



Langdale and Riverview Hydroelectric Projects FERC Nos. 2350 and 2341



Introduction

October 5, 2020

Study Results Public Meeting

Presenter: Courtenay O'Mara, P.E.

Southern Company

Hydro Services Licensing and Compliance Supervisor, Civil Engineer

Meeting Format

- Participants should remain on mute.
- Each presentation will be followed by opportunity for discussion and Q/A.
- During Q/A participants will have ability to unmute to ask questions.

Q/A

Ways to ask a question:

MS Teams:

Audio through computer, press  icon to unmute.

Audio through telephone, press *6 on your telephone dial pad to unmute.

Livestream:

Call 205-644-9085 to submit a question.

Email G2LangRiver@southernco.com to submit a question.

- State your full name prior to asking any questions or making any comments.
- To stay on schedule we will take questions and comments for an allotted time; moderator reserves the right to hold questions/comments in a “parking lot” and address during a break or at the end of the meeting.

Meeting Agenda

AFTERNOON SESSION

1:00 PM – Introduction and Opening Remarks

1:15 PM – Presentation of Study Results (each presentation will be followed by an opportunity for discussion/Q&A)

- Hydrologic and Hydraulic (H&H) (approx. 1 hour)
- Shoal Bass (approx. 20 min)
- Water Quality (approx. 20 min)
- Mussels (approx. 20 min)
- Cultural Resources (approx. 30 min)

3:45 PM – Wrap Up Discussion

- Status of the Decommissioning Process
- Comment Schedule

4:00 PM – Adjourn

EVENING SESSION

6:00 PM – Introduction and Opening Remarks

6:15 PM – Presentation of Study Results (each presentation will be followed by an opportunity for discussion/Q&A)

- Hydrologic and Hydraulic (H&H) (approx. 1 hour)
- Shoal Bass (approx. 20 min)
- Water Quality (approx. 20 min)
- Mussels (approx. 20 min)
- Cultural Resources (approx. 30 min)

8:45 PM – Wrap Up Discussion

- Status of the Decommissioning Process
- Comment Schedule

9:00 PM – Adjourn

Project Area



Presenter Introductions

Hydrologic and Hydraulic Modeling (H&H)




Michael P. Hross, P.E.
Kleinschmidt
Civil Engineer,
Water Modeling



Tyler Kreider, P.E.
Kleinschmidt
Civil Engineer,
Ecological Design


Shoal Bass



Patrick M. O'Rourke
 Georgia Power
Fisheries Biologist


Water Quality & Mussels



Tony R. Dodd
 Georgia Power
Biologist

Cultural Resources



Joey Charles
 Georgia Power
Archeologist

Information Access

Georgia Power's Website

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

Langdale and Riverview Proposed License Surrenders Document Repository

Langdale Surrender Filing (December 2018) ▶

Riverview Surrender Filing (December 2018) ▶

FERC Additional Information Request (April 2019) ▶

GPC Response to FERC AIR and Study Plan (May 2019) ▶

GPC Revised Study Plan (July 2019) ▶

GPC Progress Report, Draft Potential Effects of Dam Removal on Shoal Bass & Draft Water Quality Report (February 2020) ▶

GPC License Surrender Updated Schedule (May 2020) ▶

GPC Draft Study Reports for H&H, Water Quality, Shoal Bass, and Mussels (September 2020) ▶

FERC's eLibrary

Langdale Docket P-2341-033

Riverview Docket P-2350-025

<https://elibrary.ferc.gov/eLibrary/search>

Search eLibrary [What's New](#)

* Indicates a required field.

General Search Docket Search New Docket Only

Search on a Reference Number (Docket, Accession, Ferc Cite, etc.)

Docket (e.g. ER11, ER11-4046, ER11-4040-0201) Enter Docket Number P-2341

Sub-Dockets (eg. 001, 002) 033

Public Libraries

Harris County Public Library

7511 Georgia Highway 116

Hamilton, GA 31811



H Grady Bradshaw Library

3419 20th Avenue

Valley, AL 36854



Next Steps: Schedule

Activity	Responsibility	Date
Public Meeting	Georgia Power	October 5, 2020
File Public Meeting Documentation	Georgia Power	October 19, 2020
Comments Due on Draft Study Reports from Agencies and Public	Stakeholders	November 5, 2020
Finalize & File Study Reports and Decommissioning Plan including Draft MOU with GDNR Historic Preservation Division	Georgia Power	December 31, 2020*
FERC Review of Studies and Decommissioning Plan		

*Filing date dependent upon final field survey deliverables.

Langdale and Riverview Hydroelectric Projects FERC Nos. 2341 and 2350



Public Meeting
Hydrologic and Hydraulic (H&H) Modeling Study

October 5, 2020

Presented by Mike Hross, P.E.
Kleinschmidt Associates

H&H Modeling Discussion Outline

- Study Objectives and Purpose of Modeling
- Consultation History
- Methods and Data
- Scenarios Analyzed
- Results
- Post-Removal Conceptual Renderings
- Summary

Study Objectives and Purpose of Modeling

- Georgia Power is surrendering the Federal Energy Regulatory Commission (FERC) licenses for the Langdale and Riverview Projects and proposing:
 - Langdale and Riverview Projects be decommissioned
 - Langdale, Crow Hop, and Riverview dams be removed
 - Riverview Powerhouse to be removed; Langdale Powerhouse to remain
 - All actions contingent on FERC approval
- Modeling was completed to evaluate existing and post-removal conditions and hydraulic connectivity
 - Assess improvements to fish habitat
 - Assess impacts to near water infrastructure (e.g., boat launches, permitted discharges)
 - Assess changes to water depths and river usability
- The model is a tool to help make decisions

Consultation History

- US Fish & Wildlife Service (USFWS) is coordinating-with Georgia Power on the dam removal
- Multiple agency meetings (GA and AL)
- Meetings with the City of Valley
- Meetings with the East Alabama Water Sewer and Fire Protection District (EAWSFPD)
- Meetings with property owners
 - Meetings helped inform additional depth output for recreational access

Methods and Data – Hydraulic Modeling Software

- Hydraulic model developed using U.S. Army Corps of Engineers (USACE) Hydrologic Engineering Center's River Analysis System (HEC-RAS)
 - Industry standard software for hydraulic modeling
- 2-dimensional solution approach used
- Model uses input topographic and bathymetric data to generate a terrain model of the river
- Inflows to the Chattahoochee River specified to simulate flow in the river
- Model output includes
 - Depth
 - Water surface elevation
 - Velocity
 - Flow distribution between braids



HEC-RAS

River Analysis System

HEC-RAS 5.0.7 March 2019

Developed by the

U.S. Army Corps of Engineers

Hydrologic Engineering Center

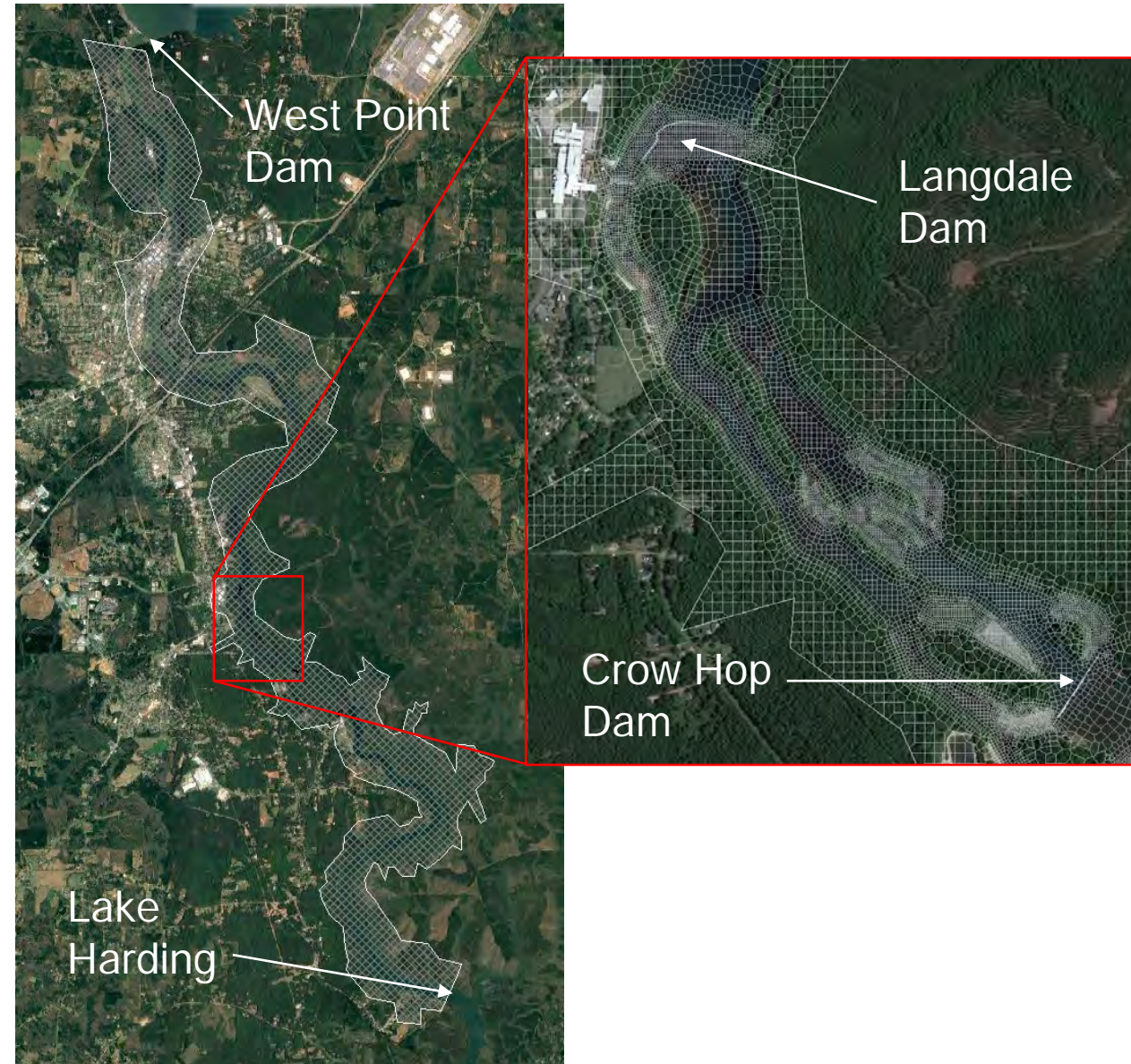
609 Second Street, Davis CA 95616

www.hec.usace.army.mil



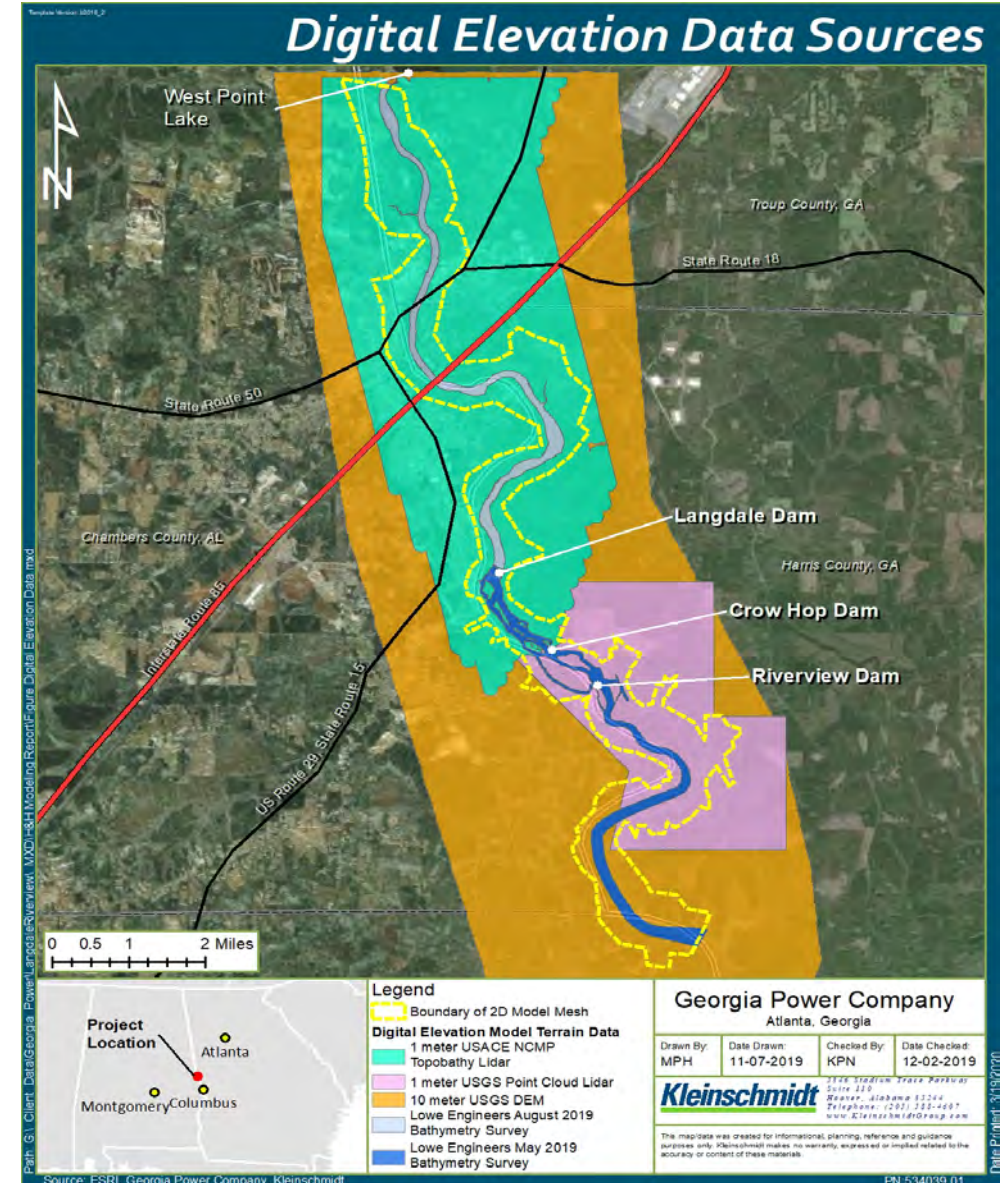
Methods and Data – Terrain Data

- Model extent from West Point Dam to Lake Harding (Bartletts Ferry Project, FERC No. 485)
- 2D mesh with cells varying from 10 feet to 100 feet in size
 - Model computes flow moving from one cell to another
 - Finer cell sizes in areas requiring better resolution data
- Upstream boundary = inflow to Chattahoochee from West Point
- Downstream boundary = water surface elevation dictated by Lake Harding elevation



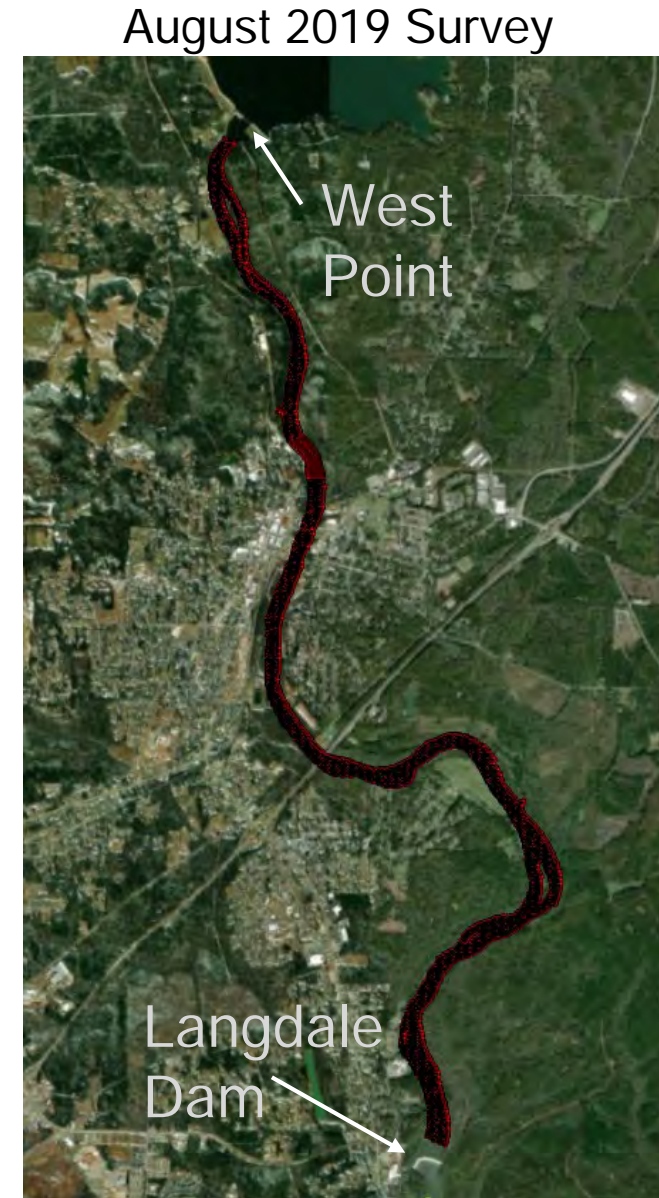
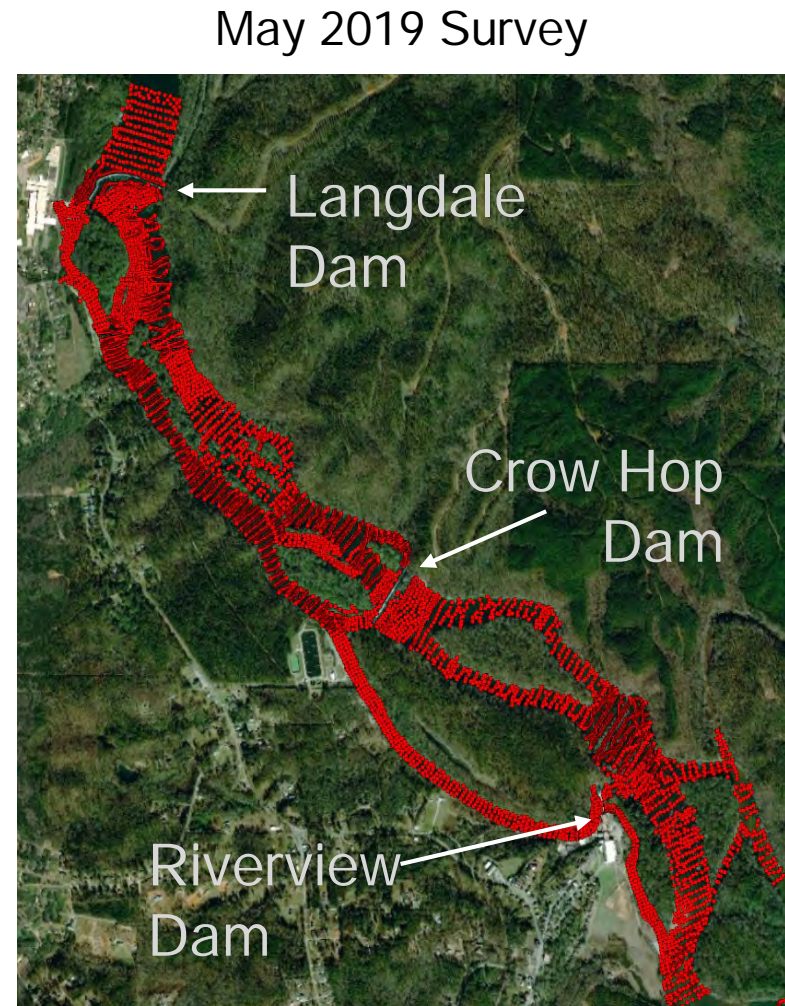
Methods and Data – Elevation Data

- Topographic Data
 - 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
 - 1-meter DEM from 2015 USACE NCMP Topobathy LiDAR: West Point Lake, Georgia
- Bathymetry (collected by Georgia Power)
 - Lowe Engineers May 2019 Survey
 - Lowe Engineers August 2019 Survey



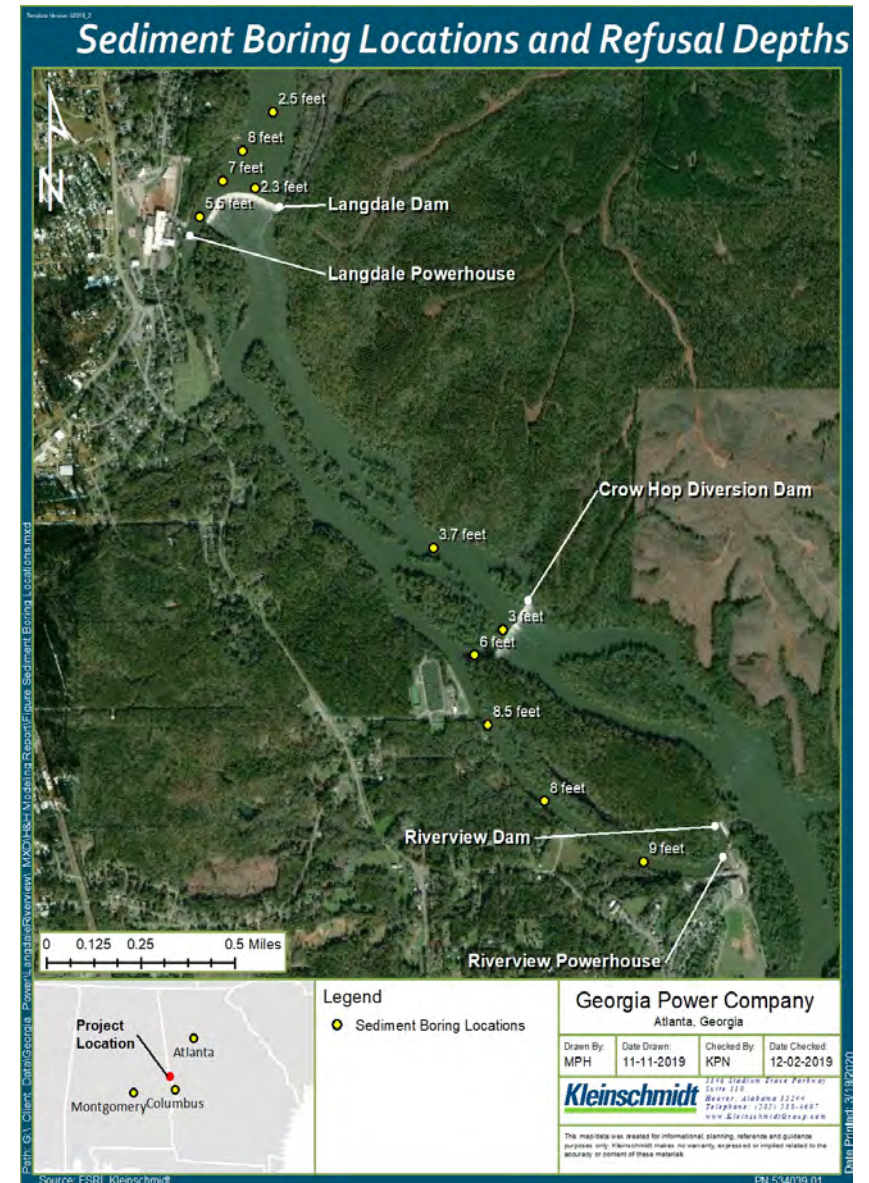
Methods and Data – Elevation Data

- Over 214,000 points collected along river bottom from West Point Dam to Langdale Dam
- Bathymetric points converted into a terrain surface



Methods and Data – Sediment Borings

- Geotechnical & Environmental Consultants (GEC)
 - Collected 11 sediment borings
 - 5 upstream of Langdale Dam
 - 3 upstream of Crow Hop Dam
 - 3 upstream of Riverview Dam
- Borings provided grain size distributions and estimated sediment depths
- Sediment data used in modeling to evaluate possible changes assuming natural river-channel migration after dams' removal

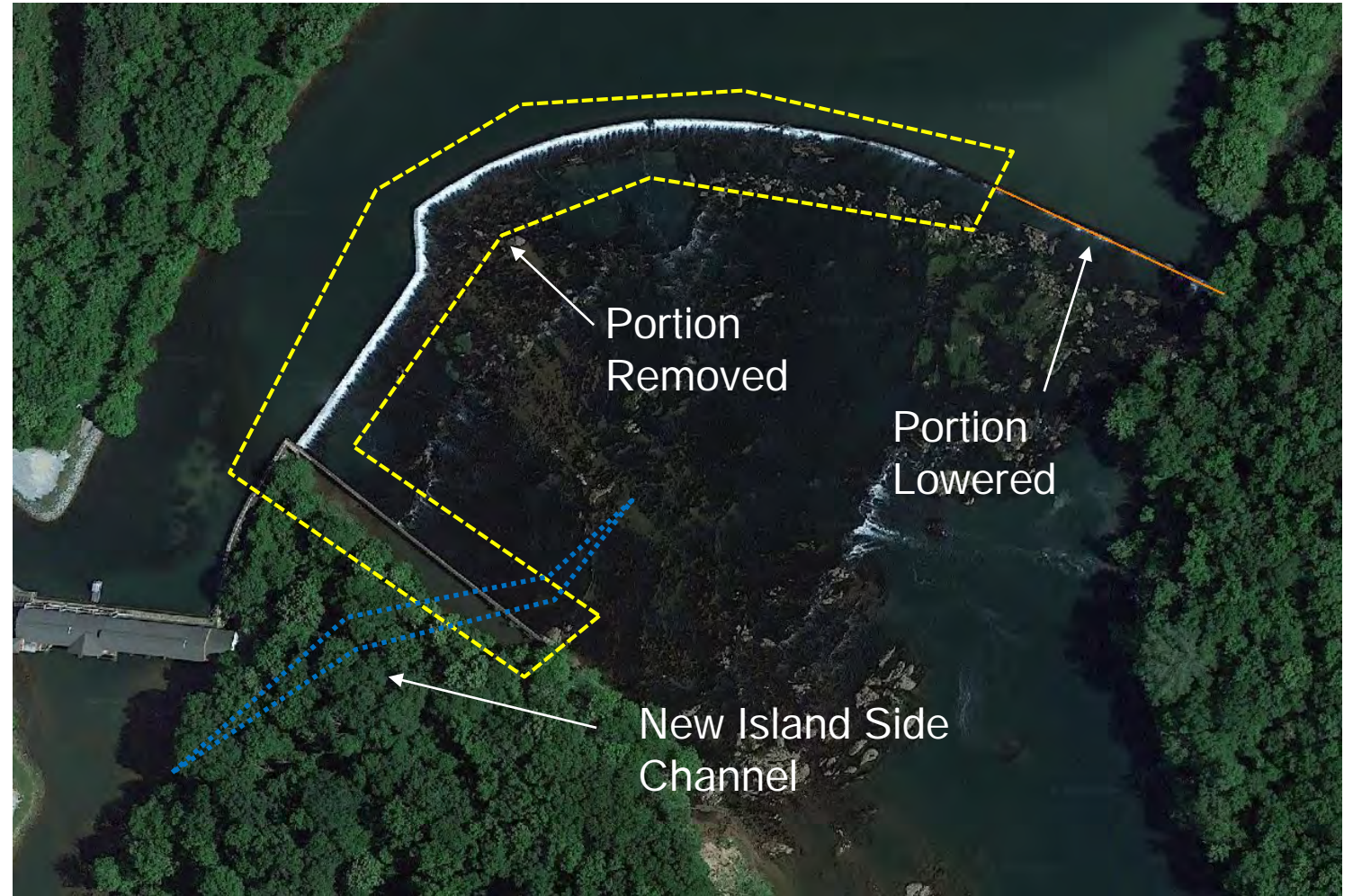


Scenarios Analyzed – Hydrology

- West Point Minimum Flow = 670 cubic feet per second (cfs)
- West Point Minimum Flow +1 Unit = 8,275 cfs
- West Point Minimum Flow +2 Units = 15,875 cfs
- 100-year Flood
 - FEMA Flood Insurance Study – 79,000 cfs at USGS gage 02339500 (West Point, Georgia)
 - May 2003 flood – 75,100 cfs measured at USGS gage – event used for 100-year flood modeling
- Note: No inflows between West Point Dam and projects were included
 - Historically river flow is ~800 cfs minimum; model results conservative

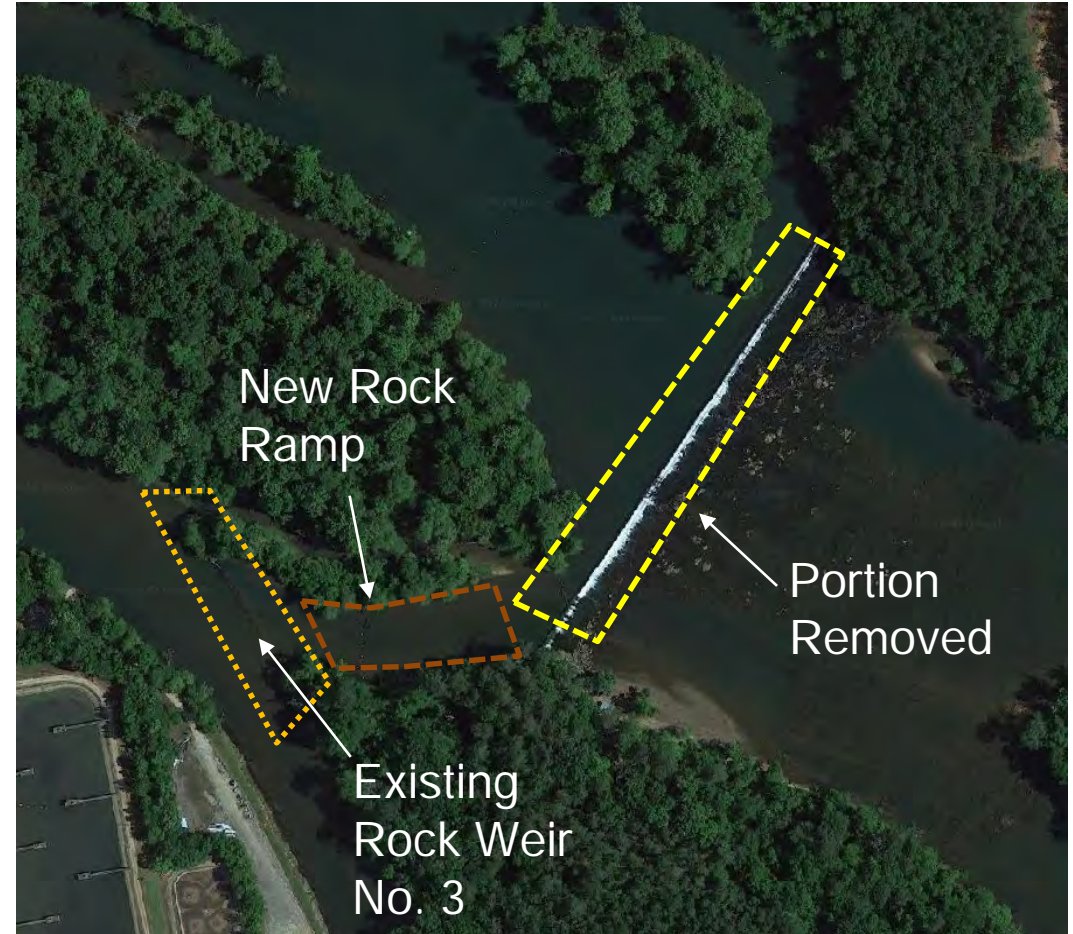
Scenarios Analyzed – Proposed Removals / Modifications

- Langdale
 - Majority of dam removed from western (AL) side
 - ~300 ft portion lowered on eastern (GA) side (to decrease velocity and spread flow across the river)
 - Powerhouse remains
- New Island Side Channel
 - To provide water to powerhouse tailrace



Scenarios Analyzed – Proposed Removals / Modifications

- Crow Hop Dam
 - Nearly fully removed
 - 10 ft abutment sections left at banks of river
- Rock Ramp adjacent to Crow Hop
 - will help maintain rock weir upstream of Riverview channel entrance



Scenarios Analyzed – Proposed Removals / Modifications

- Riverview
 - Dam nearly fully removed
 - 10 ft abutment sections left at banks of river
 - Powerhouse demolished – replaced with berm to constrain flow to Riverview Channel

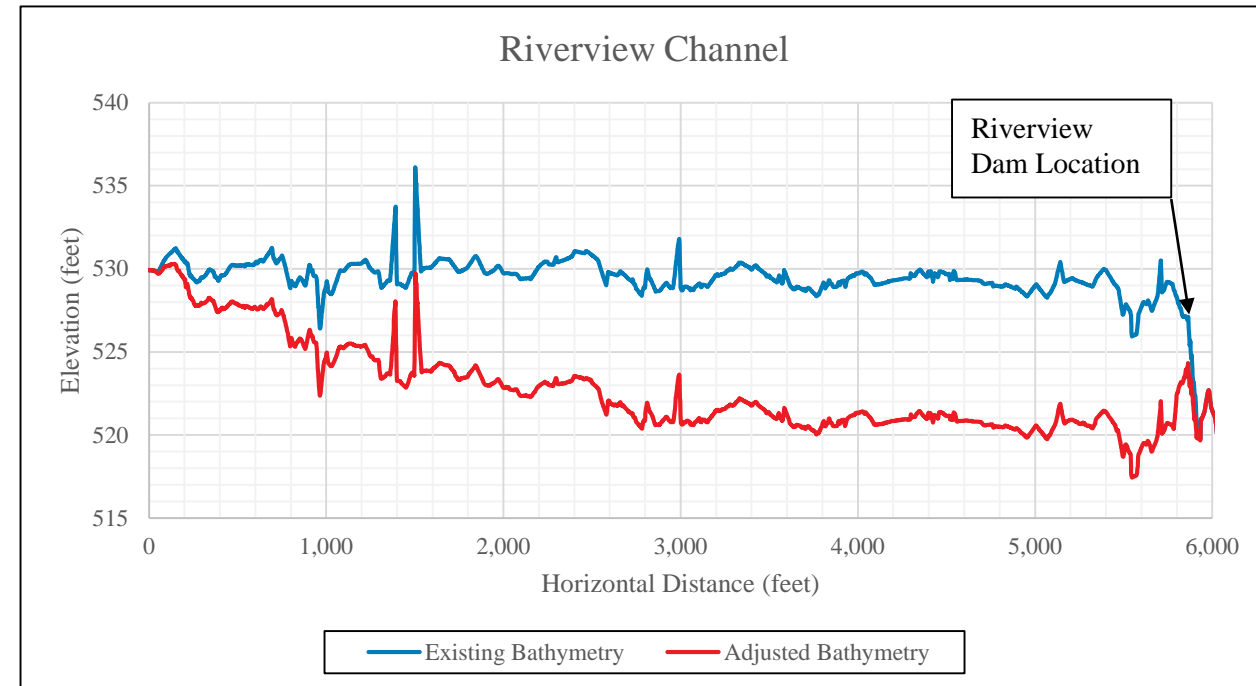


Scenarios Analyzed – River Sediment Assumptions

- Existing Conditions
- Dams Removed – Existing Bathymetry
- Dams Removed – Adjusted Bathymetry

- **Existing Bathymetry** – assumes surface of river bottom unchanged post-removal of dams
- **Adjusted Bathymetry** – assumes natural sediment migration to refusal depth post-removal of dams (conservative estimate)
 - Note: adjustments made upstream of Langdale and Riverview Dams

- Likely post-dam removal will be somewhere in between these two scenarios



Results – Existing Conditions Calibration

- No historic water levels available for Langdale and Riverview powerhouses
- Georgia Power contracted USGS to measure flow in the river
- Model compared well with USGS data

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

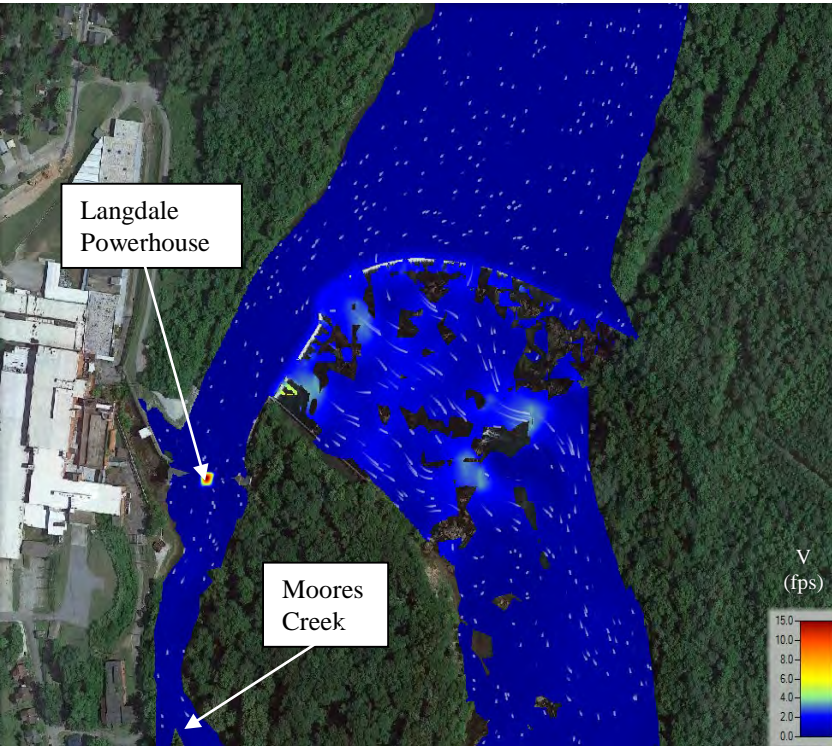


Model Results

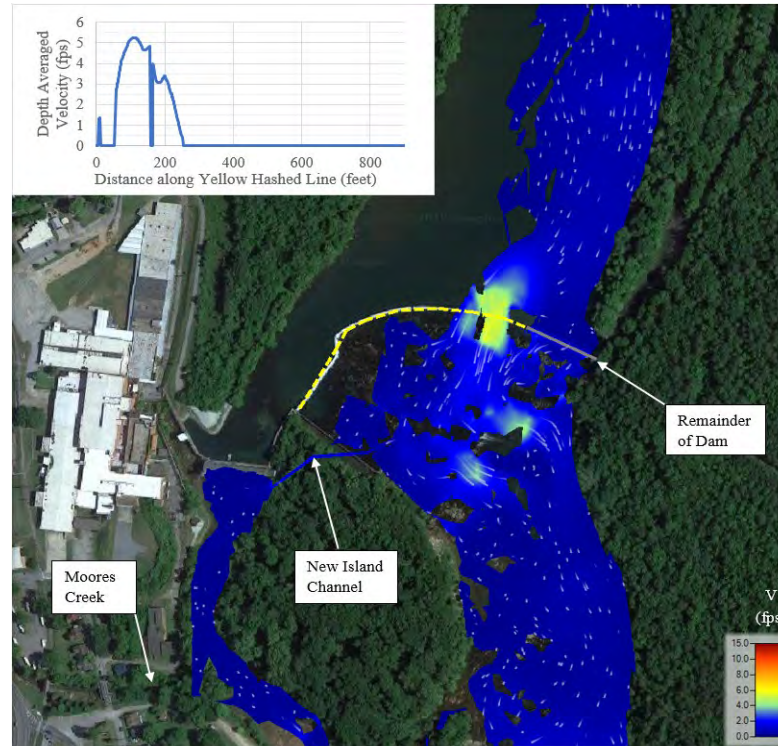
- **Velocity maps and wetted area changes at the dams**
- River flow redistribution
- Riverview Channel flow depth changes
- Effects on infrastructure
- Limits of upstream effects
- 100-year flood inundation changes
- Boating depth changes

Results – Langdale: West Point Minimum Flow (670 cfs)

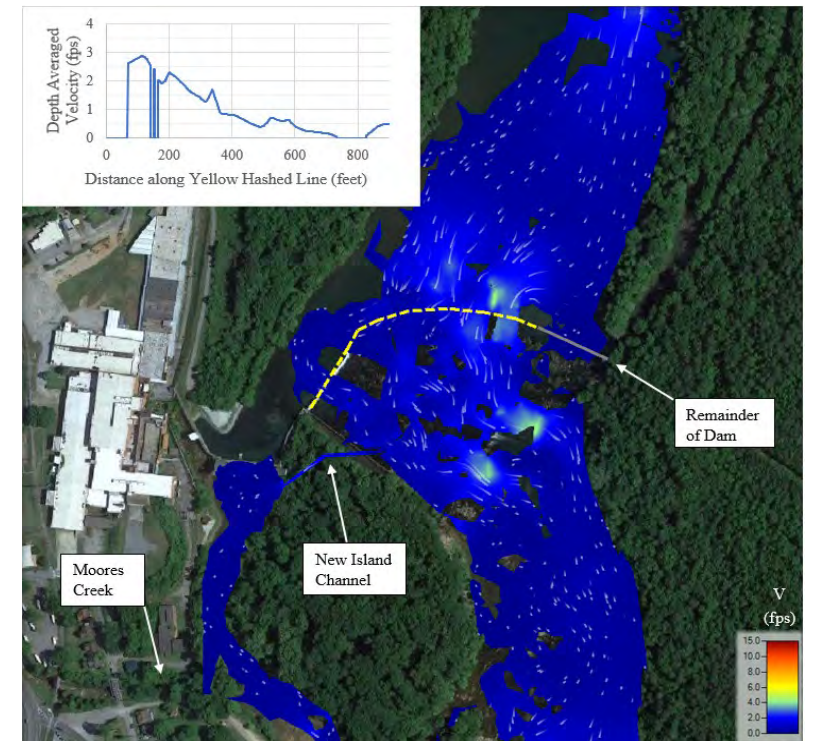
Existing Conditions



Dam Removed – Existing Bathymetry

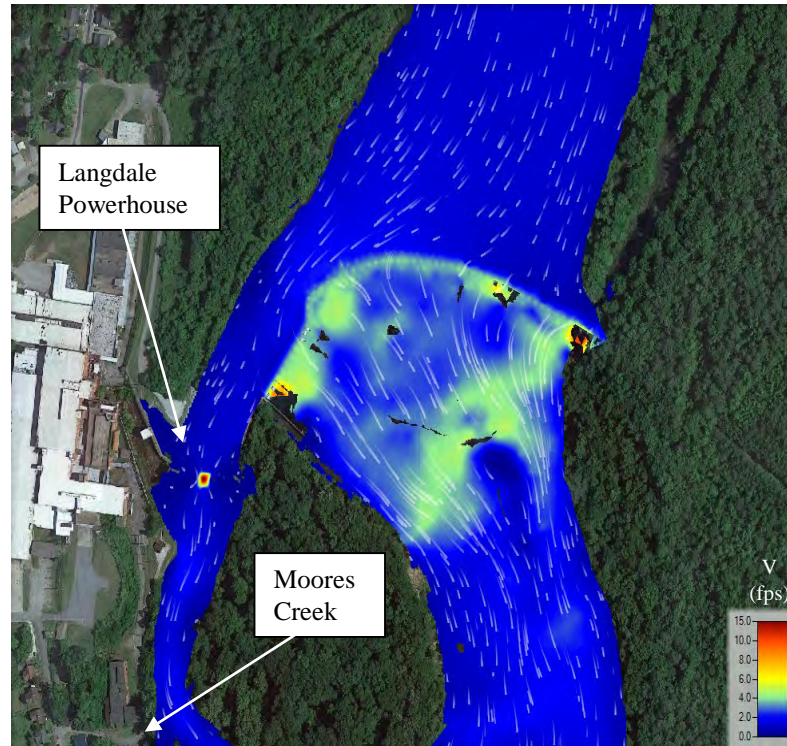


Dam Removed – Adjusted Bathymetry

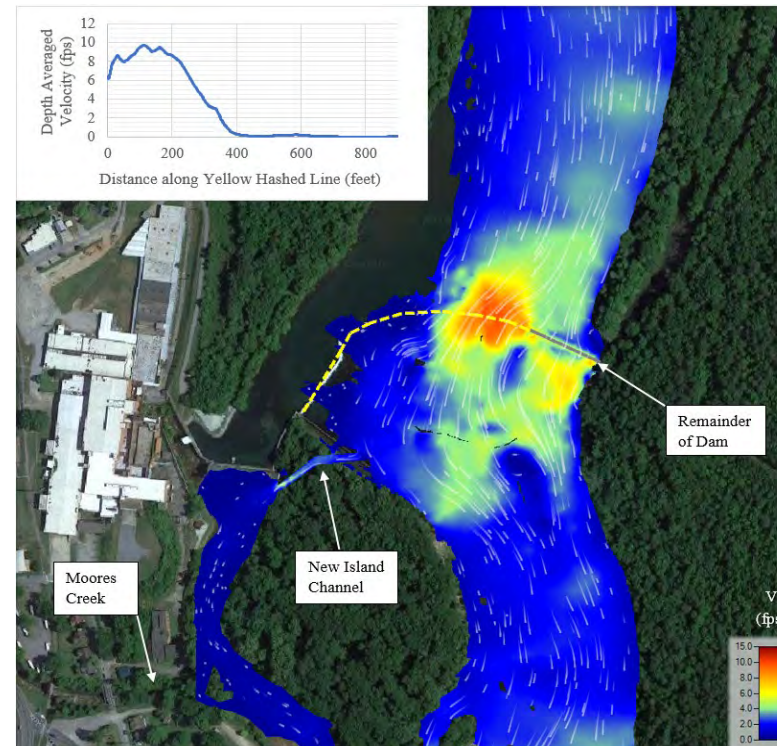


Results – Langdale: West Point Minimum Flow +1 Unit (8,275 cfs)

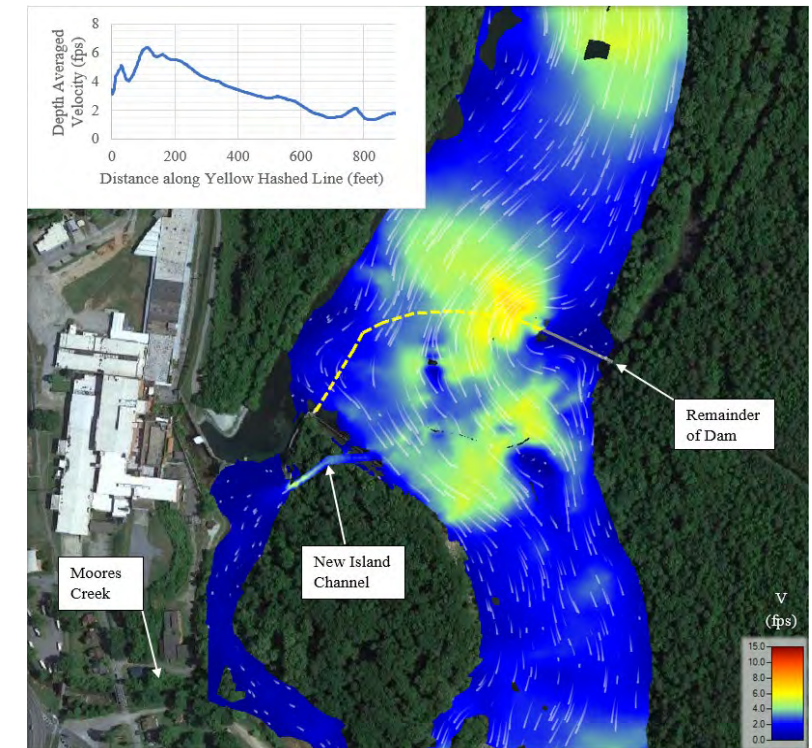
Existing Conditions



Dam Removed – Existing Bathymetry

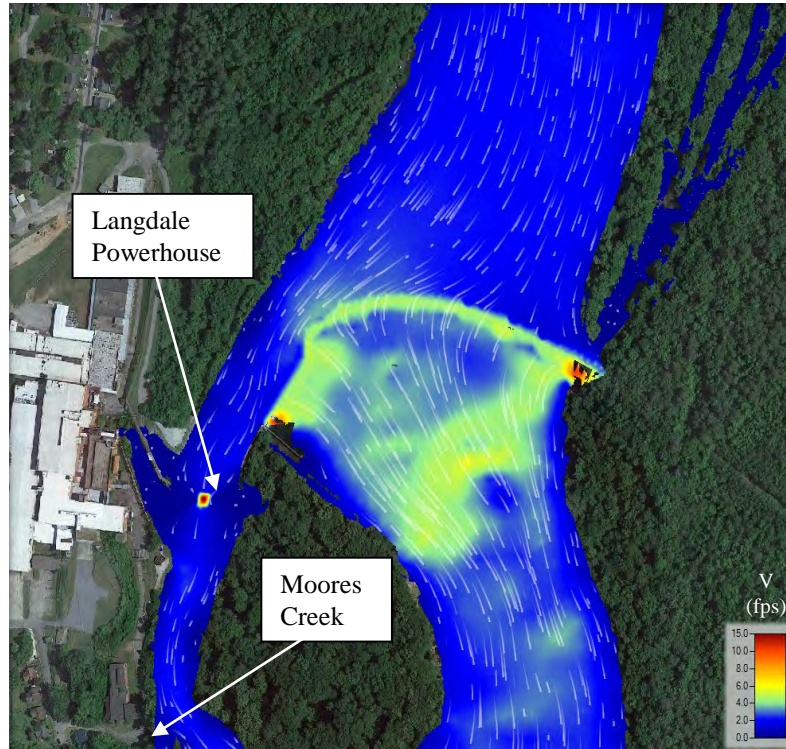


Dam Removed – Adjusted Bathymetry

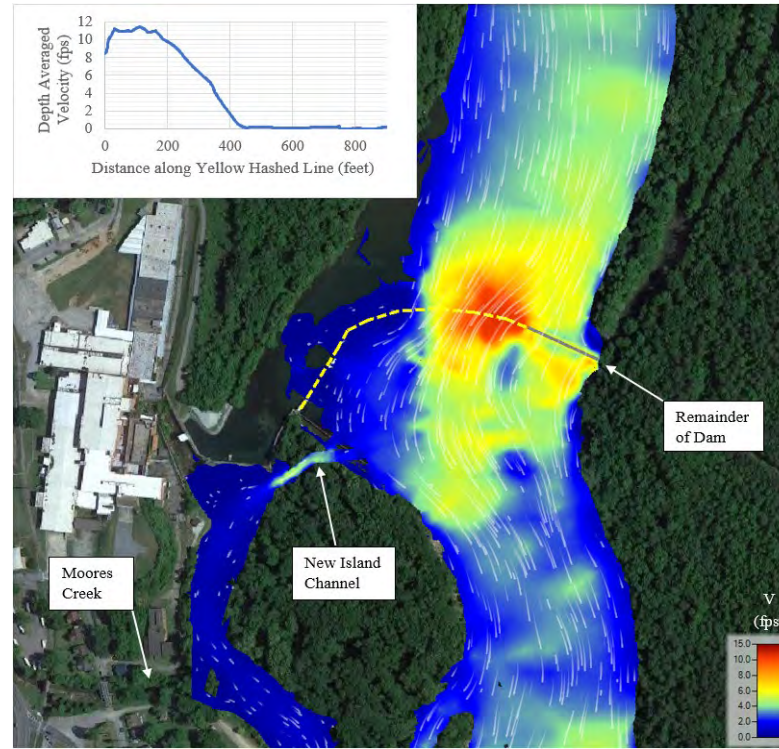


Results – Langdale: West Point Minimum Flow +2 Unit (15,875 cfs)

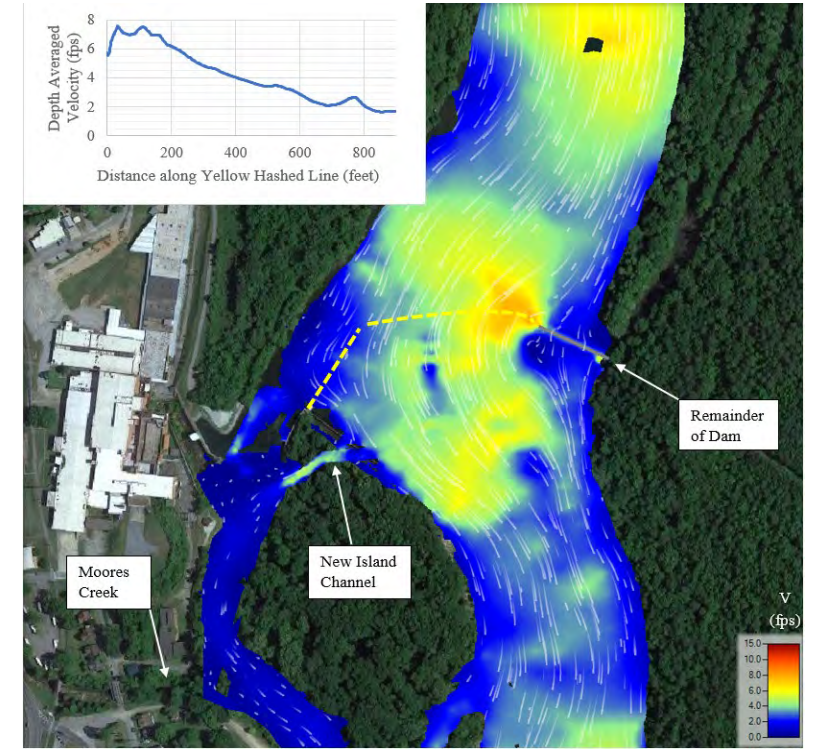
Existing Conditions



Dam Removed – Existing Bathymetry

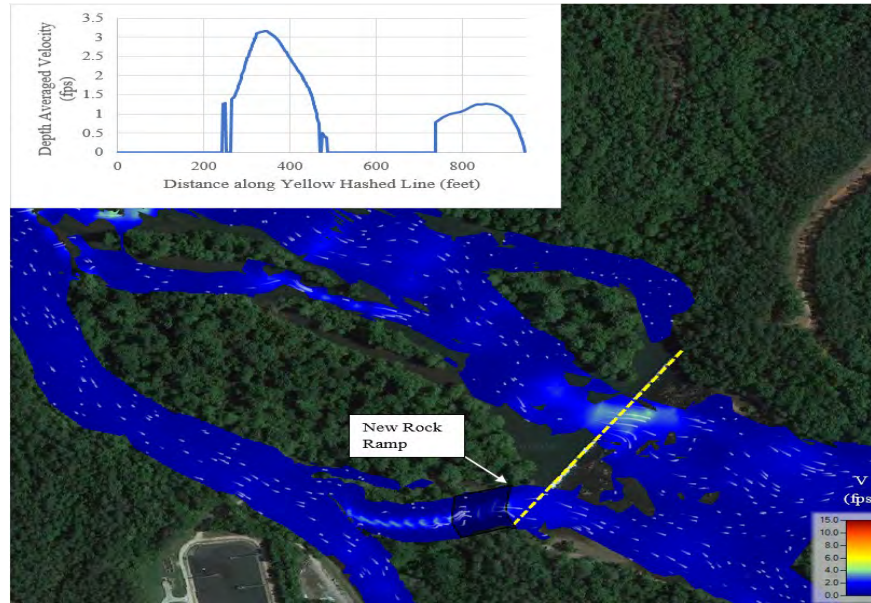
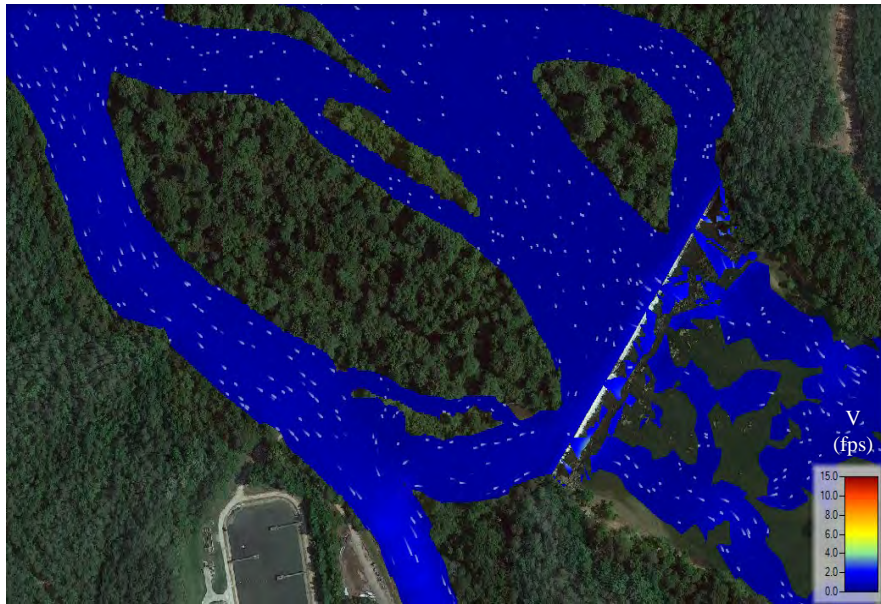


Dam Removed – Adjusted Bathymetry

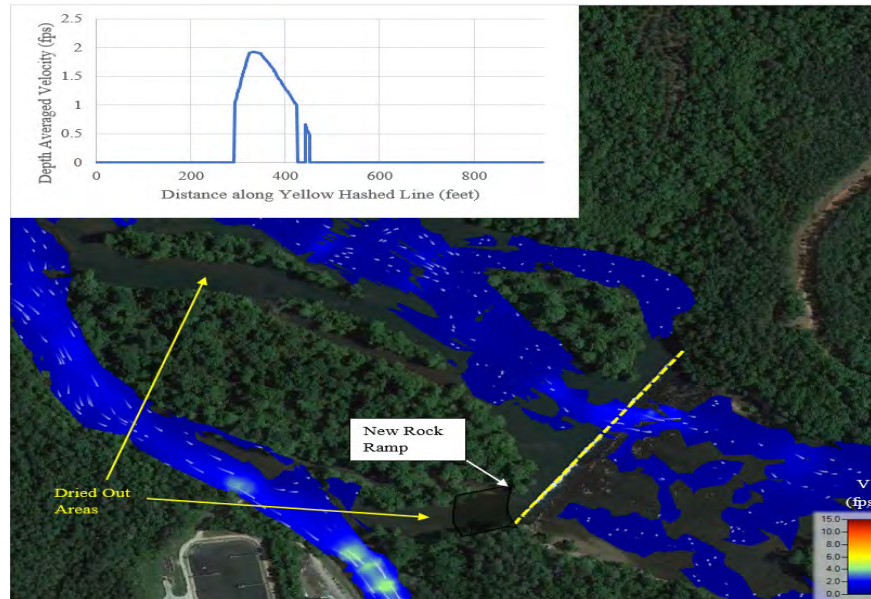


Results – Crow Hop: West Point Minimum Flow (670 cfs)

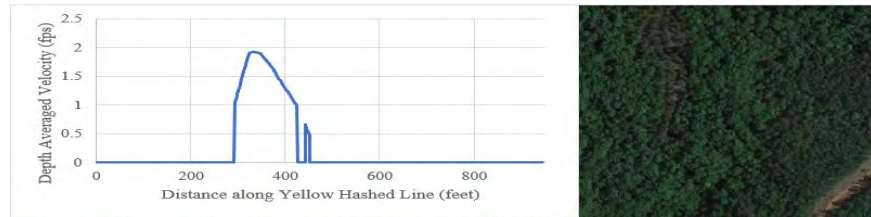
Existing Conditions



Dam Removed – Existing Bathymetry

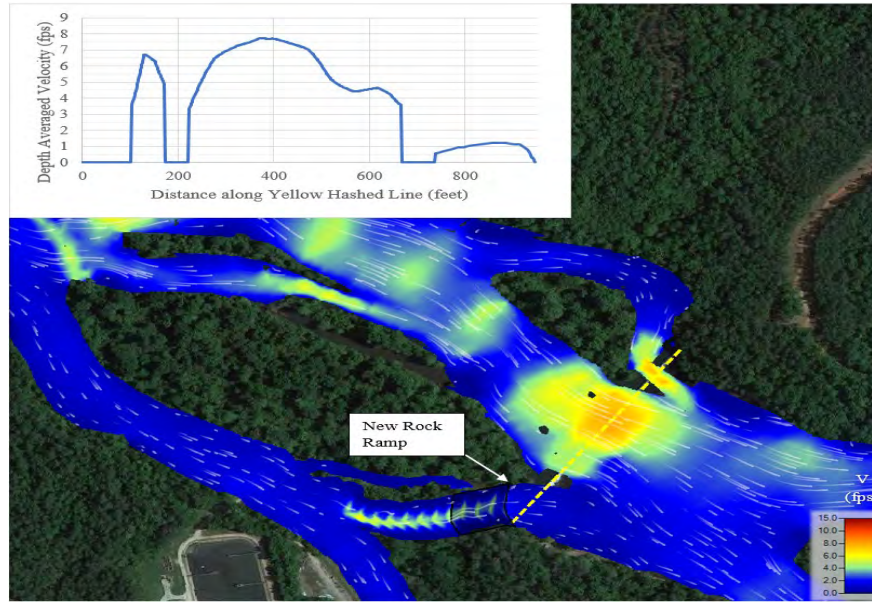
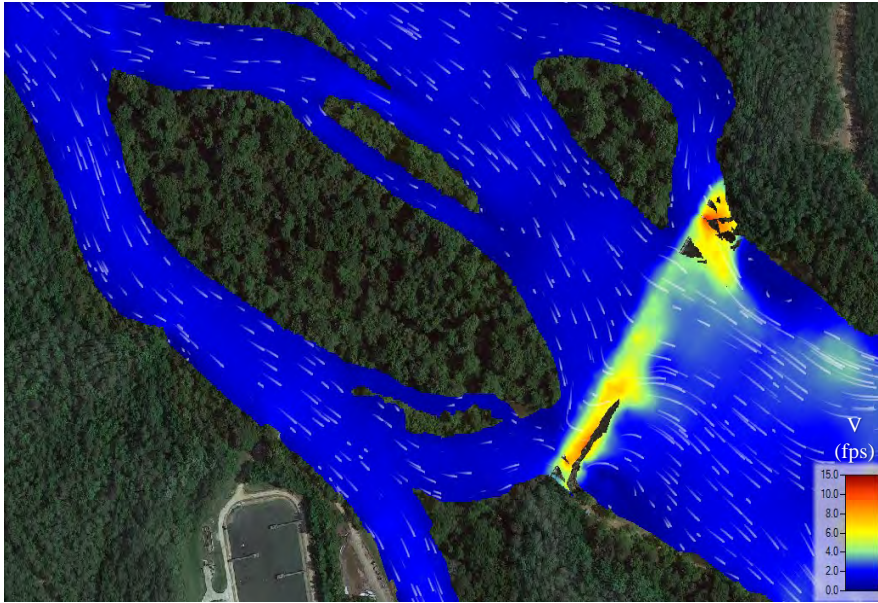


Dam Removed – Adjusted Bathymetry

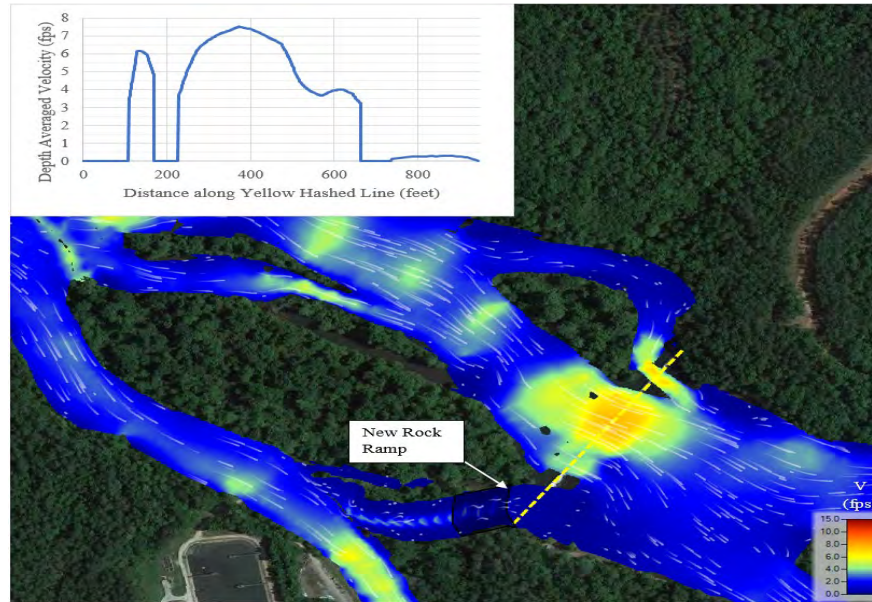


Results – Crow Hop: West Point Minimum Flow +1 Unit (8,275 cfs)

Existing Conditions



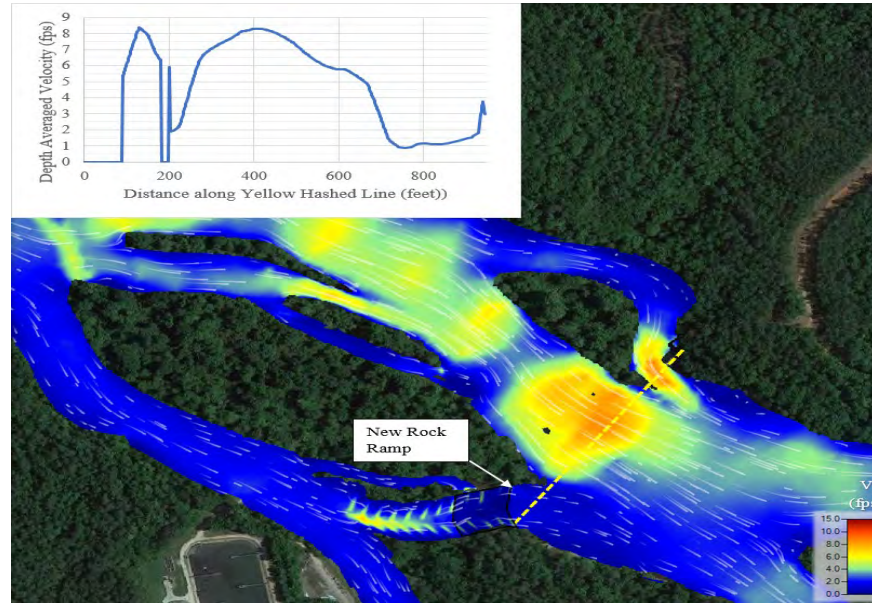
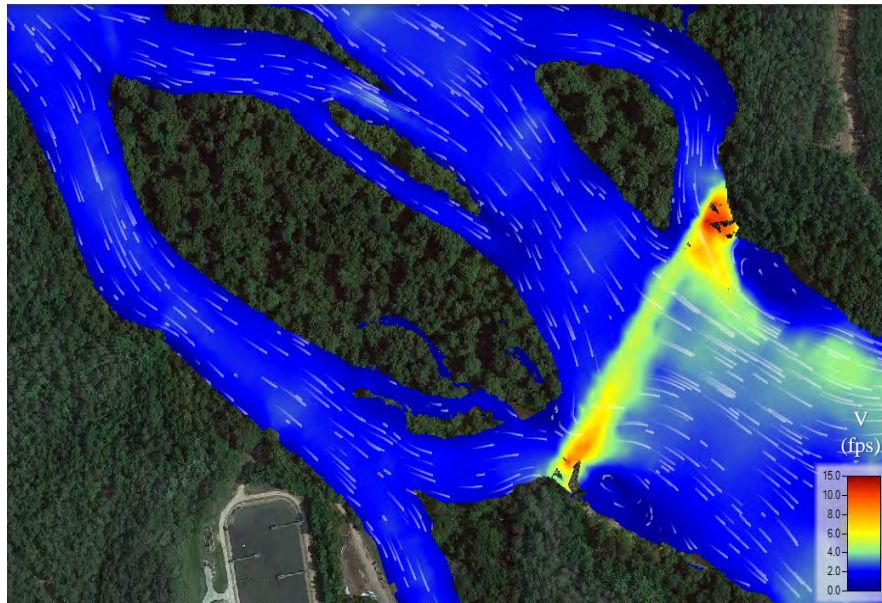
Dam Removed – Existing Bathymetry



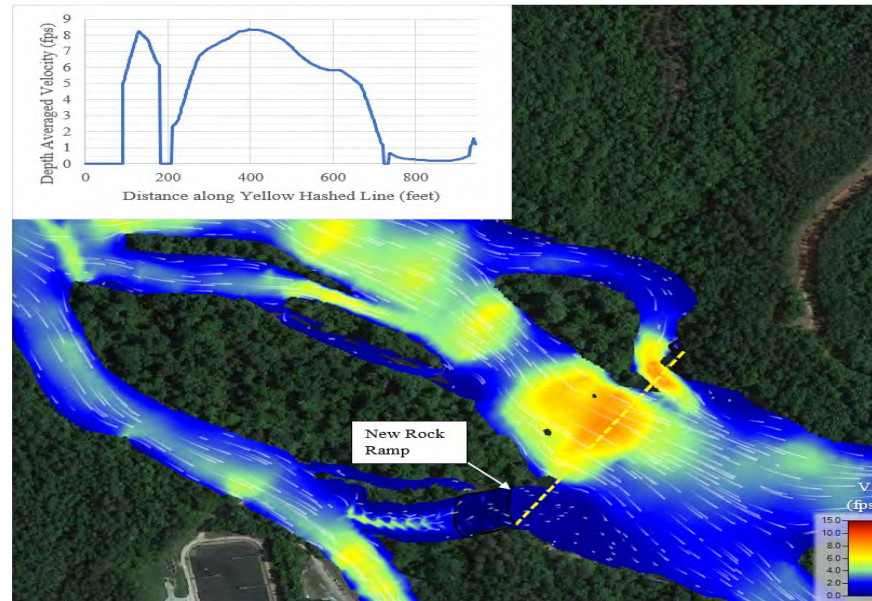
Dam Removed – Adjusted Bathymetry

Results – Crow Hop: West Point Minimum Flow +2 Unit (15,875 cfs)

Existing Conditions



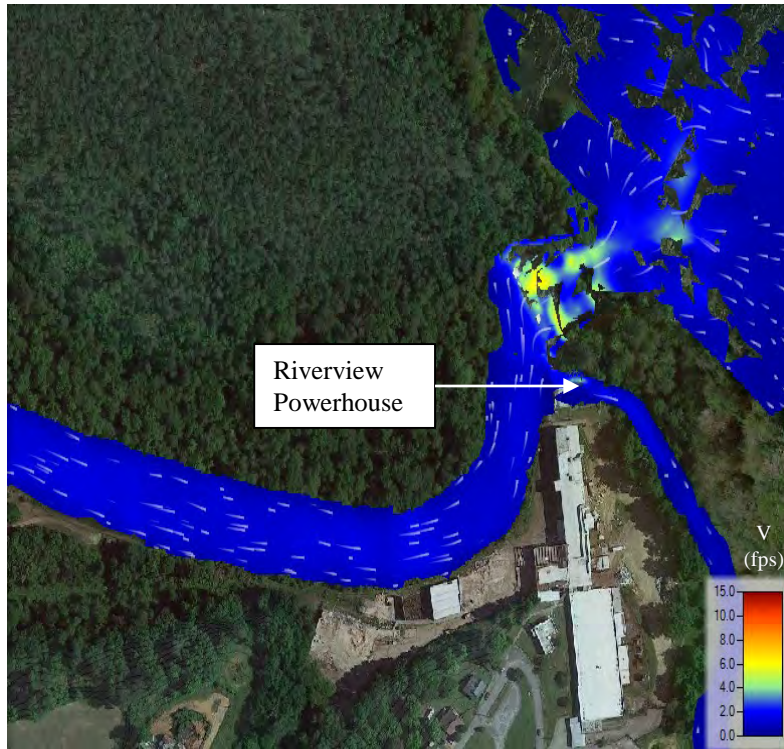
Dam Removed – Existing Bathymetry



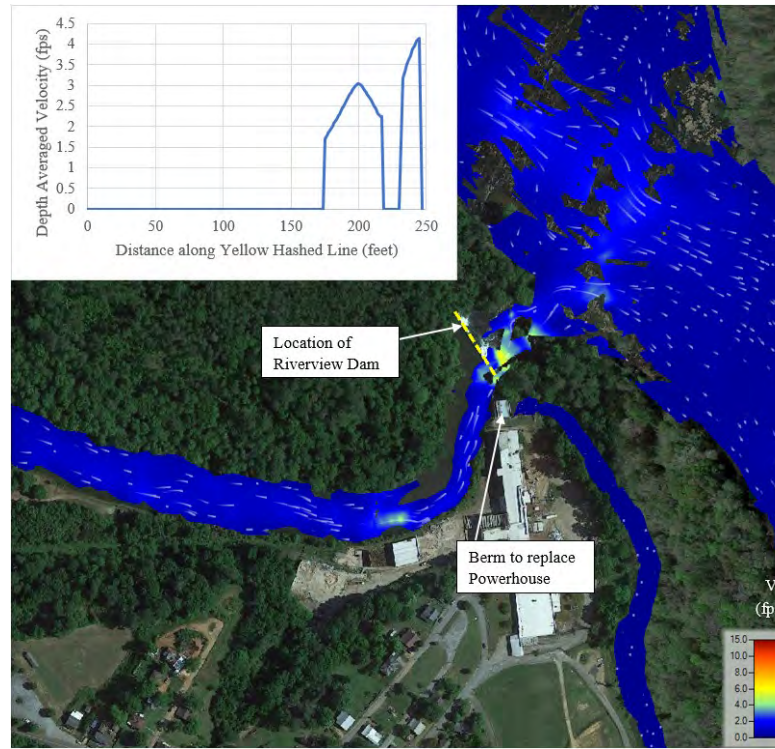
Dam Removed – Adjusted Bathymetry

Results – Riverview: West Point Minimum Flow (670 cfs)

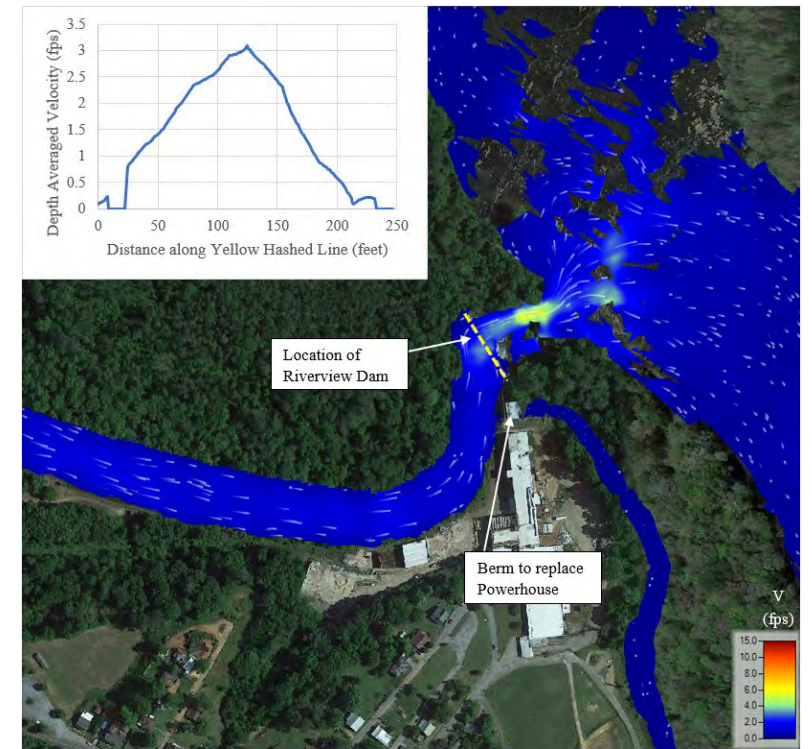
Existing Conditions



Dam Removed – Existing Bathymetry

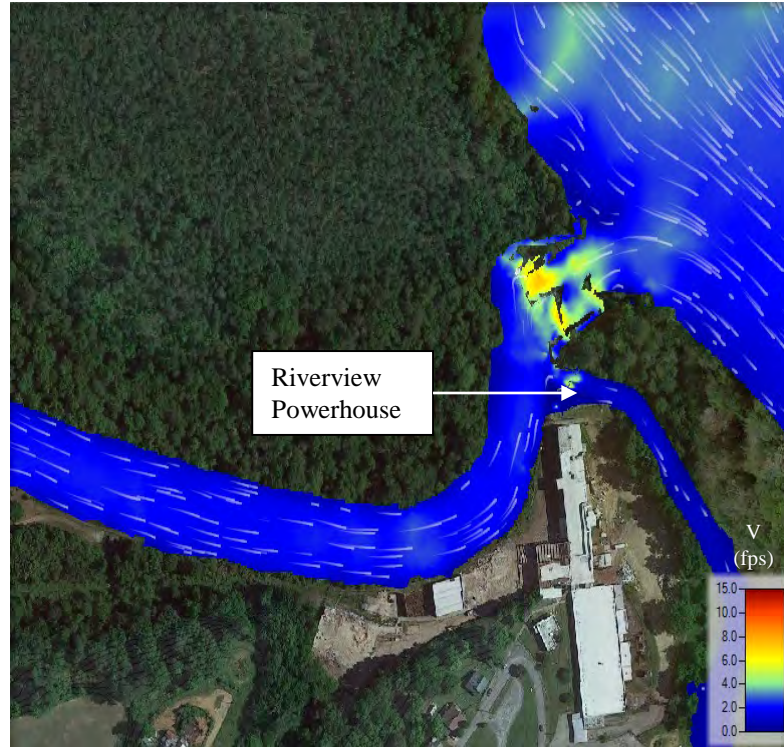


Dam Removed – Adjusted Bathymetry

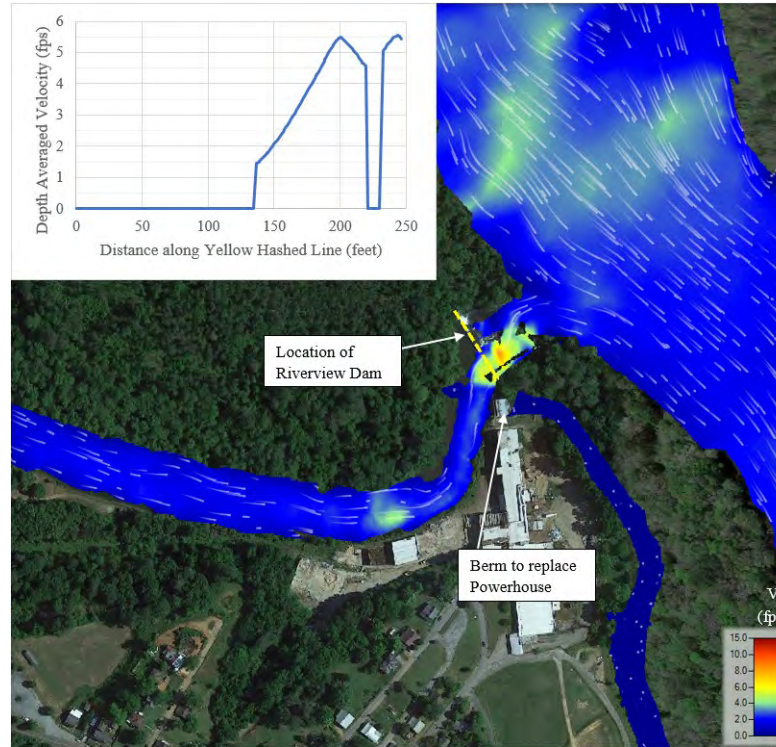


Results – Riverview: West Point Minimum Flow +1 Unit (8,275 cfs)

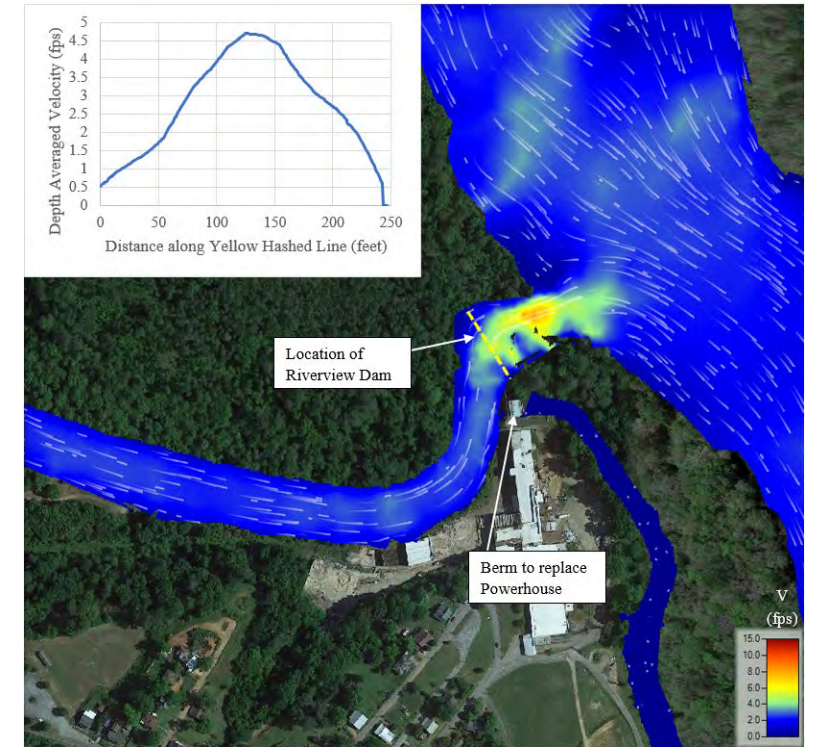
Existing Conditions



Dam Removed – Existing Bathymetry

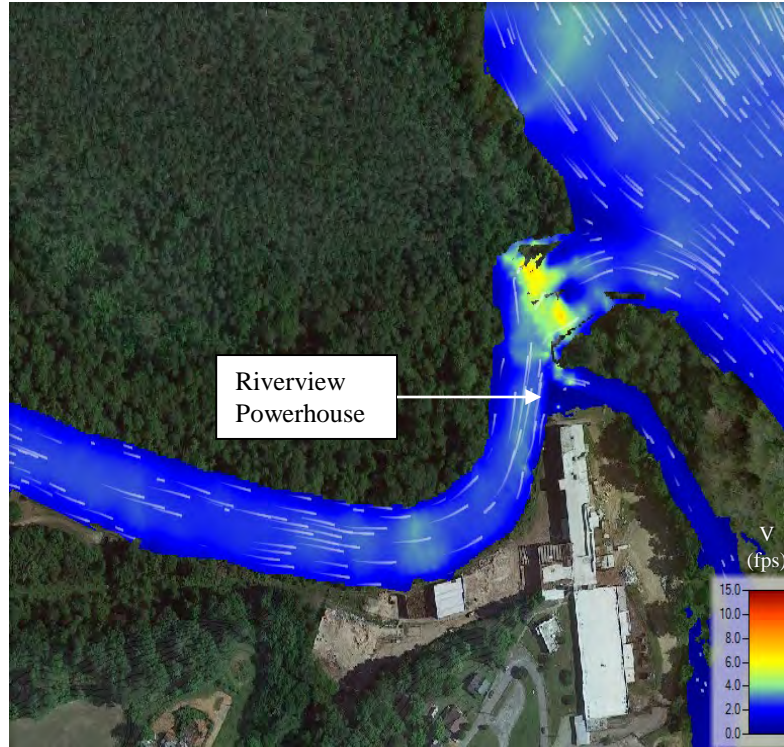


Dam Removed – Adjusted Bathymetry

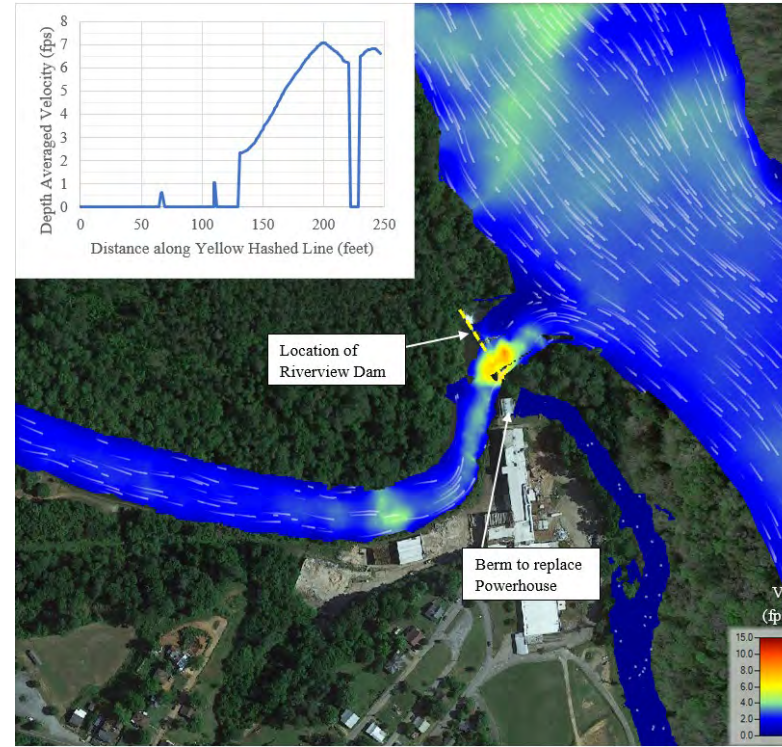


Results – Riverview: West Point Minimum Flow +2 Unit (15,875 cfs)

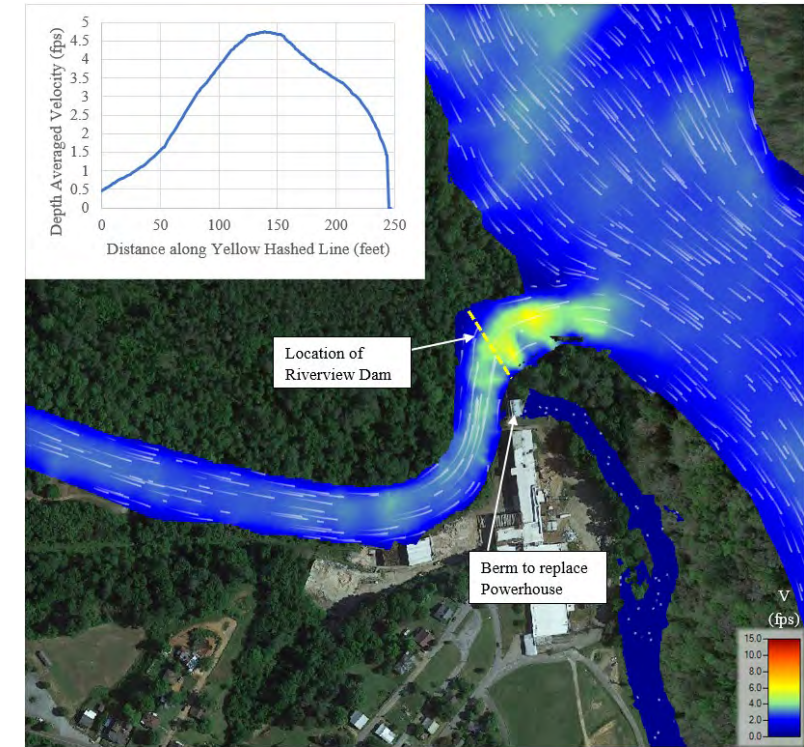
Existing Conditions



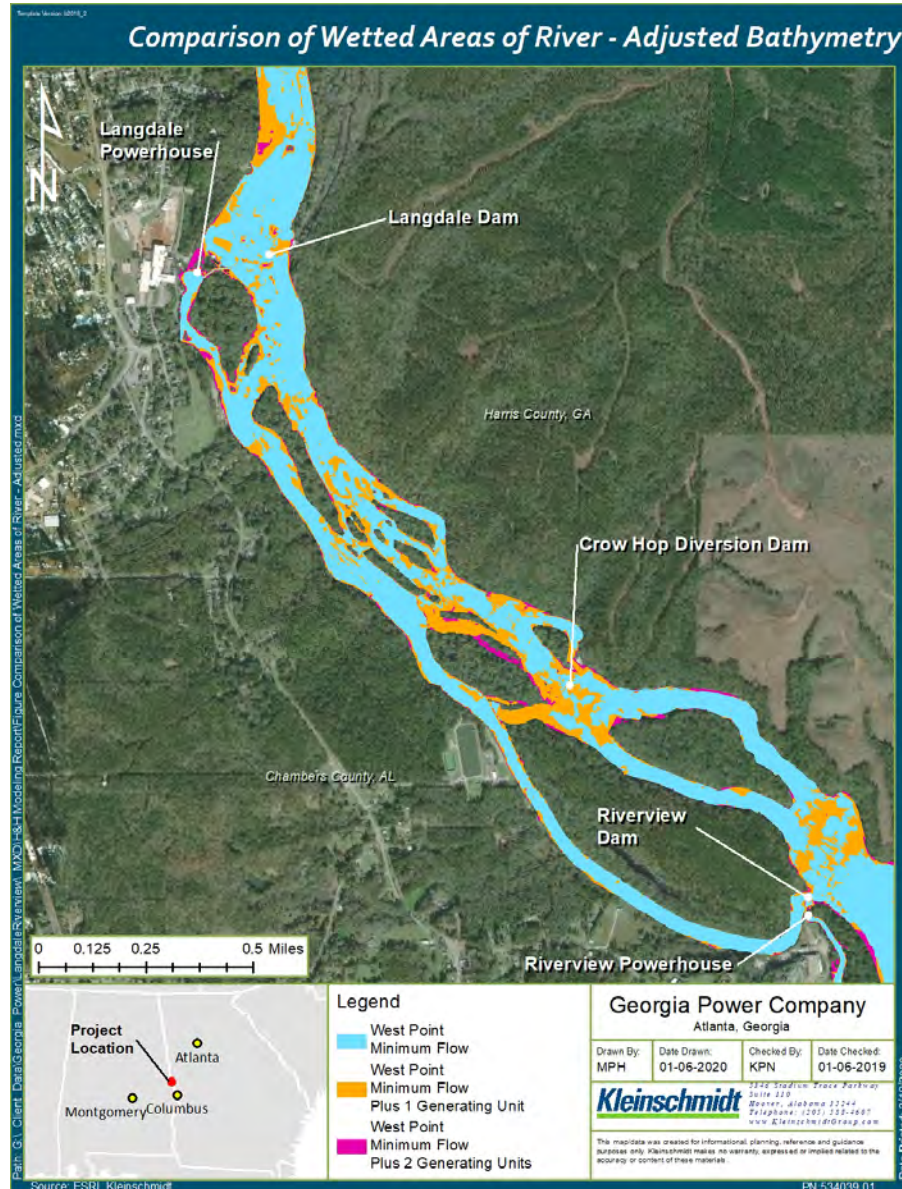
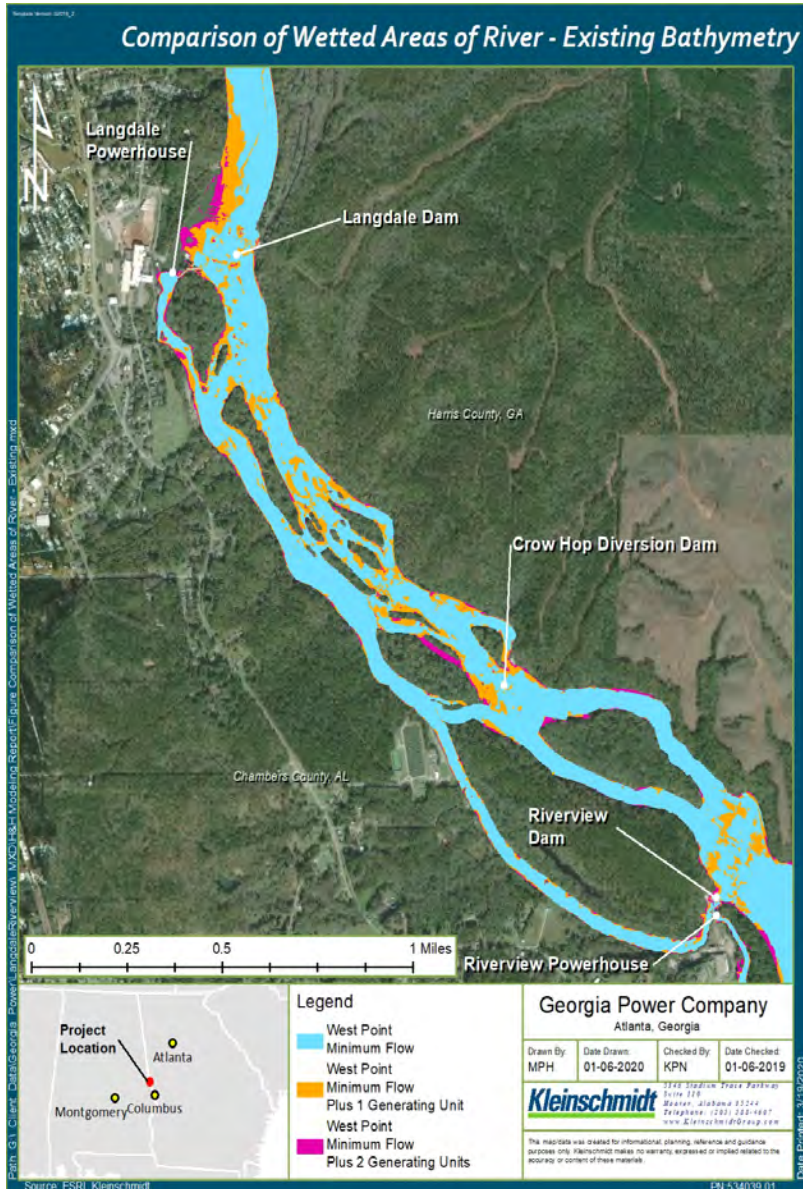
Dam Removed – Existing Bathymetry



Dam Removed – Adjusted Bathymetry



Results – Wetted Area Changes near Projects



Legend

- West Point Minimum Flow
- West Point Minimum Flow Plus 1 Generating Unit
- West Point Minimum Flow Plus 2 Generating Units

Model Results

- Velocity maps and wetted area changes at the dams
- **River flow redistribution**
- Riverview Channel flow depth changes
- Effects on infrastructure
- Limits of upstream effects
- 100-year flood inundation changes
- Boating depth changes

Results – River Flow Distribution – Dams Removed: Existing Bathymetry



West Point Minimum Flow (670 cfs)

RIVER LOCATION	EXISTING 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%

Note:

- No change in total flow in river, just redistributed
- No changes in river flow distribution downstream from Riverview Dam

Results – River Flow Distribution – Dams Removed: Existing Bathymetry



West Point Minimum Flow +2
Generating Units (15,875 cfs)

RIVER LOCATION	EXISTING 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%

Note:

- No change in total flow in river, just redistributed
- No changes in river flow distribution downstream from Riverview Dam

Results – River Flow Distribution – Dams Removed: Adjusted Bathymetry



West Point Minimum Flow (670 cfs)

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%

Note:

- No change in total flow in river, just redistributed
- No changes in river flow distribution downstream from Riverview Dam

Results – River Flow Distribution – Dams Removed: Adjusted Bathymetry



West Point Minimum Flow +2
Generating Units (15,875 cfs)

RIVER LOCATION	EXISTING 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%

Note:

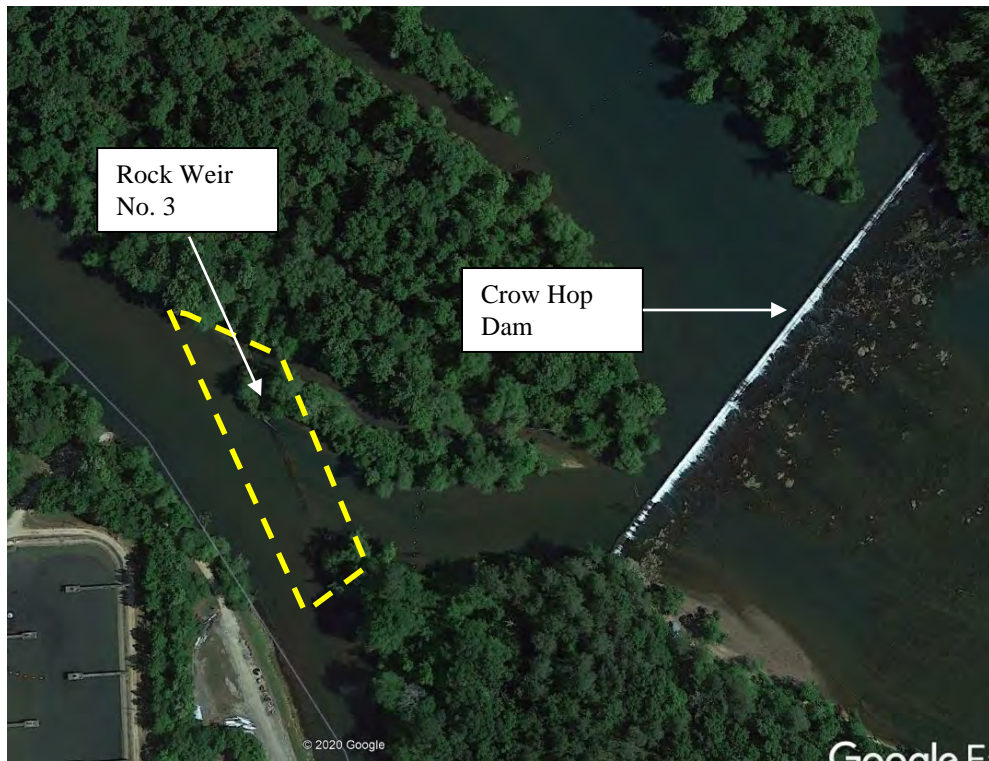
- No change in total flow in river, just redistributed
- No changes in river flow distribution downstream from Riverview Dam

Model Results

- Velocity maps and wetted area changes at the dams
- River flow redistribution
- **Riverview Channel flow depth changes**
- Effects on infrastructure
- Limits of upstream effects
- 100-year flood inundation changes
- Boating depth changes

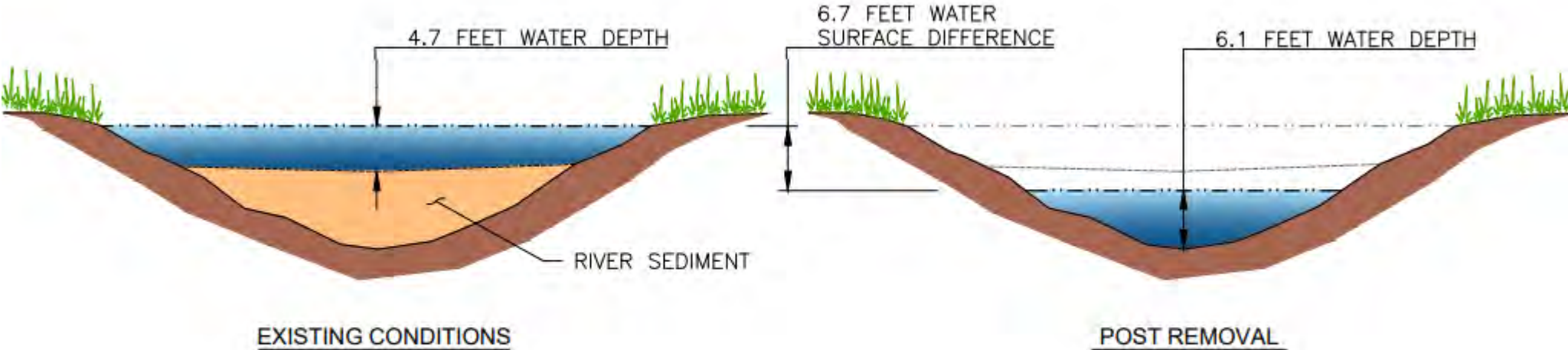
Results – Depth Changes in Riverview Channel

- Adjusted bathymetry simulations show more water entering Riverview Channel
- Despite greater amount of water, water surface elevation decreases due to the removal of the dam and migration of sediment



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

Results – Depth Changes in Riverview Channel



CHANNEL SECTION EXAMPLE

Model Results

- Velocity maps and wetted area changes at the dams
- River flow redistribution
- Riverview Channel flow depth changes
- **Effects on infrastructure**
- Limits of upstream effects
- 100-year flood inundation changes
- Boating depth changes

Results – Effects on Infrastructure

- Cemetery Park boat ramp partially dewatered at West Point Min Flow and velocities decreased under all flows modeled
- Shawmut Airport boat ramp dewatered at West Point Min Flow, reduced depth at other flows, and slightly increased velocities above Min Flow
- Similar results for both dam removal with existing and adjusted bathymetry

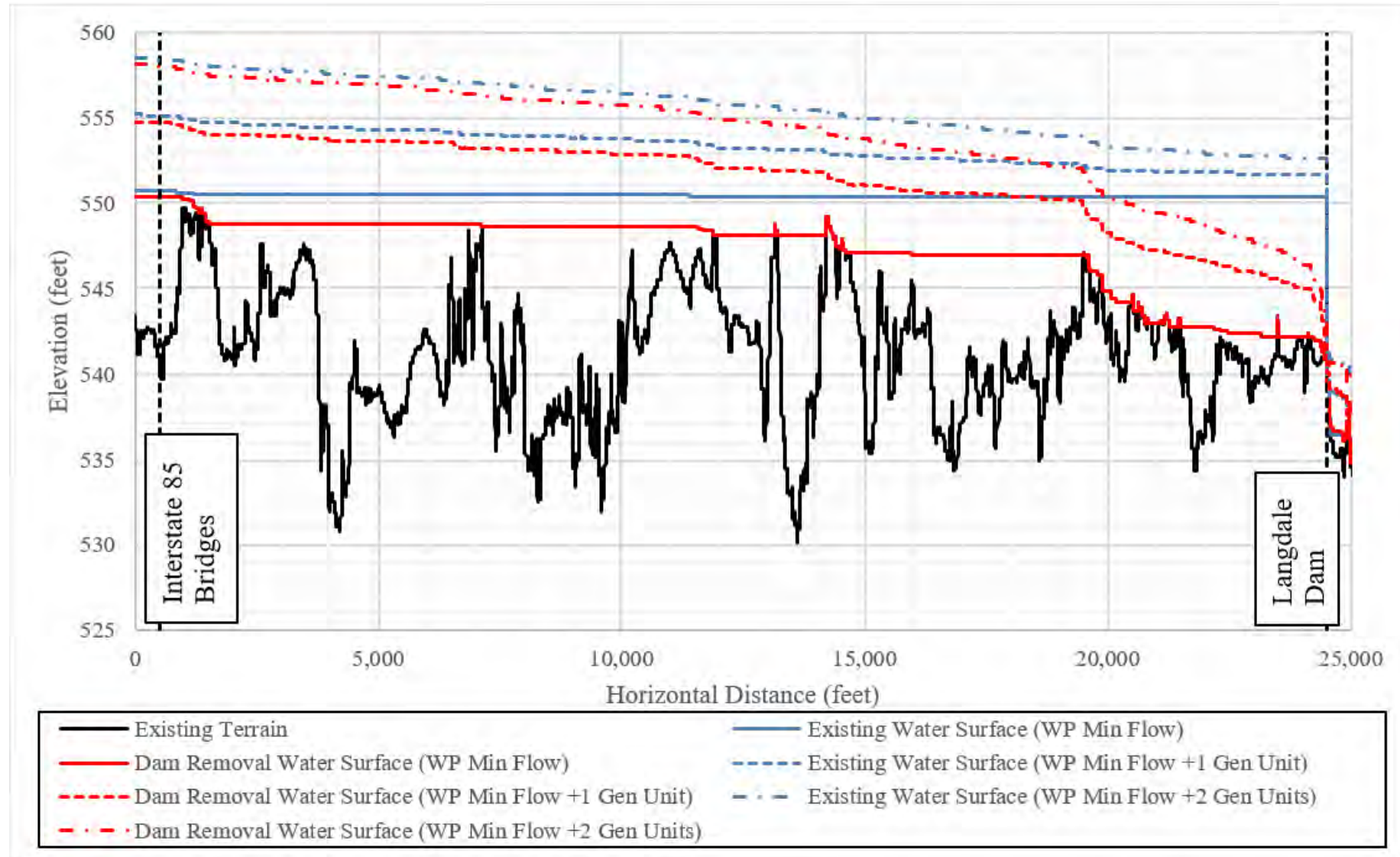


Model Results

- Velocity maps and wetted area changes at the dams
- River flow redistribution
- Riverview Channel flow depth changes
- Effects on infrastructure
- **Limits of upstream effects**
- 100-year flood inundation changes
- Boating depth changes

Results – Water Surface Profile I-85 to Langdale Dam

Dams Removed, Existing Bathymetry



Results – Water Surface Profile I-85 to Langdale Dam

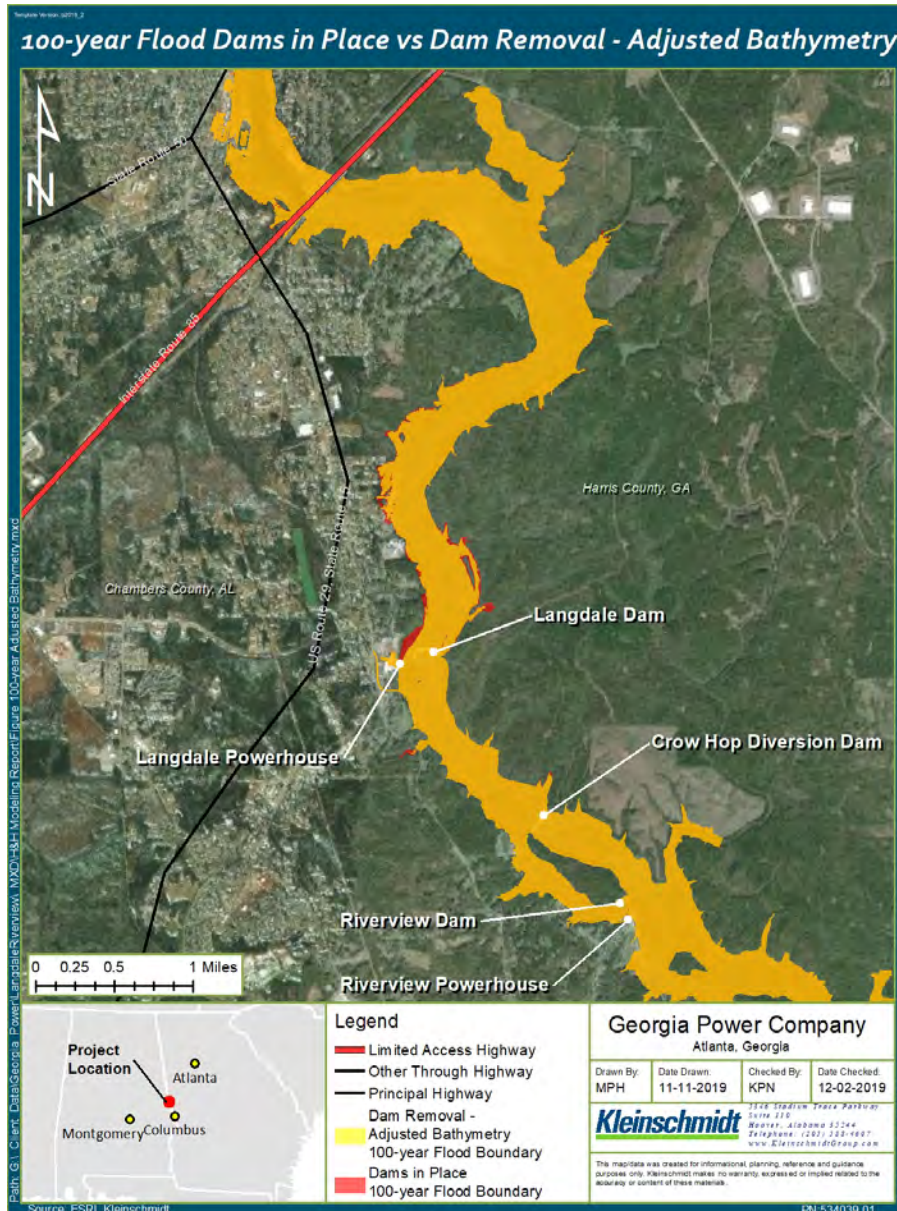
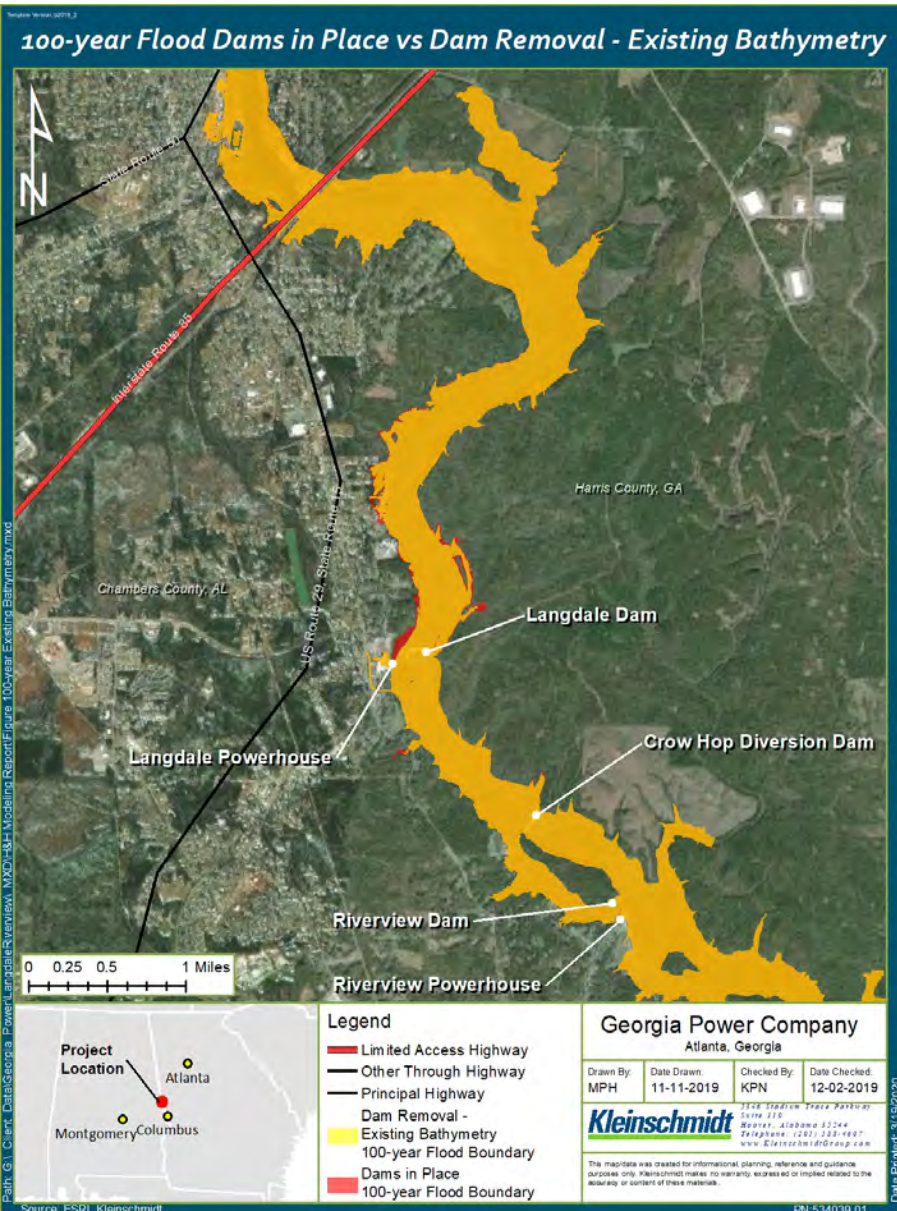
Dams Removed, Adjusted Bathymetry



Model Results

- Velocity maps and wetted area changes at the dams
- River flow redistribution
- Riverview Channel flow depth changes
- Effects on infrastructure
- Limits of upstream effects
- **100-year flood inundation changes**
- Boating depth changes

Results – 100-year Flood Changes



Legend

- Limited Access Highway
- Other Through Highway
- Principal Highway
- Dam Removal - Adjusted Bathymetry
- 100-year Flood Boundary
- Dams in Place
- 100-year Flood Boundary






Model Results

- Velocity maps and wetted area changes at the dams
- River flow redistribution
- Riverview Channel flow depth changes
- Effects on infrastructure
- Limits of upstream effects
- 100-year flood inundation changes
- **Boating depth changes**

Results – River Depth Changes

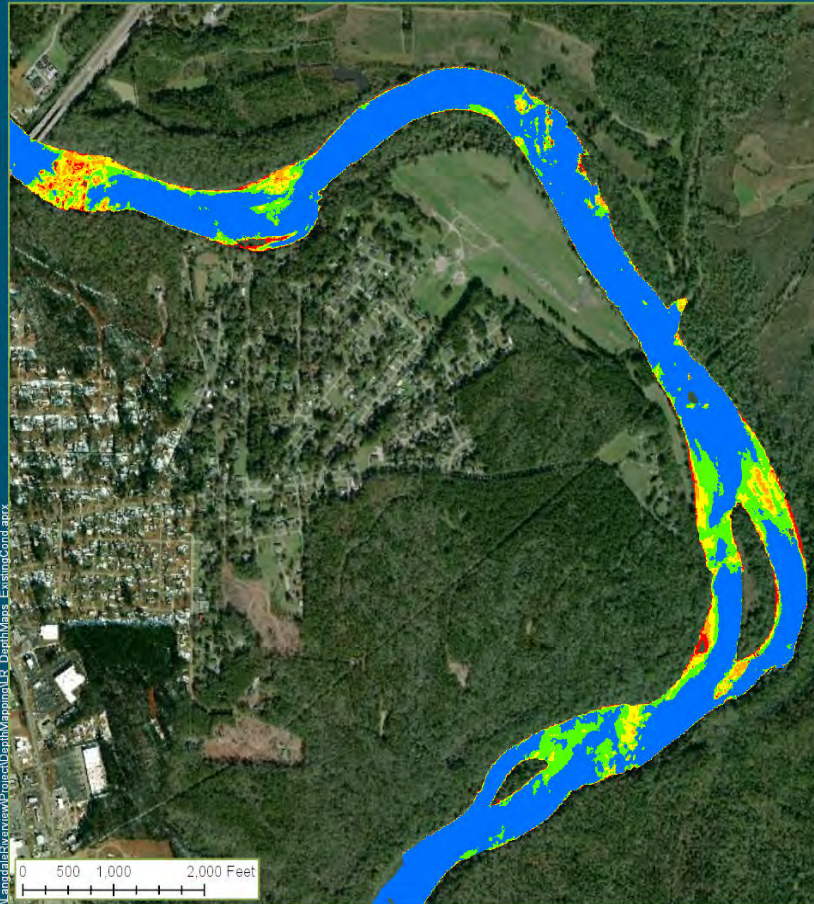
- Takeaway from Georgia Power's January 23, 2020 property owners' meeting—
How will river usability for boating change post-removal?
- Boat navigability depths based on discussion with Alabama Dept. of Conservation and Natural Resources (ADCNR)
 - Individual experience may vary based on expertise

Depth (feet)

	0.0 - 0.8	= not navigable by any craft
	0.8 - 1.5	= can be floated/poled through by canoe
	1.5 - 2.5	= navigable by canoe, not Jon boat
	2.5 - 4.0	= navigable by canoe and Jon boat, not bass boat
	4.0 +	= navigable by all boat types

Results – River Depth Changes

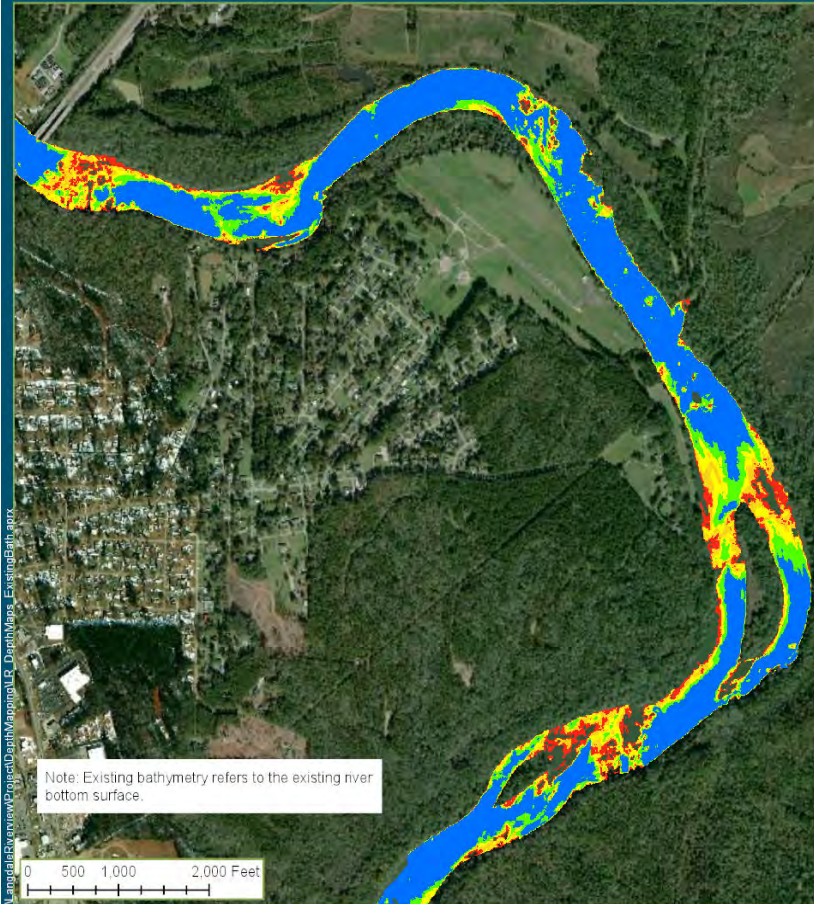
Existing Conditions - West Point Minimum Flow



Legend Depth (feet) 0.0 - 0.8 0.8 - 1.5 1.5 - 2.5 2.5 - 4.0 4.0 +	Georgia Power Company Atlanta, Georgia	
	Drawn By: MPH Date Drawn: 02-18-2020 Checked By: KPN Date Checked: 03-02-2020	141 West St., 10th Floor, 850 Philadelphia, MA 02108 Telephone: (617) 487-3328 Fax: (617) 487-3324 www.kleinschmidtgroup.com
This map/data was created for informational purposes only. It is not intended to be used for engineering or other professional purposes.		

Source: Esri, DigitalGlobe, GeoEye, USDA, USGS, Kleinschmidt
PN: 0534039.01

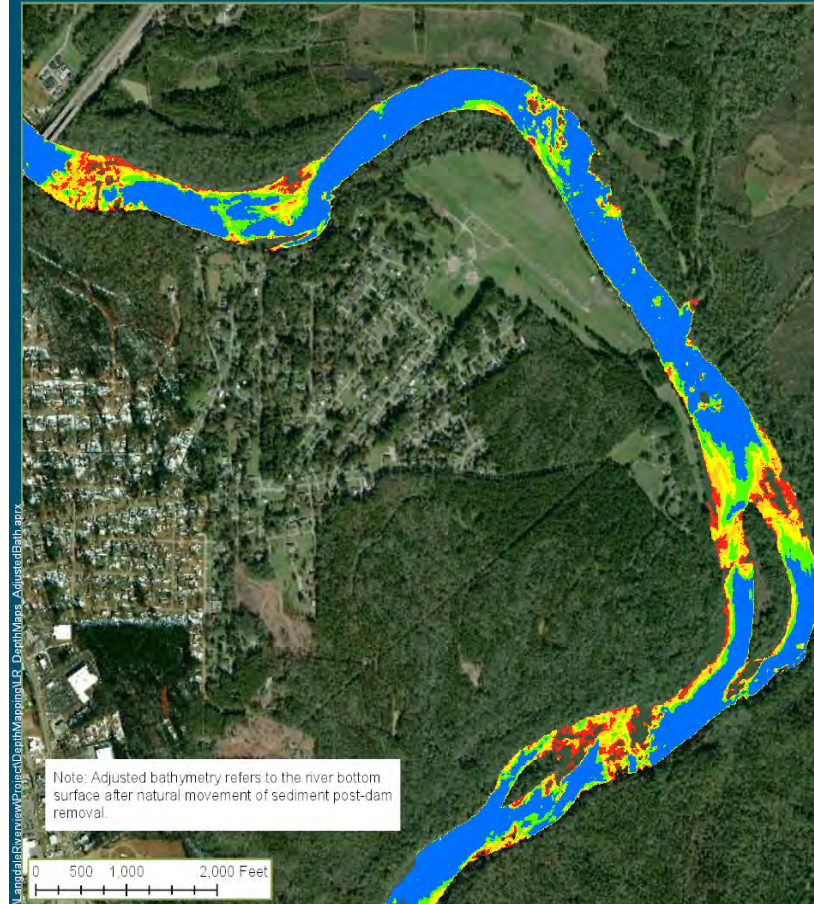
Dams Removed + Existing Bathymetry - West Point Minimum Flow



Legend Depth (feet) 0.0 - 0.8 0.8 - 1.5 1.5 - 2.5 2.5 - 4.0 4.0 +	Georgia Power Company Atlanta, Georgia	
	Drawn By: MPH Date Drawn: 02-18-2020 Checked By: KPN Date Checked: 03-02-2020	141 West St., 10th Floor, 850 Philadelphia, MA 02108 Telephone: (617) 487-3328 Fax: (617) 487-3324 www.kleinschmidtgroup.com
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PN: 0534039.01

Dams Removed + Adjusted Bathymetry - West Point Minimum Flow



Legend Depth (feet) 0.0 - 0.8 0.8 - 1.5 1.5 - 2.5 2.5 - 4.0 4.0 +	Georgia Power Company Atlanta, Georgia	
	Drawn By: MPH Date Drawn: 02-18-2020 Checked By: KPN Date Checked: 03-02-2020	141 West St., 10th Floor, 850 Philadelphia, MA 02108 Telephone: (617) 487-3328 Fax: (617) 487-3324 www.kleinschmidtgroup.com
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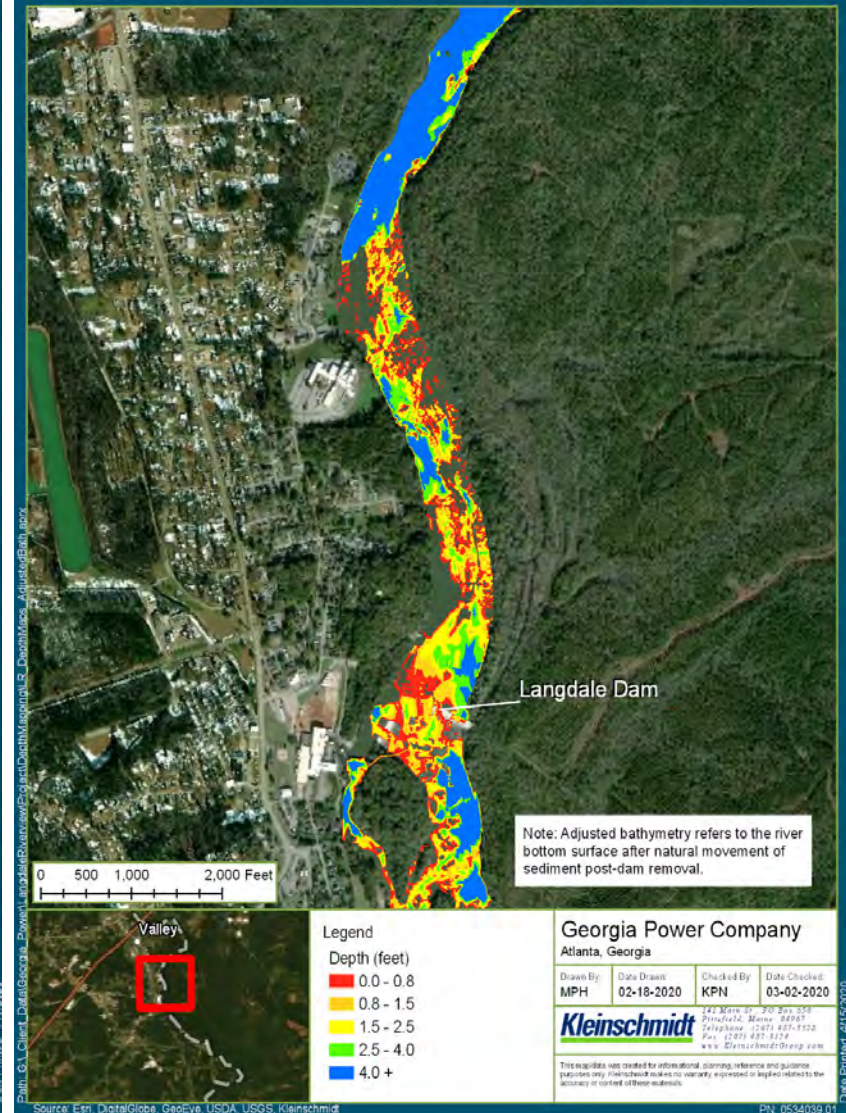
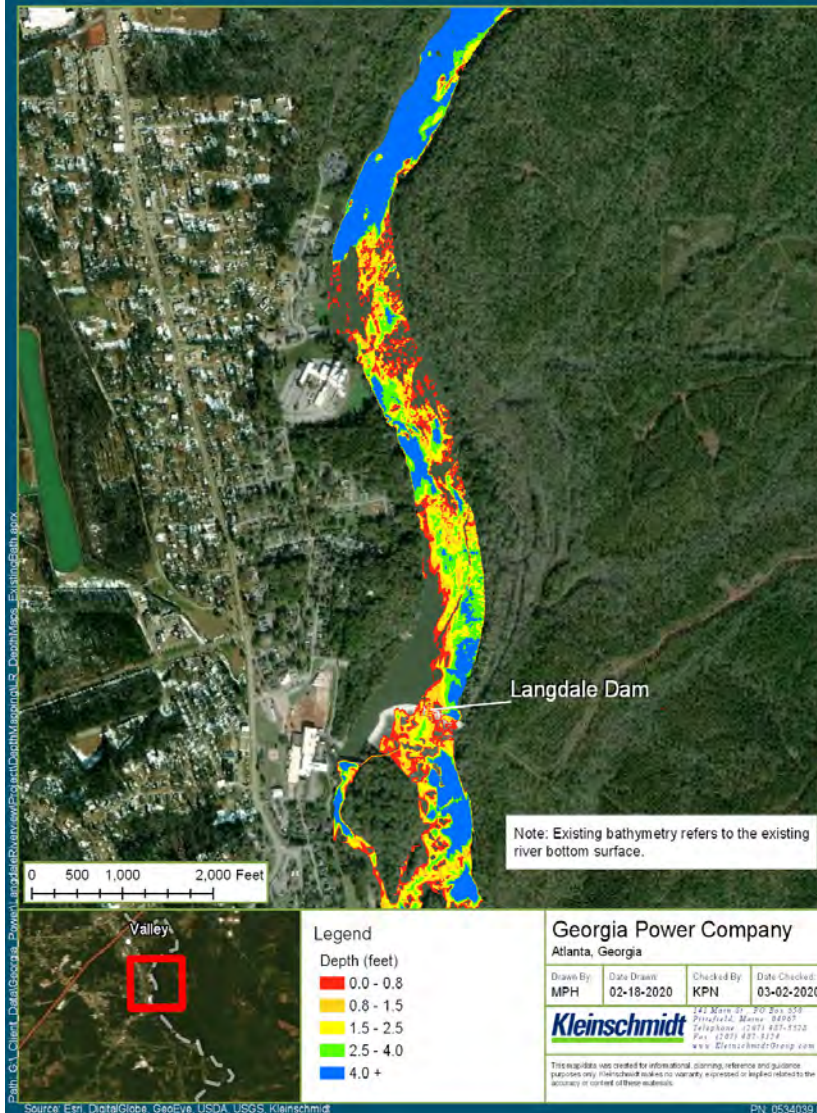
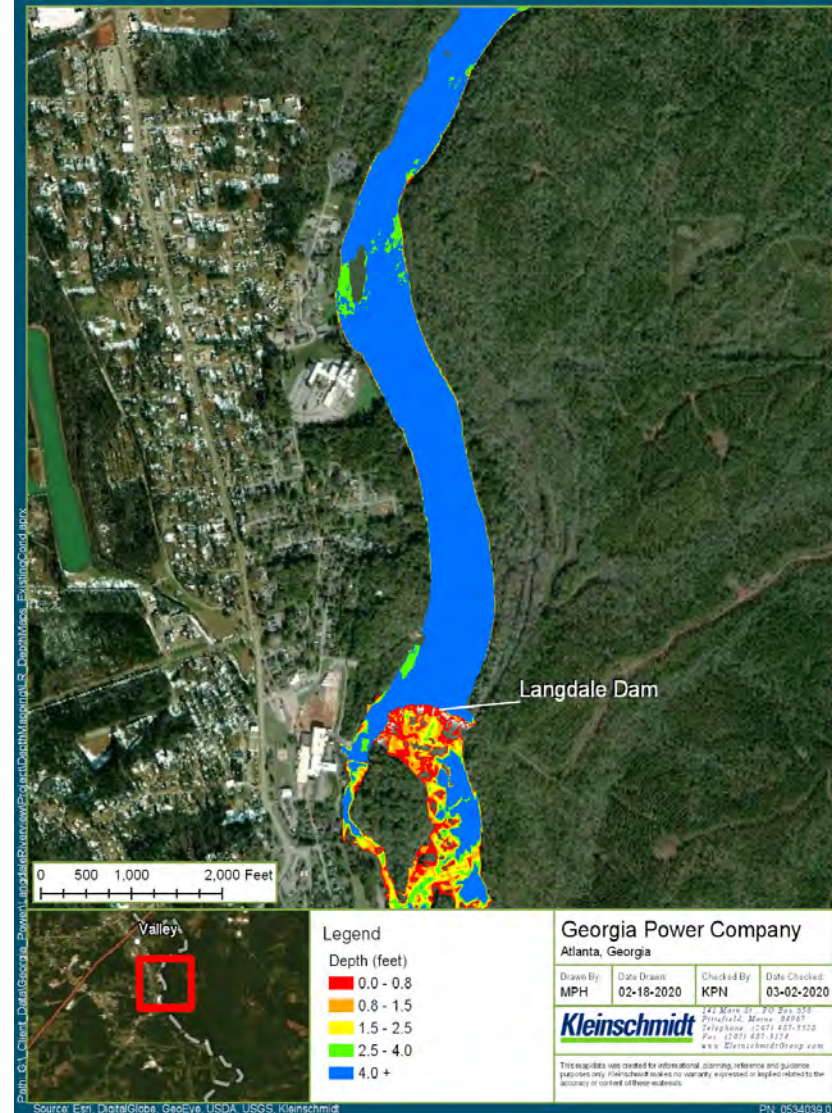
Source: Esri, DigitalGlobe, GeoEye, USDA, USGS, Kleinschmidt
PN: 0534039.01

Results – River Depth Changes

Existing Conditions - West Point Minimum Flow

Dams Removed + Existing Bathymetry - West Point Minimum Flow

Dams Removed + Adjusted Bathymetry - West Point Minimum Flow

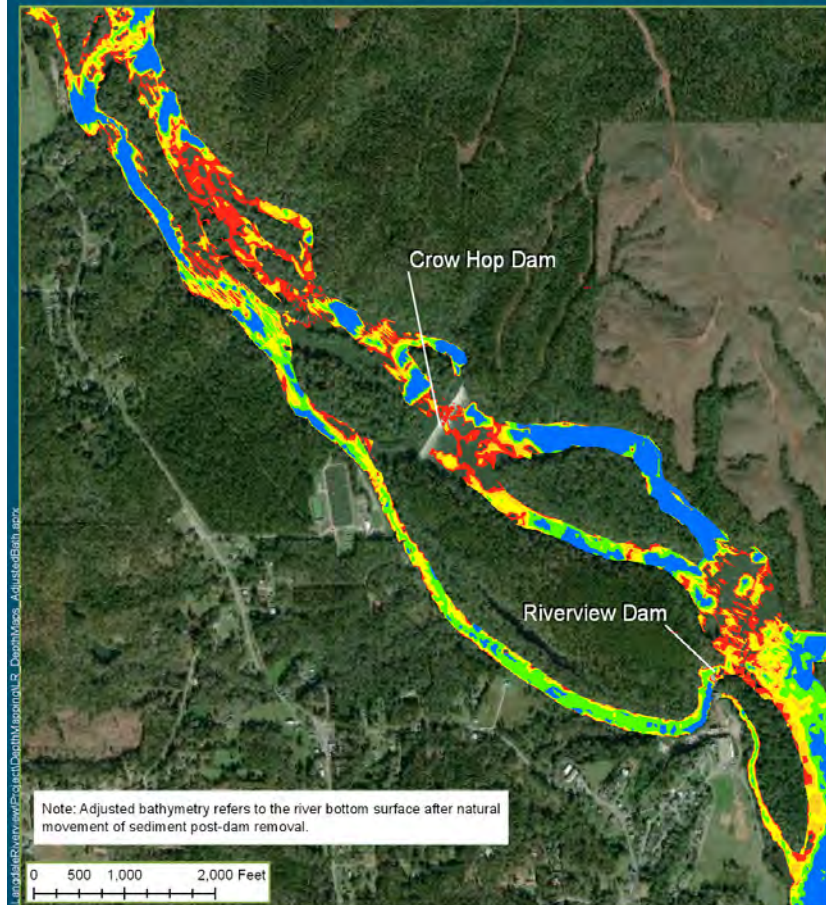
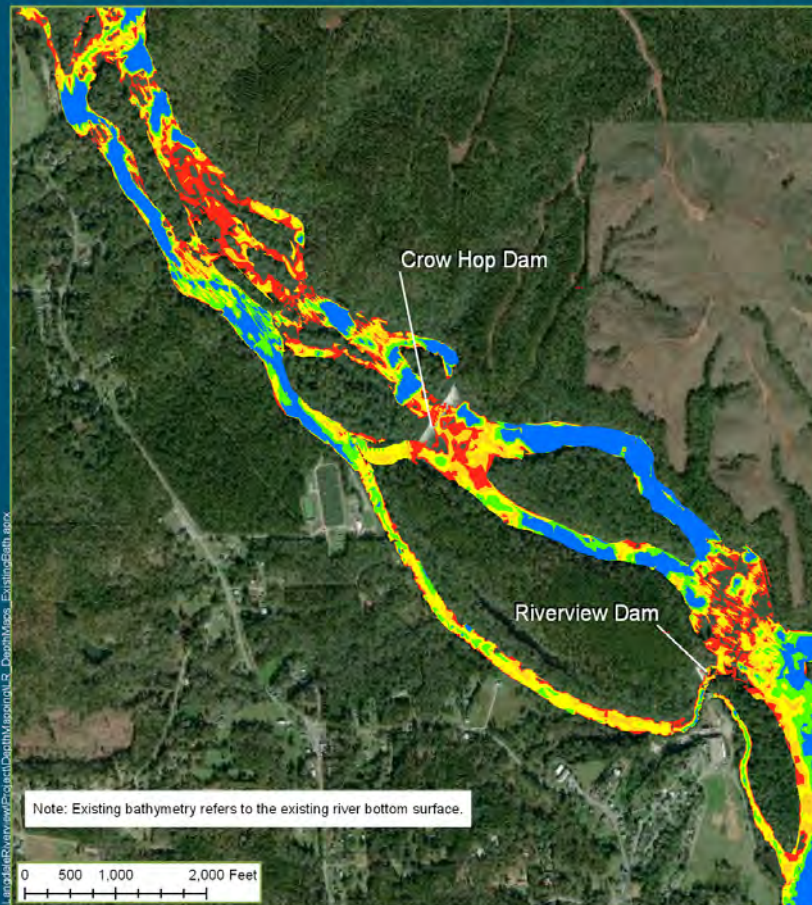
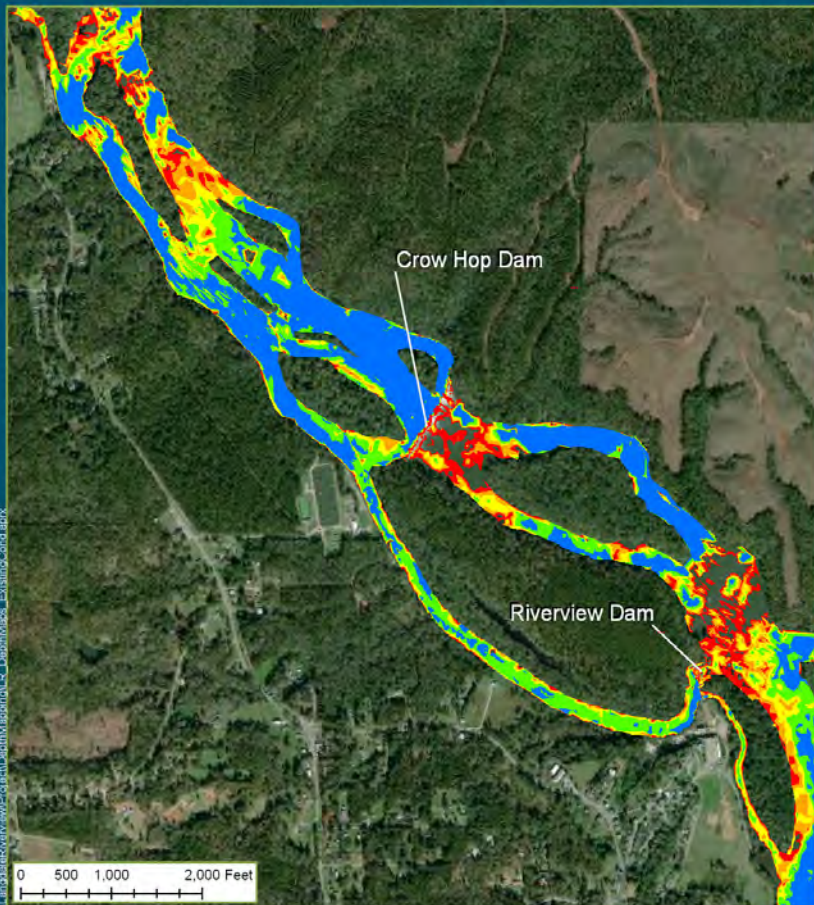


Results – River Depth Changes

Existing Conditions - West Point Minimum Flow

Dams Removed + Existing Bathymetry - West Point Minimum Flow

Dams Removed + Adjusted Bathymetry - West Point Minimum Flow



Note: Existing bathymetry refers to the existing river bottom surface.

Note: Adjusted bathymetry refers to the river bottom surface after natural movement of sediment post-dam removal.

Valley

Legend

Depth (feet)

- 0.0 - 0.8
- 0.8 - 1.5
- 1.5 - 2.5
- 2.5 - 4.0
- 4.0 +

Georgia Power Company
Atlanta, Georgia

Drawn By: MPH	Date Drawn: 02-18-2020	Checked By: KPN	Date Checked: 03-02-2020
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Valley

Legend

Depth (feet)

- 0.0 - 0.8
- 0.8 - 1.5
- 1.5 - 2.5
- 2.5 - 4.0
- 4.0 +

Georgia Power Company
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Valley

Legend

Depth (feet)

- 0.0 - 0.8
- 0.8 - 1.5
- 1.5 - 2.5
- 2.5 - 4.0
- 4.0 +

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Conceptual Renderings

Near George H. Lanier Memorial Hospital

Existing Conditions



Post-Removal Conditions



Note: Example of possible conditions after removal

Conceptual Renderings

Langdale Recreation Area

Existing Conditions



Post-Removal Conditions



Note: Example of possible conditions after removal

Conclusions

- Georgia Power is surrendering the Federal Energy Regulatory Commission (FERC) licenses for the Langdale and Riverview Projects and proposing:
 - Langdale and Riverview Projects be decommissioned
 - Langdale, Crow Hop, and Riverview dams be removed
 - Riverview Powerhouse to be removed; Langdale Powerhouse to remain
 - All actions contingent on FERC approval
- Modeling shows effects between I-85 and Riverview Dam
 - No changes downstream of Riverview Dam
- Final conditions will be somewhere between results of Existing Bathymetry and Adjusted Bathymetry modeling
 - Depending on the amount of natural sediment migration
- More detailed information available in the H&H Report

Langdale and Riverview Hydroelectric Projects FERC Nos. 2341 and 2350



Public Meeting
Potential Effects of Dam Removal on Shoal Bass
October 5, 2020

Presented by
Patrick O'Rourke, GPC Natural Resources Group

Shoal Bass Study

Goal

Provide a literature review of Shoal Bass (*Micropterus cataractae*) and describe the potential effects of dam removal on Shoal Bass and their aquatic habitats in the study area



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 Project, FERC No. 485)

Study Methods

- Literature review of peer-reviewed published journals articles.
- 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 the report.
- Comparison of HEC-RAS model results to habitat requirements.

Considerations for Dam Removal

- Popular species for anglers
- High Priority Species and Species of Concern
 - Threats include:
 - Habitat fragmentation
 - Hybridization with other bass species
 - Habitat degradation due to sedimentation, altered temperatures, and flow manipulation
- Concerns about dam removal expressed by some members of the public
- Possible benefit of dam removal anticipated by GPC, agencies
 - Increased suitable habitat for Shoal Bass
 - Increased connectivity for Shoal Bass



Shoal Bass Life History

- Endemic to the Apalachicola-Chattahoochee-Flint (ACF) river basin
- Mainstem rivers and larger tributaries
- Spawn April – June
- Habitat
 - Larvae: deep areas with no velocity
 - Juveniles: shallow areas with low velocity
 - Adults: rocky areas with moderate to high velocity
- Food: fish and crayfish
- Sexually mature at 3 years
- Longevity is ~ 8 years



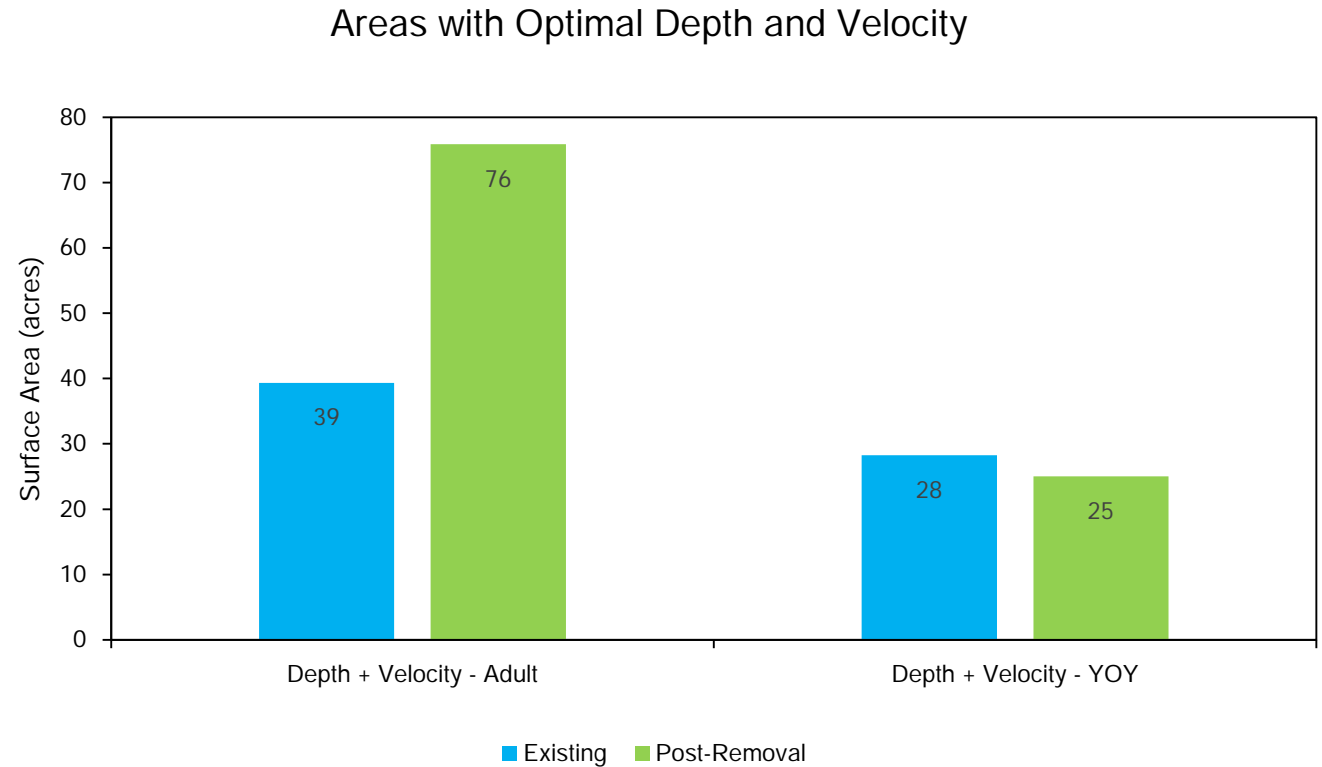
Shoal Bass and Migration

- Shoal Bass spawning migration is a natural part of life cycle
- Prior to construction of dams, Shoal Bass moved freely within ACF basin
- Migration of greater than 120 miles has been documented in the Flint River
- Shoal Bass avoid lentic habitat such as reservoirs
- 2015 study showed Shoal Bass entering the Chattahoochee from Flat Shoals Creek settled just below Crow Hop and did not enter Bartletts Ferry reservoir



Shoal Bass Habitat

- 1990 study on Ocmulgee River developed habitat suitability criteria for Shoal Bass
- Optimal Habitat
 - Adults
 - Depths of ~ 3 to 5 feet
 - Velocities of ~ 0.5 to 0.8 ft/sec
 - Young-of-year (YOY)
 - Depths of ~ 1 to 1.5 feet
 - Velocities < 0.2 ft/sec
- Compared pre- and post-removal availability using HEC-RAS model simulation results



Conclusions

- 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
 - Has the potential to increase genetic diversity of Shoal Bass and other riverine species inhabiting the reach
- Removal of the Projects' dams will result in a net increase in optimal habitat for Shoal Bass.

Langdale and Riverview Hydroelectric Projects FERC Nos. 2341 and 2350

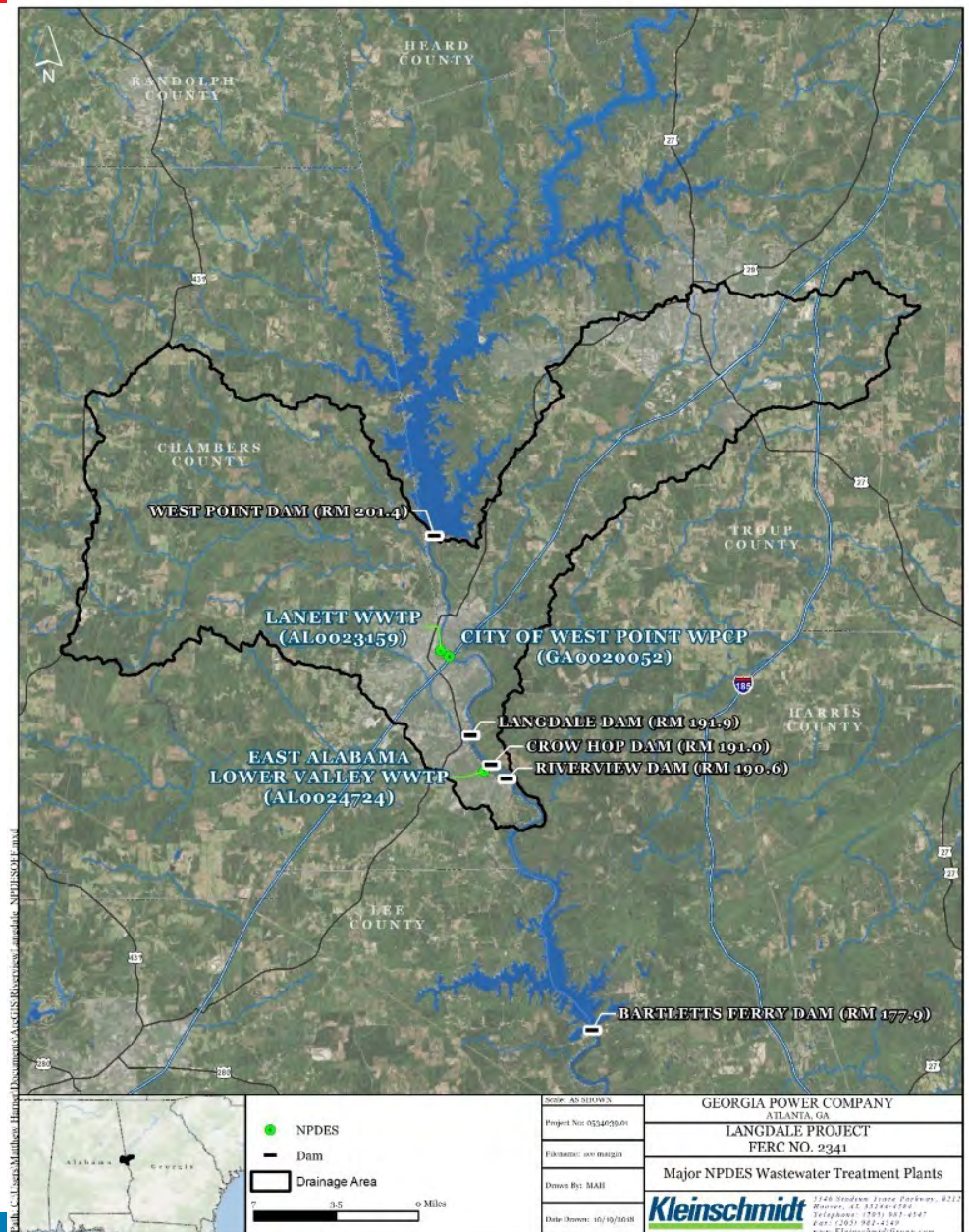


Public Meeting
Water Quality Study
October 5, 2020

Presented by
Tony Dodd, GPC Natural Resources Group

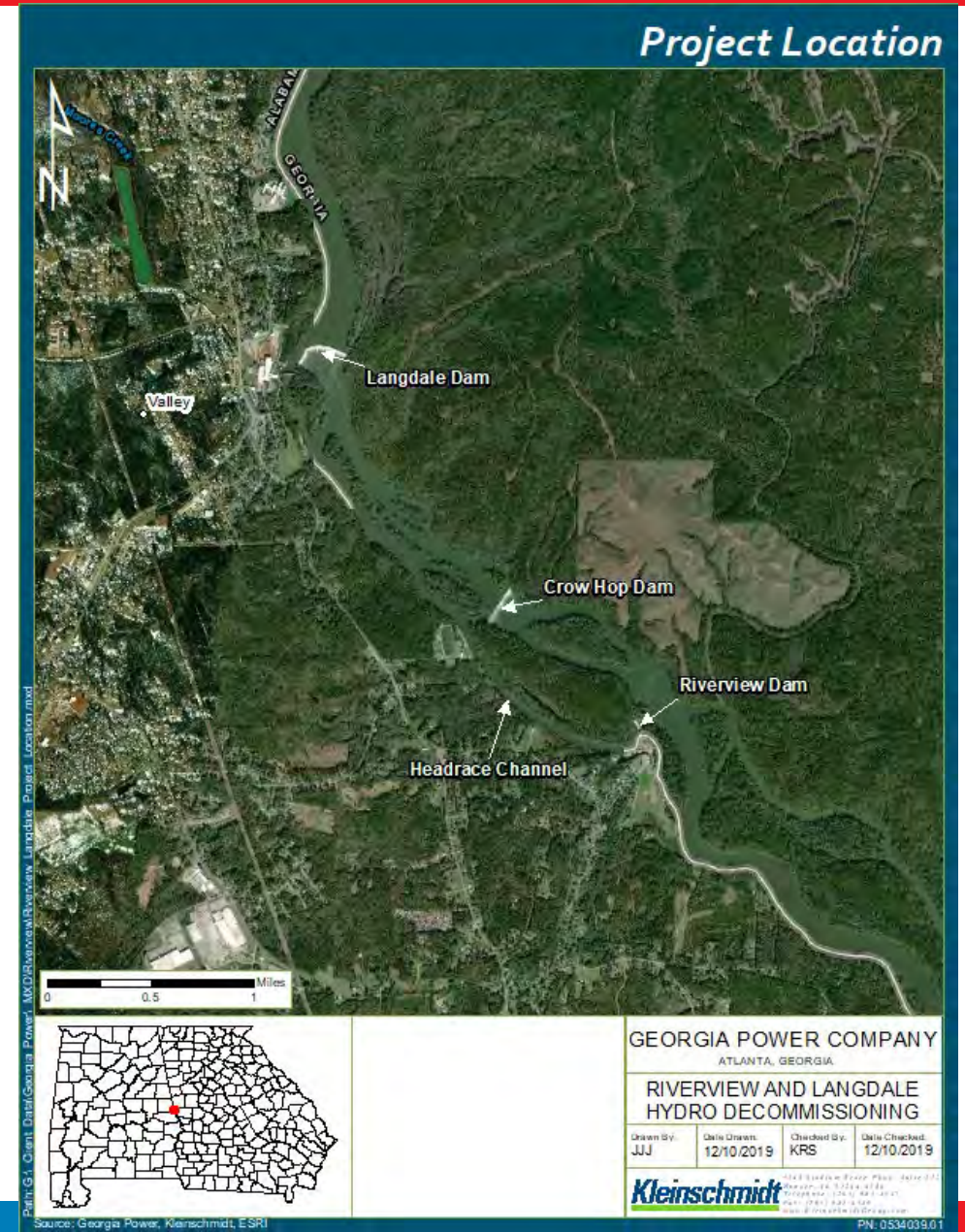
Water Quality Study Objectives

- Provide baseline evaluation of water quality at the Projects
- Characterize study area water quality based on a summary of available relevant water quality data



Study Area

- Chattahoochee River: upper Langdale Project boundary downstream to the headwaters of Lake Harding (Bartletts Ferry Project, FERC No. 485)
- Langdale, Crow Hop and Riverview Dams
- Georgia's Middle Chattahoochee Water Planning Region (MCWPR)
 - at Riverview Dam 3,661 mi² (USACE 2016)
- 98 percent of inflows to Langdale are from West Point Dam discharges
- Major tributaries: Langdale [Oselige Ck (AL), Long Cane Creek (GA)]; Riverview [Moore's Ck (AL)]



Study Methods

- Desktop searches for relevant study area water quality data and information
- Sources included:
 - United States Geological Survey (USGS),
 - Georgia Environmental Protection Division (GEPD),
 - Alabama Department of Environmental Management (ADEM), and
 - Georgia Power Company (GPC or Georgia Power)
- GEPD and Georgia Power were sources of relevant contemporary data (within the last 10 years)
- Relevant contemporary USGS and ADEM data were not identified

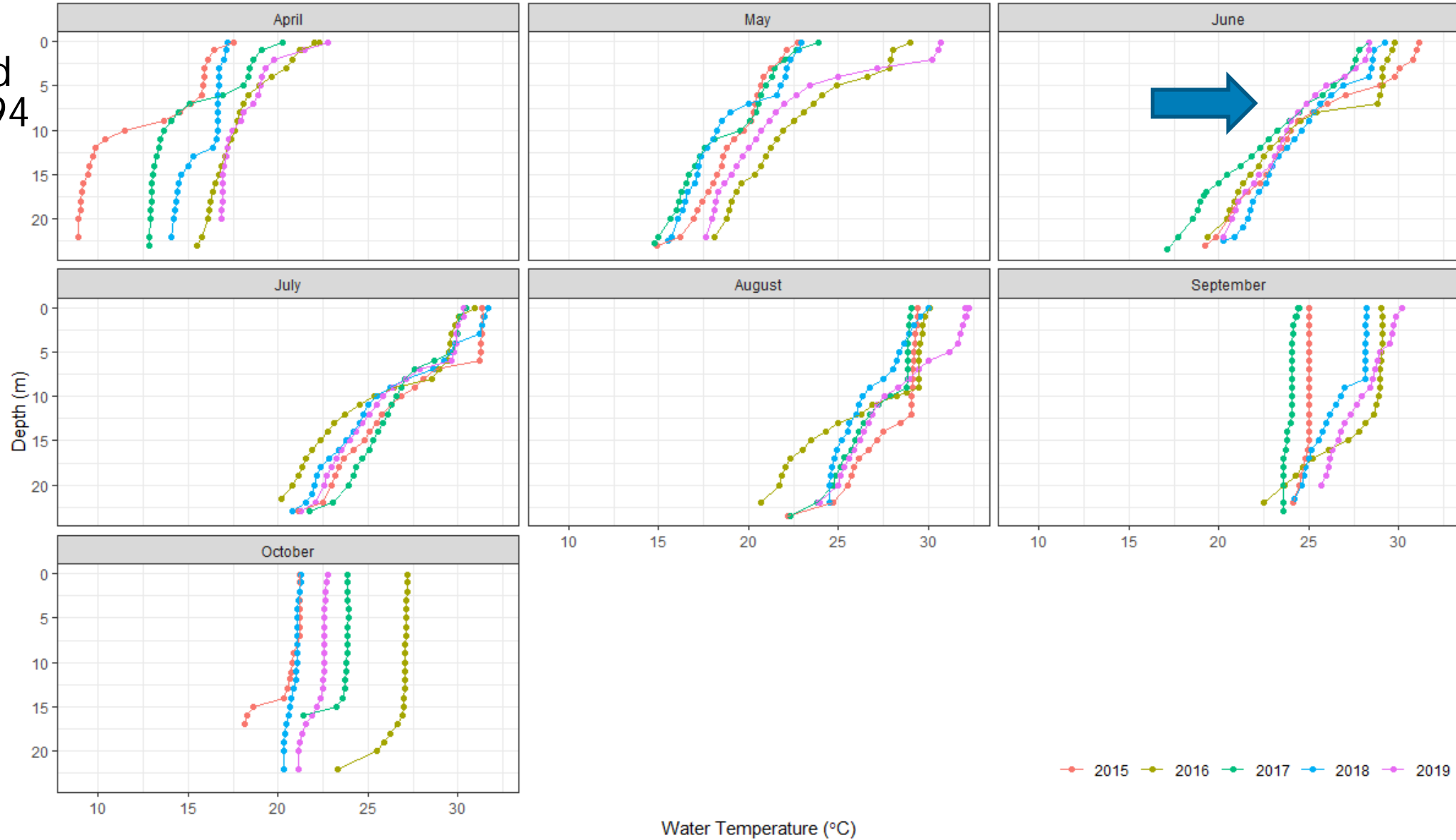
Study Results

- Historically, significant, intense uses of Chattahoochee River since 1800s included industrial, municipal and other water quality impacts. In recent times, Middle Chattahoochee withdrawals primarily for public supply, irrigation and livestock.
- Use-classification in the Project Area
 - GA (GEPD) “Drinking Water”
 - AL (ADEM) “Public Water Supply” and “Fish and Wildlife”
- Two municipal water supply withdrawals in project vicinity upstream of Langdale project boundary and natural hydraulic control upstream of I-85
 - City of West Point, GA
 - Chattahoochee Valley Water Supply District (AL)
- 3 WWTPs discharge treated effluents in the vicinity
 - City of West Point (GA) (upstream)
 - City of Lanett (AL) (upstream)
 - East Alabama Water, Sewer, and Fire Protection Division (inside Langdale project boundary)

Results

West Point Dam
forebay monitored
by EPD since 1994

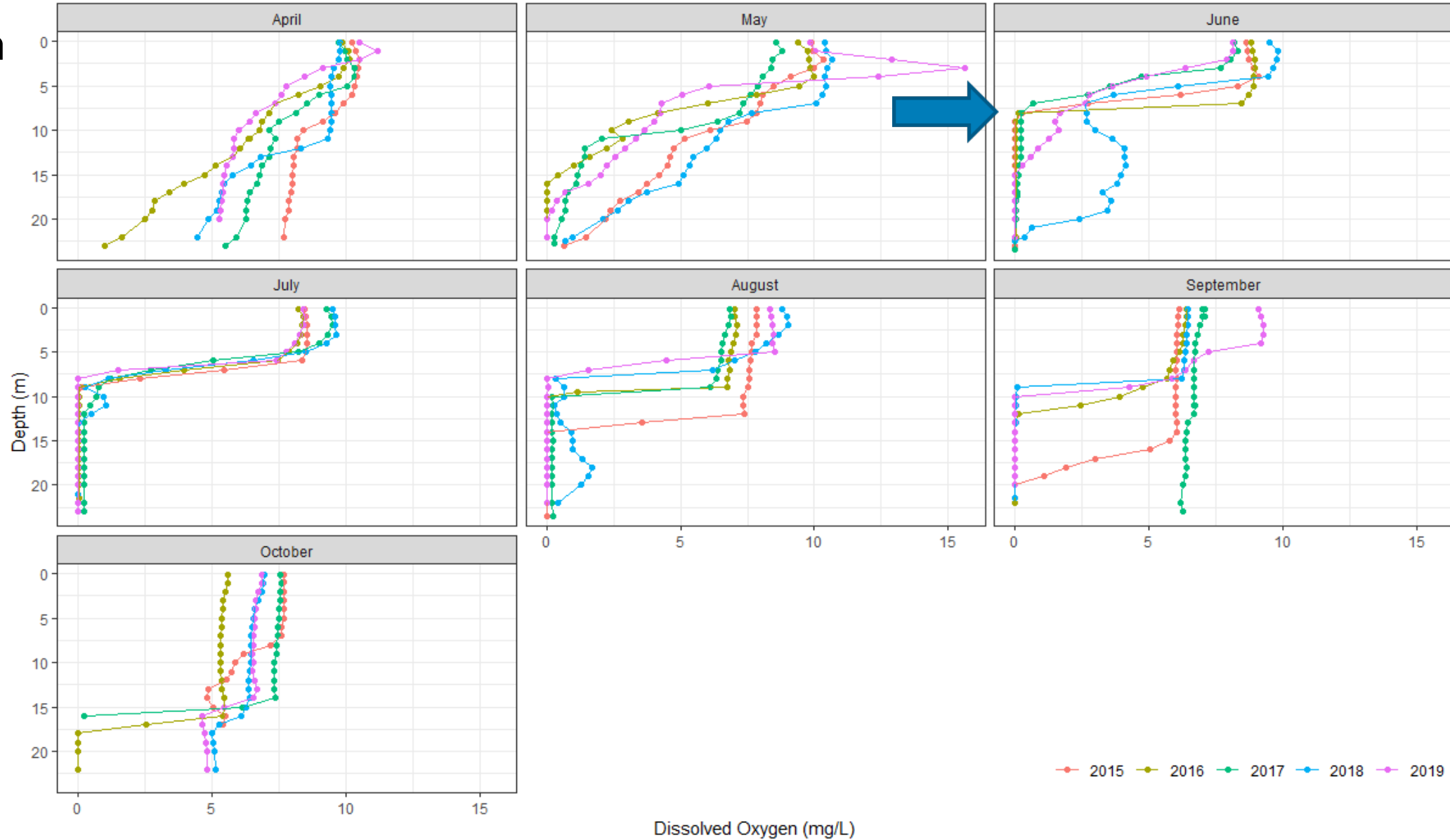
Water temperature
(°C) vertical profiles
(GEPD)



Results

West Point Dam
forebay

Dissolved oxygen
(mg/l) vertical
profiles (GEPD)



Results

Water quality measurements

Parameter	Units	0.5 Miles below West Point Dam	3 Miles Below West Point Dam, 6.3 miles above Langdale	1 Mile Below Riverview Powerhouse
Monitoring Period		Jan – Sep 2019	2010 – 2012	2009 – 2010
Water Temperature	(°C)	9.58 – 29.08	8.16 – 28.14	7.94 – 29.68
Dissolved Oxygen	(mg/L)	3.74 – 10.33	4.29 – 11.44	7.54 – 11.90
pH	(SU)	6.21 – 7.30	6.33 – 6.82	6.61 – 7.70
Conductivity	(µs/cm)	57 - 102	76 – 139	58 – 129
Turbidity	(NTU)	2.7 – 12.0	1.3 – 10.7	0 – 3000
NO ₂ -NO ₃	(mg/L)	0.45 – 0.71	0.43 – 1.31	0 – 1.12
NH ₃	(mg/L)	0 – 0.23	0.04 – 0.27	0 – 0.4
TKN	(mg/L)	0.27 – 0.56	0.20 – 0.49	-
Total Phosphorus	(mg/L)	0 – 0.04	0 – 0.05	0.01 – 0.4
Sources:		GEPD 2019	GEPD 2019	GPC 2011

Results

Water quality measurements from mussel survey (July 2020)

Parameter	Units	Langdale Dam Avg	Crow Hop Dam Avg	Riverview Dam Avg
Monitoring Period		16-Jun-20	17-Jun-20	18-Jun-20
Temperature	(°C)	23.5	23.1	23.1
Dissolved Oxygen	(mg/L)	5.4	7.5	7.9
pH	(SU)	5.4	6.1	5.9
Conductivity	(µs/cm)	0.05	0.05	0.05
Turbidity	(NTU)	0	0	0

Source: 2020 GPC Mussel Survey

Results

- Monthly monitoring downstream of West Point Dam (GEPD 2010-2012;2019)
 - low DO concentrations during July – September due to the release of hypolimnetic water
 - relatively low concentrations of nutrients indicating that West Point Lake serves as a nutrient “trap”
- Monthly vertical profiles and chemistry (24 parameters; GPC 2009-2010) monitoring ~1 mi downstream from Riverview:
 - DO concentrations support applicable criteria
 - recovery of DO concentrations during warm season West Point releases by physical aeration and atmospheric equilibration through the study area
 - water chemistry analyses indicate good water quality

Results

- East Alabama/Lower Valley WWTP discharge permit based on 7Q10 flow of 136 cfs
- H&H modeling indicates post-removal flow of 193 cfs under minimum flow discharge from West Point



Conclusions

- Water quality in the Project area meets or exceeds applicable standards and support existing designated uses
- Decommissioning and removal of the Projects will not impact the Valley WWTP permitted effluent discharge
- Continued attainment of applicable water quality standards and designated uses plus long-term improvement in water quality expected with dam-removal by restoration of riverine conditions

Langdale and Riverview Hydroelectric Projects FERC Nos. 2341 and 2350

Public Meeting
Freshwater Mussel Survey
October 5, 2020

Presented by
Tony Dodd, GPC Natural Resources Group



Study Objective

Characterize the existing mussel community in the Chattahoochee River at the Langdale Project dam and Riverview Project dams (Crow Hop and Riverview) with survey emphasis in immediate downstream areas at the dams



Langdale



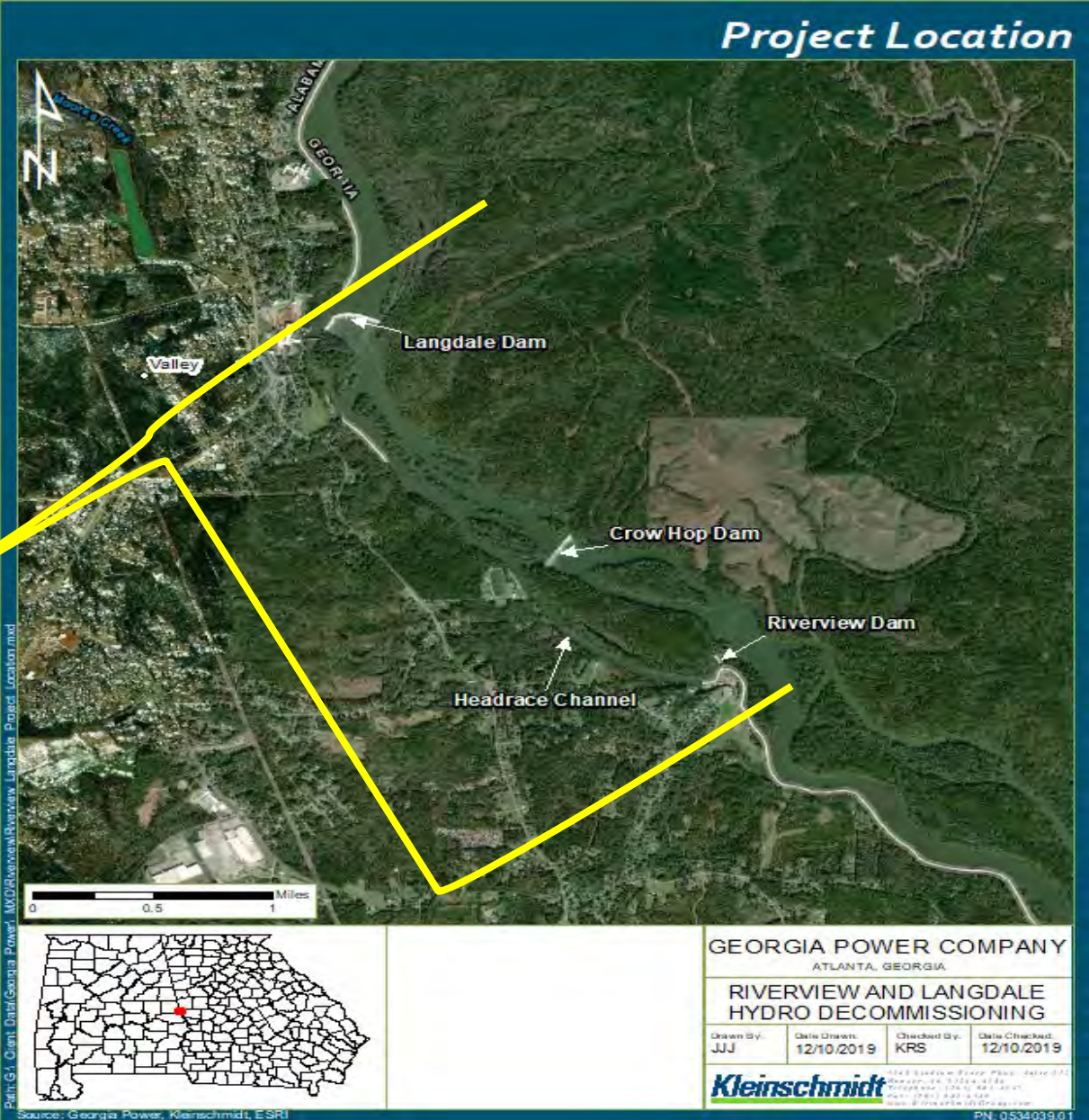
Crow Hop



Riverview

Study Area

Survey included areas immediately down- and upstream of each dam plus suitable mussel habitats throughout the segment between Langdale and Riverview Dams



Methods

- Pre-survey desktop literature and data review (potential species-occurrence; T&E)
 - USFWS Information for Planning and Consultation (IPaC)
 - USFWS HUC 10 Watershed list
 - The Georgia Natural Heritage Program (GNHP)
 - Online info from Alabama Department of Natural Resources (ADCNR) Nongame Wildlife Program
 - Georgia's Natural, Archaeological, and Historic Resources GIS (GNAHRGIS) Early Coordination letter
 - Knowledge of the previous project relicensing mussel survey results (GPC)
- Agency consultation (GDNR and USFWS) and study plan approval
- Flow control communication with USACE for suitable, safe survey conditions

Methods

- Survey conducted by Ecological Solutions, Inc. during 16-18 June 2020 (*Freshwater Mussel Survey Protocol for Transportation Projects within the State of Georgia* (GDNR, GDOT and USFWS, 2018))
- Search vicinity of each dam
 - Areas transected/gridded, bank to bank, 25% upstream and 75% downstream
 - Minimum of 4 experienced searchers in all habitats, banksides, minimum of 2 hours, no overlap
 - Visual, hand grubbing (and SCUBA in areas >1.5 m)
 - Field notes: species identification, measured, GIS-located, photo, area sketch, and returned to point of capture
 - Data sheets: conditions, habitat measurements
- 1.3-mile reach between Langdale and Riverview
 - Reconnaissance for suitable habitat
 - Tactile and visual search in random, non-overlapping pattern in each habitat

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 sands 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, finelined pocketbook, ovate clubshell, Gulf moccasinshell, delicate spike, and southern elktoe

Results – Literature Review

Protected Mussel Species Potentially Occurring within the Survey Area

Scientific Name	Common Name	Protection Status	Suitable Habitat Present?
<i>Pleurobema pyriforme</i>	oval pigtoe	FT	Yes
<i>Elliptoideus sloatianus</i>	purple bankclimber	FT	Yes
<i>Lampsilis altilis</i> *	finelined pocketbook	FT	Yes
<i>Pleurobema perovatum</i> *	ovate clubshell	FE	Yes
<i>Medionidus penicillatus</i>	gulf moccasinshell	FE	Yes
<i>Elliptio arctata</i>	delicate spike	SE	Yes
<i>Alasmidonata triangulate</i> *	southern elktoe	SE	Yes

Note: * = not expected to occur; Status = Federal Endangered (FE), Federal Threatened (FT), GA-State Endangered (SE)

Results – Habitat Characterization

- Above Langdale Dam
 - Habitat: poor to moderate
 - Substrate: mixed sands with varying mixtures of sand, cobble, and clay
 - East side of river had more defined channel with boulders



- Below Langdale Dam
 - Habitat: poor to moderate
 - Substrate: mix of bedrock, boulders, and sand
 - East side of river had more defined channel with boulders
 - Side channel with loose sand/silt/clay



Study Results – Habitat Characterization

- Above Crow Hop Dam
 - Habitat: poor to moderate
 - Substrate: primarily mixed sands with areas of mixtures of sand, cobble, and clay
 - East side of river had more defined channel with boulders



- Below Crow Hop Dam
 - Habitat: poor to moderate
 - Substrate: primarily a mix of bedrock, boulders, and sands
 - East side of river had more defined channel with boulders



Study Results – Habitat Characterization

- Above Riverview Dam
 - Habitat: poor
 - Substrate: rock and rip-rap along sides of channel and mixed sands with areas of sand, cobble, clay, and silt in the middle



- Below Riverview Dam
 - Habitat: poor to moderate
 - Substrate: primarily a mix of bedrock, boulders, and sands
 - Side channel discharging from powerhouse almost entirely soft, loose substrate



Study Results

Mussel Survey: 31 individuals, 2 native and 1 exotic species

Stream	Scientific name	Common name	Federally listed	State listed	# Collected 16-18 June 2020
above Langdale Dam	<i>Elliptio pullata</i>	Gulf spike	No	No	3
	<i>Villosa vibex</i>	southern rainbow	No	No	9
	<i>Corbicula fluminea</i> ¹	Asian clam	No	No	TNTC*
below Langdale Dam	<i>Corbicula fluminea</i>	Asian clam	No	No	TNTC
above Crow Hop Dam	<i>Villosa vibex</i>	southern rainbow	No	No	5
	<i>Corbicula fluminea</i>	Asian clam	No	No	TNTC
below Crow Hop Dam	<i>Villosa vibex</i>	southern rainbow	No	No	2
	<i>Corbicula fluminea</i>	Asian clam	No	No	TNTC
above Riverview Dam	<i>Elliptio pullata</i>	Gulf spike	No	No	9
	<i>Villosa vibex</i>	southern rainbow	No	No	3
	<i>Corbicula fluminea</i>	Asian clam	No	No	TNTC
below Riverview Dam	<i>Corbicula fluminea</i>	Asian clam	No	No	TNTC



Villosa vibex



Corbicula fluminea



Elliptio pullata

Notes: 1 = exotic invasive species; * = Too numerous to count (TNTC)

Summary and Recommendations

- Impacts from dam removal are unlikely as no state or federally listed mussels were detected
- USFWS' experienced dam removal team to conduct the demolition and associated oversight



Langdale and Riverview Hydroelectric Projects FERC Nos. 2341 and 2350



Cultural Resources Studies

October 5, 2020

Public Meeting

Presented by

Joey Charles, GPC Natural Resources Group

Study Purpose and Investigations

Study Purpose: Determine the effects to recorded historic properties (power plants, site 9HS30) as well as impacts to any unrecorded historic properties (e.g., fish traps/weirs)

3 investigations:

- 1) Archaeological Testing of Two Sites On The Chattahoochee River, 9HS30 and 9HS31, Harris County, Georgia
- 2) Archaeological Survey of 20 Acre Island in the Chattahoochee River, Harris County, Georgia
- 3) Archaeological Reconnaissance Survey of the Chattahoochee River, Harris County, Georgia

Study Goals and Objectives

Study Goal:

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

Study Objectives:

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

Project Area

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



Study Methods

Archaeological Testing of Two Sites On The Chattahoochee River, 9HS30 and 9HS31, Harris County, Georgia

- This study was designed to recover additional information regarding archaeological resources.
- Site testing of 9HS30 and 9HS31 was conducted in November 2019 using standardized techniques
- Shovel tests were implemented at 10-meter intervals across the sites
- Excavation of 1 meter x 2 meter test
- Artifacts and field records were inventoried in Southern Research's laboratory

Archaeological Testing of Two Sites
On The Chattahoochee River,
9HS30 and 9HS31, Harris County, Georgia

DRAFT REPORT



SOUTHERN
RESEARCH
Historic Preservation Consultants

June 2020

Study Results – 9HS30



Study Results – 9HS31



Study Methods

Archaeological Survey of 20 Acre Island in the Chattahoochee River, Harris County, Georgia



Study Results



Study Methods

Archaeological Reconnaissance Survey of the Chattahoochee River, Harris County, Georgia

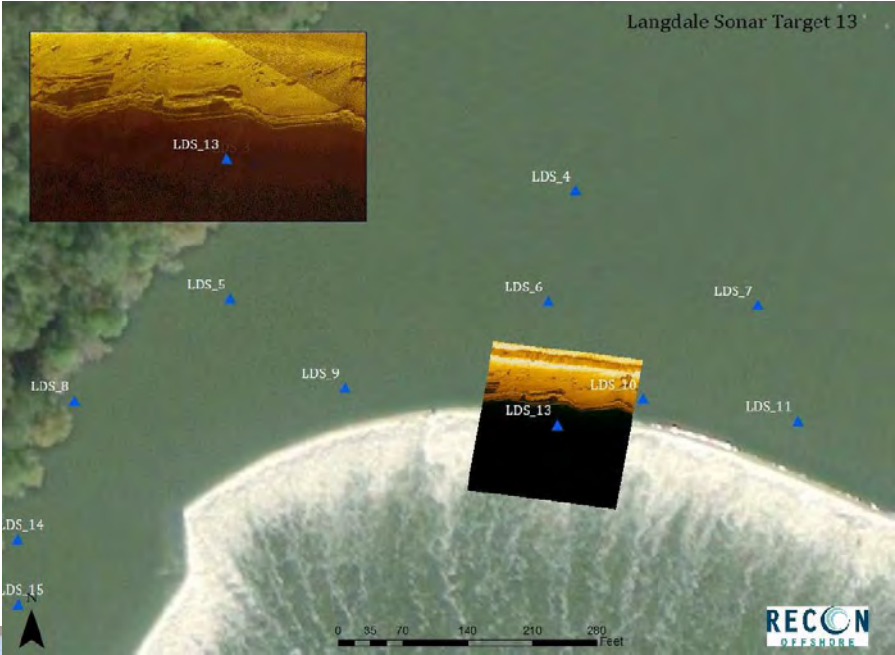
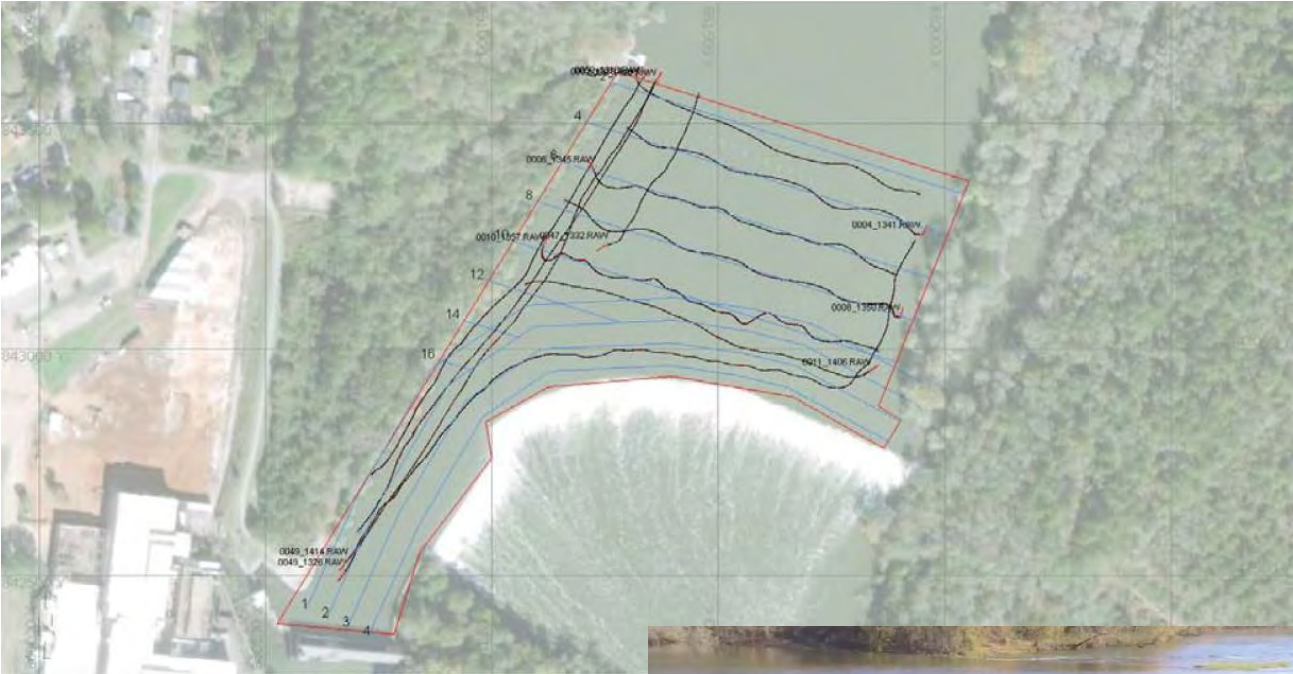
- The Area of Potential Effect (APE) was nine kilometers of river channel from the Valley, Alabama Airport boat ramp to just below the Riverview Dam.



Study Results



Study Results



Architectural Resources



Langdale Powerhouse



Riverview Powerhouse

Architectural Resources



Langdale Dam



Crow Hop Dam



Riverview Dam

Conclusion

- Prepare Memorandum of Agreement to avoid, minimize, and mitigate adverse effects to historic properties