr.ga.gov>
Sent: Monday, October 21, 2019 11:16 AM
To: Dodd, Anthony Ray <ARDODD@southernco.com>
Subject: RE: [EXTERNAL] Langdale/Riverview Mussel Survey

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Tony,

Sounds like Sandy hit the most critical points already. It's interesting that they pulled up mobile basin species… do you have a list of which HUC's they are looking at?

I read over the proposal and it seems to be solid. I reiterate Sandy's comments to remove Fineline pocketbook (*Lampsilis altilis*) and Ovate clubshell (*Pleurobema perovatum*) and include *Hamiota subangulata.* Another potential species of interest is Inflated Spike (*Elliptio purpurella*) which is GA state threatened. It's not known from the study area but it might be worth keeping an eye out for. I'm curious to see what they recover. That section of river is pretty heavily impacted and any live animals would be good news.

Matthew Rowe
Aquatic Biologist - Freshwater Invertebrates, Wildlife Conservation

Wildlife Resources Division [gcc01.safelinks.protection.outlook.com]
(706) 557-3217 | M: (678) 836-6132

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From: Dodd, Anthony Ray <ARDODD@southernco.com>
Sent: Monday, October 21, 2019 9:40 AM
To: Rowe, Matthew <matthew.rowe@dnr.ga.gov>
Subject: FW: [EXTERNAL] Langdale/Riverview Mussel Survey

From: Dodd, Anthony Ray
To: Dodd, Anthony Ray
Subject: FW: [EXTERNAL] Langdale/Riverview Mussel Survey
Date: Tuesday, June 23, 2020 9:28:07 AM

From: Dodd, Anthony Ray
Sent: Monday, October 21, 2019 9:40 AM
To: Rowe, Matthew <matthew.rowe@dnr.ga.gov>
Subject: FW: [EXTERNAL] Langdale/Riverview Mussel Survey

Matt,

Here's a note to let you know that USFWS responded with review of the proposed Langdale/Riverview mussel survey scope of work.
Below, you'll see Sandy Abbot's (USFWS) reply and guidance to modify the scope by dropping finelined pocketbook and Ovate Clubshell off of the list and adding shiny rayed pocketbook. Wanting to understand more about her guidance, I've taken some time to search for the source of GPC's initial proposed list of highlighted species.
I found that GPC's original search for potential species of the survey area was likely a bit too broad (using HUC 10 locations in WRD's biodiversity portal). The HUC10 list actually includes finelined pocket book and ovate clubshell but not does not include shiny rayed pocket book. At the HUC 8 level, ovate clubshell drops out but not finelined pocketbook.

I indicated to Sandy that we'll include her recommended changes to the study plan species list.

I hope the timing of this message is helpful to you. Please let us know if you have any questions. We're hoping to start that survey as soon as the flows and visibility settle down a little bit.

Tony

From: Abbott, Sandy <sandy_abbott@fws.gov>
Sent: Thursday, October 17, 2019 4:15 PM
To: Dodd, Anthony Ray <ARDODD@southernco.com>
Cc: Imm, Donald <donald_imm@fws.gov>; John Doresky <John_Doresky@fws.gov>
Subject: Re: [EXTERNAL] Langdale/Riverview Mussel Survey

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Tony,

I have reviewed the mussel survey proposal for the Langdale and Riverview/Crow Hop Dam removal project. There are a couple of mistakes in the species list that should be corrected. The two species, , should be taken off the list (neither occur in this system) and shinyrayed pocketbook (*Hamiota subangulata*) should be added. Using the GDOT mussel survey protocol is not appropriate for a project of this size. However, I believe the survey work proposed is adequate for this area of the Chattahoochee River since there are only historical occurrences for all listed mussels, with the exception of the one purple bankclimber found in 2001. If this project was in a different area where we have current records of federally-listed mussels the survey effort proposed may not be considered adequate enough to ensure a thorough survey. I just wanted to be sure this survey effort didn't set a precedent for future dam removal projects in other river systems.

I look forward to seeing what they find!

On Thu, Oct 17, 2019 at 3:20 PM Dodd, Anthony Ray <ARDODD@southernco.com> wrote:

> Thank you…y'all please let me know if you have any questions.
> Tony
>
> ---
>
> **From:** Imm, Donald <donald_imm@fws.gov>
> **Sent:** Thursday, October 17, 2019 3:14 PM
> **To:** Sandy Abbott <sandy_abbott@fws.gov>; Dodd, Anthony Ray <ARDODD@southernco.com>
> **Cc:** John Doresky <John_Doresky@fws.gov>
> **Subject:** Re: [EXTERNAL] Langdale/Riverview Mussel Survey
>
> **EXTERNAL MAIL: Caution Opening Links or Files**
>
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> > In response to FERC's input, GPC is prepared now to conduct a mussel survey of the project area this month (Oct). GPC is requesting USFWS review and approval of the proposed scope of work before initiating the field work. Included here is a copy of the proposed work plan. For the sake of successfully surveying under suitable flows and temperature with remaining time this Fall (before early November), the task timeline is very compressed. Depending on the results of the survey this Fall will provide an opportunity for the project team to formulate additional survey needs or remedy

response before Summer 2020.
We greatly appreciate any consideration for rapid review.
Please contact me if you have any questions.

-
Thank you,

-

-
Tony Dodd
Natural Resources Specialist
Georgia Power Company
241 Ralph McGill Blvd, NE
Atanta, GA 30308
Ph: 404-506-5026
Cell:404-434-9412

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Donald W. Imm, PhD.
Field Supervisor
U.S.Fish & Wildlife Service, Georgia Ecological Service
355 East Hancock Avenue, Room 320 [maps.google.com] Box 7
Athens, GA 30601 [maps.google.com]

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cell: 850/532-2046
office: 706/208-7501
fax: 706/613-6059

-
NOTE: This email correspondence and any attachments to and from this sender are subject to the Freedom of Information Act and may be disclosed to third parties.

--
Sandy Abbott
US Fish and Wildlife Service
West GA Ecological Services Sub Office
Fish and Wildlife Biologist
706-662-4615

From: Dodd, Anthony Ray
To: Dodd, Anthony Ray
Subject: FW:
Date: Tuesday, June 23, 2020 9:19:01 AM

From: Rowe, Matthew <matthew.rowe@dnr.ga.gov>
Sent: Monday, November 04, 2019 11:34 AM
To: Dodd, Anthony Ray <ARDODD@southernco.com>
Subject: RE:

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Thanks Tony,

I sent him an email. I'd like to get down there to help out if I can. Hopefully we can work something out.

- Matt

From: Dodd, Anthony Ray <ARDODD@southernco.com>
Sent: Friday, November 1, 2019 4:27 PM
To: Rowe, Matthew <matthew.rowe@dnr.ga.gov>
Cc: Mark Ballard <markballard@ecologicalsolutions.net>
Subject:

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hey Matt,
I hope all is well with you.
This is a note to let you know that Ecological Solutions hopes to start the mussel survey for the Langdale Riverview project next Wednesday. You are welcome to observe or participate in the survey.
If you choose to meet the crew, contact Mark Ballard (markballard@ecologicalsolutions.net) and simply reference this email.
Thanks and hope you have a great weekend!
Tony

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From:	Dodd, Anthony Ray
To:	Dodd, Anthony Ray
Subject:	FW: Langsdale, Riverview, and Crow Hop Dam Removal
Date:	Tuesday, June 23, 2020 9:24:51 AM

From: Dean Wilder <deanwilder@ecologicalsolutions.net>
Sent: Monday, November 04, 2019 2:36 PM
To: matthew.rowe@dnr.ga.gov
Cc: Mark Ballard <markballard@ecologicalsolutions.net>; Dodd, Anthony Ray <ARDODD@southernco.com>; David Smith <davidsmith@ecologicalsolutions.net>
Subject: Langsdale, Riverview, and Crow Hop Dam Removal

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Matt,

I just wanted to touch base with you concerning the Langsdale, Riverview, and Crow Hop dam removal mussel surveys. First of all, I just got off the phone with Tony Dodd of Georgia Power. He said that the Corps of Engineers have to do a scheduled release out of West Point Lake today and Wednesday. It will be at a rate of 11,000 cfs for at least 8 hours each day. That plus the fact that rain is expected on Thur. and/or Fri. has pretty much wiped out any chance of getting in the water this week. However, when it does get put back on the schedule, we'd be glad to have your help and expertise any time. It will be good to see you again (we rode around together at the ACF Mussel Workshop at the Jones Center). We will definitely keep you posted on any updates and schedule changes for this project.

Dean Wilder
Senior Ecologist
Ecological Solutions, Inc.
630 Colonial Park Drive
Suite 200
Roswell, GA 30075

Office: 770.998.7848 ext. 123
Cell: 770.527.0562
Fax: 770.998.5606
www.ecologicalsolutions.net [ecologicalsolutions.net]

From: Mark Ballard
Sent: Monday, November 04, 2019 11:42 AM
To: Dean Wilder <deanwilder@ecologicalsolutions.net>

Subject: Fwd: FW:

Hey Dean,

Can you coordinate with Matthew?

Thanks and late Happy Birthday!

Mark

Sent from my iPhone

Begin forwarded message:

> **From:** "Rowe, Matthew" <matthew.rowe@dnr.ga.gov>
> **Date:** November 4, 2019 at 11:32:59 AM EST
> **To:** "markballard@ecologicalsolutions.net" <markballard@ecologicalsolutions.net>
> **Subject: FW:**
>
> Mr. Ballard,
>
> My name is Matthew Rowe and I'm the biologist in charge of freshwater mussels in the Apalachicola/Chattahoochee/Flint for GADNR. I've recently been following the Langdale-Riverview project and I'd like to come down to help out with your scheduled survey if you wouldn't mind. We can help with shoreline/snorkeling surveys and/or mussel ID. I'd like to get my eyes on the site in general but if I can time it with your work I think it would be valuable to both of us. Let me know if we can coordinate something. Thank you.
>
> Matthew Rowe
> Aquatic Biologist - Freshwater Invertebrates, Wildlife Conservation
>
> **Wildlife Resources Division** [gcc01.safelinks.protection.outlook.com]
> (706) 557-3217 | M: (678) 836-6132
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> GEORGIA DEPARTMENT OF NATURAL RESOURCES
>
> ---
>
> **From:** Dodd, Anthony Ray <ARDODD@southernco.com>
> **Sent:** Friday, November 1, 2019 4:27 PM

To: Rowe, Matthew <matthew.rowe@dnr.ga.gov>
Cc: Mark Ballard <markballard@ecologicalsolutions.net>
Subject:

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Hey Matt,
I hope all is well with you.
This is a note to let you know that Ecological Solutions hopes to start the mussel survey for the Langdale Riverview project next Wednesday. You are welcome to observe or participate in the survey.
If you choose to meet the crew, contact Mark Ballard (markballard@ecologicalsolutions.net) and simply reference this email.
Thanks and hope you have a great weekend!
Tony

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From:	Dodd, Anthony Ray
To:	Dodd, Anthony Ray
Subject:	FW: [EXTERNAL] Langdale Riverview mussel survey
Date:	Tuesday, June 23, 2020 9:23:04 AM
Attachments:	image001.gif

From: Abbott, Sandy <sandy_abbott@fws.gov>
Sent: Monday, December 02, 2019 12:14 PM
To: Dodd, Anthony Ray <ARDODD@southernco.com>
Subject: Re: [EXTERNAL] Langdale Riverview mussel survey

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Thank you Tony!

On Mon, Dec 2, 2019 at 12:05 PM Dodd, Anthony Ray <ARDODD@southernco.com> wrote:

> Hey Sandy,
> I hope all is well with you.
> I'm following up on our recent email regarding a mussel survey for the Langdale and Riverview Dams decommissioning project.
> Due to a combination of factors (high river flows, West Point release schedules) that can negatively affect survey feasibility and surveyor safety,
> GPC has elected to postpone the survey til late spring or summer of 2020. The postponement will be described in GPC's next project progress report (Dec 2019) to FERC.
>
> -
> I will keep you posted about the rescheduled effort when it comes due.
>
> -
> Best Regards,
>
> -
> Tony
>
> -
>
> -
> Tony Dodd
> Natural Resources Specialist
> Georgia Power Company
> 241 Ralph McGill Blvd, NE
> Atlanta, GA 30308
>
> -
> Desk: 404-506-5026
> Cell: 404-434-9412
> ardodd@southernco.com
>
> -

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Sandy Abbott
US Fish and Wildlife Service
West GA Ecological Services Sub Office
Fish and Wildlife Biologist
706-544-7518

From:	Dodd, Anthony Ray
To:	Dodd, Anthony Ray
Subject:	FW: Langdale Riverview mussel survey
Date:	Tuesday, June 23, 2020 9:27:31 AM
Attachments:	image001.gif

From: Dodd, Anthony Ray
Sent: Monday, December 02, 2019 12:05 PM
To: Abbott, Sandy <sandy_abbott@fws.gov>
Subject: Langdale Riverview mussel survey

Hey Sandy,
I hope all is well with you.
I'm following up on our recent email regarding a mussel survey for the Langdale and Riverview Dams decommissioning project.
Due to a combination of factors (high river flows, West Point release schedules) that can negatively affect survey feasibility and surveyor safety,
GPC has elected to postpone the survey til late spring or summer of 2020. The postponement will be described in GPC's next project progress report (Dec 2019) to FERC.

I will keep you posted about the rescheduled effort when it comes due.

Best Regards,

Tony

Tony Dodd
Natural Resources Specialist
Georgia Power Company
241 Ralph McGill Blvd, NE
Atlanta, GA 30308

Desk: 404-506-5026
Cell: 404-434-9412
ardodd@southernco.com

From: Dodd, Anthony Ray
To: Dodd, Anthony Ray
Subject: FW: Goat Rock Lake Dam gate repair
Date: Tuesday, June 23, 2020 9:16:13 AM

From: Dodd, Anthony Ray <ARDODD@southernco.com>
Sent: Tuesday, June 16, 2020 8:59:17 AM
To: Rowe, Matthew <matthew.rowe@dnr.ga.gov>
Subject: Re: Goat Rock Lake Dam gate repair

I think they will try to wrap it up within 3 days beginning this morning.
Feel free to contact Dean Wilder with Ecological Solutions for logistics if/as needed, if you have the time. Controlled low flows have been coordinated there with the Corps of Engineers to accomodate the 3 day period.
Tony

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From: Rowe, Matthew <matthew.rowe@dnr.ga.gov>
Sent: Tuesday, June 16, 2020 8:55:09 AM
To: Dodd, Anthony Ray <ARDODD@southernco.com>
Subject: RE: Goat Rock Lake Dam gate repair

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Tony,

I forgot to get back to you sooner. I would have loved to have been there but my new seasonal technician is starting today. Will the survey be multiple days or is this it?

- Matt

From: Dodd, Anthony Ray <ARDODD@southernco.com>
Sent: Thursday, June 11, 2020 3:40 PM
To: Rowe, Matthew <matthew.rowe@dnr.ga.gov>
Subject: Re: Goat Rock Lake Dam gate repair

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Matt
Here's another project note. Our mussel survey for the Langdale and Riverview dam decommissioning project is scheduled to kick off on site Tues next week. Dean Wilder with Ecological

Solutions will be leading the effort. We'll watch conditions through Monday to make sure it's a go. We are coordinating altered peak generation flows with the Corps of Engineers to aid survey conditions next week. As we had discussed months ago, please feel free to observe, join in the effort, ...whatever level you feel you would like to participate if your schedule and covid-19 protocols permit.
Tony

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