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April 3, 2020

Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

SUBJECT: West Canada Creek Project (FERC No. 2701-059)
ILP Relicensing Initial Study Report Meeting Summary

Dear Secretary Bose:

Erie Boulevard Hydropower, L.P. (Erie or Licensee), a Brookfield Renewable company, is the Licensee, owner and operator of the West Canada Creek Hydroelectric Project (FERC No. 2701) (Project). The West Canada Creek Project consists of two developments, Prospect and Trenton, and is located on West Canada Creek in Oneida and Herkimer counties, New York. The current license for the West Canada Creek Project expires on February 28, 2023.

Erie is pursuing a new license for the Project using the Commission's Integrated Licensing Process (ILP) pursuant to 18 C.F.R. Part 5 of the Commission's regulations. In accordance with 18 C.F.R § 5.15(c), Erie filed the Initial Study Report (ISR) on March 6, 2020. According to 18 CFR §5.15, Erie held the ISR meeting on March 19, 2020, within 15 days of the filing of the ISR. Due to travel restrictions associated with the COVID-19 pandemic and at the request of multiple stakeholders, Erie conducted the ISR meeting through a virtual meeting platform (Skype/conference call).

Pursuant to 18 C.F.R. § 5.15(c)(3), Erie is filing an ISR meeting summary with the Commission within 15 days of the ISR meeting (Attachment A). A copy of the ISR meeting presentation can be found in Attachment B. In accordance with the FERC Process Plan (Attachment C), stakeholders may file any comments on the ISR and/or the ISR meeting summary on or before May 6, 2020.

If you have any questions or require any additional information, please contact me at (315) 598-6130 or via email at steven.murphy@brookfieldrenewable.com.

Steven Murphy
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Attachments: Attachment A – Initial Study Report Meeting Summary
Attachment B – ISR Meeting Presentation
Attachment C – West Canada Creek Process Plan and Schedule

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ATTACHMENT A

INITIAL STUDY REPORT MEETING SUMMARY

WEST CANADA CREEK PROJECT (P-2701)

INITIAL STUDY REPORT MEETING SUMMARY
CONFERENCE CALL

ATTENDEES:	Emily Carter, FERC	Bill Wellman, NYTU
	Wohee Choi, FERC	Ken Ziobro, NYTU
	Allyson Conner, FERC	Kathy Kellogg, WCWA
	Laurie Bauer, FERC	Tyler Rychener, Individual
	John Wiley, USFWS	Steve Murphy, Brookfield
	Duncan Hay, NPS	Jon Elmer, Brookfield
	Todd Phillips, NYSDEC	Pat Storms, Brookfield
	Nicole Cain, NYSDEC	Rick Heysler, Brookfield
	Chris Balk, NYSDEC	Julie Pelletier, Brookfield
	Steve Case, NYSDEC	Bryan Apell, Kleinschmidt
	Dick McDonald, NYSDEC	Karen Klosowski, Kleinschmidt
	Dave Erway, NYSDEC	Brandon Kulik, Kleinschmidt
	Bob Nasdor, AW	Rachel Russo, Kleinschmidt
	Cindy Brady, NYPA	Kayla Hopkins, Kleinschmidt
	Tara Groom, NYPA	

DATE: March 19, 2020

Erie Boulevard Hydropower, L.P. (Erie or Licensee), a Brookfield Renewable company, is the Licensee, owner and operator of the West Canada Creek Hydroelectric Project (FERC No. 2701) (Project). The West Canada Creek Project consists of two developments, Prospect and Trenton, and is located on West Canada Creek in Oneida and Herkimer counties, New York. The current license for the West Canada Creek Project expires on February 28, 2023. Erie is pursuing a new license for the Project using the Commission's Integrated Licensing Process (ILP) pursuant to 18 C.F.R. Part 5 of the Commission's regulations.

In accordance with 18 C.F.R § 5.15(c), Erie filed the Initial Study Report (ISR) on March 6, 2020. The ISR and supporting documents provide the results and status of the field studies conducted pursuant to the Commission's SPD, including:

- Aquatic Mesohabitat Assessment Study;
- Macroinvertebrate and Freshwater Mussel Survey;
- Impoundment Shoreline Characterization Study;
- Fish Assemblage Assessment;
- Fish Entrainment and Turbine Passage Survival Assessment;
- Water Quality Study;
- Recreation Use, Needs and Access Study;
- Whitewater Boating Study Progress Report, and
- Aesthetic Flow Assessment Study.

Erie held the ISR meeting on March 19, 2020, within 15 days of the filing of the ISR. Due to travel restrictions associated with the COVID-19 pandemic and at the request of multiple stakeholders, Erie conducted the ISR meeting through a virtual meeting platform (Skype/conference call). A copy of the ISR meeting presentation can be found in Attachment B[1]. Following is a summary of key topics and discussions during the ISR meeting. Participants on the call included representatives from the Federal Energy Regulatory Commission (FERC), the United States Fish and Wildlife Service (USFWS), the National Park Service (NPS), the New York State Department of Environmental Conservation (NYSDEC), American Whitewater (AW), New York Power Authority (NYPA), New York Trout Unlimited (NYTU), West Canada Creek Watershed Alliance (WCWA), individual resident, Erie, and Kleinschmidt.

Project Activities

Following introductions of participants on the call, Steve Murphy (Erie) and Karen Klosowski (Kleinschmidt) provided a meeting introduction, including the purpose of the meeting, an overview of the ILP milestones, and the ISR meeting agenda. Erie reviewed the overall Project schedule including key milestones associated with previous study activities and forthcoming relicensing activities. Including:

- Study Progress Reports were filed, July 29, 2019 and October 31, 2019.
- Erie filed the ISR on March 6, 2020.
- Erie to file ISR meeting summary on April 6, 2020.
- Stakeholder comments on ISR by May 6, 2020.
- Erie to complete outstanding study efforts in 2020 field season.
- Erie to file Draft License Application October 2020.

Emily Carter (FERC) stated the dates in the December 5, 2019, FERC Order were the correct dates to follow for the filing deadlines (as compared to the updated dates pursuant to the ISR filing and meeting presentation (slide 8). Accordingly, Attachment C provides the Process Plan Schedule consistent with the FERC December 5, 2019 Order.

Macroinvertebrate and Freshwater Mussel Surveys

Bryan Apell (Kleinschmidt) presented a summary of the study purpose, methodology, and results for the Macroinvertebrate and Freshwater Mussel Survey. Todd Phillips (NYSDEC) questioned what was the rare, threatened and endangered species status of the three species found in the freshwater mussel survey. Bryan Apell stated that his understanding was that none of the identified species are currently federally or state listed species, and that the eastern elliptio is a common species in the area. Nicole Cain (NYSDEC) stated that New York State is updating their listed species, and that the eastern pearlshell is currently a high priority species and may be elevated to a state threatened species.

[1] Note: the maps in the PowerPoint presentation distributed to the participants prior to the call were not the final maps included in the reports distributed with the ISR filing. These maps (slides 13, 30 and 58-60) have been updated in Appendix A to be consistent with those included in the ISR reports.

Laurie Bauer (FERC) questioned what level of the taxonomic resolution were macroinvertebrate organisms identified for the macroinvertebrate survey. Bryan Apell stated that the lab at SWCA (subconsultant) classified to the lowest practical level, most down to family and then some were down to species. Laurie Bauer asked whether the depth information could be provided for those mussels collected during the mussel survey. Bryan Apell stated that mussel observations were lumped for all depths that occurred within the $100m^2$ survey polygons and could range anywhere from 6 to 20 feet in depth.

Impoundment Shoreline Characterization Study

Bryan Apell (Kleinschmidt) presented a summary of the study purpose, methodology, and results for the Impoundment Shoreline Characterization Study. There were no comments or questions.

Aquatic Mesohabitat Assessment Study

Brandon Kulik (Kleinschmidt) presented a summary of the study purpose, methodology, and results for the Aquatic Mesohabitat Assessment Study. Jon Elmer (Brookfield) asked for clarification regarding the orientation of transects and whether they were looking river left or river right. Dick McDonald (NYSDEC) questioned if the flow information could be provided in the photographs that correlates to transect discharges and river right and river left orientations. Brandon Kulik stated that the headpin is always on river right looking downstream, and that some photos did not necessarily have the same view orientation of the transect.

Laurie Bauer (FERC) questioned what data, other than photos and videos, was collected during the drone surveys for the Prospect study area. Brandon Kulik (Kleinschmidt) stated that dominant substrate data and mesohabitat boundary latitude/longitude geolocations were collected. Laurie Bauer questioned whether there was any difficulty viewing substrate by drone in the field. Brandon Kulik responded that generally the high resolution camera and water clarity meant that it was easier to view using the drone, for the altitude allowed for a broader vantage point than traditional field methods. Laurie Bauer questioned how mapping riffles and run individually rather than lumping them together was determined for the downstream mapping. Brandon Kulik responded that these determinations were made in the office after reviewing at the data. Long, continuous mesohabitats (e.g. riffle, runs) were classified according to mesohabitat type, and overlapping or repeating intervals of riffles and runs were classified as a combined riffle/run complex.

Bob Nasdor (AW) questioned why Erie selected flows of 10, 25, and 50 cubic feet per second (cfs) for the Prospect bypass transect assessment, and why the assessment did not include the flow ranges comparable to the Aesthetic Study. Brandon Kulik (Kleinschmidt) responded that the purpose was to study a wetted channel starting at the existing condition (leakage), and that a flow of 50 cfs was chosen because it is significantly higher flow; the other flows assessed provided incremental measurements between leakage and 50 cfs. Bob Nasdor commented that the profiles of the transects at those flows show that the wetted area was fairly limited, and questioned whether wetted area would increase as the flow increased. Nicole Cain (NYSDEC) questioned whether there is information available to asses flows of 100 cfs or 200 cfs in the Prospect bypassed reach. Brandon Kulik stated there is a supporting stage discharge curve for each of the transects, which would allow further extrapolation and interpolation for other flows.

Fish Assemblage Assessment

Bryan Apell (Kleinschmidt) presented a summary of the study purpose, methodology, and results for the Fish Assemblage Assessment. Laurie Bauer (FERC) questioned whether there was any explanation as to why gill netting did not yield many fish. Bryan Apell stated that any input would be speculation, and that sometimes gill netting can be hit or miss in terms of catch rates. However, when compared to similar efforts, when the NYSDEC set up gill nets several years ago in the impoundment, the NYSDEC caught 4 fish in 4 gill nets in similar areas, and this current survey was in line with those gill netting results.

John Wiley (USFWS) questioned where the trout were collected in the Prospect bypassed reach. Bryan Apell stated that the trout were collected in the middle of the transect in a riffle that transitioned from a pool. Tyler Rychener (Individual) questioned what were the number of trout found in the creek downstream, whether the catch met expectations, and if there were methods employed to restrict escapement during the sampling effort. Bryan Apell stated that block netting was not used due to the size of the creak and water velocities. Bryan Apell stated there may have been some amount of escapement, and it is possible that trout were seeking refuge in cooler waters during sampling efforts which was conducted in September. Bryan Apell stated that trout were found in the lower section of the West Canada Creek near tributaries. These trout seemed native based on their smaller size and what would be expected to be stocked by the NYSDEC.

Fish Entrainment and Turbine Passage Survival Assessment

Bryan Apell (Kleinschmidt) presented a summary of the study purpose, methodology, and results for the Fish Entrainment and Turbine Passage Survival Assessment. Dick McDonald (NYSDEC) asked why the swim speeds were calculated and not noted from the literature. Bryan Apell stated that there are different methodologies for calculating these swim speeds; however, the approach was consistent with methods used by the USFWS.

Water Quality Study

Bryan Apell (Kleinschmidt) presented a summary of the study purpose, methodology, and results for the Water Quality Study. Jon Elmer (Brookfield) questioned if the August events were correlated to the Kast Bridge flows. Bryan Apell stated that all the data were analyzed in relation to discharge at the Kast Bridge USGS gage. The loggers were installed in the spring in as deep of water as safely possible such that loggers remained watered throughout the season; however, some of the missing or erroneous data occurred during low flow periods when loggers may have been dewatered. Chris Balk (NYSDEC) questioned if biofouling on the meters would result in a more gradual decline on the graph. Bryan Apell agreed that biofouling may result in a more gradual effect on data collection but that it can occur rather quickly in the warm summer months. Chris Balk asked how the data loggers were deployed. Bryan Apell stated that the loggers were deployed off the bottom and affixed to a cinder block, but in close proximity to the sediment water interface, and that some level of sedimentation did occur on a regular basis. Bryan Apell stated; however, that the loggers used for this study were cleaned every time data was downloaded, approximately every two weeks, and that sufficient data was obtained for analysis and reporting. Steve Murphy (Brookfield) questioned whether turbidity from rain events during the field season could have contributed to the sediment build-up. Bryan Apell stated the lower

West Canada Creek is flashy, and localized precipitation can make the river much more turbid, particularly as a result of inflows from tributaries. Bryan Apell stated that additional levels of silt accumulation were observed after localized storm events, but this was not quantified as part of this study.

Recreation Use, Needs and Access Study

Karen Klosowski (Kleinschmidt) presented a summary of the study purpose, methodology, and results for the Recreation Use, Needs and Access Study. Allyson Conner (FERC) questioned how the 10 downstream recreation access sites were selected. Karen Klosowski stated that a review was conducted of NYSDEC access site locations, NYSDOT access sites, and in-field recognizance for public access sites in the downstream reaches of West Canada Creek. The selection of these access sites for inclusion in the Recreation Study was reviewed with the Working Group (USFWS, NYSDEC, and AW).

Bob Nasdor (AW) questioned to what extent the Recreation Study results indicated that Project flows restricted recreation opportunities on the West Canada Creek. Karen Klosowski stated that the survey responses generally did not indicate that respondents restricted use due to flows; however, respondents indicated that they on occasion adjusted their activities and the timing of their activities by reviewing existing flow information (i.e., SafeWaters site, Kast Bridge USGS gage data).

Bob Nasdor (AW) stated that the Trenton Trail Days is open to the public 2 weekends a year (4 days total), and questioned how the survey accounted for people that would use the trail if the trail was available on additional dates. Karen Klosowski stated that the public was asked during the Trenton Trail Day intercept surveys for input regarding having the site opened for additional days. The respondents provided a broad range of responses, and some respondents indicated they would like to see more days with the trail open. The survey responses ranged from open up a few more times a year to open up the trail every month.

Steve Murphy (Erie) stated the trail has been open on 2 weekends in the spring and 2 weekends in the fall in some of the previous years; however, these events are run by local volunteers and with recent decline in volunteers, the event has been pushed back to one weekend in the spring and one weekend in the fall. When Erie started the event, the original design for the spring was to capture the spring runoff and significant water over the falls, and the design for fall was to see the fall leaf colors. Steve Murphy stated that Erie has visitor numbers for approximately 10 years for these events, and data suggests that weather is clearly a driver for the event rather than the flows of the waters over the falls. Chris Balk (NYSDEC) questioned if trails were opened if there was not any water over the falls. Steve Murphy stated that yes the trails were open at times where there are no flows or leakage; the spring events was structured to capture the spring runoff events and the fall events for the leaf viewing and leakage flows.

Bob Nasdor (AW) questioned whether information was captured as to whether Trenton Trail visitors enjoyed one flow over another, and how visitors reacted to different flows at the Project. Karen Klosowski stated that there were specific questions on the Trenton Trail Survey related to aesthetics ratings of the overall trail and key overlook sites, and that this information is provided in both the Recreation Study and the Aesthetics Study. Karen Klosowski stated more specifics

would be reviewed under the Aesthetic Study presentation; however, the overall aesthetic rating by the participants was very high (excellent and good).

Bob Nasdor (AW) suggested cross-referencing the Whitewater Boating Study and the Recreation Study to use both studies together to capture the demand for whitewater boating. Karen Klosowski stated that the Recreation Study was designed to capture recreation visitation information across all types of recreation opportunities, and the Whitewater Boating Study provide specifics related to Whitewater Boating opportunities. Karen Klosowski stated there is relevant information and cross-over between the Whitewater Boating, Recreation, and Aesthetics Studies, and references to the other studies are provided as appropriate in the study reports.

Whitewater Boating Flow and Access Study Progress Report

Karen Klosowski (Kleinschmidt) presented a summary of the study purpose, methodology, and results for the Whitewater Boating Flow and Access Study Progress Report. The Whitewater Boating Study controlled flow assessment for the downstream West Canada Creek was postponed due to higher flows, logistical challenges, colder weather, and associated safety considerations of the participants, and is scheduled for the 2020 field season. The results of the Whitewater Boating Study controlled flow assessment, and a desktop evaluation of existing available data regarding the timing and volume of flow events within the past 5 years will be provided in the forthcoming Updated Study Report.

Bob Nasdor (AW) stated appreciation for Erie working with AW and volunteers during fall 2019 for attempts to implement the Whitewater Boating Study. Bob Nasdor stated that the field season schedule for 2020 may be affected by the COVID -19 pandemic, and requested that Erie keep in mind rescheduling, if necessary. Bob Nasdor stated that he anticipated additional discussions with Erie regarding the Prospect bypassed reach assessment, and that AW is still seeking evaluation of this reach for whitewater boating opportunities. Bob Nasdor stated that AW recognizes the difficulty of providing access to the West Canada Creek Project, but there are options like stairways for river access, such as what was implemented at the Deerfield River. Karen Klosowski stated that over the next several months Erie will reach out and review logistics for the controlled flow assessment with the Working Group, including the AW, USFWS, NYSDEC, and FERC staff.

Allyson Conner (FERC) questioned what were the flows at the time of the scheduled whitewater boating events for 2019, and why the flow assessment was not completed. Karen Klosowski stated difficulty scheduling a period when the flows were at the low end of the scale during the latter part of the field season due to rain events, as well as logistical difficulties of coordinating schedules of the experienced volunteers for the boating assessment. Steve Murphy (Erie) stated that travel time of approximately 6 to 8 hours from Trenton tailrace to Kast Bridge was also an issue because of the length and location of the boating assessment reaches. The flows targeted for testing were 600, 1,000 and 1,400 cfs, and at the scheduled time for the controlled flow assessment, the flows were well over 1,400 cfs. Bob Nasdor (AW) stated that he would suggest starting the surveys in the summer 2020 because this would provide longer days and more time for flows to get to the second location.

Allyson Conner (FERC) stated that slide 133 listed the regional whitewater boating opportunities including several that had Class 2, but could also include Class 2, 3, and 4, not just specifically Class 2 opportunities. Duncan Hay (NPS) stated that additional boating opportunities that provide Class 1, 2 or 3 opportunities are available south of the Mohawk River that were not denoted on the Figure, such as the Susquehanna River or Shenango River. Bob Nasdor (AW) noted that AW's website/database does not show all available whitewater opportunities. Duncan Hay also questioned whether Erie takes into consideration the diversions below the Morgan dam (canal feeder connection) for the downstream flows. Steve Murphy responded that Erie coordinates with the New York State Canal Corporation to provide required flows downstream of Morgan dam. Steve Murphy stated that the required minimum flow below Morgan dam is 160 cfs, and for example, if the canal flow diversion is 20 cfs, then Erie provides flow output from the Trenton Station at or greater than 180 cfs in order to meet the flow diversion and downstream minimum flow requirements.

Aesthetic Assessment Study

Karen Klosowski (Kleinschmidt) presented a summary of the study purpose, methodology, and results for the Aesthetics Assessment Study. A supplement to the Aesthetic Flow Assessment Study will be provided in the Updated Study Report to include photographs of the leakage/flow conditions at the Key Observation Point locations and a desktop evaluation of existing available data regarding the timing and volume of flow events within the past 5 years.

Bob Nasdor (AW) questioned if Erie is listing the difference between the targeted controlled flow of 400 cfs at Trenton and the actual flow during the assessment as a study plan variance. Bob Nasdor also stated that as being a participant out on site for this study, it seemed that the presentation description of aesthetic ratings minimized what the reactions were out in the field. Bob Nasdor stated, for example, it may not seem like a big change between ratings, but reactions on site during the assessment indicated that these differences were valuable. Karen Klosowski stated that the difference in flows was not identified as a variance and that the study report included documentation of the targeted versus actual flows. Bob Nasdor stated that the study was targeting 400 cfs, and if actual flows were 325 cfs, then this should be documented and stated as a variance, even if likely not to affect the overall outcome of the study.

Next Steps

Karen Klosowski reviewed the next steps. Erie will file ISR meeting summary on or before April 6, 2020. Stakeholders to file comments on the ISR by May 6, 2020. All stakeholders to file response to comments by June 5, 2020. FERC issues Director's Determination on disagreements/amendments on July 5, 2020. Field work for Whitewater boating to be completed in 2020. Erie to file the Updated Study Report by January 10, 2021.

ATTACHMENT B

ISR MEETING PRESENTATION

Initial Study Report Meeting

WEST CANADA CREEK HYDROELECTRIC PROJECT FERC NO. 2701-NY

ERIE BOULEVARD HYDROPOWER, L.P.,
A BROOKFIELD RENEWABLE COMPANY

March 19, 2020

Introductions, Meeting Purpose and Schedule

Safety Briefing

Brookfield Renewable

- Brookfield Renewable Energy Health & Safety Policy:
  We continuously strive to achieve excellence in safety performance and to be recognized as industry leaders in accident prevention.

- In case of emergency, dial 911.

- Emergency exits and rally point outside.

- Restrooms.

ISR Meeting Purpose

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Introductions

Meeting Purpose

- Review of Initial Study Report documents
  - Provide overview of the study reports included in the Initial Study Report (ISR)
  - Share any additional information
  - Review any comments with respect to the ISR
- Next Steps
  - Review of remaining study activities
  - Stakeholder submittal of written comments on ISR
  - Updated Study Report

Meeting Agenda

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Targeted Schedule[1]	Topic
10:00 - 10:30	Introduction, Meeting Objectives, Overall Schedule
10:30 - 12:30	Macroinvertebrate and Freshwater Mussel Surveys
	Impoundment Shoreline Characterization Study
	Aquatic Mesohabitat Assessment Study
	Fish Assemblage Assessment
12:30 - 1:00	Break
1:00 - 3:00	Fish Entrainment and Turbine Passage Survival Assessment
	Water Quality Study
	Recreation Use, Need and Access Study
	Whitewater Boating Study Progress Report
	Aesthetics Assessment Study
	Next Steps

[1]Note: Schedule may vary, these are targeted times.

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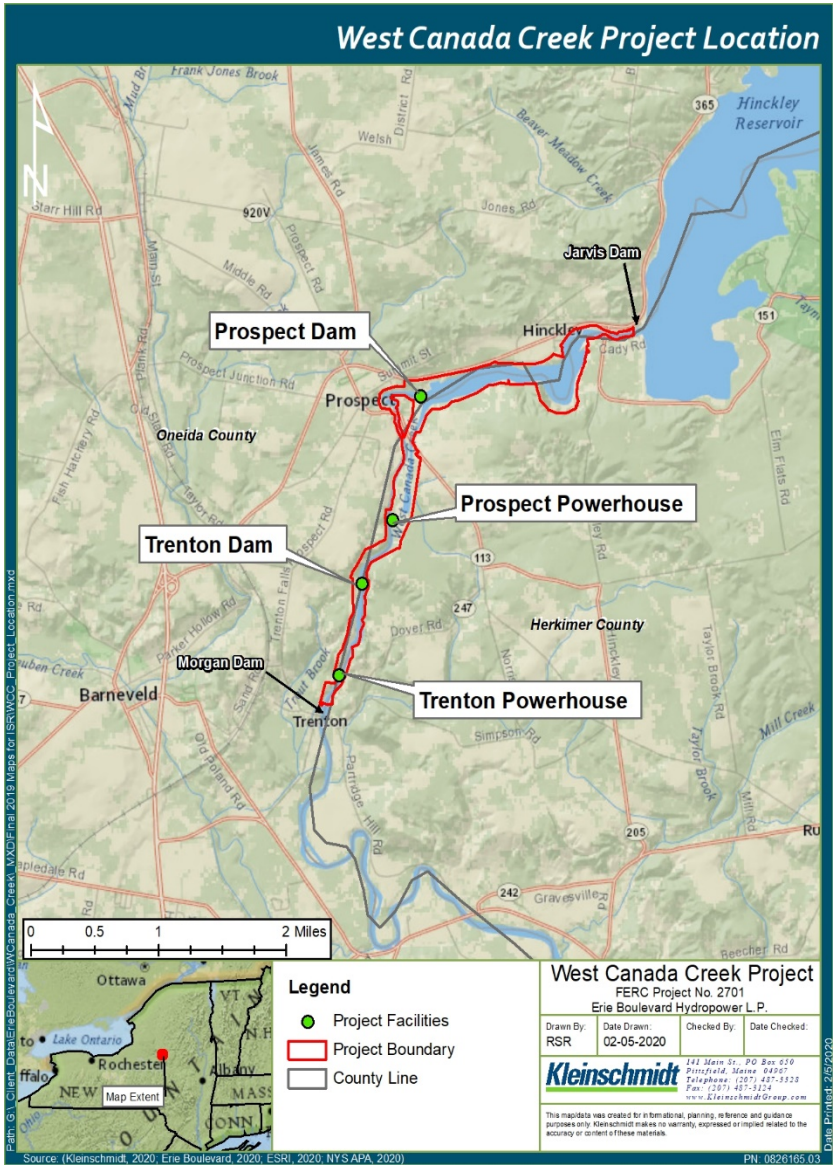
West Canada Creek Project and Schedule Overview

West Canada Creek Project Overview

- West Canada Creek Hydroelectric Project (FERC Project No. 2701) (Project) is owned and operated by Erie Boulevard Hydropower, L.P. (Erie), a Brookfield company.
- The Project is located on West Canada Creek in Oneida and Herkimer counties, New York.
- The Project consists of two developments: Prospect and Trenton.
- The existing license expires on February 28, 2023.



West Canada Creek Project Activities

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Key Milestones of the West Canada Creek Project Relicensing Process

- Key Activities Completed
  - Erie filed Notice of Intent (NOI) and Pre-application Document (PAD)
  - FERC issued Scoping Document 1 (SD1)
  - FERC held Scoping Meeting and Site Visit
  - Erie filed Preliminary Study Plan (PSP)
  - FERC issued Scoping Document 2 (SD2)
  - Proposed Study Plan (PSP) Meeting
  - Comments on PSP
  - Erie file Revised Study Plan (RSP)
  - File comments on RSP
  - FERC issues Study Plan Determination (SPD)
  - Conduct First Season of Studies
  - File Initial Study Report
- Conduct Initial Study Report Meeting
- Upcoming Key Activities
  - Stakeholders comments on ISR
  - Complete outstanding study efforts
  - File Draft License Application
  - File Updated Study Report
  - File Final License Application

Activity	Responsible Party	Dates
File NOI/PAD	Erie	2/28/18
Scoping Meetings/Site Visit	Stakeholders	5/30/2018, 5/31/2018
File Comments on PAD/Study Requests	Stakeholders	6/29/2018
File Proposed Study Plan (PSP)	Erie	8/13/2018
Study Plan Meeting	Stakeholders	9/11/2018
File Comments on PSP	Stakeholders	11/11/2018
File Revised Study Plan (RSP)	Erie	12/11/2018
File Comments on RSP	Stakeholders	12/26/2018
Issuance of Study Plan Determination	FERC	1/10/2019
Conduct First Season of Studies	Erie	March - Nov 2019
Initiate Formal Study Dispute Resolution Process (if necessary)	Mandatory Conditioning Agencies	1/30/19
Dispute Resolution Panel Convenes	Dispute Resolution Panel	2/19/19
File Comments on Study Dispute	Erie	2/24/19
Dispute Resolution Panel Issues Recommendations	Dispute Resolution Panel	3/21/19
FERC Issues Study Dispute Determination	FERC	4/10/19
Conduct First Season of Studies	Erie	Spring-Fall 2019
File Initial Study Report	Erie	3/7/2020
Initial Sudy Report Meeting	Stakeholders	3/19/2020
File Initial Study Report Meeting Summary	Erie	4/3/2020
File Meeting Summary Disagreements	Stakeholders	5/3/2020
File Responses to Meeting Summary Disagreements	Stakeholders	6/2/2020
Resolution on Disagreements	FERC	7/2/2020
Conduct Second Season of Studies (if necessary)	Erie	TBD 2020
File Preliminary Licensing Proposal (PLP) or Draft License Application (DLA)	Erie	10/1/2020
File Comments on Applicant's PLP or DLA	Stakeholders	12/30/2020
File Updated Study Report (if necessary)	Erie	1/10/2021
Updated Study Report Meeting (if necessary)	Stakeholders	1/25/2021
File Updated Study Report Meeting Summary (if necessary)	Erie	2/9/2021
File Final License Application	Erie	2/28/2021

[1] Activities in shaded areas are not necessary if there are no study disputes

West Canada Creek Project Activities

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- Erie filed Revised Study Plan (RSP) on December 11 2018.
- FERC Issued Study Plan Determination (SPD) on March 7, 2019.
- Erie conducted consultation with stakeholders, U.S. Fish and Wildlife Service (USFWS) and New York State Department of Environmental Consultation (NYSDEC), on April 18, 2019, July 16, 2019, and August 9, 2019 regarding the Aquatic Mesohabitat Assessment, Macroinvertebrate and Mussel Surveys, Fish Assemblage Assessment, and Fish Entrainment and Turbine Passage Survival Assessment studies.
- Erie conducted consultation with stakeholders, USFWS, NYSDEC, American Whitewater (AW), and New York Trout Unlimited (NYTU), on May 29, 2019, September 9, 2019, and September 12, 2019, regarding the Recreation Use, Needs, And Access Study, Whitewater Boating Flow and Access Study, and Aesthetics Flow Assessment.
- Erie filed Study Progress Report 1 on July 29, 2019 and Study Progress Report 2 on October 31, 2019.
- FERC granted revision of Process Plan schedule on December 5, 2019.
- Erie filed the ISR and the supporting study report documents on March 6, 2020.

Macroinvertebrate and Freshwater Mussel Surveys

MACROINVERTEBRATE AND FRESHWATER MUSSEL SURVEYS

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Study Purpose and Study Area

Study Purpose

- Provide information on existing macroinvertebrate and freshwater mussels that could be affected by the Project operations.

Study Area

- Macroinvertebrates
  - Prospect bypass reach - 2 kick net samples
  - Trenton bypass reach - 2 sampling traps
  - Downstream West Canada Creek kick net sampling at 8 locations

- Mussel Survey
  - Prospect impoundment littoral zone - 10 cells (100 meter^2)
  - Prospect bypass reach – 2 cells
  - West Canada Creek downstream between Morgan Dam and the Mohawk River confluence - 20 cells
  - No survey in the Trenton bypass reach or impoundment given that the substrates were predominantly bedrock ledge that were unsuitable habitat for mussels and sampling would pose a significant safety risk for divers.

Methodology - Macroinvertebrate

- Benthic macroinvertebrate kick net sampling or sampling traps in representative habitats in the study area.
- The benthic macroinvertebrate community metrics analyzed for this assessment were consistent with those identified in the RSP and the FERC SPD and include:
  - 1) Species Richness (SPP),
  - 2) Ephemeroptera, Plecoptera, and Trichoptera (EPT) Richness,
  - 3) Hilsenhoff's Biotic Index,
  - 4) NYSDEC's Biological Assessment Profile (BAP)
    - Species Diversity (DIV)
    - Nutrient Biotic Index – Phosphorus (NBI-P)
  - 5) Percent Model Affinity (PMA).
- Samples were examined under a dissecting microscope and all invertebrates larger than 1.5 mm will be removed and identified.

Variances From Approved Study Plan

- The Macroinvertebrate Survey was conducted in accordance Erie's proposed RSP and the FERC SPD.

MACROINVERTEBRATE AND FRESHWATER MUSSEL SURVEYS

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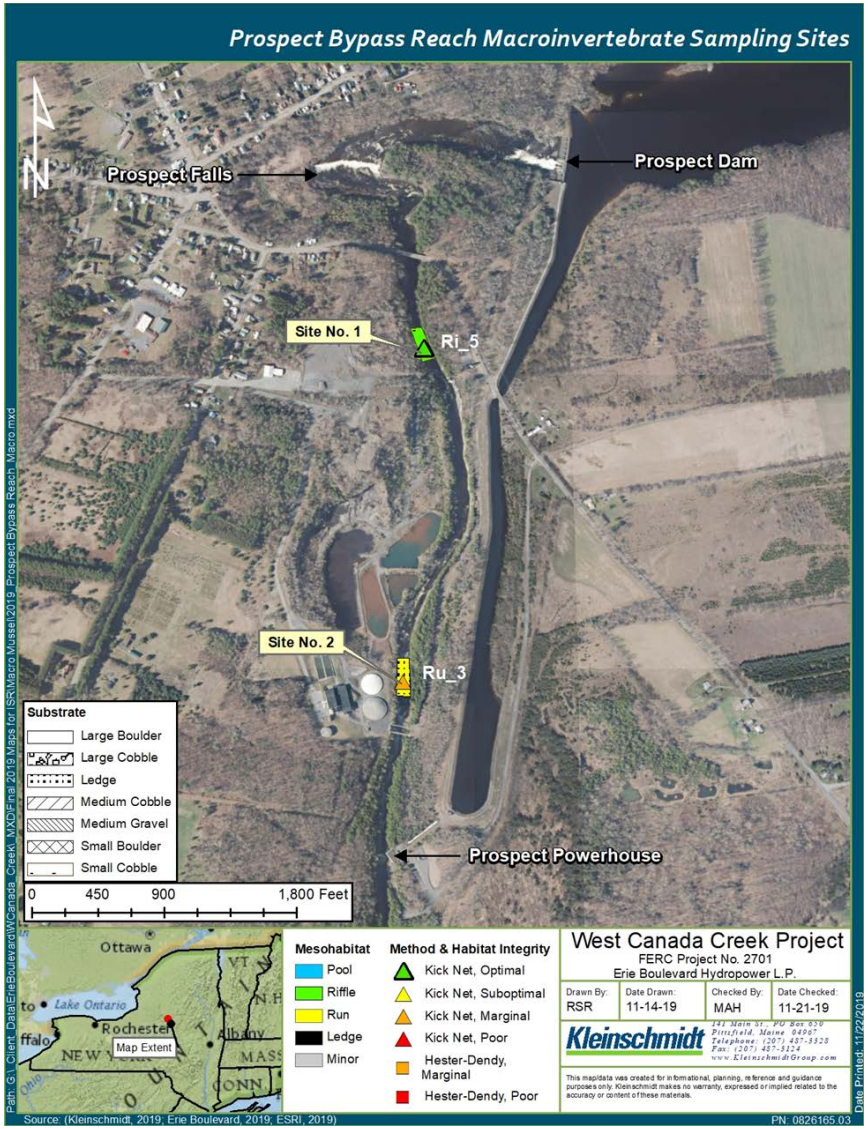

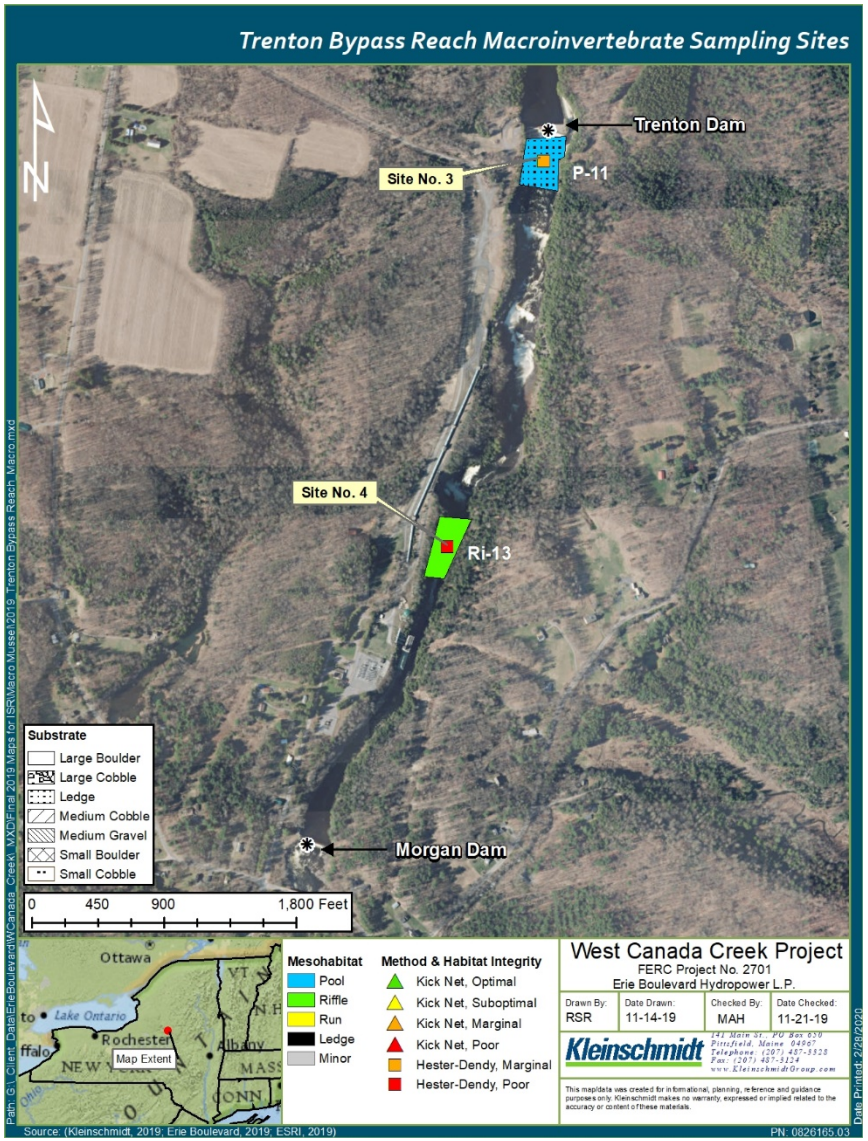

MACROINVERTEBRATE AND FRESHWATER MUSSEL SURVEYS

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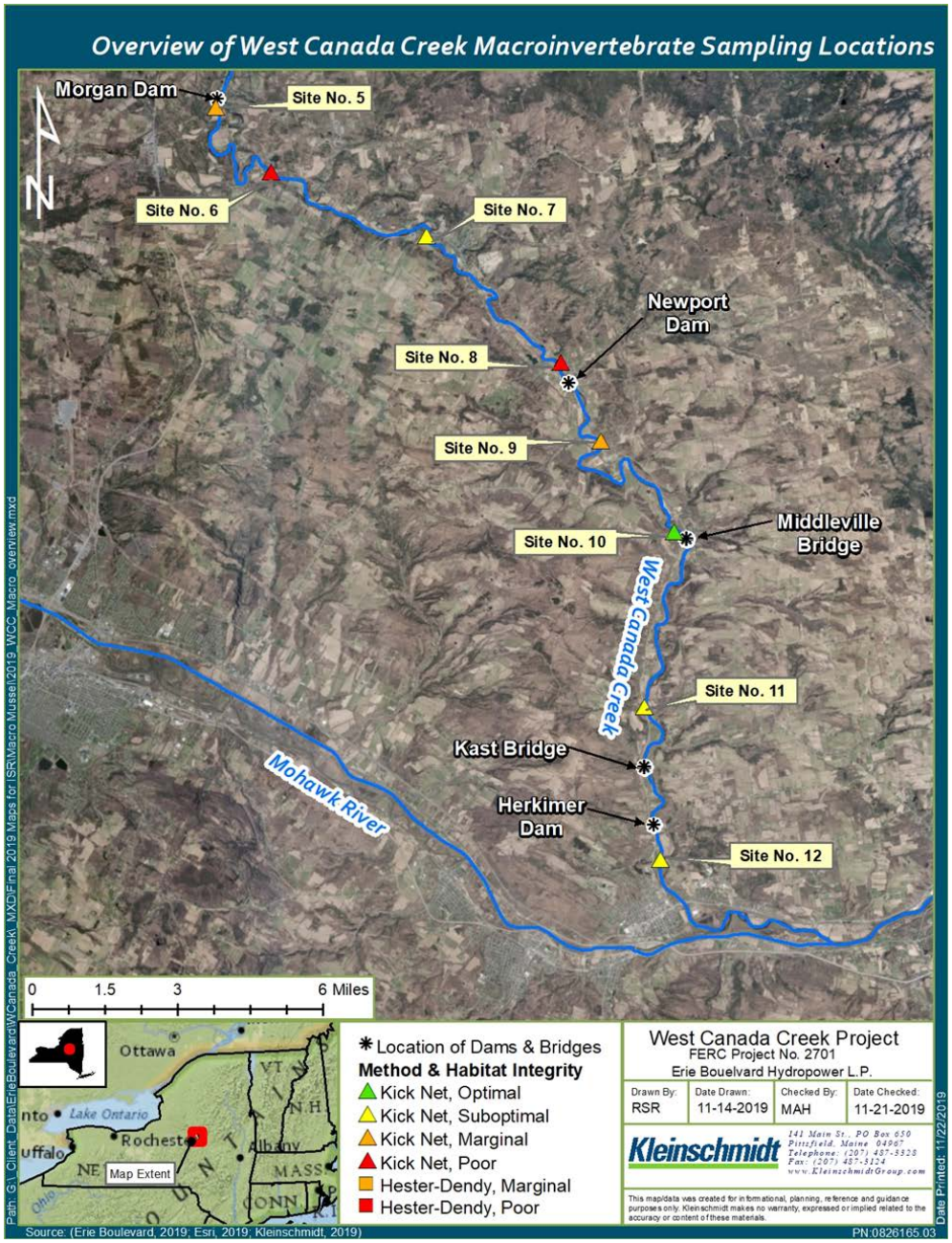

MACROINVERTEBRATE AND FRESHWATER MUSSEL SURVEYS

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Data Collection - Macroinvertebrates

- Kick net sampling was conducted in late summer, on September 4 and 5, 2019, as recommended by NYSDEC.
- Erie deployed macroinvertebrate substrate traps (Hester-Dendy) in the Trenton bypass reach for approximately 6 weeks from August 21, 2019 to October 3, 2019.

Site No.	Location	River Mile	Sample Method	Date	Habitat	Substrate	Depth (ft)
1	Upper Prospect Bypass	34.5	Kick Net	9/4/2019	riffle	large gravel	1.0
2	Lower Prospect Bypass	34.1	Kick Net	9/4/2019	run	small cobble	1.5
3	Upper Trenton Bypass	33.3	Hester-Dendy	8/21/2019 – 10/3/2019	pool	bedrock	2.0
4	Lower Trenton Bypass	33.0	Hester-Dendy	8/21/2019 – 10/3/2019	run	bedrock	1.5
5	Downstream Morgan Dam	32.1	Kick Net	9/5/2019	riffle	small cobble	2.5
6	Upstream Route 28 crossing	28.5	Kick Net	9/5/2019	run	medium gravel	2.5
7	Downstream Poland Water Quality Site 6	24.3	Kick Net	9/5/2019	run	large gravel	2.5
8	Newport Market	19.8	Kick Net	9/5/2019	run	medium gravel	0.5
9	Route 29 pull-off Water Quality Sampling Site 8	17.7	Kick Net	9/5/2019	riffle	small cobble	2.0
10	Upstream Middleville Bridge	13.3	Kick Net	9/5/2019	riffle	small cobble	1.5
11	1.5 miles Upstream of Kast Bridge	8.9	Kick Net	9/5/2019	run	small cobble, fines	3.0
12	Mohawk River Confluence	5.0	Kick Net	9/5/2019	riffle	large cobble	1.0

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Methodology - Macroinvertebrate

Metrics Used to Calculate BAP for Kick Net Samples and Multi-plate Samplers

Kick net samples	
SPP	Number of taxa found in the sample
HBI	calculated by multiplying the number of individuals of each species by its assigned tolerance value, summing these products, and dividing by the total number of individuals. On a 0-10 scale, tolerance values range from intolerant (0) to tolerant (10).
EPT	total number of species of mayflies (Ephemeroptera), stoneflies (Plecoptera), and caddisflies (Trichoptera) found in a sample
PMA	Measure of similarity to a model non-impacted community based on percent abundance of 7 major groups. The model for statewide kick samples was used for this study.
Nutrient Biotic Index – Phosphorus (NBI-P)	A similar calculation to HBI with different tolerance values for select families
Multiple-plate samples.	
SPP	See above
HBI	See above
EPT	See above
Species diversity (DIV)	Combines SPP and community balance (evenness)

MACROINVERTEBRATE AND FRESHWATER MUSSEL SURVEYS

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Data Results - Macroinvertebrates

Biological Metrics for each Site Sampled for Macroinvertebrates

Site No.	Location	Total Specimens	SPP	EPT	HBI	PMA	NBI-P	DIV	BAP
1	Upper Prospect Bypass	582	21	10	4.1	67	3.6	-	7.56
2	Lower Prospect Bypass	12	8	4	6.5	50	4.0	-	4.87
3	Upper Trenton Bypass	8	1	1	3.0	40	-	0	2.88
4	Lower Trenton Bypass	0	0	0	0	0	-	0	0
5	Downstream Morgan Dam	52	15	5	5.2	72	4.9	-	6.24
6	Upstream Route 28 Crossing	10	5	0	6.3	25	5.0	-	2.8
7	Downstream Poland Water Quality Site 6	105	15	7	4.5	80	4.4	-	6.93
8	Newport Market	13	4	2	6.5	53	*	-	3.4
9	Route 28 pull off- water quality Site 8	53	13	4	5.6	73	4.8	-	5.97
10	Upstream Middleville Bridge	367	22	14	4.2	81	3.9	-	8.18
11	1.5 mile Upstream of Kast Bridge	61	14	9	5.3	83	4.7	-	6.83
12	Downstream Herkimer Dam	457	15	9	4.9	77	4.0	-	7.01

Habitat Integrity		Poor	Marginal	Suboptimal	Optimal
Water Quality Impact		Severe Impact	Moderate Impact	Slight Impact	Non-impact
Metric	SPP	0-11	11-19	19-26	>26
	HBI	10-8.5	8.5-6.5	6.5-4.5	4.5-0
	EPT	0-2	2-6	6-10	>10
	PMA	20-35	35-49	49-64	64-90
	NBI-P	>7	7-6	6-5	5-0
	DIV	1-2	2-3	3-4	4-5
	BAP	0-2.5	2.5-5	5-7.5	7.5-10

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Results Summary - Macroinvertebrates

- The greatest species richness was observed in the upper Prospect bypass and upstream of the Middleville bridge, with 21 and 22 families collected, respectively.
- Overall 23 EPT families were identified and HBI (combined for all sites) was 4.5.
- PMA ranged from 0 to 83, with an overall PMA of 81.
- The average BAP for the 10 kick net sample sites was 6.0, ranging from 2.8, at the Route 28 crossing, to 8.2, just upstream of the Middleville bridge.
- Specimens were only recovered from the Hester-Dendy samplers deployed in the upper Trenton bypass reach, resulting in a BAP of 2.9.
- No organisms occurred on the Hester-Dendy sampler in the lower Trenton bypass reach and thus resulted in a BAP score of 0.

Methodology – Freshwater Mussel Survey

- SWCA Environmental Consultants (SWCA) conducted a presence/absence survey of freshwater mussels on September 16 through 20, 2019, and September 23, 2019 through September 25, 2019.
- Survey methodology was consistent with West Virginia Department of Natural Resources 2016 as requested by NYSDEC.
- Shallow (<6 feet) littoral areas containing suitable substrates for the Prospect bypass reach and downstream West Canada Creek were surveyed in stratified approach.
- Prospect impoundment surveys extended from a minimum depth of approximately 6 feet below the lower operational pond elevation (1,156.5 feet) to depths as great as 20 feet.

Variances from Approved Study Plan

- The Freshwater Mussel Survey was conducted in accordance Erie's proposed RSP and the FERC SPD.
- In addition, observations of mussels encountered outside of the designated areas of the sample polygons were also noted during this study.

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Data Collection – Freshwater Mussel Survey

- SWCA conducted timed searches within the 32 selected cells. Two biologists, using snorkel and SCUBA equipment surveyed each cell.
- Within each survey cell, the two biologists conducted both visual and tactile surveys for mussels. Tactile surveys consisted of each diver raking their fingers through soft substrates to a depth of approximately 4 inches.
- Cells were surveyed at a rate of 0.2 minutes per meter^2 (20-minute total).
- If mussels were observed, surveying continued for an additional 0.3 minutes per meter^2, for a final rate of up to 0.5 per meter^2 or 50 minutes per cell.

MACROINVERTEBRATE AND FRESHWATER MUSSEL SURVEYS

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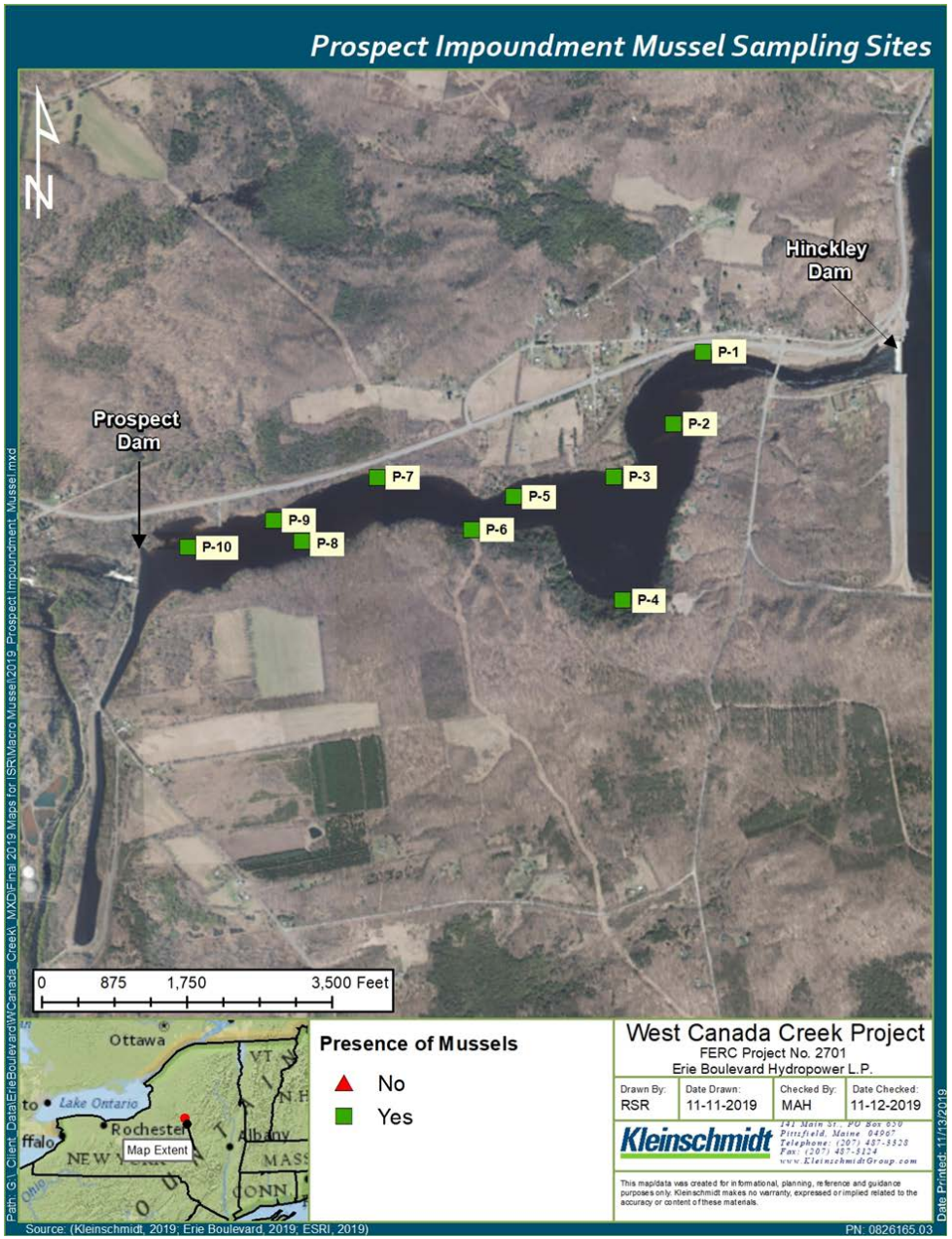

MACROINVERTEBRATE AND FRESHWATER MUSSEL SURVEYS

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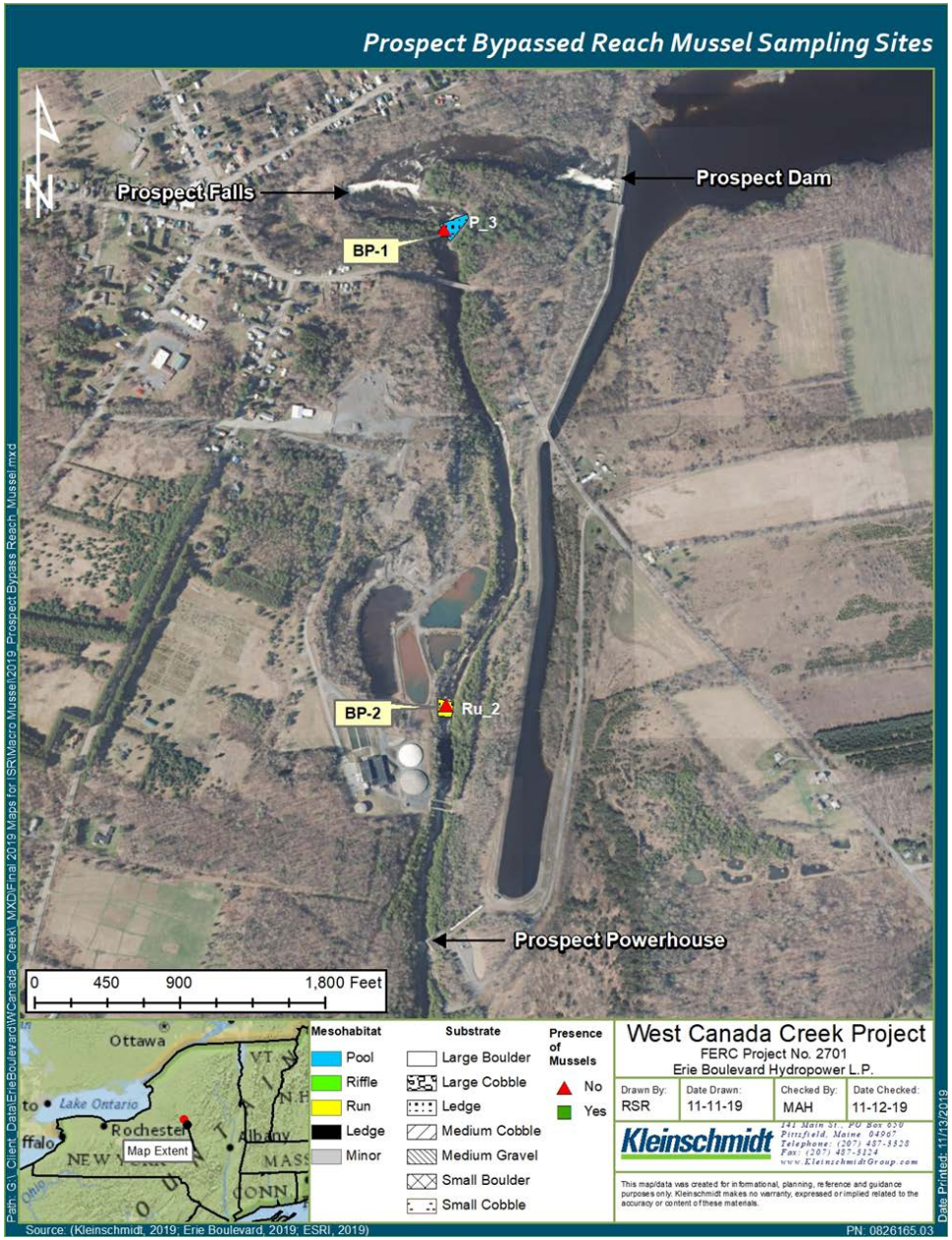

MACROINVERTEBRATE AND FRESHWATER MUSSEL SURVEYS

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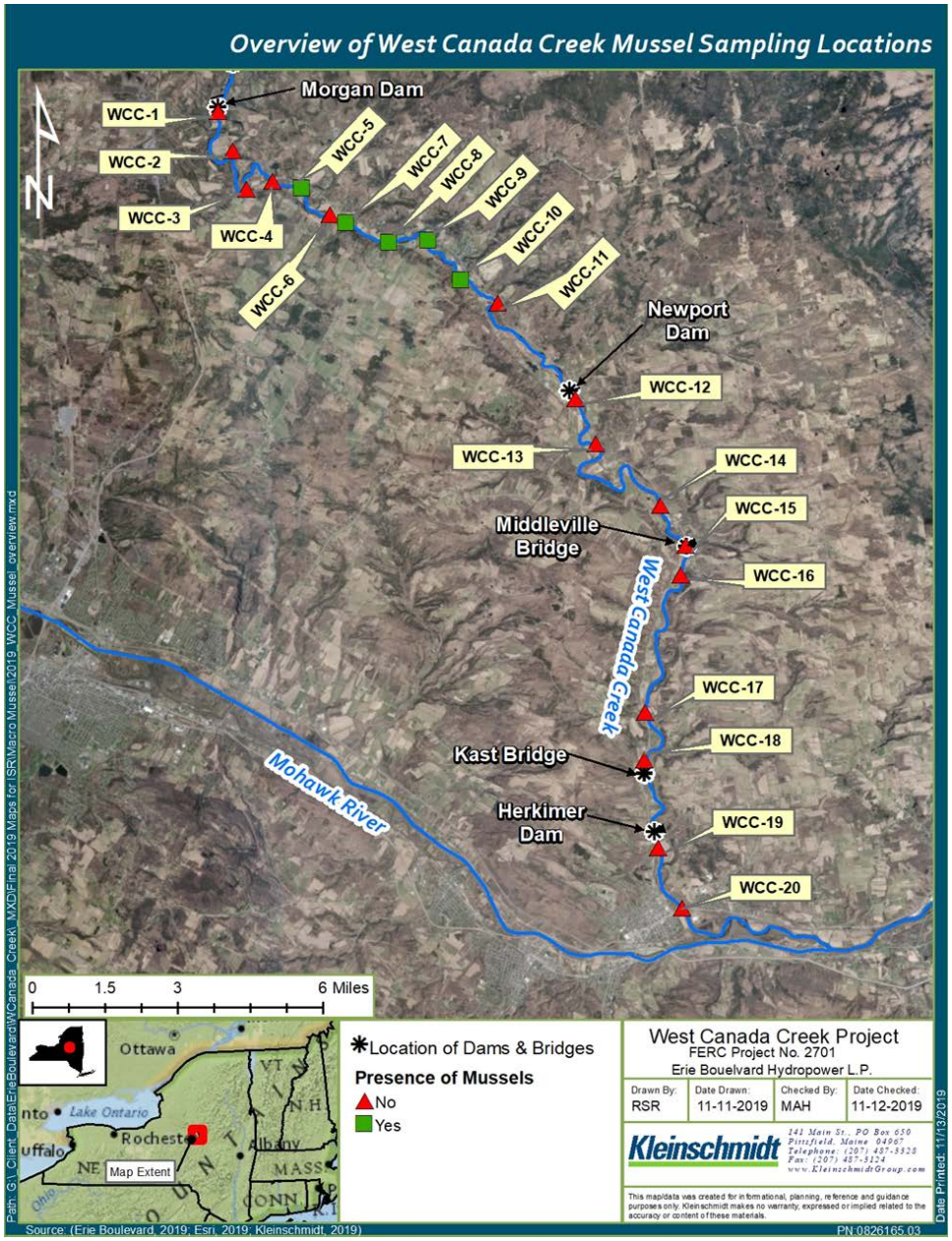

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Results – Freshwater Mussel Survey

- Three species of mussel were found within the study area;
  - lake floater (*Pyganodon lacustris*),
  - eastern elliptio (*Elliptio complanata*) and
  - eastern pearlshell (*Margaritifera margaritifera*).
- Live native mussels were observed in all ten survey cells within the Prospect impoundment.
- All mussels observed appeared to be healthy, and a number of juvenile mussels were found over the course of the surveys, indicating successful reproduction within the population.
- No mussels or shells were found within the Prospect bypass reach.
- Eastern elliptio (*Elliptio complanata*) and eastern pearlshell (*Margaritifera margaritifera*) were observed in or near five of the 20 survey cells located within lower West Canada Creek.

Impoundment Shoreline Characterization Study

IMPOUNDMENT SHORELINE CHARACTERIZATION STUDY

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Study Purpose and Study Area

- Study Purpose
  - Characterize the littoral habitat within the Project impoundments.
  - Document any encounters with wetlands hydraulically influenced by the project, aquatic vegetation, fish spawning beds, and mussel beds.

- Study Area
  - Phase 1 included the littoral region of the Prospect and Trenton impoundments within the existing Project boundary.
  - Phase 2 included microhabitat field verification and shoreline transects conducted of representative littoral areas of the Prospect impoundment.
  - No shoreline transects were conducted for the Trenton impoundment due to the vertical bedrock walls with almost vertical littoral zones and safety concerns associated with access.

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Methodology – Data Collection

- Phase 1 - Drone Aerial Imagery
  - Erie conducted drone-based shoreline surveys of the Prospect and Trenton impoundments on August 6 and 7, 2019, respectively.
  - Collected aerial imagery data via drone flight of Prospect and Trenton impoundments to visually document those aquatic habitats and resources within the fluctuation zone and identify major aquatic habitat types.
  - Flight occurred on August 6 and 7, 2019, during a period of low pond (i.e., Prospect at 1,156.5 ft, and Trenton at 1,011.9 ft).
  - Encountered NWI/NYSDEC identified wetlands, RTE species, invasive species and mussel beds were noted.
- Habitat classifications, bed slope and substrate, along the impoundment shoreline was determined by examining the drone imagery.

Methodology – Data Collection

- Phase 2 - Additional Field Survey
  - Phase 2 survey was conducted between August 20, 2019, and August 22, 2019.
  - Detailed microhabitat data were collected at a total of 5 transects that represent the major habitat classifications identified from the drone imagery.
  - Each transect extended from top of bank (or to a maximum of 6 feet above the full pond elevation of 1,161.5 feet) to 3 feet below low pond (1,153.5 feet).
  - Verticals were surveyed along each transect to depict top of bank, normal high-water elevation, toe of bank, and elevation 3 feet below normal low pond elevation.
  - Additional verticals were established at intervals wherever micro-changes in slope, substrate, embeddedness, or cover were encountered.

Variances from Approved Study Plan

- In consultation with USFWS and NYSDEC, no shoreline transects were conducted for the Trenton impoundment due to the vertical bedrock walls with almost vertical littoral zones and safety concerns associated with access to Trenton.
- This was a variance from the approved study plan in that Erie had anticipated transects (less than 2) at the Trenton impoundment.

IMPOUNDMENT SHORELINE CHARACTERIZATION STUDY

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IMPOUNDMENT SHORELINE CHARACTERIZATION STUDY

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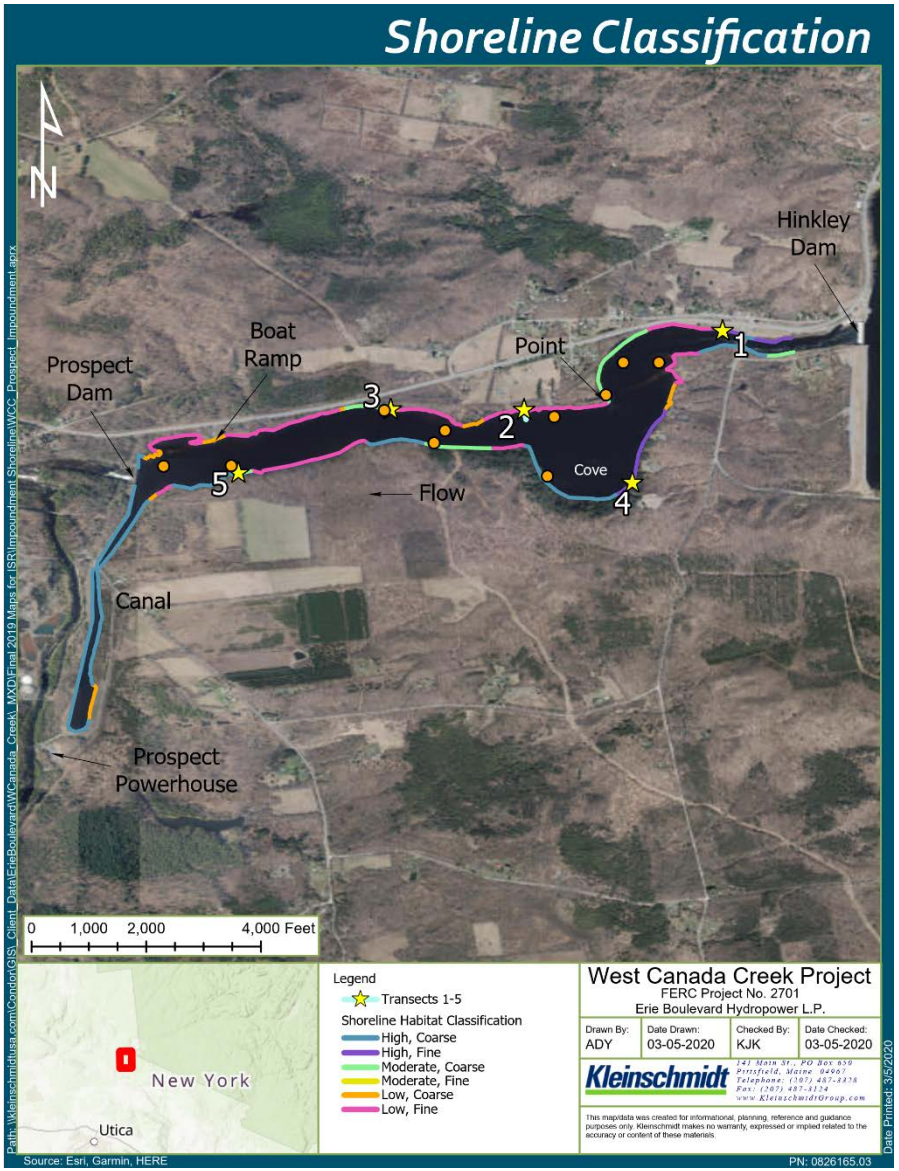
Data Results – Prospect Impoundment

Habitat within the littoral zone of the Prospect impoundment was categorized by:

1. High gradient is > 10% (6°) slope.
2. Moderate gradient between 5 – 10% (3 – 6°) slope.
3. Low gradient < 5% (3°) slope.
4. Fine substrate includes sand, mud, clay and detritus with a grain size less than 0.15 inches.
5. Course substrate includes gravel (0.15” – 4”), cobble (4” -10”), boulder (>10”) and bedrock.



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Data Results – Prospect Impoundment

Habitat Categories and Extent within the Prospect Impoundment

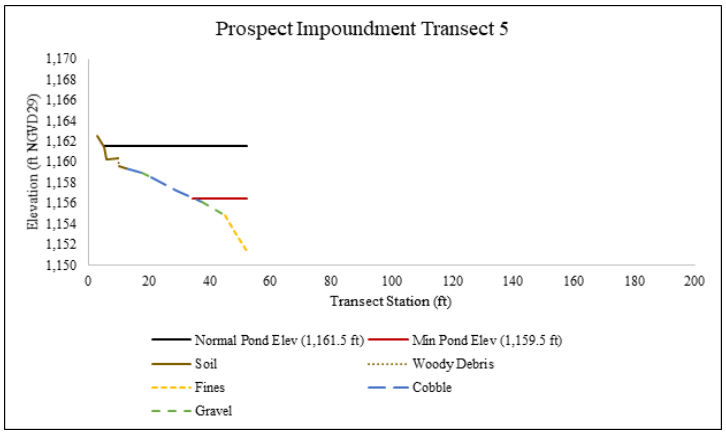
Location	Gradient	Substrate	Length (ft)	Length (miles)	Percent
Canal	High	Coarse	6,169	1.2	90.9
Canal	Low	Coarse	615	0.1	9.1
Canal Total			6,784	1.3	100
Impoundment	High	Coarse	7,575	1.4	30.8
Impoundment	High	Fine	519	0.1	2.1
Impoundment	Moderate	Coarse	2,970	0.6	12.1
Impoundment	Moderate	Fine	434	0.1	1.8
Impoundment	Low	Coarse	2,047	0.4	8.3
Impoundment	Low	Fine	11,021	2.1	44.9
Impoundment Total			24,566	4.7	100

Data Results – Prospect Impoundment

Prospect Impoundment Shoreline Transect Location and Habitat Classification

Transect	Date	WSEL[1]	Headpin Latitude	Headpin Longitude	Length (ft)	Transect Slope	Habitat Classification and Description
1	8/20/2019	1,159.9	43.3142853	-75.1181904	31	16% (9°)	High gradient slope with fine substrate and SAV
2	8/20/2019	1,159.8	43.3074997	-75.1236795	196	3% (1°)	Low gradient slope with fine substrate with SAV
3	8/20/2019	1,160.1	43.3028535	-75.1238832	57	8% (5°)	Moderate gradient slope with coarse substrate transitioning to fines and SAV below min pond el.
4	8/22/2019	1,156.5	43.3113928	-75.1282693	32	16% (9°)	High gradient slope with gravel and fine substrate
5	8/22/2019	1,158.6	43.304846	-75.138265	49	10% (6°)	Moderate gradient slope with predominantly cobble substrate with moderate SAV cover

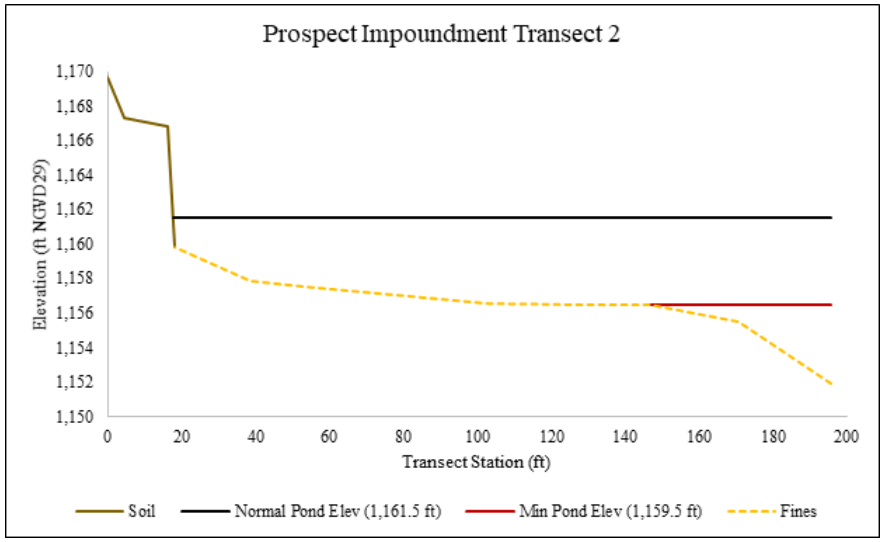
[1] Water surface elevation at time of survey. Elevation data reported in 1929 National Geodetic Vertical Datum.

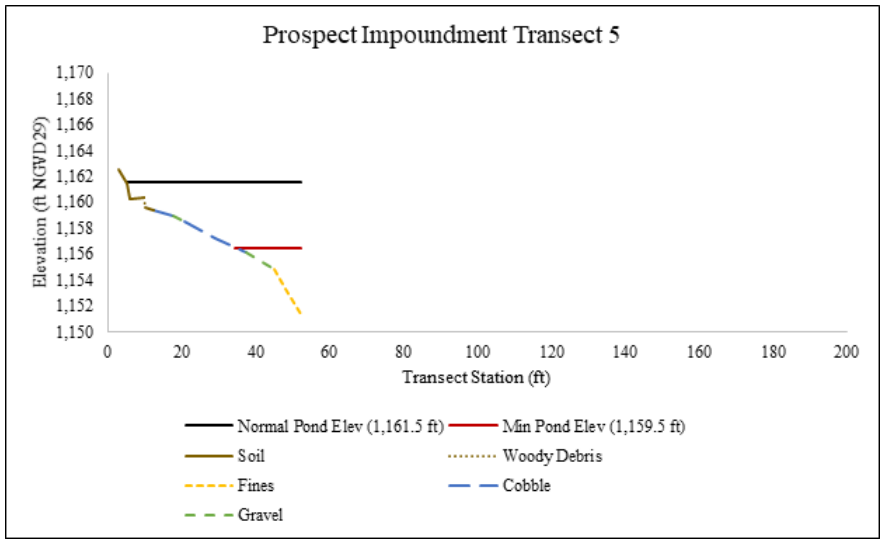


IMPOUNDMENT SHORELINE CHARACTERIZATION STUDY

Brookfield Renewable

Data Results – Prospect Impoundment



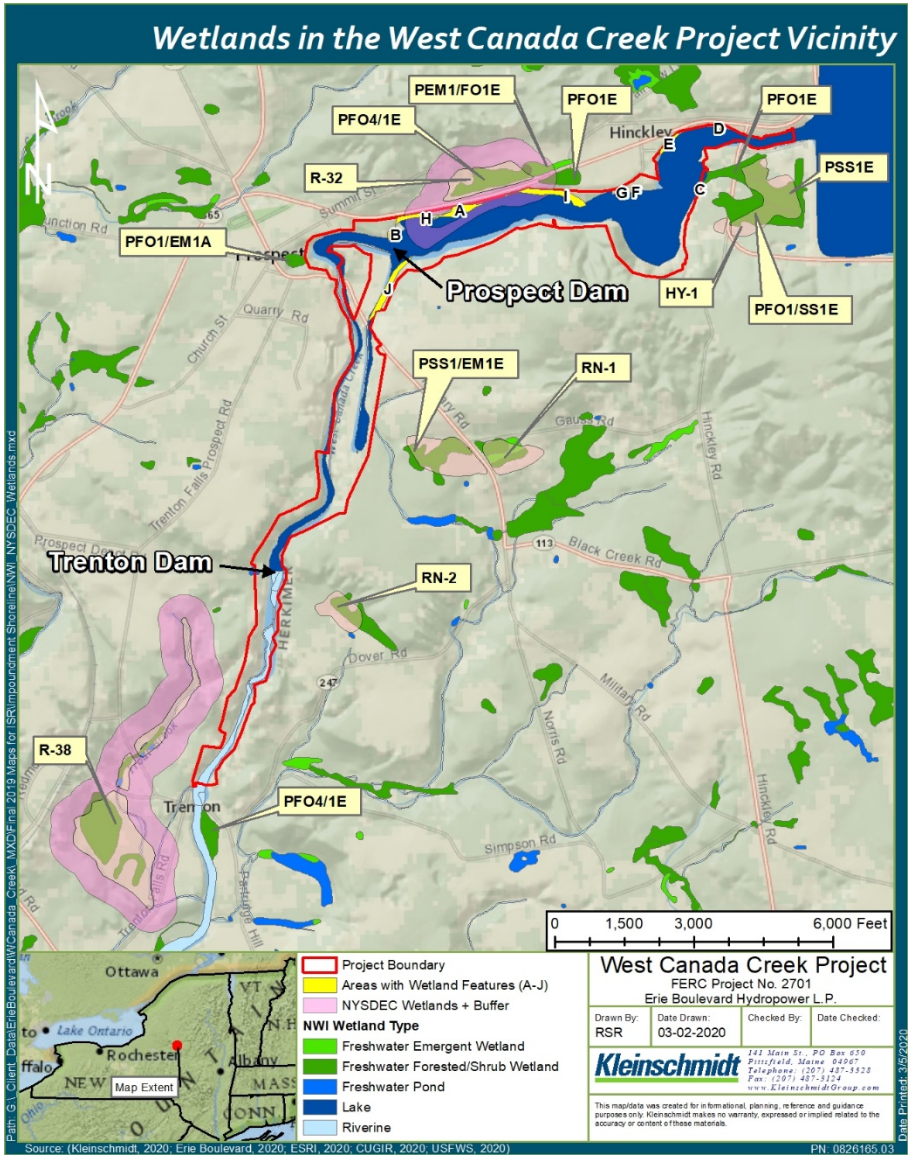


IMPOUNDMENT SHORELINE CHARACTERIZATION STUDY

Brookfield Renewable

Data Results – Prospect Impoundment

- NYSDEC regulated wetlands within the general vicinity of the Project include five wetlands encompassing a total of 209.1 acres
- The NWI database identifies one wetland feature within the Project boundary, and eight NWI identified wetland features within the general vicinity of the Project boundary
- Ten (10) separate areas with wetland features were documented along the perimeter of the Prospect impoundment and power canal.



Aquatic Mesohabitat Assessment Study

AQUATIC MESOHABITAT ASSESSMENT STUDY

Brookfield Renewable

Study Purpose

Mesohabitat Mapping

- Map the distribution and abundance of aquatic mesohabitat.
- Quantitatively characterize the types of aquatic habitats that occur within the Project study area.
- Provide a basis for locating level loggers and transects.
- Inform on locations for mussel, macroinvertebrate and electrofishing sampling.

Trenton Minimum Flow Release Valve

- Validation of the automated minimum flow release valve discharge at Trenton Station.

AQUATIC MESOHABITAT ASSESSMENT STUDY

Brookfield Renewable

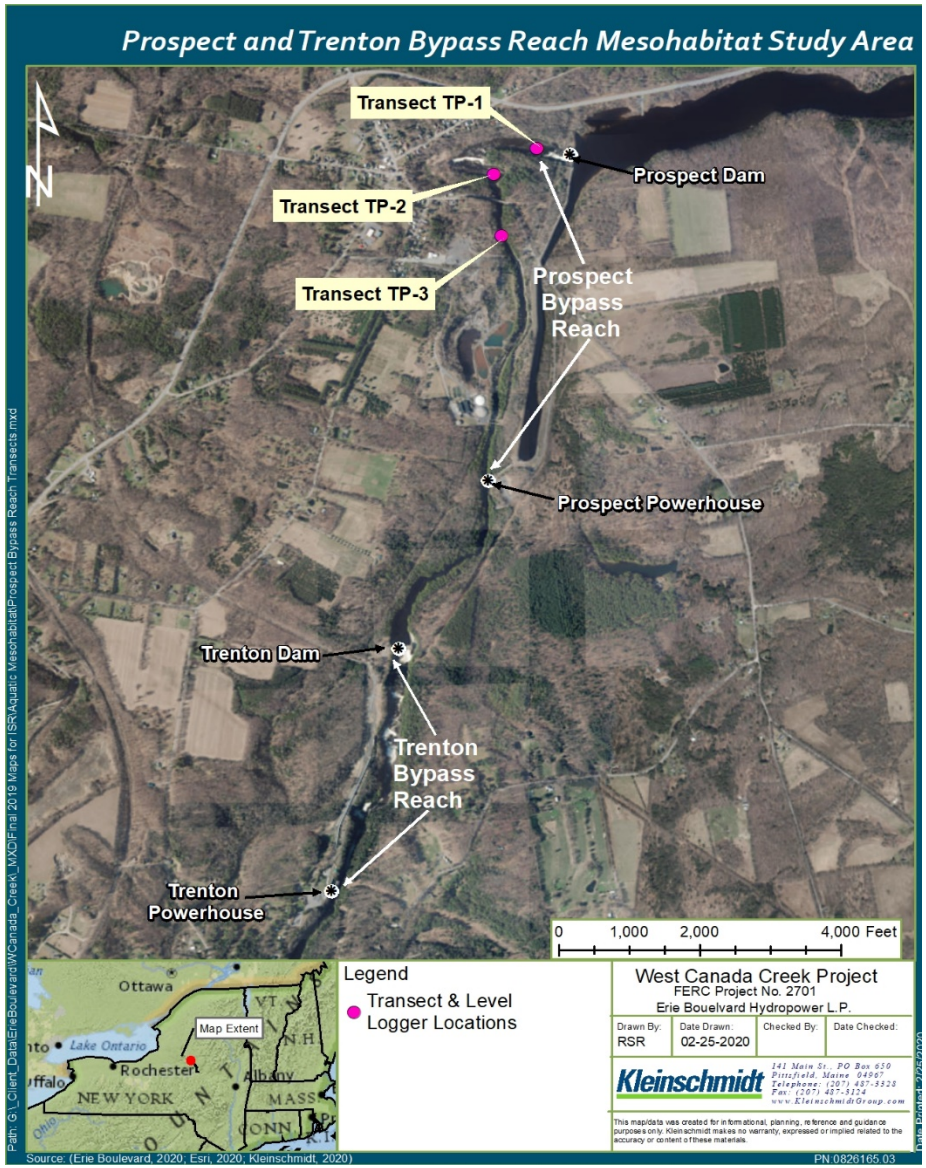
Study Area

Project Area

- Prospect bypass reach - extends from the toe of Prospect dam downstream to Trenton impoundment.
- Trenton bypass reach - extends from the toe of Trenton dam downstream to Trenton tailrace.

Downstream West Canada Creek

- Upper Reach - Trenton tailrace to Newport
- Middle Reach - Newport to Kast Bridge
- Lower Reach - Kast Bridge to Mohawk River



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Methodology – Data Collection

Mesohabitat Mapping

- Riverine aquatic mesohabitat characterized by dominant substrate (riffle, pool, run, glide, rapids, falls, etc.); and cover type and cover density was noted for each mesohabitat.
- High definition drone aerial imagery utilized to delineate mesohabitat boundaries in the Prospect bypass reach and by boat in West Canada Creek to identify candidate field investigation sampling sites within the study area.

Level Loggers and Mesohabitat Transects

- Locations of loggers and mesohabitat transects reviewed with USFWS and NYSDEC
  - Three transects/loggers located within Prospect bypass reach.
  - Six transects/loggers located in downstream West Canada Creek.
- Bed profile and water elevation data were collected at all 9 transect locations.
- Discharges at Trenton and Kast Bridge were prorated to flows at transect sites to develop stage discharge curves.

Trenton Minimum Flow Release Valve

- The discharge measurements of the automated minimum flow release valve at Trenton Station were conducted using an Acoustic Doppler current profiler (ADCP) unit.

Variances from Approved Study Plan

- Additional mesohabitat mapping of the entire downstream West Canada Creek reach from Trenton tailrace to confluence with the Mohawk River (approximately 33 river miles) as compared to FERC SPD recommended 12.5 river miles.

AQUATIC MESOHABITAT ASSESSMENT STUDY

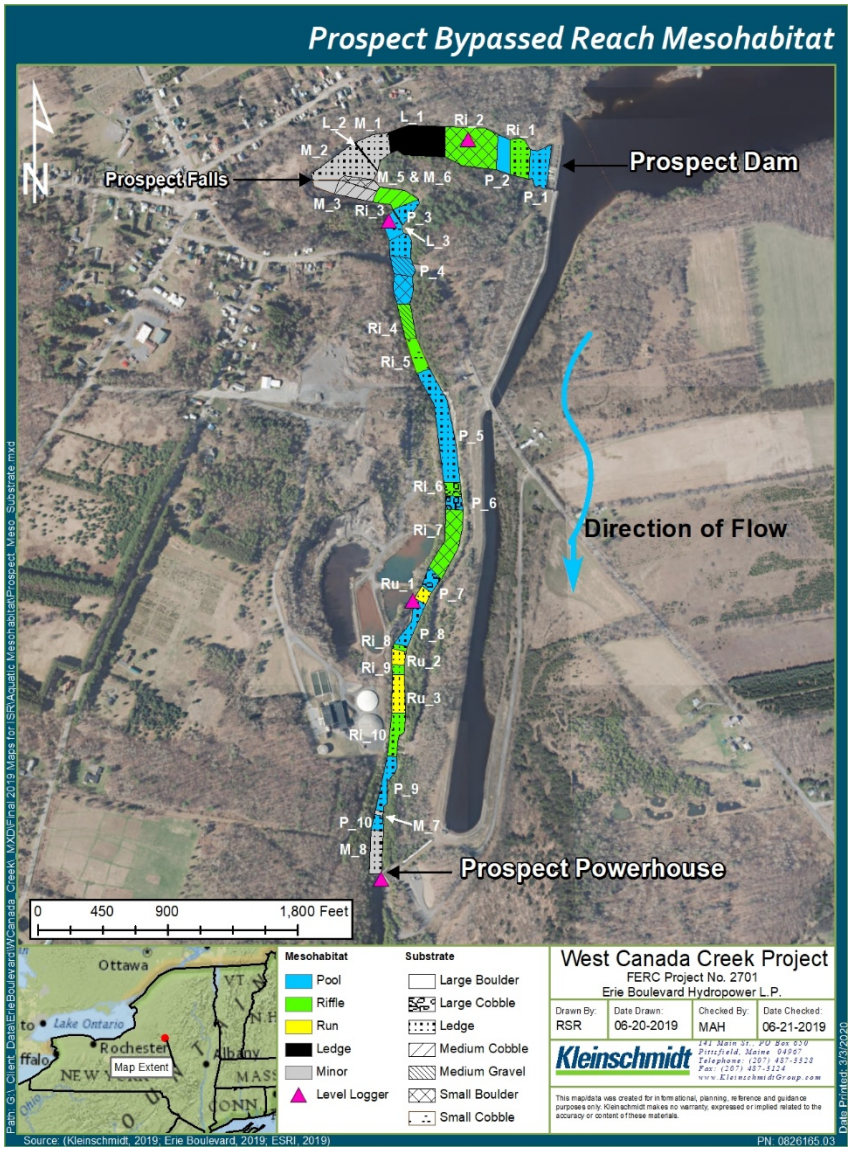
Brookfield Renewable

Data Results - Mesohabitat Mapping

Relative Abundance of Mesohabitat And Substrate Units in the Prospect Bypass Reach

Mesohabitat	Length (ft)	Percent of Total
Pool	2,702	38%
Riffle	2,137	30%
Minor	1,441	20%
Run	446	6%
Horizontal Ledge	405	6%
Total	7,131	100%

Substrate	Length (ft)	Percent (%) of Total
Ledge	4,159	58
Small Boulder	1,278	18
Medium Cobble	500	7
Small Cobble	443	6
Medium Gravel	357	5
Large Cobble	304	4
Large Boulder	89	1
Total	7,131	100



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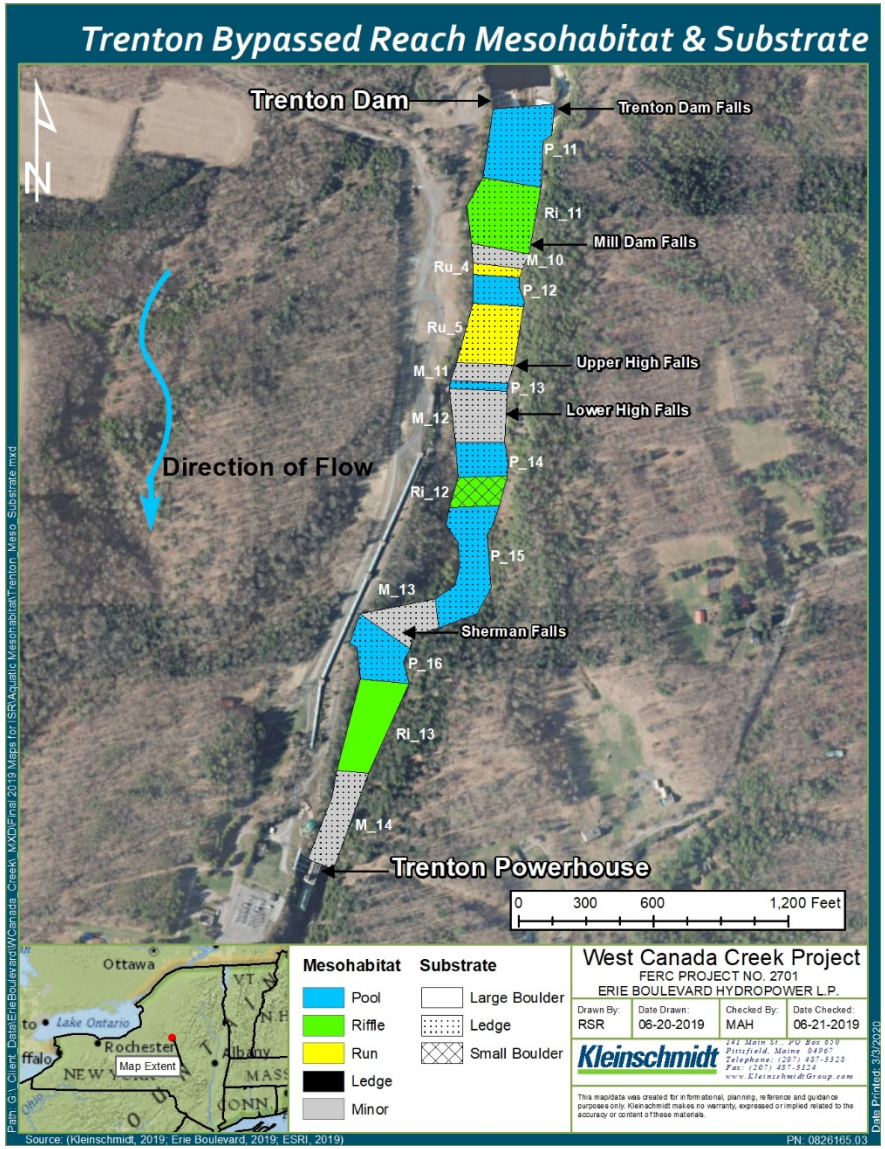
Data Results - Mesohabitat Mapping

Relative Abundance of Mesohabitat And Substrate Units in the Trenton Bypass Reach

Mesohabitat	Length (ft)	Percent of Total
Pool	1,388	37%
Riffle	872	24%
Minor	1,098	30%
Run	345	9%
Total	3,703	100%

Substrate	Length (ft)	Percent of Total
Ledge	3,136	85%
Large Boulder	433	12%
Small Boulder	135	4%
Total	3,703	100%



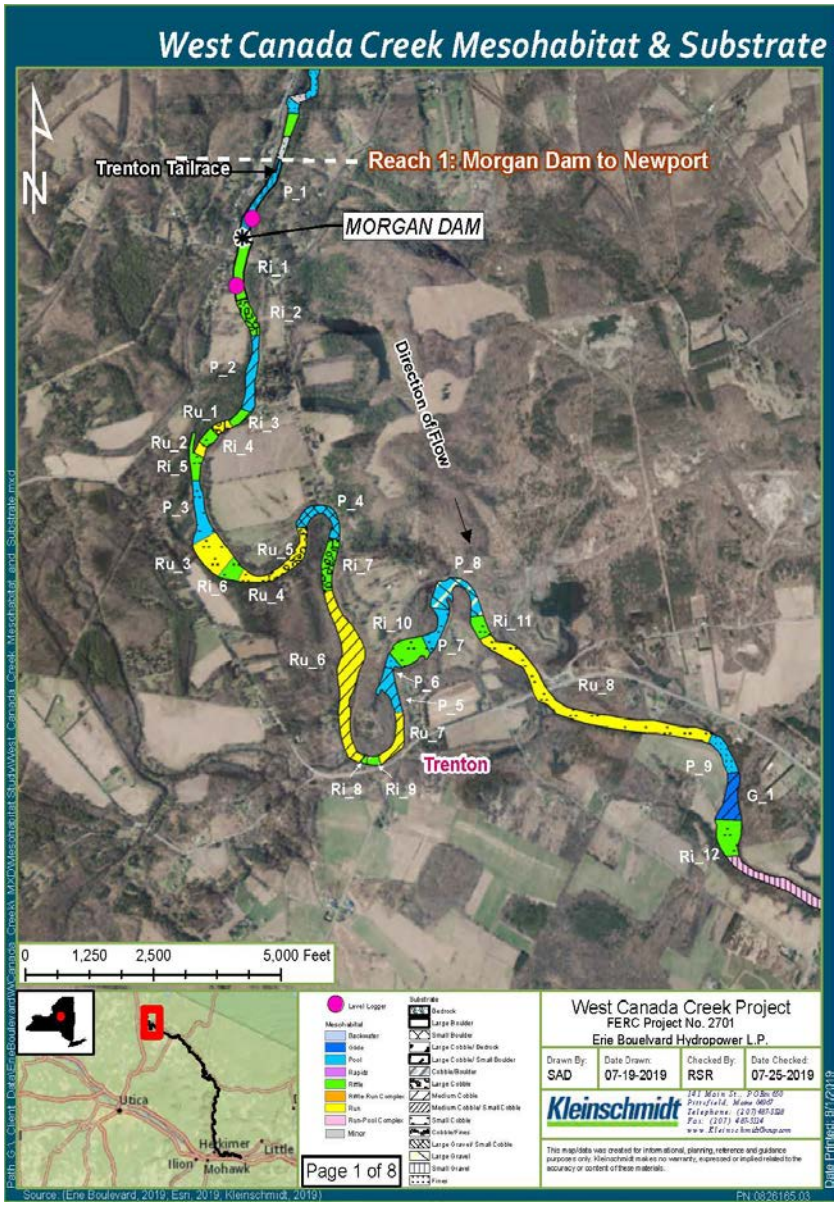
AQUATIC MESOHABITAT ASSESSMENT STUDY

Brookfield Renewable

Data Results - Mesohabitat Mapping

Relative Abundance of Mesohabitat Units in West Canada Creek Between Trenton Tailrace and the Mohawk River Confluence

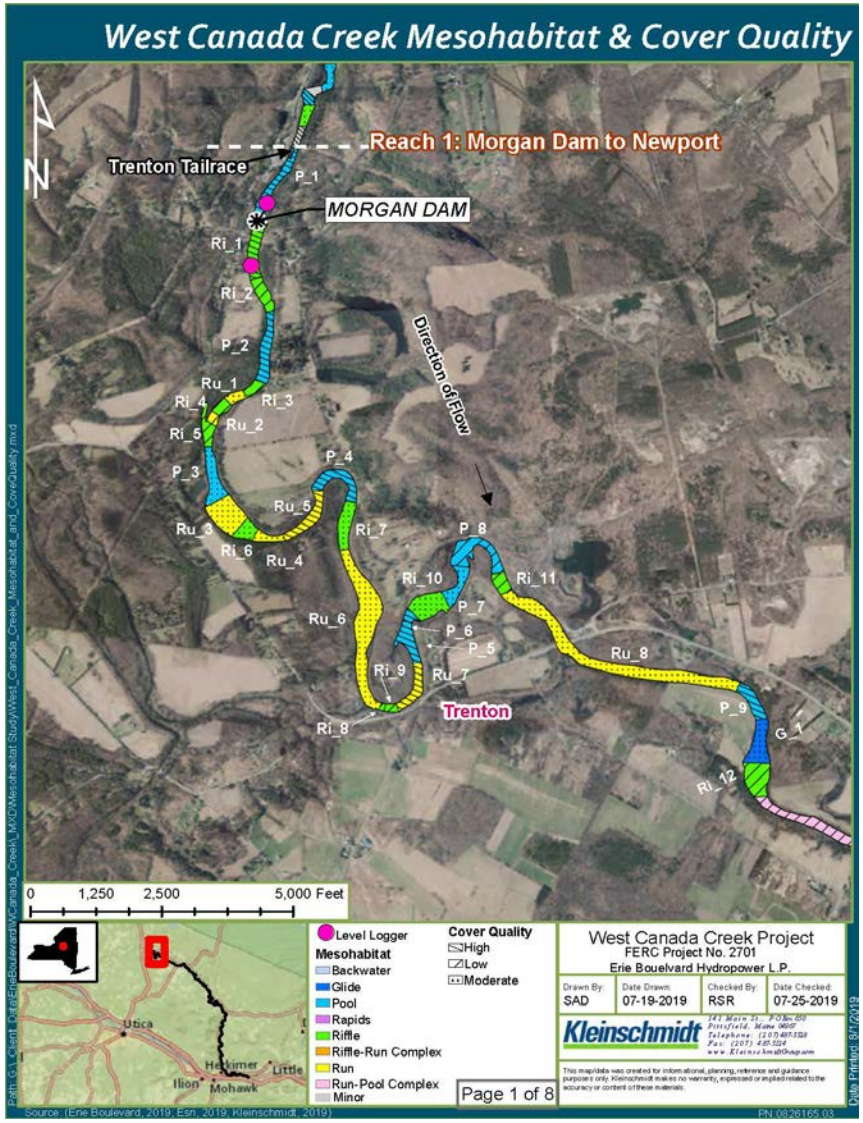
MESOHABITAT	LENGTH (FT)	PERCENT OF TOTAL
Riffle-Run Complex	51,216	29.7%
Run	42,768	24.8%
Riffle	29,568	17.1%
Pool	19,008	11.0%
Run-Pool Complex	14,256	8.3%
Rapids	8,448	4.9%
Backwater	5,280	3.1%
Glide	2,112	1.2%
Total	172,656	100%



Data Results - Mesohabitat Mapping

Relative Abundance of Dominant Substrates in West Canada Creek Between Trenton Tailrace and the Mohawk River Confluence

Substrate	Length (ft)	Percent of Total
Large Cobble	40,392	23.4%
Small Cobble	19,800	11.5%
Medium Cobble	16,632	9.6%
Small Boulder	16,368	9.5%
Large Boulder	15,312	8.9%
Small Gravel	14,256	8.3%
Small Cobble/ Gravel	13,728	8.0%
Fines	10,032	5.8%
Bedrock	7,392	4.3%
Large Cobble/ Small Boulder	5,280	3.1%
Cobble/Fines	4,224	2.4%
Cobble/Boulder	3,168	1.8%
Large Cobble/ Bedrock	2,640	1.5%
Unknown	1,584	0.9%
Large Gravel	1,320	0.8%
Medium Cobble/Small Cobble	528	0.3%
Total	172,656	100%

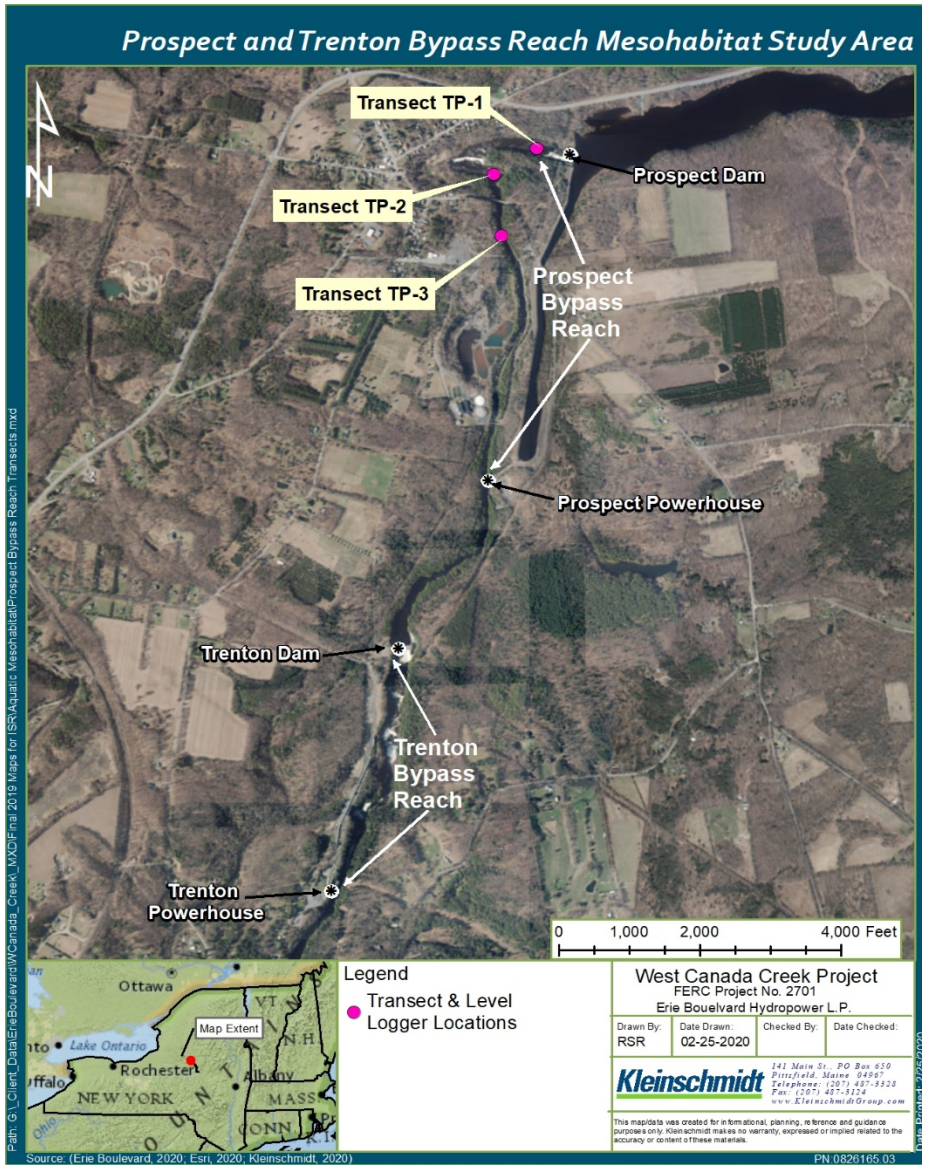


Brookfield Renewable

Data Results - Transects

Prospect Bypass Reach

- Transect TP-1 is in the riffle occupying the widened section of the Prospect bypass reach between the spillway and the falls.
- Transect TP-2 is in a riffle occupying the middle section of the bypass.
- Transect TP-3 is in a riffle occupying the lower section of the bypass reach in the steep-walled gorge segment between the Military Road Bridge and the confluence with the tailrace.

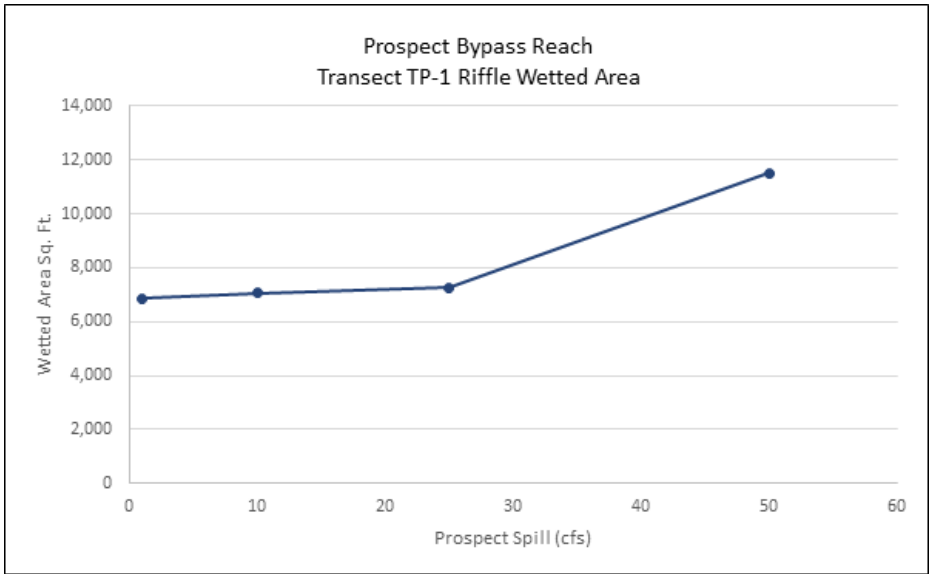


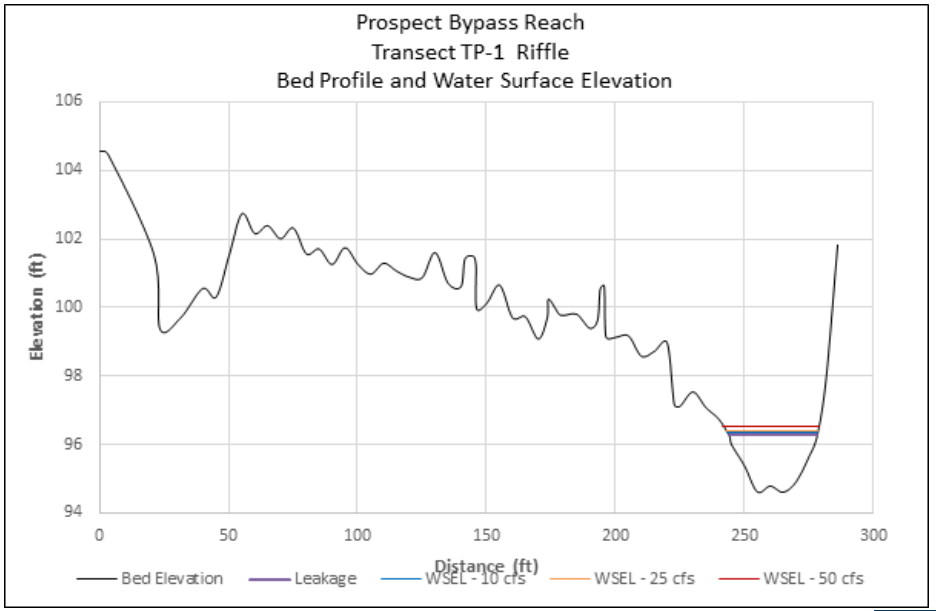
AQUATIC MESOHABITAT ASSESSMENT STUDY

Brookfield Renewable

Data Results – Transect TP-1 Riffle

Discharge (cfs)	Wetted Width (ft)	Linear Distance (ft)	Wetted Area (sq ft)
Leakage (1)	34	202	6,868
10	35	202	7,070
25	36	202	7,272
50	57	202	11,514



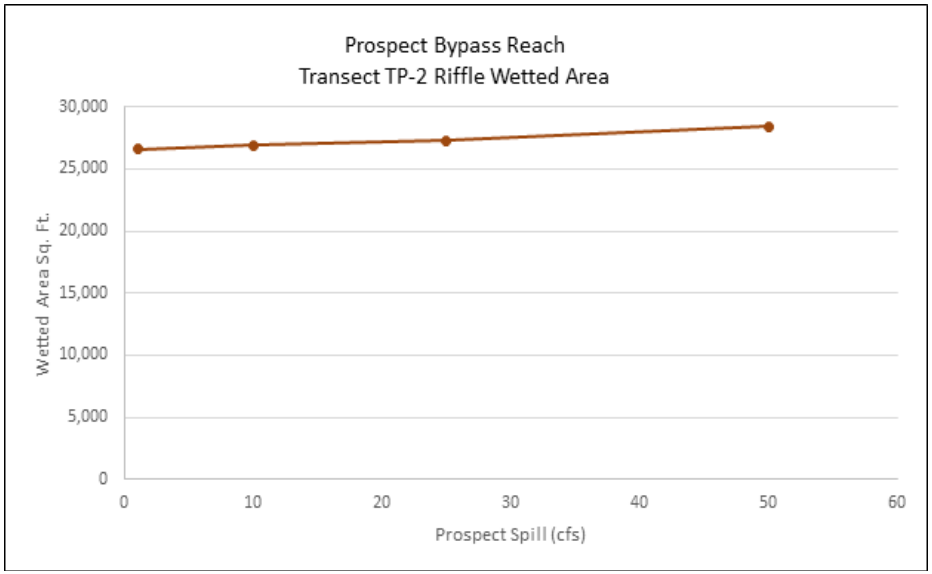


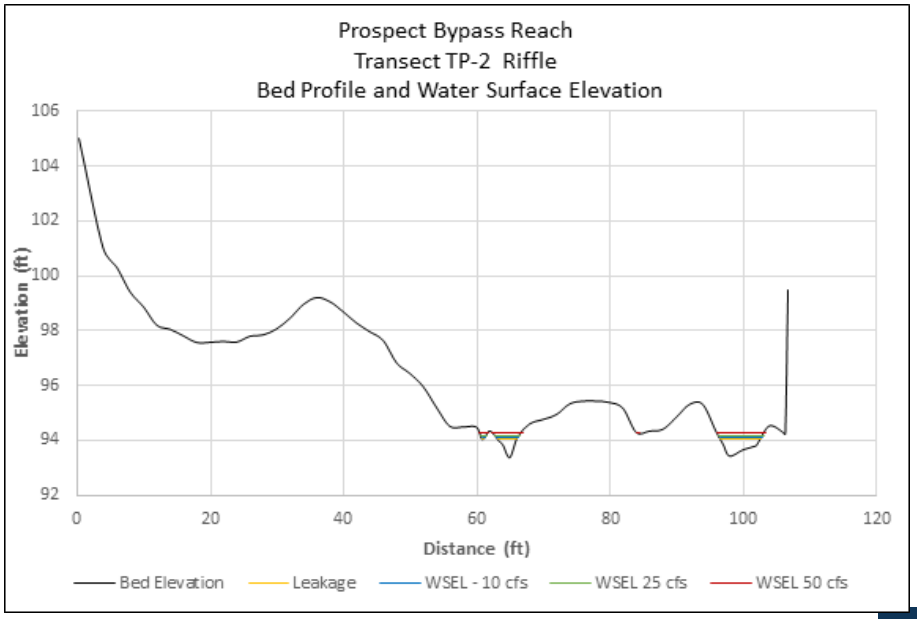
AQUATIC MESOHABITAT ASSESSMENT STUDY

Brookfield Renewable

Data Results – Transect TP-2 Riffle

Discharge (cfs)	Wetted Width (ft)	Linear Distance (ft)	Wetted Area (sq ft)
Leakage (1)	72	369	26,568
10	73	369	26,937
25	74	369	27,306
50	77	369	28,413



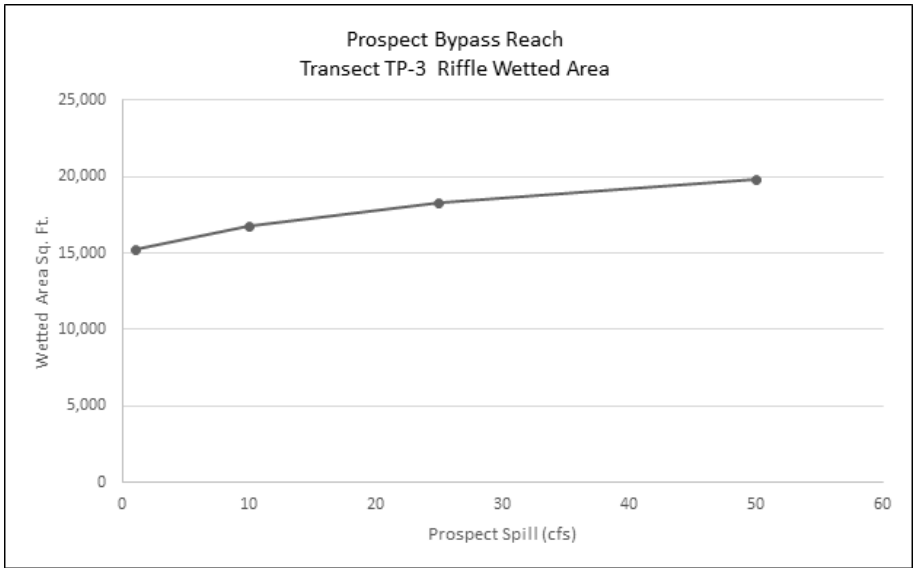


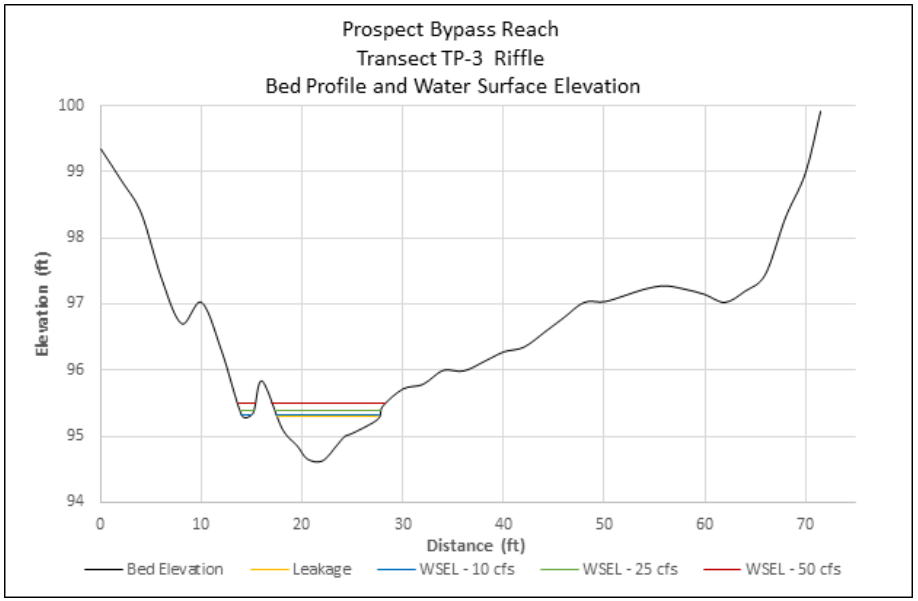
AQUATIC MESOHABITAT ASSESSMENT STUDY

Brookfield Renewable

Data Results – Transect TP-3 Riffle

Discharge (cfs)	Wetted Width (ft)	Linear Distance (ft)	Wetted Area (sq ft)
Leakage (3)	10	1,523	15,230
10	11	1,523	16,753
25	12	1,523	18,276
50	13	1,523	19,799



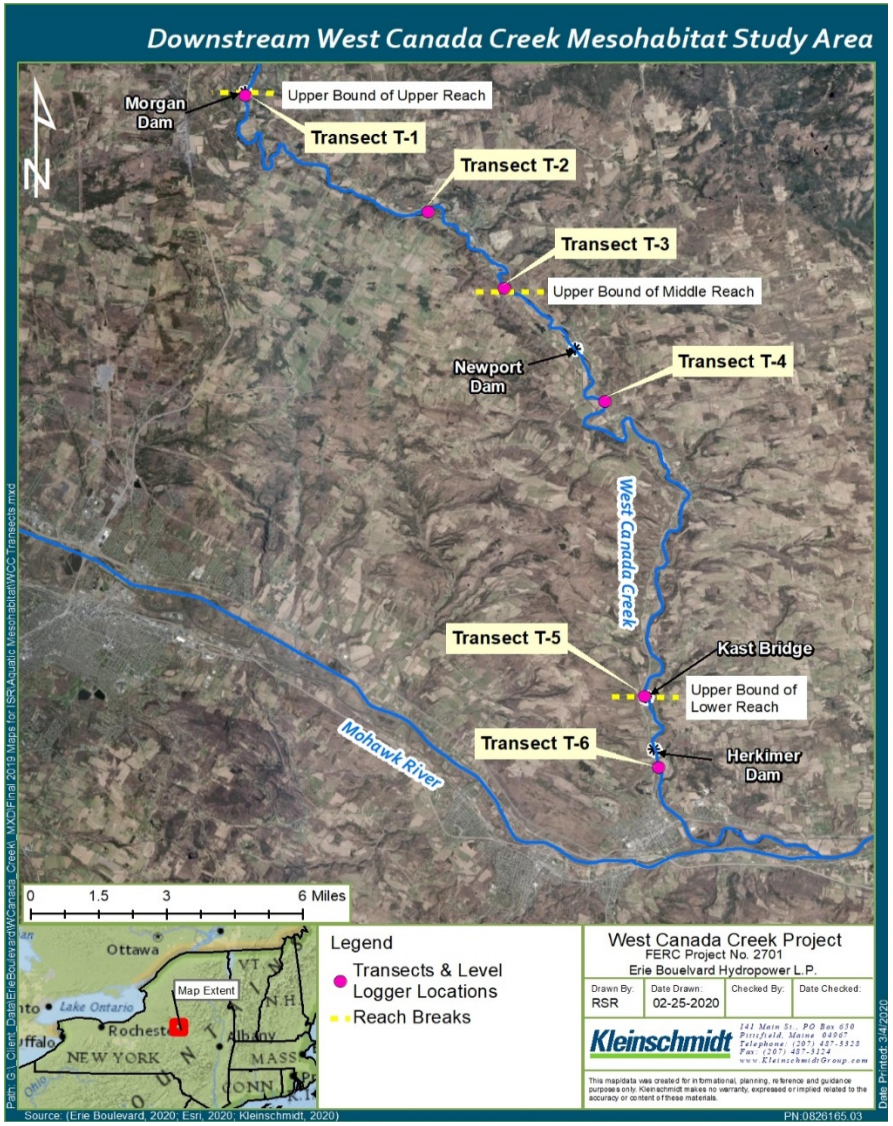


Brookfield Renewable

Data Results -Transects

Downstream West Canada Creek

- Upper Reach - Trenton Tailrace to Newport
  - Transect T-1 Riffle
  - Transect T-2 Run/Pool complex
- Middle Reach - Newport to Kast Bridge
  - Transect T-3 Riffle/Rapid
  - Transect T-4 Riffle
- Lower Reach - Kast Bridge to Mohawk River
  - Transect T-5 Riffle/Run Complex
  - Transect T-6 Low-gradient Run

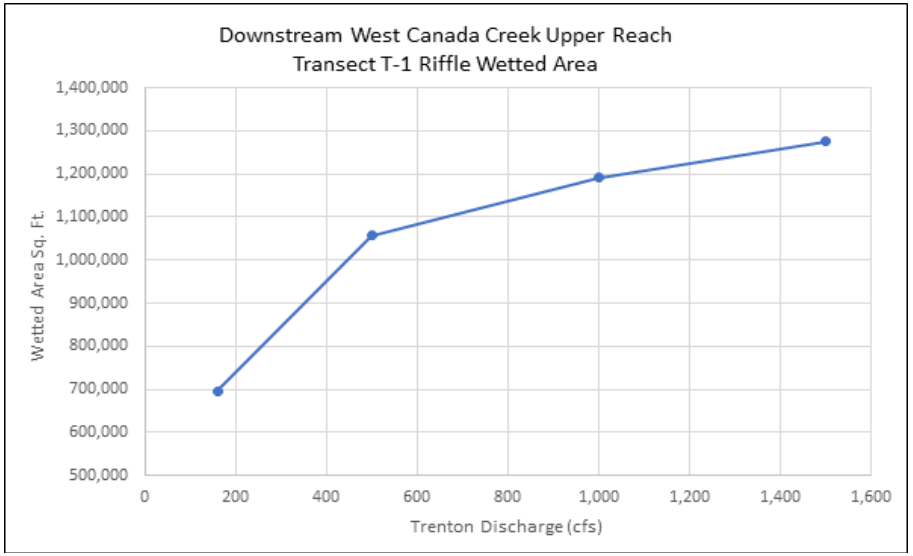


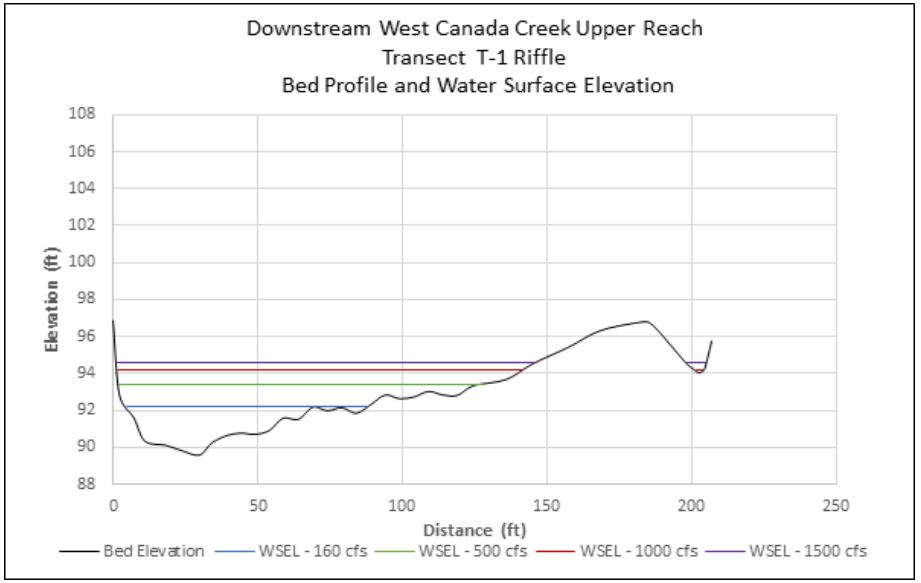
AQUATIC MESOHABITAT ASSESSMENT STUDY

Brookfield Renewable

Data Results – Transect T-1 Riffle

Discharge (cfs)	Wetted Width (ft)	Linear Distance (ft)	Wetted Area (sq ft)
160	83	8,393	696,619
500	126	8,393	1,057,518
1,000	142	8,393	1,191,806
1,500	152	8,393	1.275,736



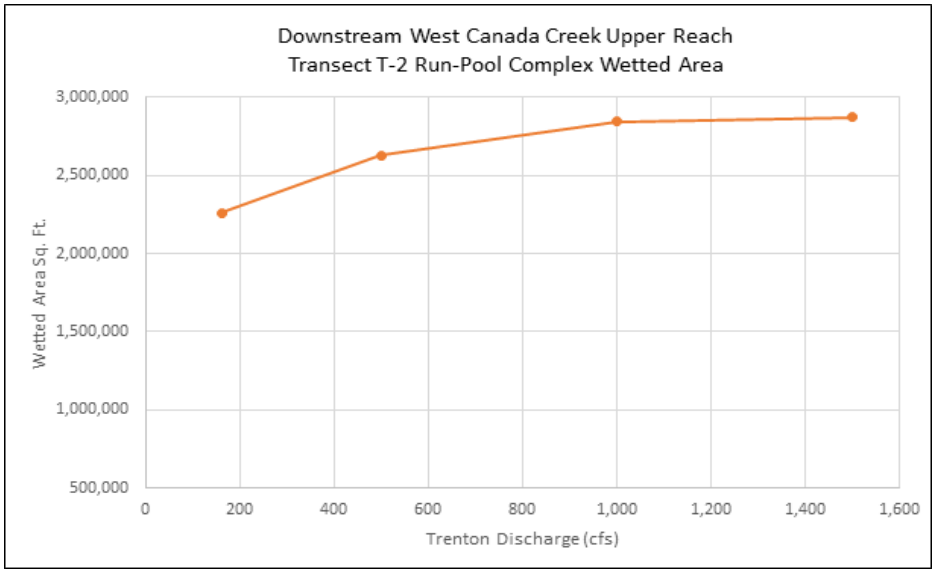


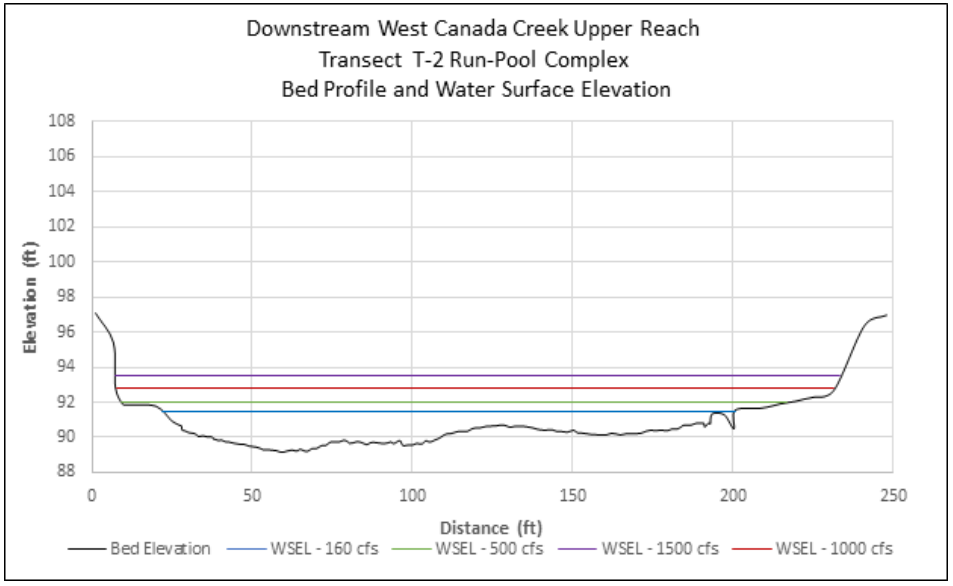
AQUATIC MESOHABITAT ASSESSMENT STUDY

Brookfield Renewable

Data Results – Transect T-2 Run/Pool Complex

Discharge (cfs)	Wetted Width (ft)	Linear Distance (ft)	Wetted Area (sq ft)
160	178	12,705	2,261,490
500	207	12,705	2, 629,935
1,000	224	12,705	2,845,920
1,500	226	12,705	2,871,330



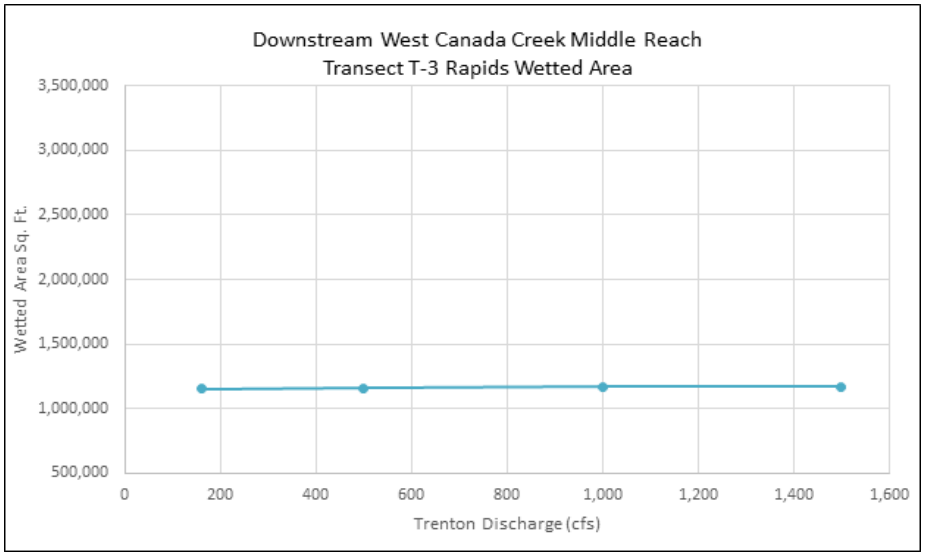


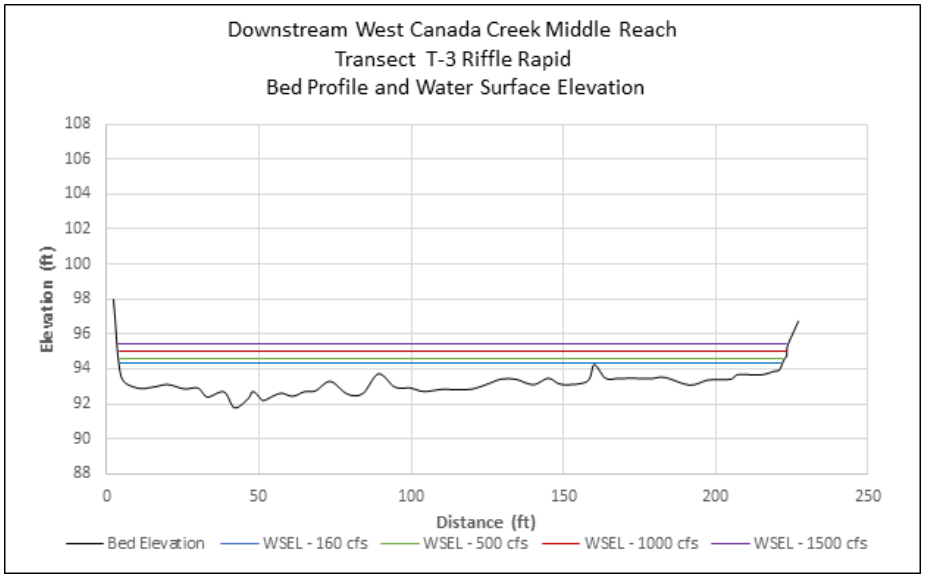
AQUATIC MESOHABITAT ASSESSMENT STUDY

Brookfield Renewable

Data Results – Transect T-3 Riffle/Rapid

Discharge (cfs)	Wetted Width (ft)	Linear Distance (ft)	Wetted Area (sq ft)
160	217	5,313	1,152,921
500	218	5,313	1,158,234
1,000	220	5,313	1,166,860
1,500	220	5,313	1,168,860



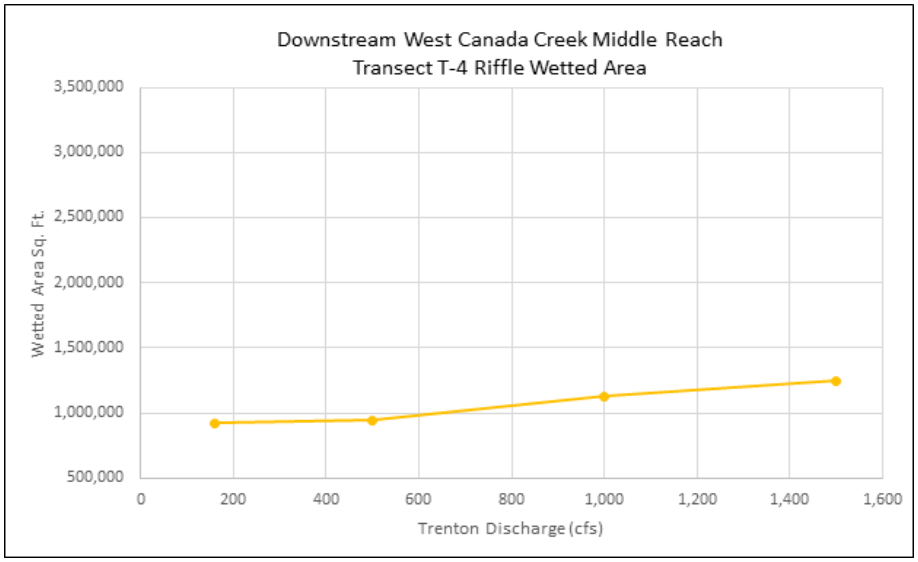


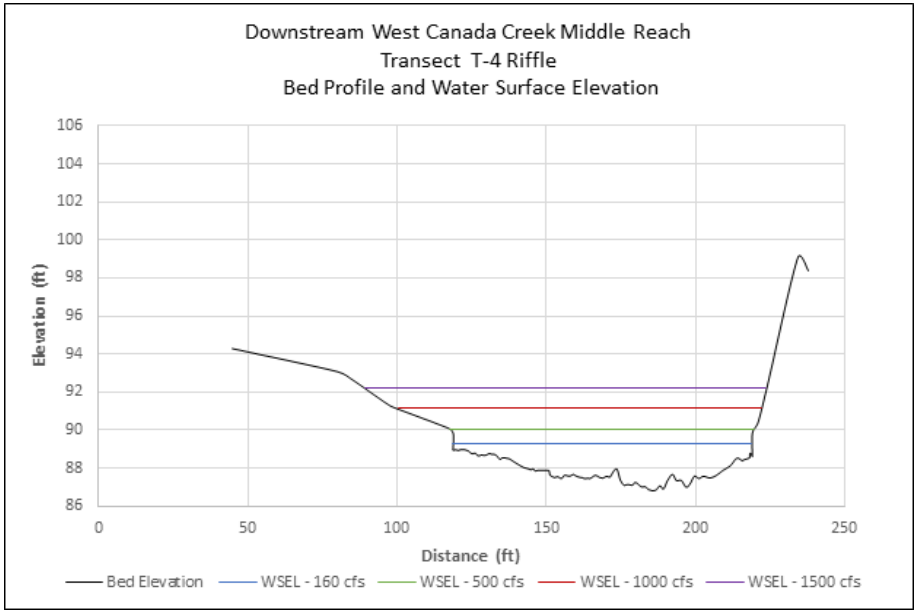
AQUATIC MESOHABITAT ASSESSMENT STUDY

Brookfield Renewable

Data Results – Transect T-4 Riffle

Discharge (cfs)	Wetted Width (ft)	Linear Distance (ft)	Wetted Area (sq ft)
160	100	9,246	924,600
500	102	9,246	943,092
1,000	122	9,246	1,128,012
1,500	135	9,246	1,248,210



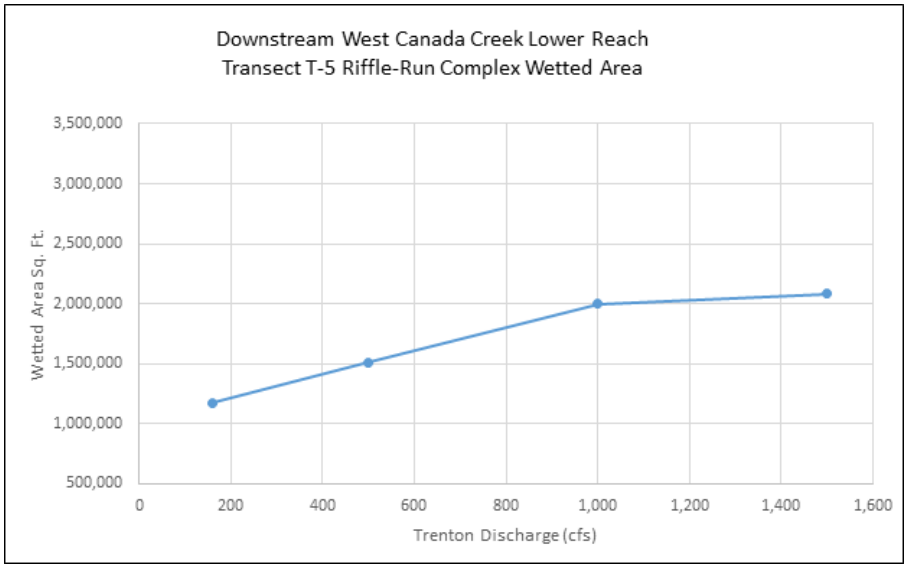


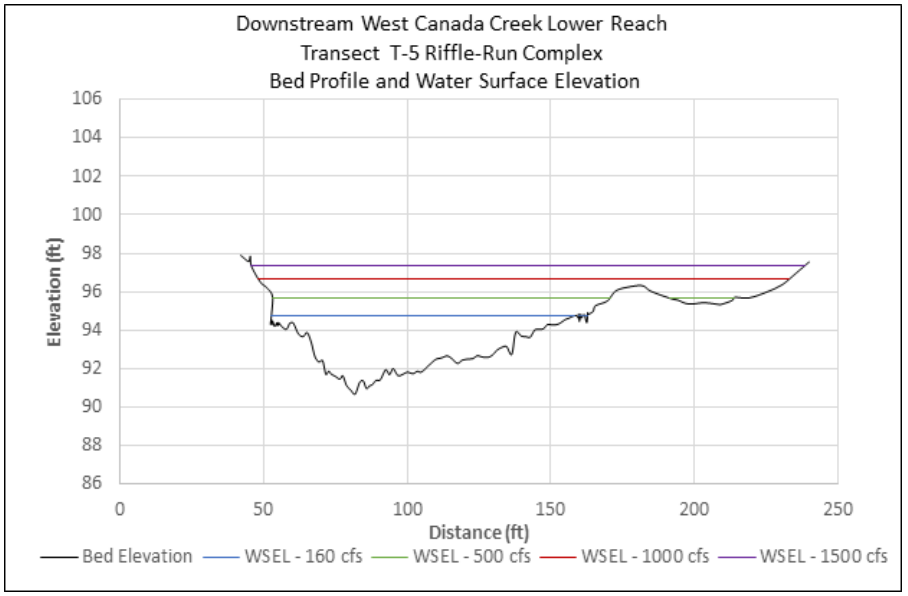
AQUATIC MESOHABITAT ASSESSMENT STUDY

Brookfield Renewable

Data Results – Transect T-5 Riffle/Run Complex

Discharge (cfs)	Wetted Width (ft)	Linear Distance (ft)	Wetted Area (sq ft)
160	109	10,804	1,177,636
500	140	10,804	1,512,560
1,000	185	10,804	1,998,740
1,500	193	10,804	2,085,172



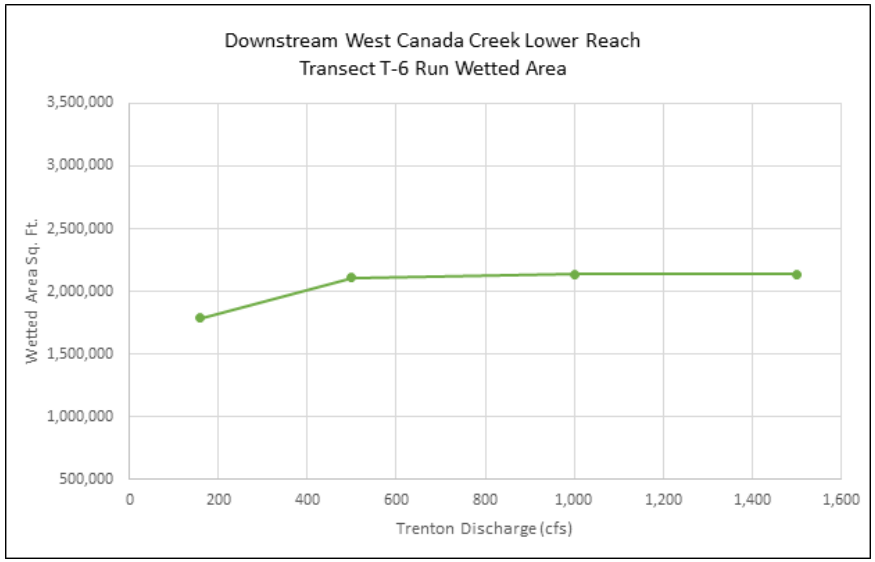


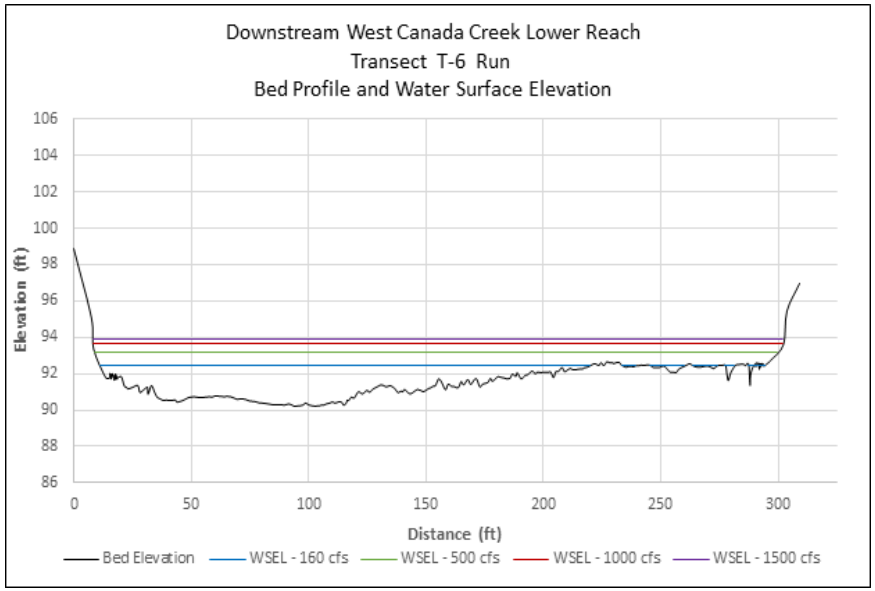
AQUATIC MESOHABITAT ASSESSMENT STUDY

Brookfield Renewable

Data Results – Transect T-6 Low-gradient Run

Discharge (cfs)	Wetted Width (ft)	Linear Distance (ft)	Wetted Area (sq ft)
160	246	7,273	1,789,158
500	290	7,273	2,109,170
1,000	294	7,273	2,138,262
1,500	294	7,273	2,138,262





Brookfield Renewable

Summary

Prospect Bypass Reach

- Upper Prospect bypass reach is heavily scoured and over-widened; over 300 feet wide, significantly wider than the downstream sections.
- Middle Prospect bypass reach channel geometry is controlled by vertical bedrock walls and is composed of small pools and short inter-connecting riffles at low flows. Depths and wetted area do not change significantly across the study flows.
- Lower Prospect bypass reach contains somewhat larger pools divided by cobble/gravel riffles. The greatest increase in depth and wetted area occurs between leakage and 10 cubic feet per second (cfs).

Downstream West Canada Creek

- Mesohabitat is dominated by runs, riffles and combinations of the two, as well as pools segments where aquatic habitat is less affected by flow changes.
- Riffle-rapid mesohabitat in the middle reach of West Canada Creek did not change in wetted area across the flow range.
- Wetted area and depth distributions observed in the flow range studies were affected by channel gradient and cross-sectional morphology characteristic of the various mesohabitats.
- The lower West Canada Creek run habitat is fully wetted even at the lowermost flow studied, and thus wetted area does not change at higher flows.

Brookfield Renewable

Data Results – Gaging of Trenton Minimum Flow Release Valve

- Automated minimum flow valve is designed to open should an unexpected outage occur (e.g., unit trip) such that a minimum flow (160 cfs) continues to be released downstream.
- Discharge measurements were collected using an M9 ADCP via transect line immediately downstream of Trenton tailrace.
- Measured automated minimum flow release valve discharge is 269.05 cfs and exceeds the required 160 cfs minimum flow.

Measurements	Trenton Discharge at 8.5 MW (cfs)	Combined Discharge (cfs) (Trenton 8.5 MW plus automated minimum flow release valve)	Calculated automated minimum flow release valve (cfs)
1	472	754	
2	486	739	
3	472	744	
Mean	477[1]	746[2]	269

[1] Standard Deviation 7.9
[2] Standard Deviation 7.4

Fish Assemblage Assessment

Brookfield Renewable

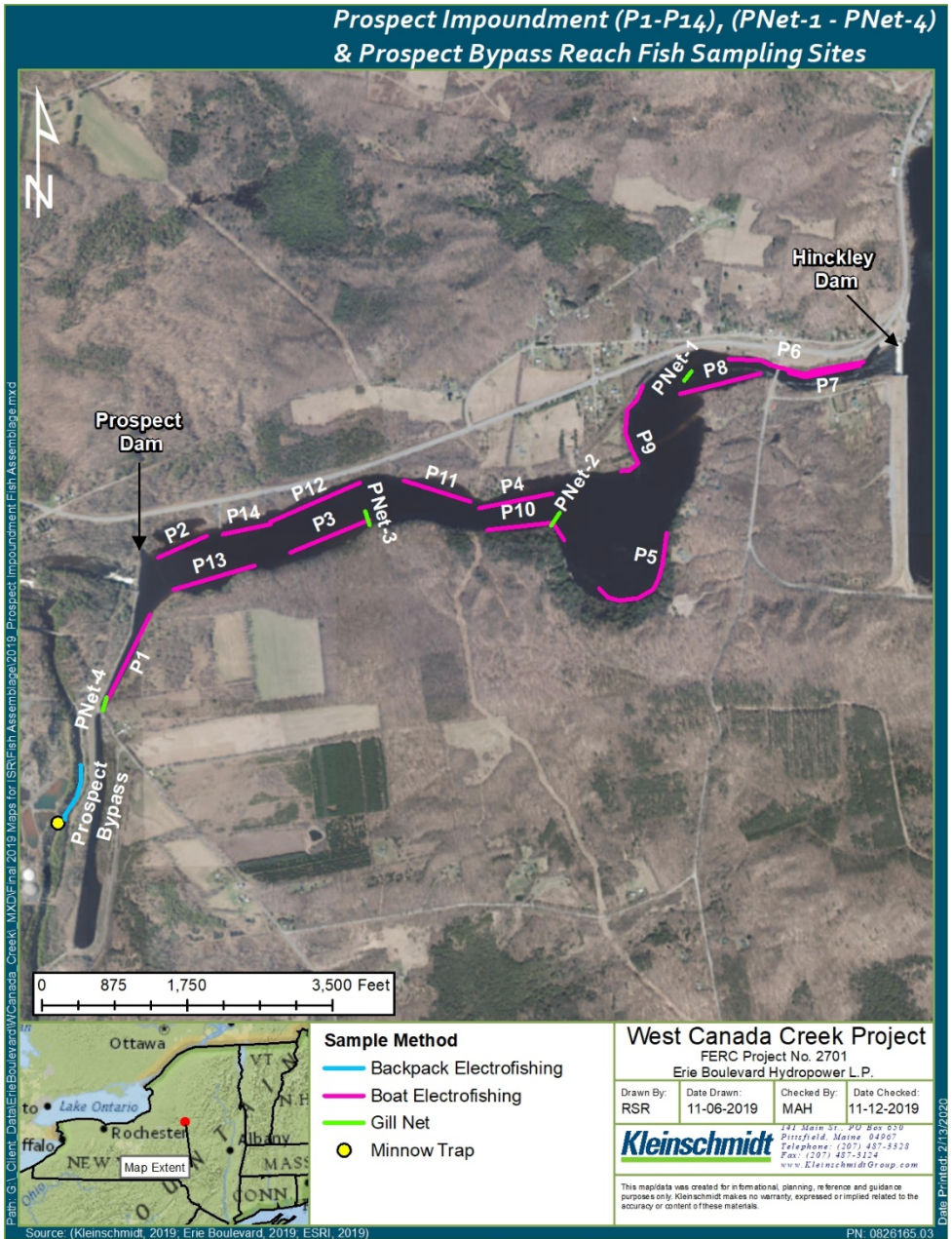
Study Purpose and Study Area

- Study Purpose
  - Provide information on the existing fishery resources in the study area including documenting species occurrence, distribution, and relative abundance of fishes in the Project impoundments.

- Study Area
  - Prospect sampling locations included 13 transects within the impoundment and one transect in the power canal.
  - Trenton impoundment included two experimental gill net sampling locations.
  - Downstream West Canada Creek sampling locations included:
    - One site immediately downstream of Morgan dam (Site 1);
    - One site downstream of Newport dam (Site 4);
    - Three locations at confluence of tributary streams but still in the main stem of the West Canada Creek; Mill Creek (Site 2A/2B), White Creek (Site 3A/3B), and Cold Brook (Site 5A/5B), and
    - One site near Kast Bridge (Site 6).

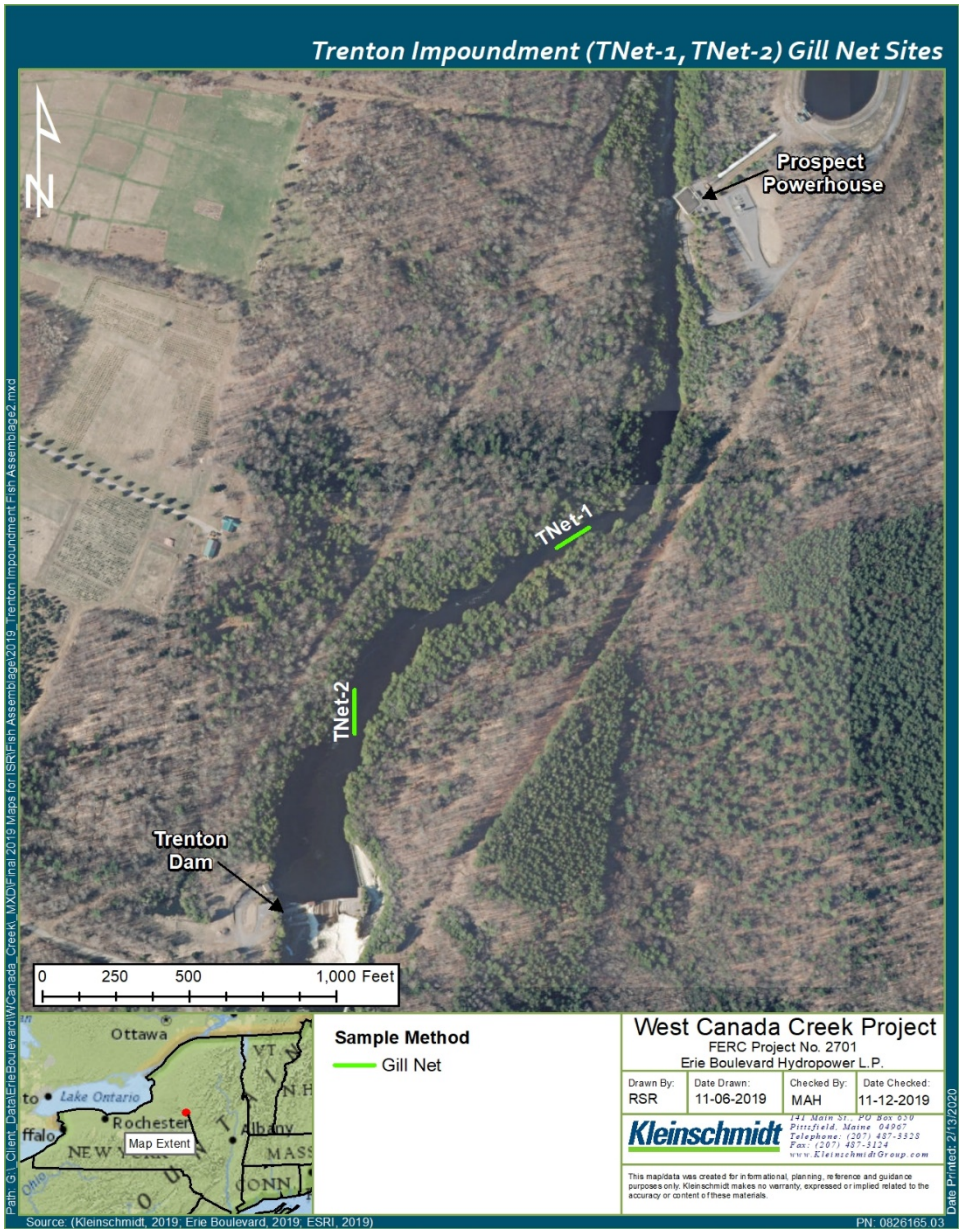
FISH ASSEMBLAGE ASSESSMENT

Brookfield Renewable



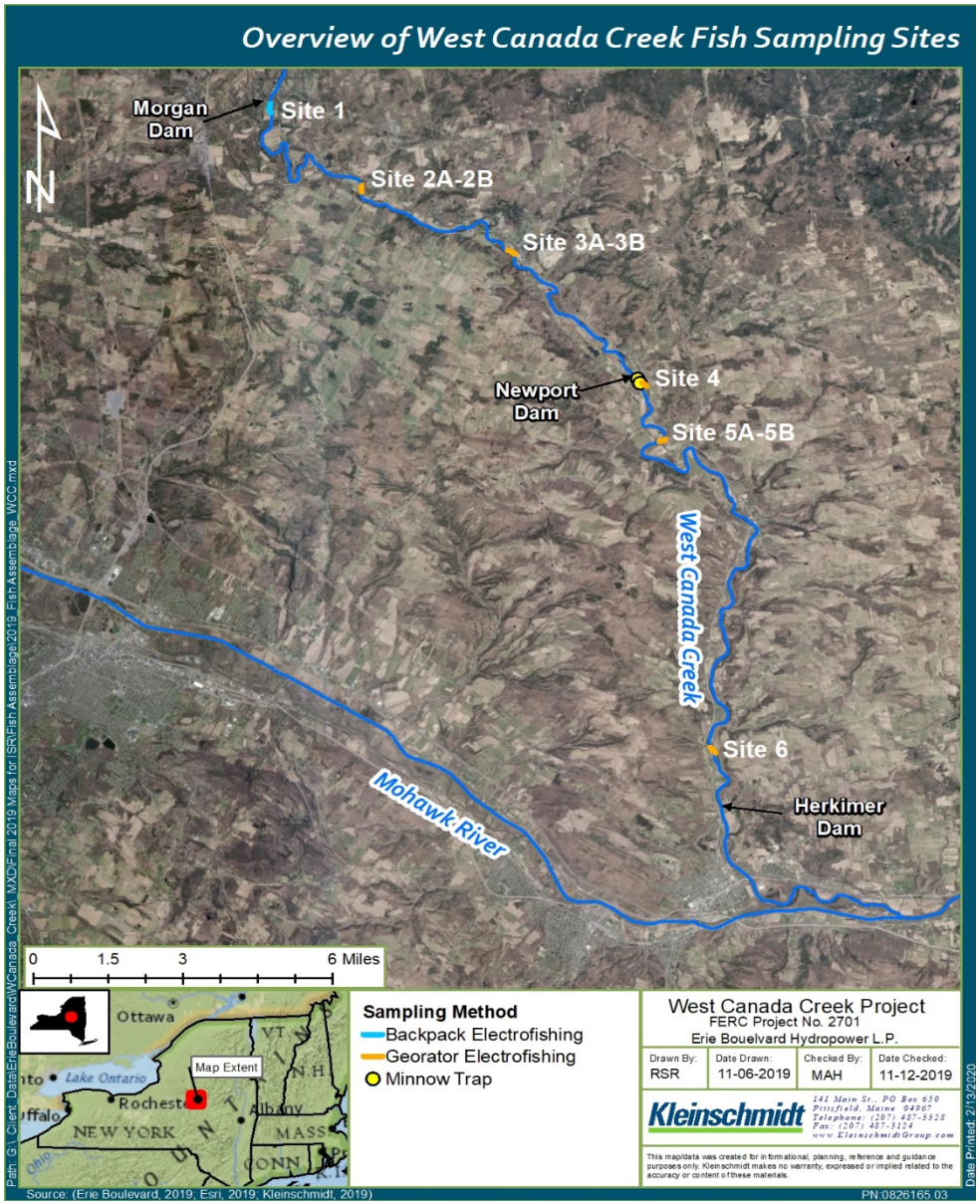
FISH ASSEMBLAGE ASSESSMENT

Brookfield Renewable



FISH ASSEMBLAGE ASSESSMENT

Brookfield Renewable



FISH ASSEMBLAGE ASSESSMENT

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Methods

- Fish surveys were conducted from September 9 through September 26, 2019.
- Water temperatures were cool enough to minimize handle stress, temperature was generally between 15 ˚C to 23 ˚C (59 ˚F to 73 ˚F) as recommended in the NYSDEC protocol.
- For the Prospect impoundment and power canal, sampling was stratified by depth where shallow areas (<6 feet) were sampled via boat electrofishing, and deeper areas were sampled via experimental gill nets.
- Shallow habitat was minimal in the Trenton impoundment due to its gorge-like character, as such sampling included experimental gill netting only.
- Prospect bypass reach and downstream reaches of West Canada Creek included electrofishing (backpack or georator) and minnow trap collection sampling methods.
- Supporting data were also collected for each sample site, including: location (GPS), sampling gear type, sampling effort (minutes or hours fished), average depth, water quality parameters (temperature, DO, pH and conductivity), predominant substrate, time of day, day of year, presence of cover, and proportion of vegetation cover.

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Data Collection

Electrofishing

- Boat electrofishing was conducted on September 25 and 26, 2019, during the daytime and at night at the Prospect impoundment, and in the Prospect canal during daytime hours only.
- Thirteen sites were sampled in the impoundment and one site in the power canal for a total of 14 sites and a total of 4.3 sampling hours.

Experimental Gill Netting

- Three experimental gill nets were deployed in the Prospect impoundment, one experimental gill net in the Prospect power canal on September 12, 2019.
- Two experimental gill nets were deployed in the Trenton impoundment on September 17, 2019.
- Water temperatures were within the range of a low of 18.1 ˚C (64.6 ˚F) to a high of 18.8 ˚C (65.8 ˚F).
- The experimental gill nets were set at depths ranging from 6 feet to 25 feet for approximately 24 hours.

Data Collection

Georator

- Georator electrofishing was conducted at 5 of the 6 downstream sites between September 9 and September 12, 2019, in an upstream direction by a four-person crew; an operator, two netters and a barge tender.
- The total time sampling (seconds fished) was recorded for each site.
- Sampling transects were generally 750 feet in length.
- At tributary sites (sites 2A/2B, 3A/3B, and 5A/5B), approximately 375 feet downstream (Site A) and 375 feet upstream (Site B) of the tributary.

Backpack

- Backpack electrofishing was employed at Site 1 in the West Canada Creek mainstem on September 10, 2019, and in the Prospect bypass reach on September 17, 2019.
- Backpack electrofishing was conducted in the same upstream direction as georator electrofishing.

Minnow Traps

- Minnow traps were deployed in the Prospect bypass reach on September 17, 2019, and at Site 4 in West Canada Creek on September 11, 2019, for a minimum of 24 hours.

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Variances from Approved Study Plan

Bag Seining

- FERC recommended Erie conduct bag seine sampling at a minimum of three sites within the Prospect impoundment.
- Beach seining was judged to not be effective due to conditions in the littoral zone.
- The boat electrofishing system successfully navigated these areas and collected a range of fish species and sizes that likely would have been detected with seining gear.

Backpack Electrofishing

- FERC recommended Erie conduct backpack electrofishing surveys in the Prospect bypass reach and downstream West Canada Creek.
- Following field reconnaissance of the downstream sites and consultation with USFWS and NYSDEC, the use of a more powerful electrofisher (georator) was determined to provide better collection results where the georator system could be implemented.

Water Quality Data

- FERC recommended that Erie collect temperature and dissolved oxygen data at various depths in the Prospect impoundment prior to setting the experimental gill nets.
- During the fish assemblage study, water quality data were collected at mid-depth during the survey. Monthly water quality profiles were collected as part of the Water Quality Study.

FISH ASSEMBLAGE ASSESSMENT

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Data Results – Total Catch

- During the sampling period, a total of 2,801 fishes were collected, representing 29 species.
  - Prospect Impoundment – 52.7% of catch
  - Prospect Bypass Reach – 4.3% of total Catch
  - Trenton Impoundment - <0.04%
  - Lower WCC – 43%

Scientific Name	Common Name
Fundulus diaphanus	Banded Killifish
Rhinichthys atratulus	Eastern Blacknose Dace
Lepomis macrochirus	Bluegill
Pimephales notatus	Bluntnose Minnow
Culaea inconstans	Brook Stickleback
Salvelinus fontinalis	Brook Trout
Ameiurus nebulosus	Brown Bullhead
Salmo trutta	Brown Trout
Esox niger	Chain Pickerel
Luxilus cornutus	Common Shiner
Semotilus atromaculatus	Creek Chub
Exoglossum maxillingua	Cutlip Minnow
Semotilus corporalis	Fallfish
Etheostoma flabellare	Fantail Darter
Notemigonus crysoleucas	Golden Shiner
Percina caprodes	Common Logperch
Rhinichthys cataractae	Longnose Dace
Notropis volucellus	Mimic Shiner
Opsopoeodus emiliae	Pugnose Minnow
Lepomis gibbosus	Pumpkinseed
Ambloplites rupestris	Rock Bass
Cottus cognatus	Slimy Sculpin
Micropterus dolomieu	Smallmouth Bass
Notropis hudsonius	Spottail Shiner
Etheostoma olmstedi	Tessellated Darter
Percopsis omiscomaycus	Trout-Perch
Catostomus commersonii	White Sucker
Ameiurus natalis	Yellow Bullhead
Perca flavescens	Yellow Perch

FISH ASSEMBLAGE ASSESSMENT

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Data Results – Prospect Impoundment

- Site P1 was located in the Prospect power canal, while the other sites were distributed throughout the impoundment.
- Sites P1 through P7 were sampled during day-time hours, while Sites P8 through P14 were nighttime samples.
- During the sampling period, boat electrofishing captured 1,471 fish, representing 11 species.
- During day-time samples 579 fish were collected, while 892 fish were collected at night.
- The average CPUE for Prospect Impoundment boat electrofishing was 5.7 fish per minute.

Sampling Site	Sampling Transect Length (ft)	Total No. of Fish	Effort (Minutes)	CPUE (Fish Per Minute)
P1	1,273.3	26	19.0	1.4
P2	641.2	83	18.2	4.6
P3	1,033.5	104	18.4	5.6
P4	898.0	71	18.6	3.8
P5	1,442.1	74	19.5	3.8
P6	1,668.4	127	17.6	7.2
P7	873.4	94	19.3	4.9
P8	1,002.2	195	19.1	10.2
P9	1,266.9	134	18.9	7.1
P10	1,045.3	85	18.6	4.6
P11	849.9	164	18.3	9.0
P12	1,180.4	149	18.6	8.0
P13	1,022.7	77	17.3	4.5
P14	594.0	88	17.2	5.1
Average	1,056.5	105.1	18.5	5.7

FISH ASSEMBLAGE ASSESSMENT

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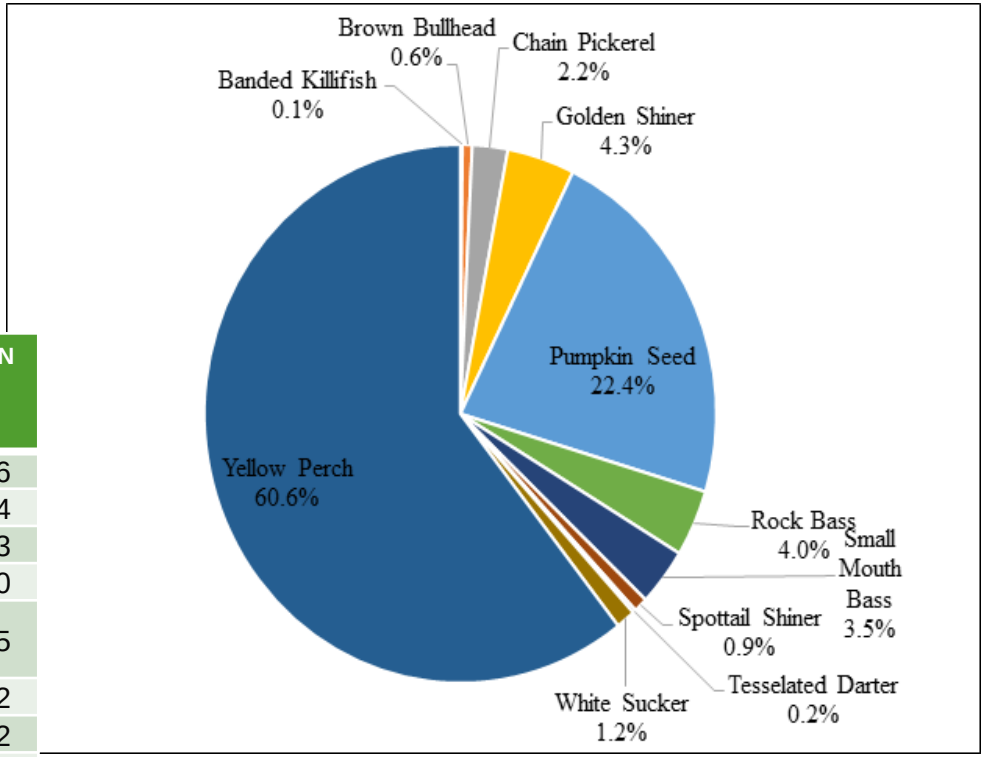
Data Results – Prospect Impoundment

- Yellow Perch and Pumpkinseed Sunfish were two most dominate species (83.5 percent of the catch).



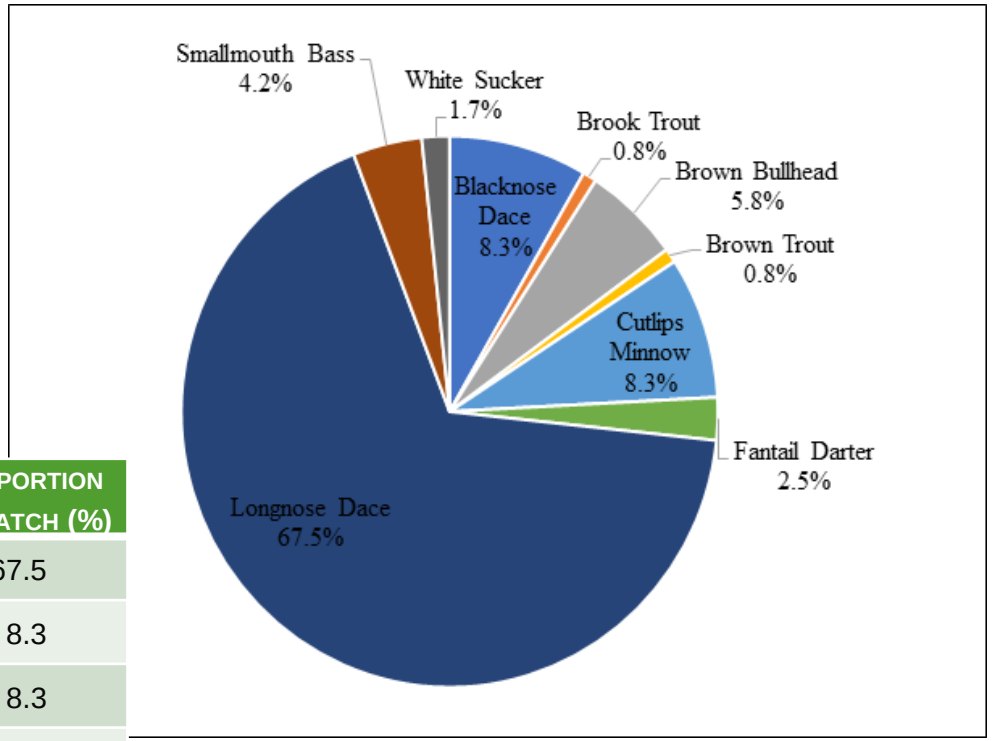
Species	No. of Fish	Avg. Weight (g)	Proportion of Catch (%)
Yellow Perch	894	11.2	60.6
Pumpkinseed	331	12.4	22.4
Golden Shiner	63	15.3	4.3
Rock Bass	57	63.9	4.0
Smallmouth Bass	51	93.8	3.5
Chain Pickerel	33	142.0	2.2
White Sucker	15	786.8	1.2
Spottail Shiner	13	8.7	0.9
Brown Bullhead	9	287.4	0.6
Tessellated Darter	3	3.3	0.2
Banded Killifish	2	3.5	0.1
Total	1,471		100

FISH ASSEMBLAGE ASSESSMENT

Brookfield Renewable

Data Results – Prospect Bypass Reach

- A total of 120 fish were collected with a CPUE of 3.8 fish per minute.
- Longnose Dace were the most abundant species, approximately 68 percent (n = 81) of the catch.
- A Brook Trout (TL 190 mm) and a Brown Trout (TL 220 mm) were collected



Species	No. of Fish	Average Weight (g)	Proportion of Catch (%)
Longnose Dace	81	4.5	67.5
Blacknose Dace	10	1.2	8.3
Cutlip Minnow	10	11.2	8.3
Brown Bullhead	7	18.4	5.8
Smallmouth Bass	5	9.8	4.2
Fantail Darter	3	2.7	2.5
White Sucker	2	50.5	1.7
Brook Trout[1]	1	56.0	0.8
Brown Trout[2]	1	84.0	0.8
Total	120		100

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Data Results – Trenton Impoundment

- Two nets were deployed from the shore, extending to depths of approximately 25 feet.
- The net-set time ranged from 24 hours, to 25 hours and 11 minutes.
- Experimental gill netting resulted in the catch of a single Rock Bass in TNet-1, with a length of 205 mm and weight of 182g.
- The CPUE was 0.042 fish per hour gill netting in Trenton Impoundment.

FISH ASSEMBLAGE ASSESSMENT

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Data Results – Lower West Canada Creek

Sampling Effort

- The average number of fishes captured at each site was 201 fishes, with an average CPUE of 4.6 fish per minute.
- The average length of transects was 843.3-feet-long, with the longest transect at site 1 (1,048.5 feet) and the shortest at Site 4 (639.8 feet) with a total sample length of nearly a mile (5,059.4 feet).

Site No.	Sampling Transect Length (ft)	Site Name	Total No. of Fish	Effort (minutes)	CPUE (Fish Per minute)
1	1,048.5	Downstream of Morgan Dam	52	45.4	1.1
2B	636.6	Upstream of Mill Creek	77	12.4	6.2
2A	151.6	Downstream of Mill Creek	194	28.3	6.9
Site 2 Total	788.2		271	40.6	6.7
3B	388.7	Upstream of Cold Brook	78	16.0	4.9
3A	584.5	Downstream of Cold Brook	149	34.3	4.3
Site 3 Total	973.2		227	50.3	4.5
4	639.8	Downstream of Newport Dam	412	46.0	9.0
5B	488.4	Upstream of White Creek	96	18.4	5.2
5A	291.5	Downstream of White Creek	9	18.6	0.5
Site 5 Total	779.9		105	36.9	2.8
6	829.9	Kast Bridge	138	42.7	3.2
Total	5,059.5		1,205	262.1	
Average	843.3		201	43.7	4.6

FISH ASSEMBLAGE ASSESSMENT

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Data Results – Lower West Canada Creek

Species Caught

- Overall, 1,205 fishes were caught representing 25 species.
- The Cutlip Minnows, which represented 23.9 percent (n = 289) of the catch, followed by the Common Shiner 12 percent (n = 148), Fantail Darters and Tessellated Darters (10 percent each, n = 123 each).
- The survey included four species not previously documented including; Banded Killifish, Mimic Shiner, Yellow Bullhead and Pugnose Minnow.

Species	No. Fish	Proportion of Species (%)
Cutlip Minnow	289	24.0
Common Shiner	148	12.3
Fantail Darter	123	10.2
Tessellated Darter	123	10.2
Longnose Dace	93	7.7
White Sucker	86	7.1
Blacknose Dace	71	5.9
Bluntnose Minnow	63	5.2
Smallmouth Bass	59	4.9
Yellow Bullhead	30	2.5
Fallfish	29	2.4
Creek Chub	15	1.2
Slimy Sculpin	15	1.2
Brown Bullhead	13	1.1
Brown Trout	12	1.0
Mimic Shiner	9	0.7
Trout Perch	8	0.7
Rock Bass	6	0.5
Brook Stickleback	3	0.2
Bluegill	2	0.2
Brook Trout	2	0.2
Pugnose Minnow	2	0.2
Yellow Perch	2	0.2
Log Perch	1	0.1
Spottail Shiner	1	0.1
Total	1,205	100

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Fish Entrainment and Turbine Passage Survival Assessment

Fish Entrainment and Turbine Passage Survival Assessment

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Study Purpose and Study Area

- Study Purpose
  - Assess the potential effects of Project operations on fish entrainment and turbine strike mortality.
- Study Area
  - Prospect and Trenton impoundments and the Prospect power canal.

Methodology

The desktop assessment included the following steps:

- Development of estimates of fish entrainment rates based upon applicable entrainment study data from existing literature;
- Development of total annual entrainment at the Project based upon Project-specific operational data combined with estimated entrainment rates;
- Development of estimates of species and length class composition of potentially entrained fishes at the Project based upon available site-specific sampling data;
- Development of physical and biological filters used to screen the total annual entrainment estimate;
- Development of estimated turbine mortality based on existing literature; and
- Estimation of turbine mortality fish losses computed by applying site specific turbine mortality rates to annual entrainment estimates.

Fish Entrainment and Turbine Passage Survival Assessment

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Variances from Approved Study Plan

- The Fish Entrainment and Turbine Passage Survival Assessment was implemented according to Erie's RSP and the FERC SPD.

Methodology

Development of Entrainment Database and Entrainment Rate

- Existing entrainment data was reviewed to establish a database of surrogate studies at sites similar to the Project.
- The annual entrainment rates for all projects in the FERC entrainment study database were reported in fish per hour using 100 percent of the plant capacity.
- These hourly entrainment rates were converted to fish per million cubic feet (MCF) using the reported maximum plant capacity for each site.
- Entrainment rates expressed as fish per volume of water allow for the comparison of entrainment at different sites despite varying characteristics, such as plant hydraulic capacity.
- Once an entrainment rate, in fish per MCF, was established for each site, the rates were averaged together to produce an estimated annual entrainment rate for the Project.

Methodology

Estimation of Total Annual Entrainment

- Annual estimates of total entrainment (entrainment abundance) were developed for the Project by multiplying the annual entrainment rate by the estimated monthly generation flows.
- Monthly generation flow estimates were derived using mean monthly values from the USGS gage at Kast Bridge.
- Flows were limited to the maximum powerhouse flow of 1,855 cfs for the Prospect Development and 1,425 cfs for the Trenton Development.
- The monthly flow in cfs was then converted to the volume of water expected to pass through the powerhouse in MCF.
- This approach is very conservative and assumes that the Project operates at maximum capacity with no turbine outages during the year.

Methodology

Species Length and Composition

- Site-specific data from the 2019 electrofishing efforts at the Prospect impoundment were deemed the most appropriate data for characterizing typical species and length class composition at the Project.
- For the purposed of the Trenton entrainment analysis, the use of fish data collected in the Prospect impoundment is likely to result in an over estimation as there are more fishes and available habitat in the Prospect impoundment when compared to the Trenton impoundment.
- Lengths for these fish were estimated using species specific length weight relationships (Schneider et al. 2000).
- Relative abundance from this data was applied to the annual entrainment estimates to develop annual estimates of fish species entrainment at the Project.

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Methodology

Entrainment Screening

- The expected approach velocity of water into the Project intakes was calculated based on trash rack spacing (inches), intake area (ft²), and the maximum flow capacity (cfs).
- After using Project specific parameters to calculate the approach velocity of water (feet per second or fps) at the intakes, velocity was compared to the swimming speeds of fish that could potentially encounter the intakes.
- Fish swimming speeds were estimated using methods described in a USFWS bulletin, a conservative estimate of a fishes sustained swimming speed as 3 times its body length.
- The expected swimming speed of fish at the Project using the following equation:

  Swimming Speed (ft/s) = Fish Length (ft) × 3 body lengths per second (ft/s).

Prospect Development Intake and Trashrack Dimensions	
Intake Height (ft)	29.0
Intake Width (ft)	30.0
Intake Area (ft²)	870.0
Trash Rack Bar Spacing (in)	3.6
Trash Rack Bar Thickness (in)	0.4
Bar Percentage	0.1
Bar Area (ft²)	91.2
Free Area (ft²)	778.8

Trenton Development Intake and Trashrack Dimensions	
Intake Height (ft)	25.0
Intake Width (ft)	20.0
Intake Area (ft²)	500.0
Trash Rack Bar Spacing (in)	2.0
Trash Rack Bar Thickness (in)	0.4
Bar Percentage	0.2
Bar Area (ft²)	95.0
Free Area (ft²)	405.0

Fish Entrainment and Turbine Passage Survival Assessment

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Methodology

Fish Impingement

- The skull is the least compressible part of the fish body and provides a conservative index of what size fish the trashrack may exclude.
- Interorbital widths were calculated using the relationships of a fish's total length, standard length, and interorbital width as defined in Smith (1985).

Turbine Mortality Rates and Estimation of Total Fish Mortality

- Mortality estimates were calculated using methods defined in Franke et al (1997) equations for calculating the probability that a turbine blade would strike an entrained fish based on Project specific turbine parameters.
- Mortality rates for each length class at the Project were calculated using the longest fish in a length class.
- The mortality rate for each length class were applied to the estimated number of fish entrained annually for each length class to obtain an estimate of annual Project induced mortality.

Prospect Turbine Characteristics	Generation
Turbine Type	Francis
No. of Blades	14
Runner Diameter (ft.)	8
RPM	180
Head (ft.)	135
Hydraulic Capacity (cfs)	1855

Trenton Turbine Characteristics	Generation
Turbine Type	Francis
No. of Blades	13
Runner Diameter (ft.)	5
RPM	327
Head (ft.)	255
Hydraulic Capacity (cfs)	475

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Results – Prospect Development

- The monthly flows were multiplied by the annual entrainment rate calculated for the Prospect Development estimated entrainment rate of 1.55 fish per MCF.
- This calculation estimated annual entrainment at 52,211 fish per year at the Prospect Development prior to the application of biological and physical filters that influence entrainment.
- The calculated approach velocity at the maximum station hydraulic capacity is 2.13 ft/s. The calculated approach velocity was then compared to the calculated swimming speed of fish for each length class.
- The swimming speed calculations show that fish greater than 8 inches in length should be able escape flow entering the Project intake; therefore, fish larger than 8 inches were not included in the entrainment estimate.
- No fish within the electrofishing dataset collected at the Prospect development were found to be too wide to fit through the 3 5/8 in. width trash racks.
- Estimated annual mortality rates across correlation factors of 0.10, 0.15, and 0.20 range from 1,059 to 2,117 fish per year at the Prospect Development.

Results – Trenton Development

- The monthly flows were multiplied by the annual entrainment rate calculated for the Trenton Development estimated entrainment rate of 2.0 fish per MCF.
- This calculation estimated annual entrainment at 65,125 fish per year at the Trenton Development prior to the application of biological and physical filters that influence entrainment.
- The calculated approach velocity at the maximum station hydraulic capacity is 2.85 ft/s. The calculated approach velocity was then compared to the calculated swimming speed of fish for each length class.
- The swimming speed calculations show that fish greater than 11 inches in length should be able to escape flow entering the Project intake, therefore fish larger than 11 inches were not included in the entrainment estimate.
- Only four white suckers within the electrofishing dataset collected at the Prospect Development were found to be too wide to fit through the trash racks. All four fish were greater than 11 inches in length, and should be capable of out swimming intake velocities.
- Estimated annual mortality rates across correlation factors of 0.10, 0.15, and 0.20 range from 3,333 to 6,665 fish per year at the Trenton Development.

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Results – Summary

- The magnitude of the average annual fish entrainment estimate presented in this report, and most desktop entrainment studies, is most likely an overestimate of the actual entrainment that typically occurs at the Project.
- The method used to determine Project operations was based on “ideal” conditions and assumes the Project is always available to operate at maximum capacity. The ability to account for times when the Project is not operating, or operating at a reduced flow, would further reduce entrainment and mortality estimates.
- Over 75 percent of the estimated number of fish potentially entrained and lost to turbine mortality are pumpkinseed, a species which has fairly high fecundity, capable of producing thousands of offspring per individual female each season.
- Given the results of this analysis, it is reasonable to assume the operation of the Project will have little effect on the health of the reservoir fishery.

Water Quality Study

WATER QUALITY STUDY

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Study Purpose and Study Area

Study Purpose

- Provide baseline water quality information at the Project to identify any potential impacts the Project may have on West Canada Creek and to inform the state 401 Water Quality Certificate (WQC) application.
- Characterize water quality parameters (water temperature, DO, pH and conductivity) using data loggers capable of 15-minute interval readings from April 15 to November 15 for one (1) year.

Study Area

- Prospect impoundment – vertical profile measurements.
- Prospect bypass reach (2 locations), the Prospect tailrace (1 location), Trenton tailrace (1 location).
- Downstream of the Trenton tailrace to the confluence with the Mohawk River at level loggers locations (6 locations).

Site Number	Location	Description
Project Sites		
1	Upper Prospect Bypass Reach	Approximately 250 feet upstream of Military Road Bridge at the head of a pool on river right; water depth approximately 2.5 feet.
2	Lower Prospect Bypass Reach	Approximately 2,200 feet downstream of Military Road Bridge at the head of a run on river right; water depth approximately 3 feet.
3	Prospect Tailrace	On right side of the powerhouse on a concrete platform; data loggers deployed at a depth of approximately 5 feet.
4	Trenton Tailrace	Immediately downstream of the powerhouse.
Downstream Sites		
5	Downstream of Morgan Dam	Approximately 800 feet downstream of the Morgan Dam in a run on river right; water depth approximately 2.5 feet.
6	Downstream of Poland Island	Approximately 1,500 feet downstream of Route 28 Bridge in a riffle, water depth approximately 2 feet. The data loggers were relocated approximately 700 feet further downstream on September 5.[1]
7	Newport Marketplace	Approximately 2,500 feet upstream of Newport Dam on river left near the head of the impounded water; water depth approximately 3 feet.
8	Downstream of Brown Island	Approximately 1.5 miles downstream of Newport dam in a run on river left; water depth approximately 2.5 feet.
9	Kast Bridge	Approximately 50 feet downstream of Kast Bridge on river right in a run; water depth approximately 2 feet.
10	Herkimer	Approximately 1,200 feet downstream of the Route 94 Bridge in Herkimer and 5 miles upstream of the confluence with the Mohawk River in a run on river right; water depth approximately 2 feet.

WATER QUALITY STUDY

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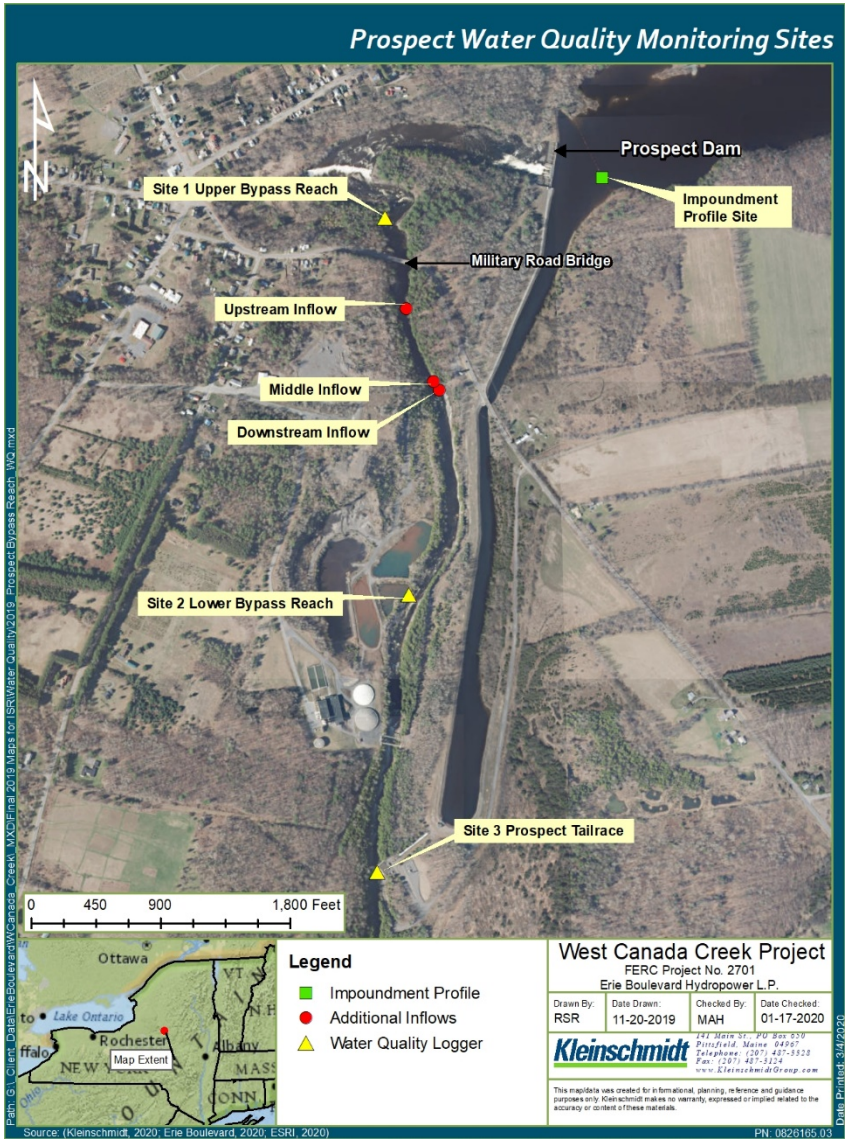

WATER QUALITY STUDY

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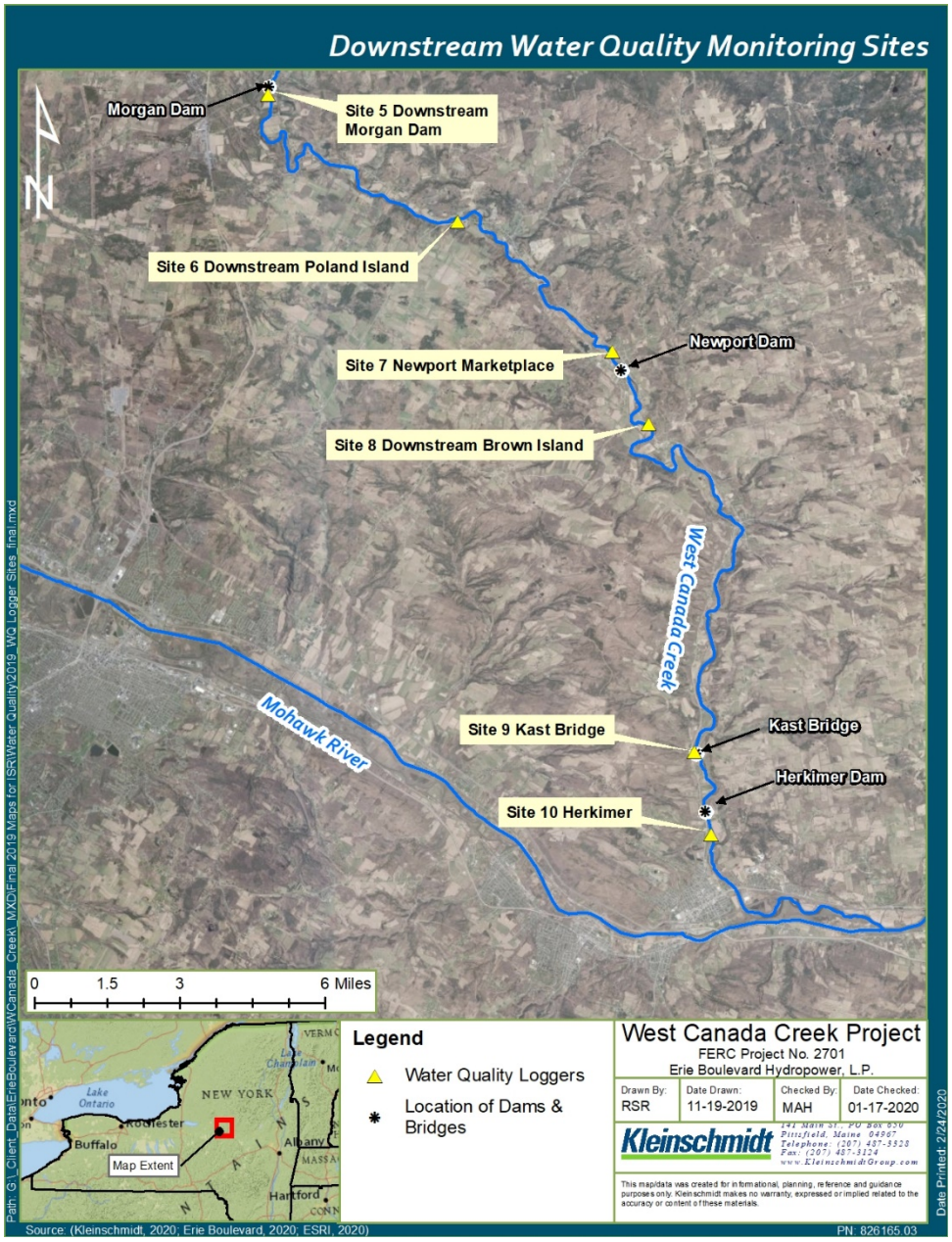

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Methodology

Prospect Impoundment Vertical Profile

- Vertical profiles of water temperature, DO concentration, conductivity, and pH in the Prospect impoundment.
- Prospect impoundment vertical profiles were collected in the deep part of the impoundment where the water depth was approximately 46 feet; the sample site was at the 5th buoy on the boat barrier from the south shore of the impoundment.
- In addition, spot measurements were taken during the fish assemblage sampling at Prospect impoundment.

Month	Sampling Date
May	5/2/2019, 5/30/2019
June	6/20/2019
July	7/10/2019, 7/25/2019
August	8/8/2019
September	9/4/2019, 9/18/2019
October	10/3/2019, 10/17/2019

Prospect Bypass Reach and Prospect and Trenton Tailrace Continuous Monitoring

- Water quality loggers were installed April 10, 2019 through April 12, 2019, to continuously monitor (15-minute intervals as stipulated in the FERC SPD) water temperature, DO, conductivity, and pH.
- Equipment at each water quality sampling site consisted of 3 Onset HOBO data loggers; a U26 data logger measured water temperature and DO, a MX2501 data logger measured pH, and a U24 data logger monitored conductivity.
- All loggers were calibrated prior to deployment following the manufacturer's instructions.

WATER QUALITY STUDY

Brookfield Renewable

Methodology

Downstream West Canada Creek

- Water quality loggers were installed between the period of April 10, 2019 and April 11, 2019 through November 15, 2019, to continuously monitor water temperature, DO, conductivity, and pH.

Prospect Bypass Additional Inflow Measurements

- Three separate additional inflows were identified that provide discharge to the Prospect bypass reach.
- Instantaneous spot measurements (water temperature, DO, conductivity, and pH) were collected upstream of the inflow, where the inflow mixes with West Canada Creek (i.e., plume), and downstream of the inflow in West Canada Creek using a YSI 556 MPS multiparameter handheld meter.

Variances from Approved Study Plan

- The Water Quality Study was implemented in accordance with the RSP and FERC's SPD and there were no variances.

Water Quality Classifications and Standards

Study Area New York State Water Quality Classifications and Standards

- Prospect impoundment is designated as Class B/B(T) trout waters
- Prospect Dam to the confluence of the Mohawk River is designated as Class C/C(T) trout waters.

Stream Segment	Classification	Classification Description Best Usage	
Hinckley Dam to Prospect Dam	B/B(T)	The best usages of Class B waters are primary and secondary contact recreation and fishing. These waters shall be suitable for fish, shellfish and wildlife propagation and survival.	These reaches are also designated as trout waters (T). Any water quality standard, guidance value, or thermal criterion that specifically refers to trout or trout waters applies.
Prospect Dam to Trenton Powerhouse	C/C(T)	The best usage of Class C waters is fishing. These waters shall be suitable for fish, shellfish and wildlife propagation and survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.	
Trenton Powerhouse to Kast Bridge	C/C(T)		
Kast Bridge to Confluence with Mohawk River	C/C(T)		

Parameter	Class B/B(T) and Class C/C(T) Standard
Dissolved oxygen	For trout waters (T), the minimum daily average shall not be less than 6.0 milligrams per liter (mg/L), and at no time shall the concentration be less than 5.0 mg/L.
pH	Shall not be less than 6.5 nor more than 8.5

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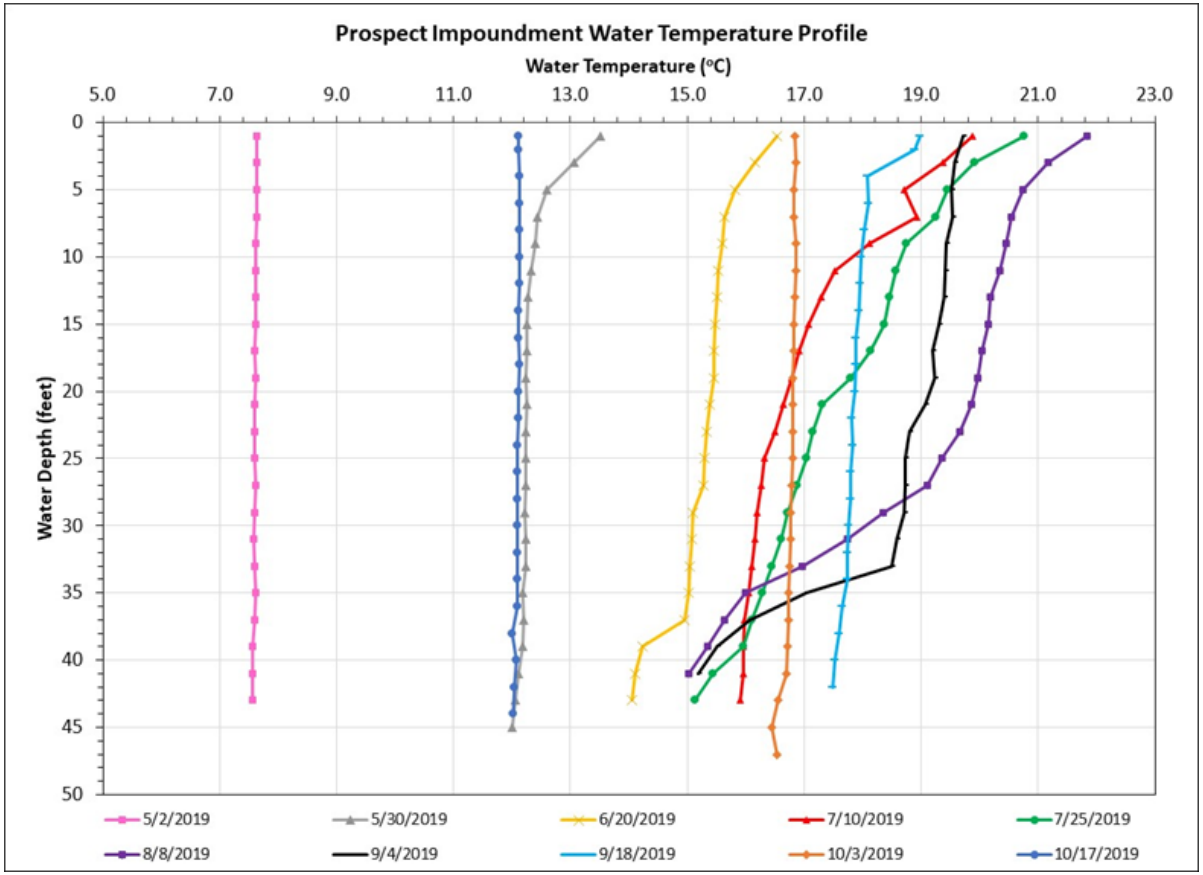
Results – Prospect Impoundment Vertical Profile Data

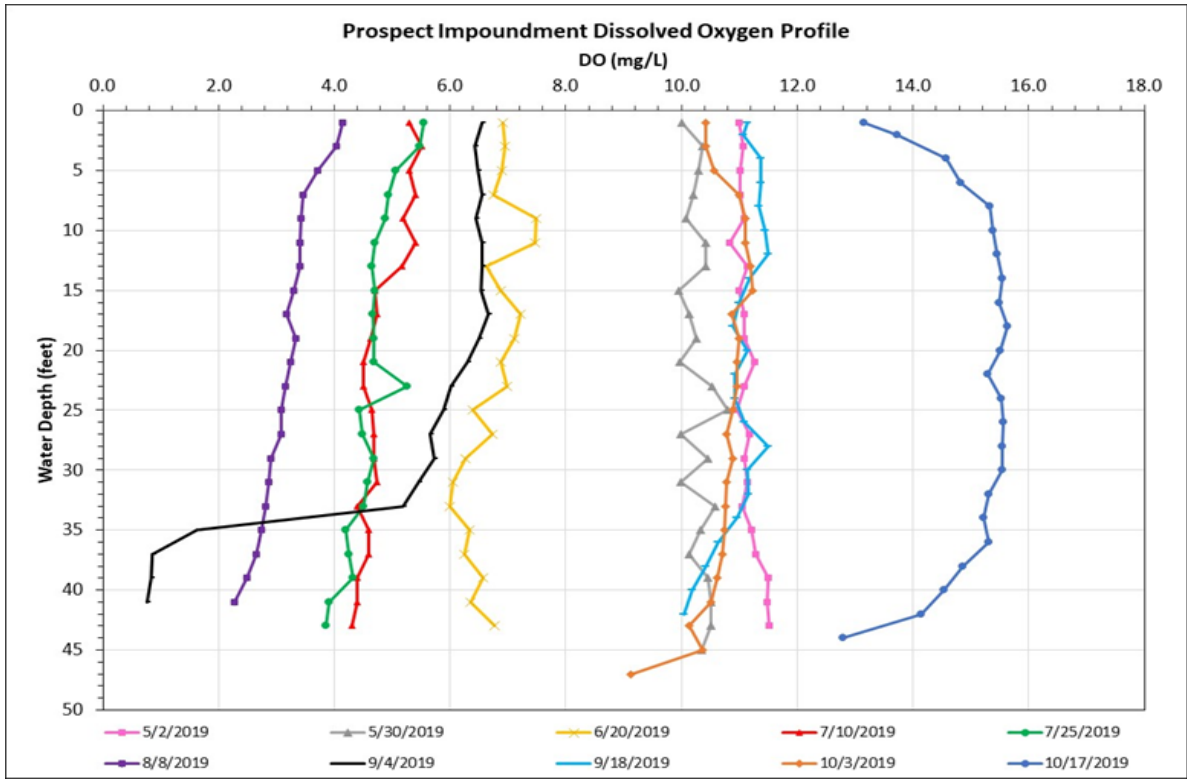
- The lowest water temperature (7.6 ºC) was measured on May 2 and the maximum average temperature occurred during the August 8 profile (19.0 ºC).
- During most profiles, the water temperature was uniform or decreased slightly with increasing depth. However, the impoundment stratified at a depth of approximately 31 to 35 feet on August 8 and September 4.



Brookfield Renewable

Results – Prospect Impoundment Vertical Profile Data

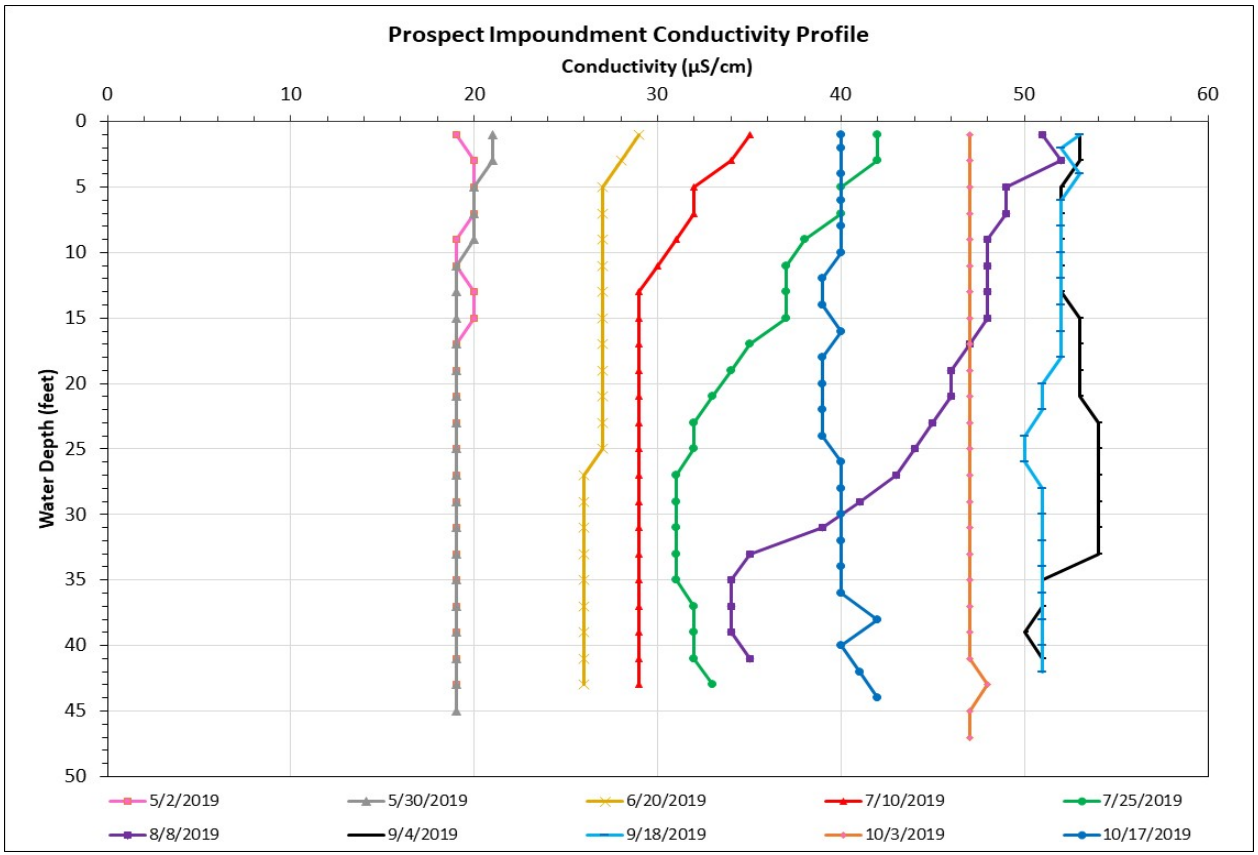
- In the May through August, September 18, and October 3 profiles, DO was generally uniform or decreased slightly with increasing depth**.**
- DO decreased to a range of 6 mg/L to 7.5 mg/L on June 20 and decreased to range of 3.9 mg/L to 5.5 mg/L in the July profiles.
- The vertical profile with the lowest average DO occurred on August 8 (average 3.2 mg/L, range 2.3 mg/L to 4.1 mg/L).
- The average DO increased after August 8 with the highest DO measured during the last profile on October 17 (average 15 mg/L, range 12.8 mg/L to 15.6 mg/L).



Brookfield Renewable

Results – Prospect Impoundment Vertical Profile Data

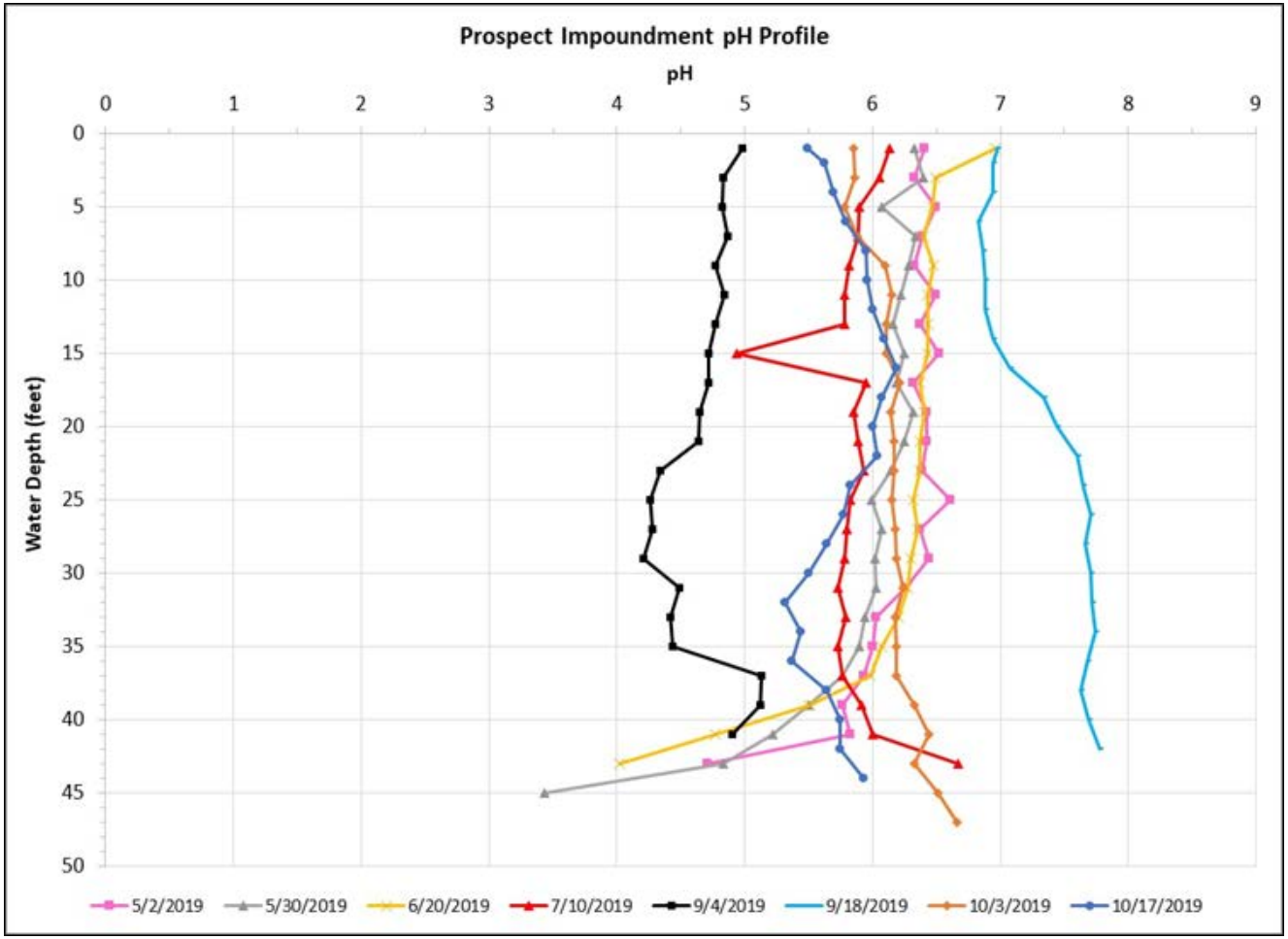
- Conductivity was similar in the two May profiles and ranged from 19 µS/cm to 21 µs/cm.
- Conductivity increased in the June, July, and August profiles to its highest levels in the two September profiles (range 50 µS/cm to 54 µS/cm).
- Conductivity ranged from 39 µs/cm to 48 µs/cm in the two October profiles.



Brookfield Renewable

Results – Prospect Impoundment Vertical Profile Data

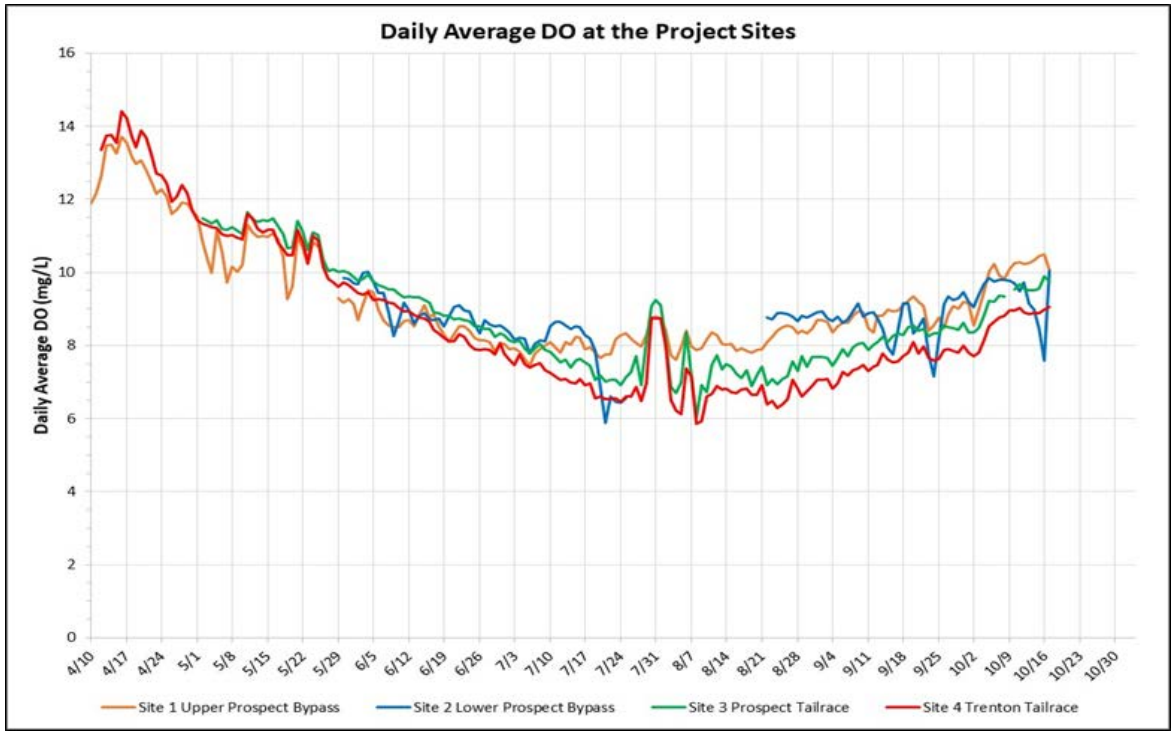
- pH was highest in the September 18 profile (range 6.8 to 7.8, average =7.3) and lowest in the September 4 profile.



Brookfield Renewable

Results – Prospect Bypass, Prospect and Trenton Tailraces

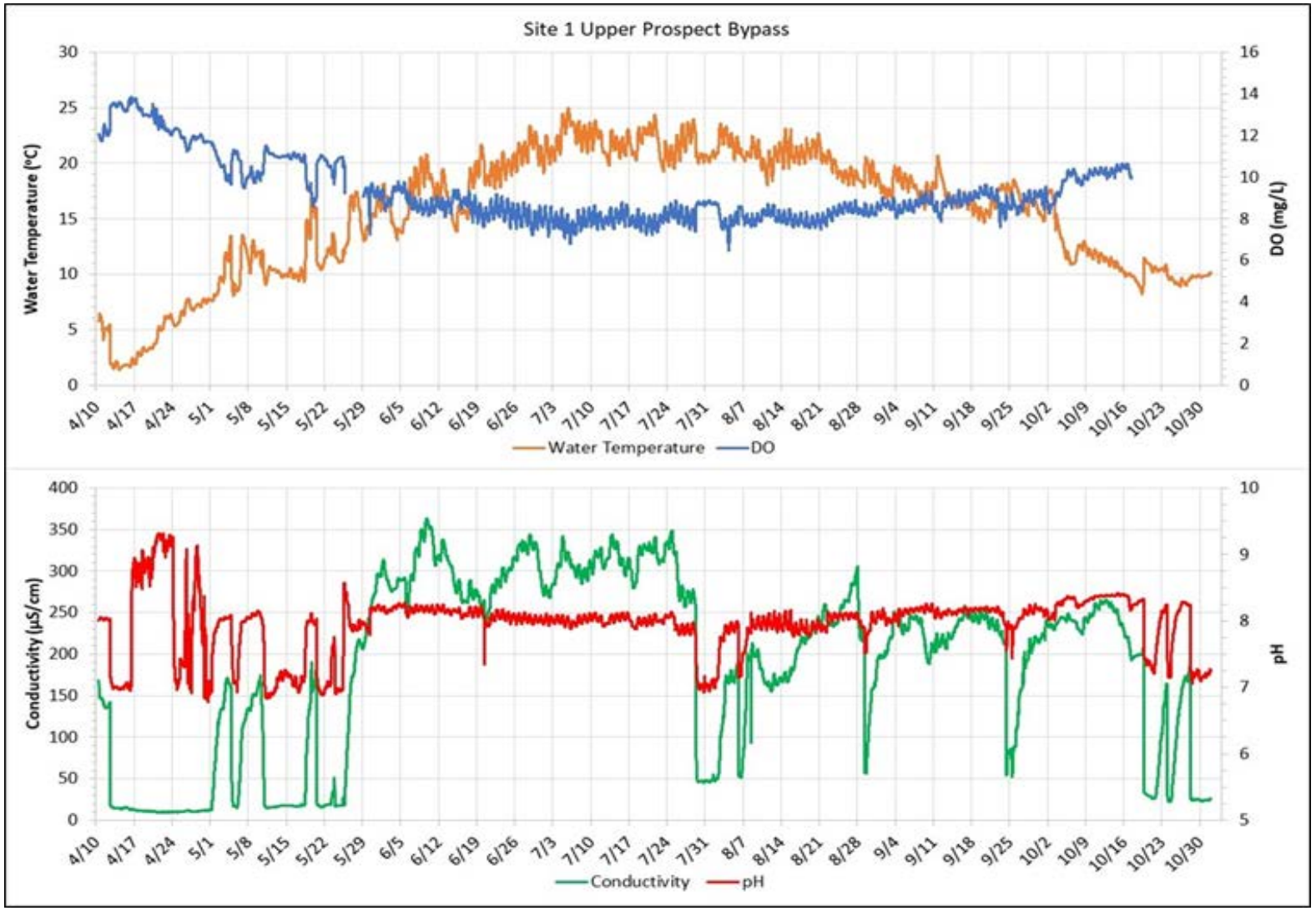
- DO exceeded the New York state water quality instantaneous standard (5 mg/L) throughout the entire monitoring period at Site 1, Site 3, and Site 4.
- DO ranged from 6.5 mg/L to 13.8 mg/L at Site 1, from 5.5 mg/L to 12.4 mg/L at Site 3, and from 5.1 mg/L to 15.2 mg/L at Site 4.
- At Site 2 Lower Prospect Bypass, there were five short term periods (approximately 0.5 hours to 4 hours) where DO decreased below 5 mg/L on July 21 and 23, September 20, 23, and 24.
- DO did not meet the daily average standard (6 mg/L) on one day at Site 2 (daily average = 5.9 mg/L on July 21) and two days at Site 4 (daily average = 5.9 mg/L on August 8 and 9).



WATER QUALITY STUDY

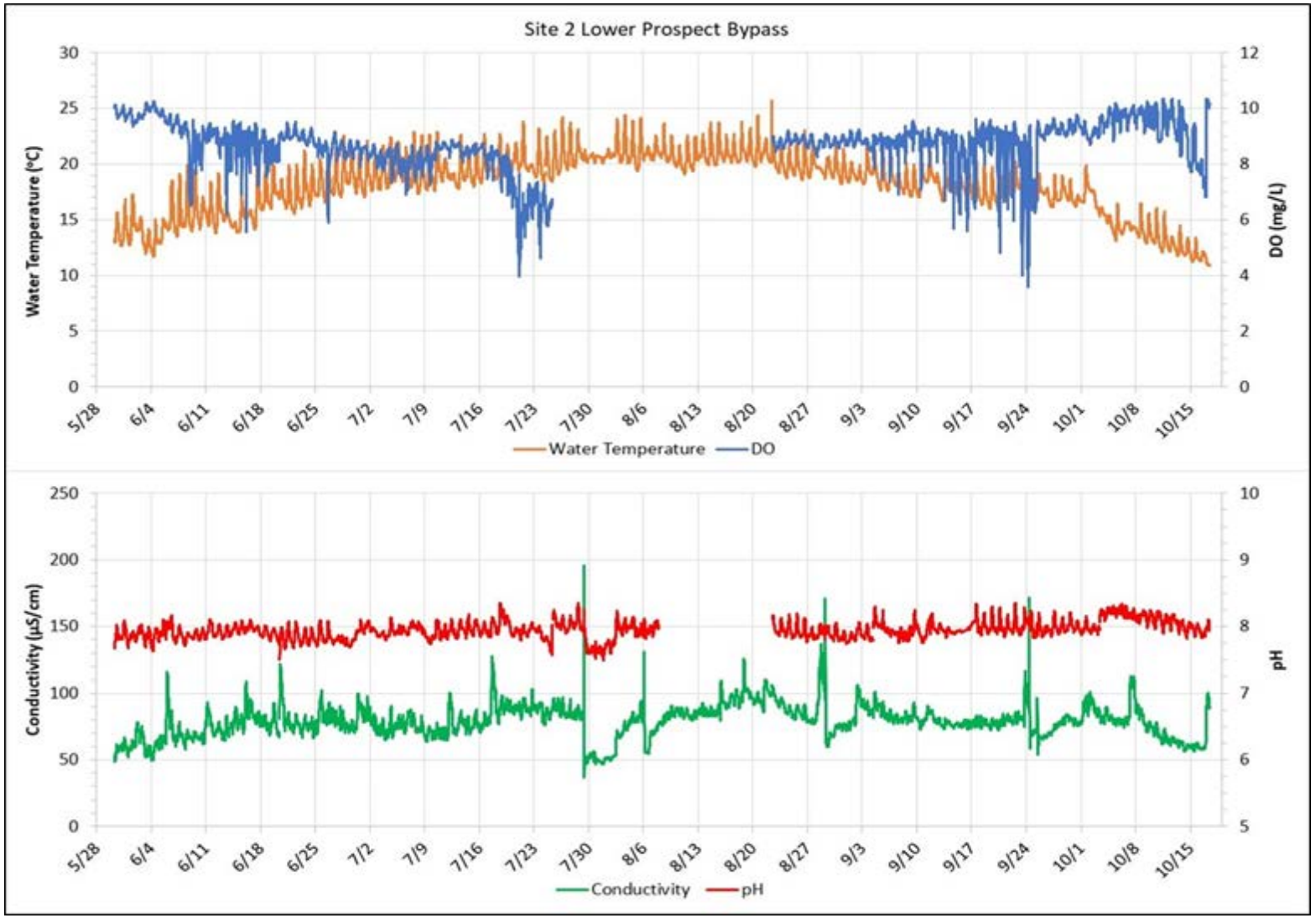
Brookfield Renewable

Results – Prospect Bypass, Prospect and Trenton Tailraces



Brookfield Renewable

Results – Prospect Bypass, Prospect and Trenton Tailraces



WATER QUALITY STUDY

Brookfield Renewable

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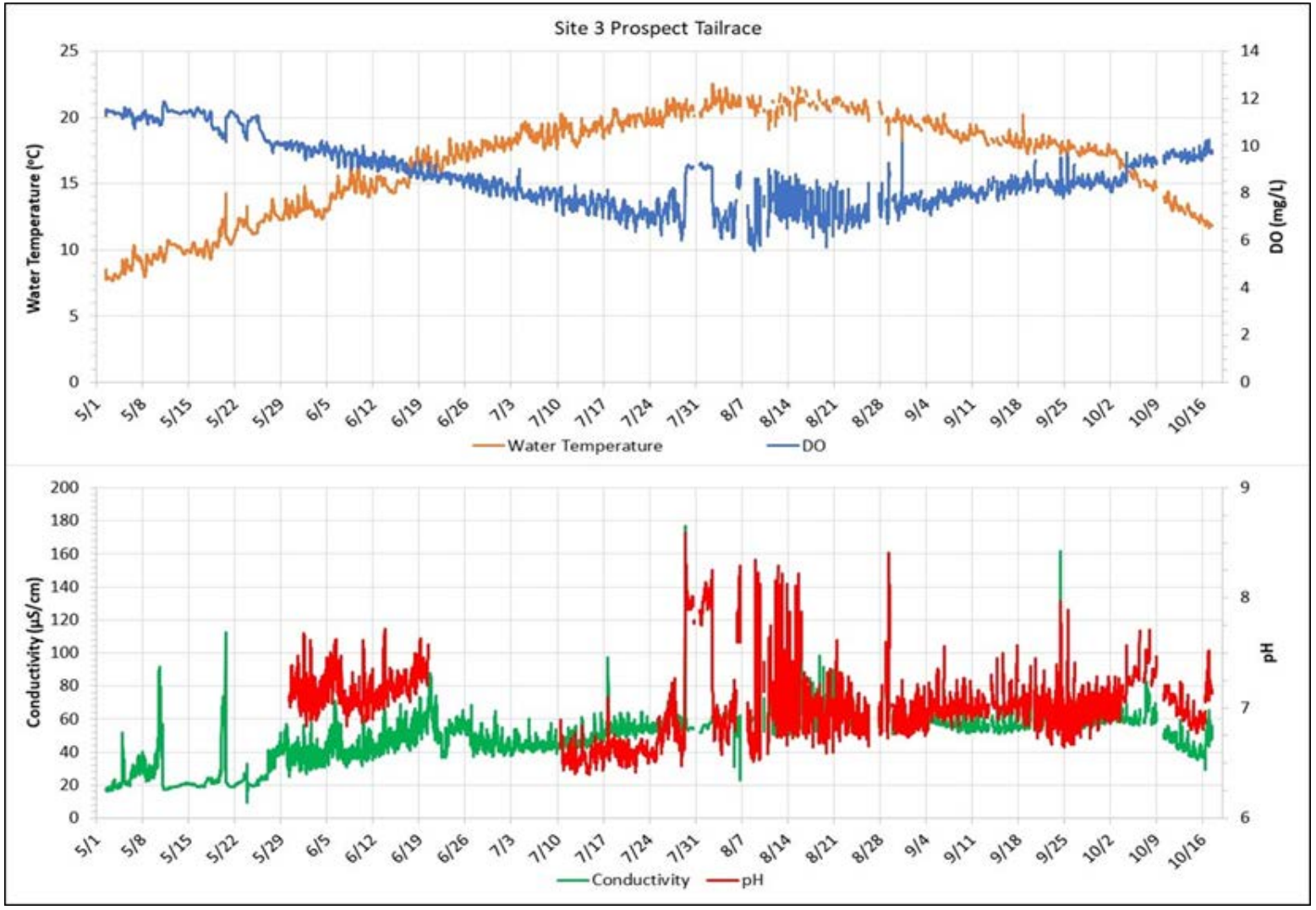
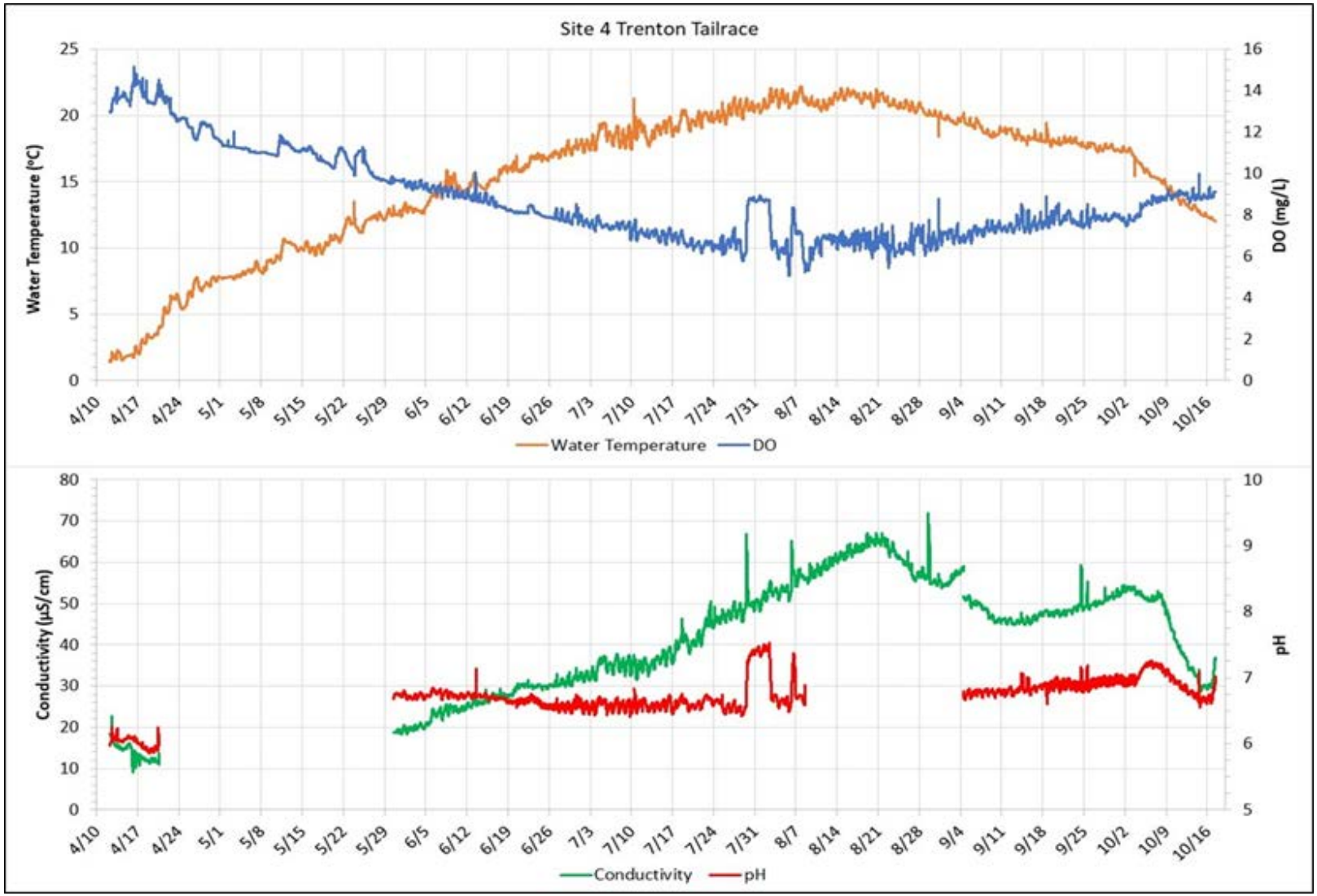


Brookfield Renewable

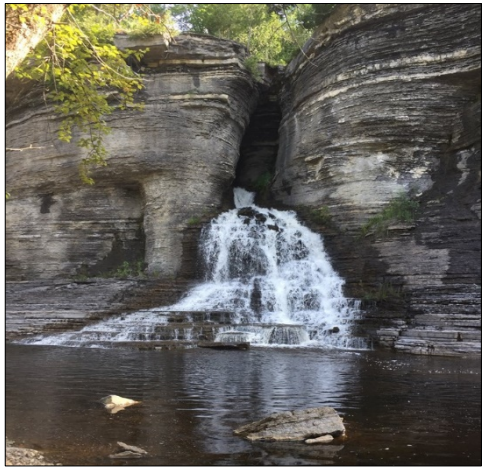
Results – Prospect Bypass, Prospect and Trenton Tailraces



Brookfield Renewable

Results – Prospect Bypass Additional Inflow Areas

- Instantaneous water temperature, DO, conductivity, and pH measurements were collected at three sources of additional inflow to the Prospect bypass reach.
- Water temperature measurements were similar between the three inflows on each sample day and were within the range of the measurements from the upper and lower Prospect bypass reach data loggers.
- On July 10, July 25, and August 8, DO ranged from 5.3 mg/L to 7.6 mg/L; DO ranged from 9.2 mg/L to 13.0 mg/L on October 3.
- Overall, conductivity decreased from the upper to lower Prospect bypass reach.
- There was no consistent spatial trend in pH between the three sources of additional inflow. On each sample day, the range of pH values measured were similar.



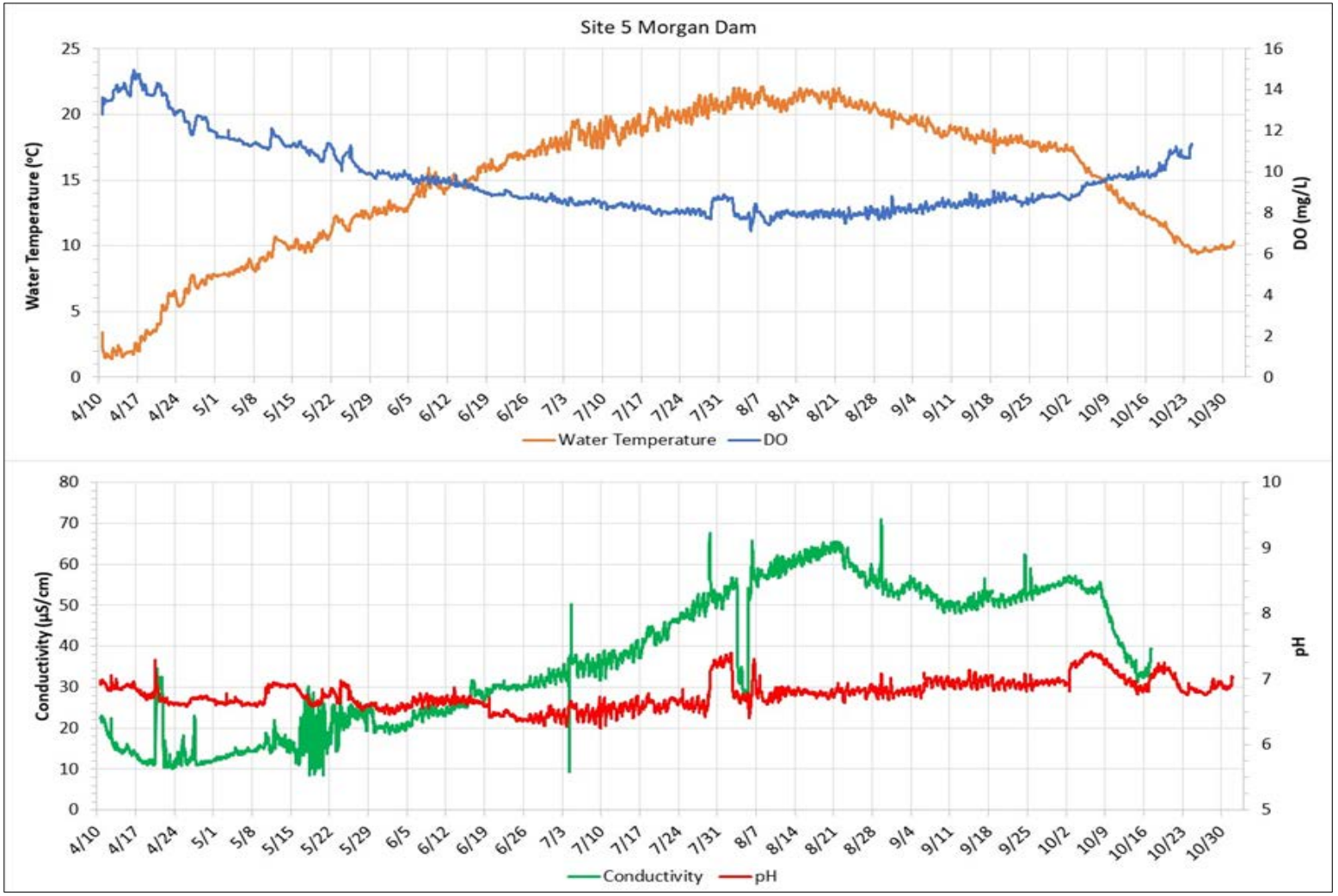
Brookfield Renewable

Results – Downstream West Canada Creek

- Water quality at the six downstream sites reflected typical diurnal trends and changes in river flow.
- At the downstream West Canada Creek sites (Sites 5-10), water temperature reflected the typical seasonal trend of increasing during spring to maximum levels in July to mid-August followed by decreasing levels in late summer and fall
- DO was above the instantaneous and daily average water quality standards throughout the study period at Morgan Dam (Site 5), Poland (Site 6), downstream Brown Island (Site 8), and Herkimer (Site 10).
- At Newport (Site 7), the cause of reduced DO between September 26 and October 2 is ultimately unknown, but is believed to have resulted from sedimentation of the data logger based on field observation.

Brookfield Renewable

Results – Downstream West Canada Creek



Brookfield Renewable

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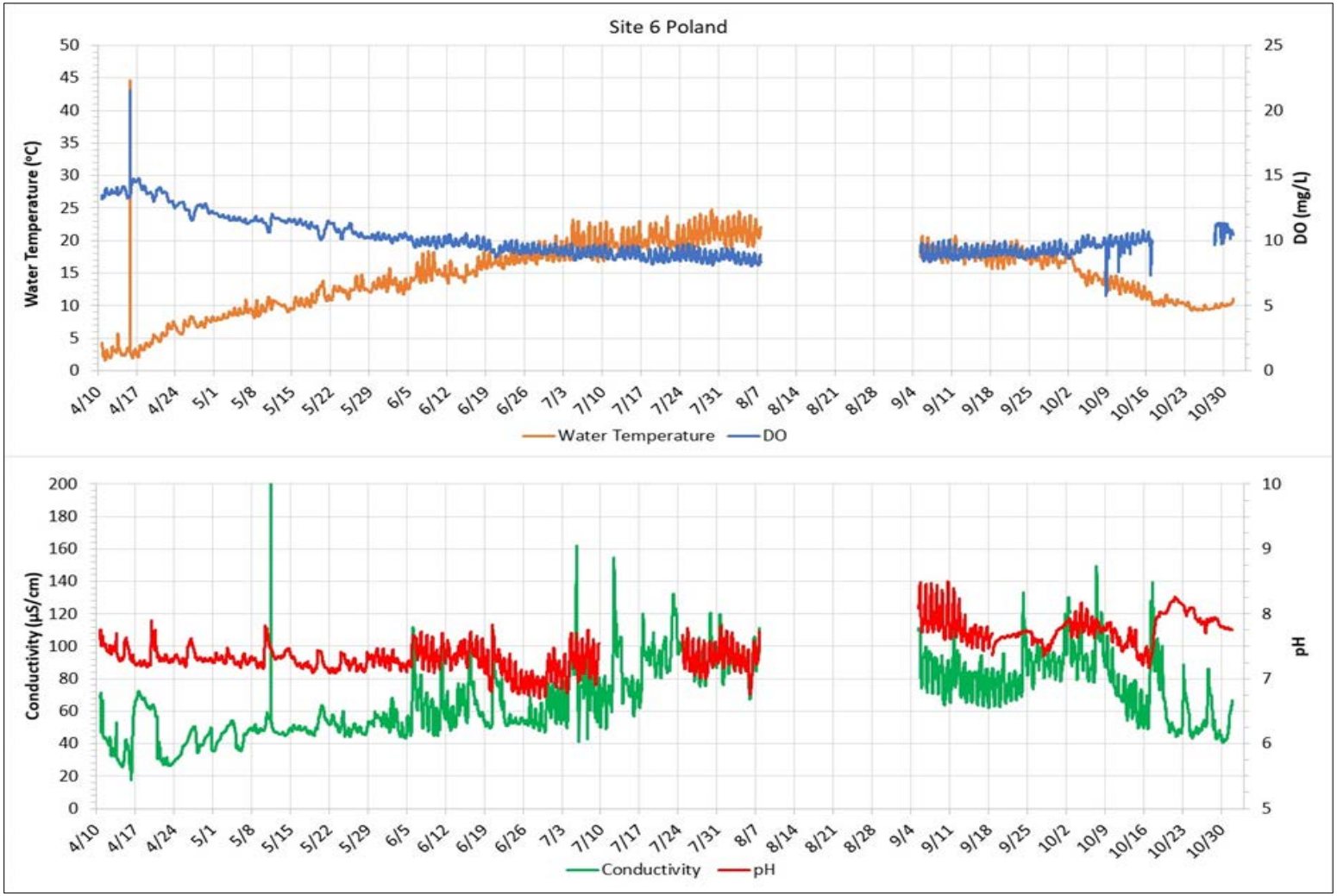
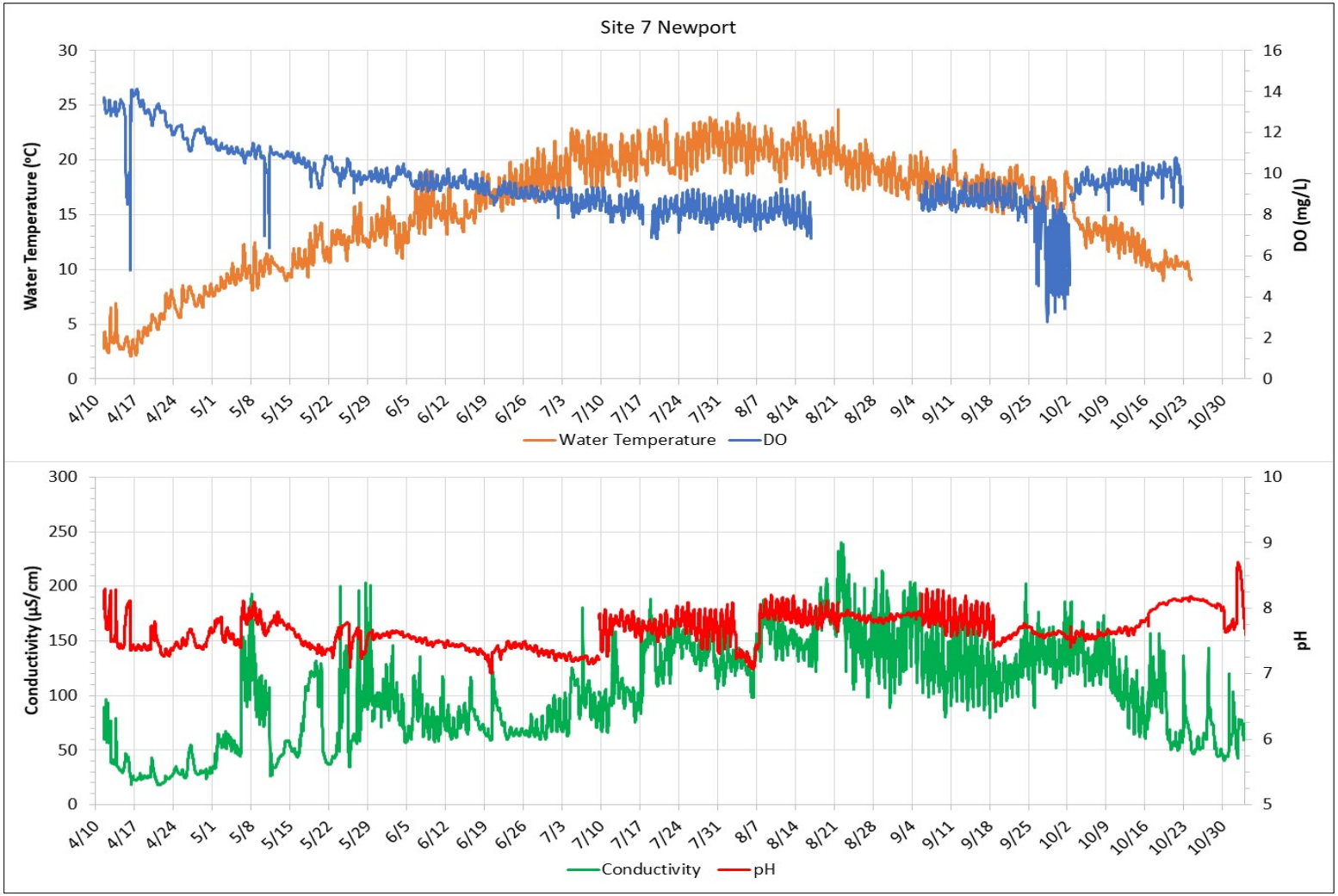


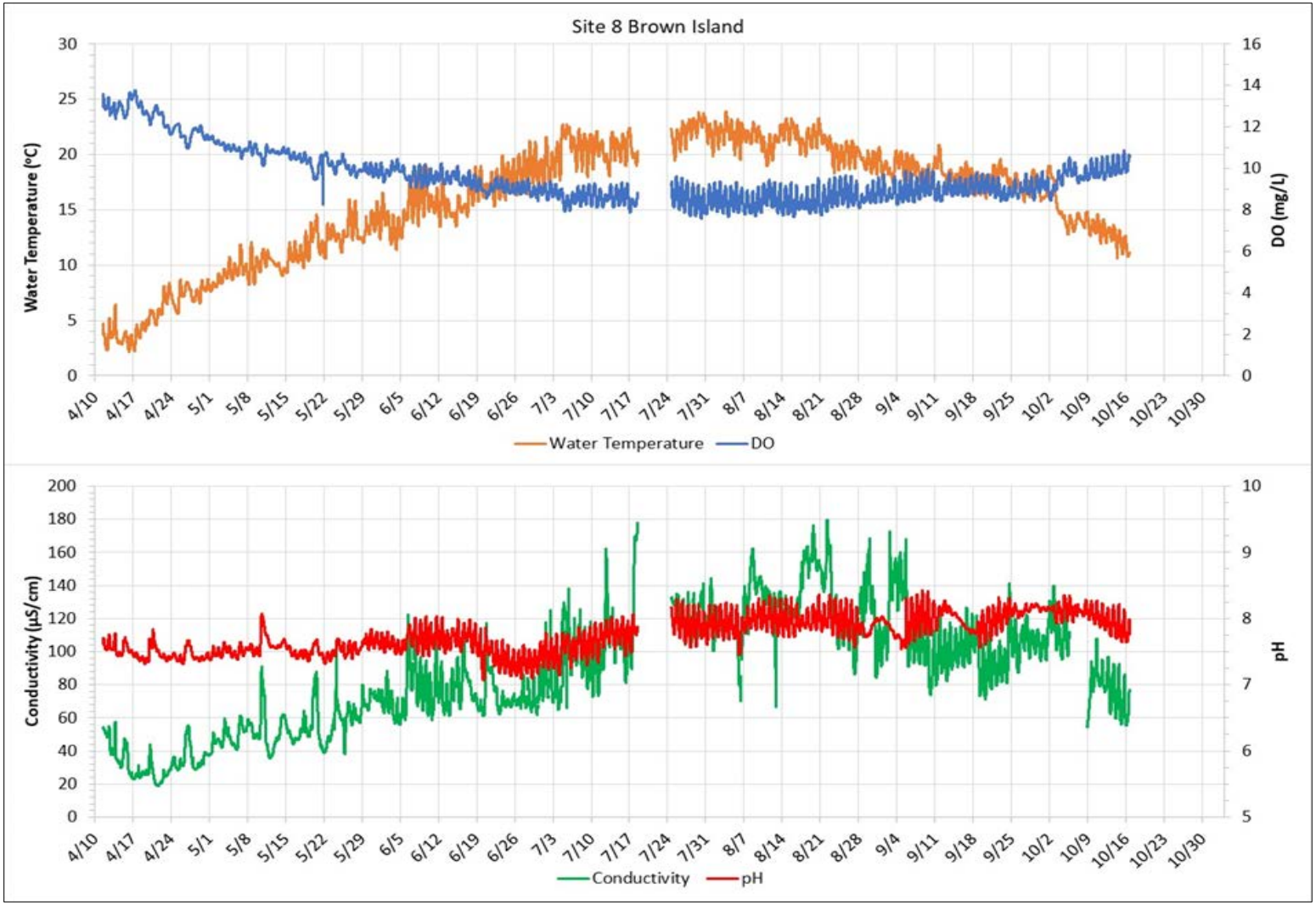
Brookfield Renewable

Results – Downstream West Canada Creek



Brookfield Renewable

Results – Downstream West Canada Creek



Brookfield Renewable

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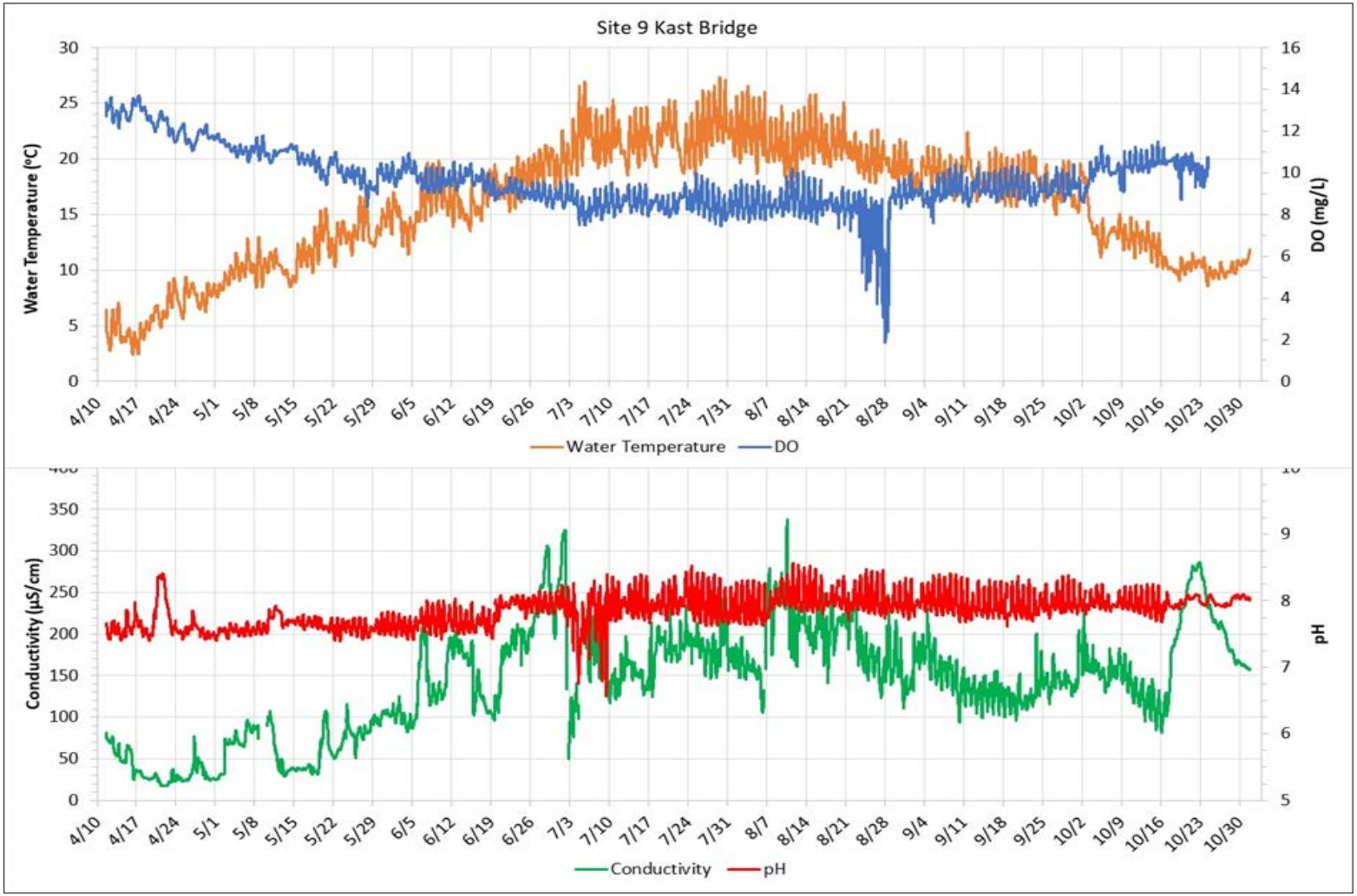
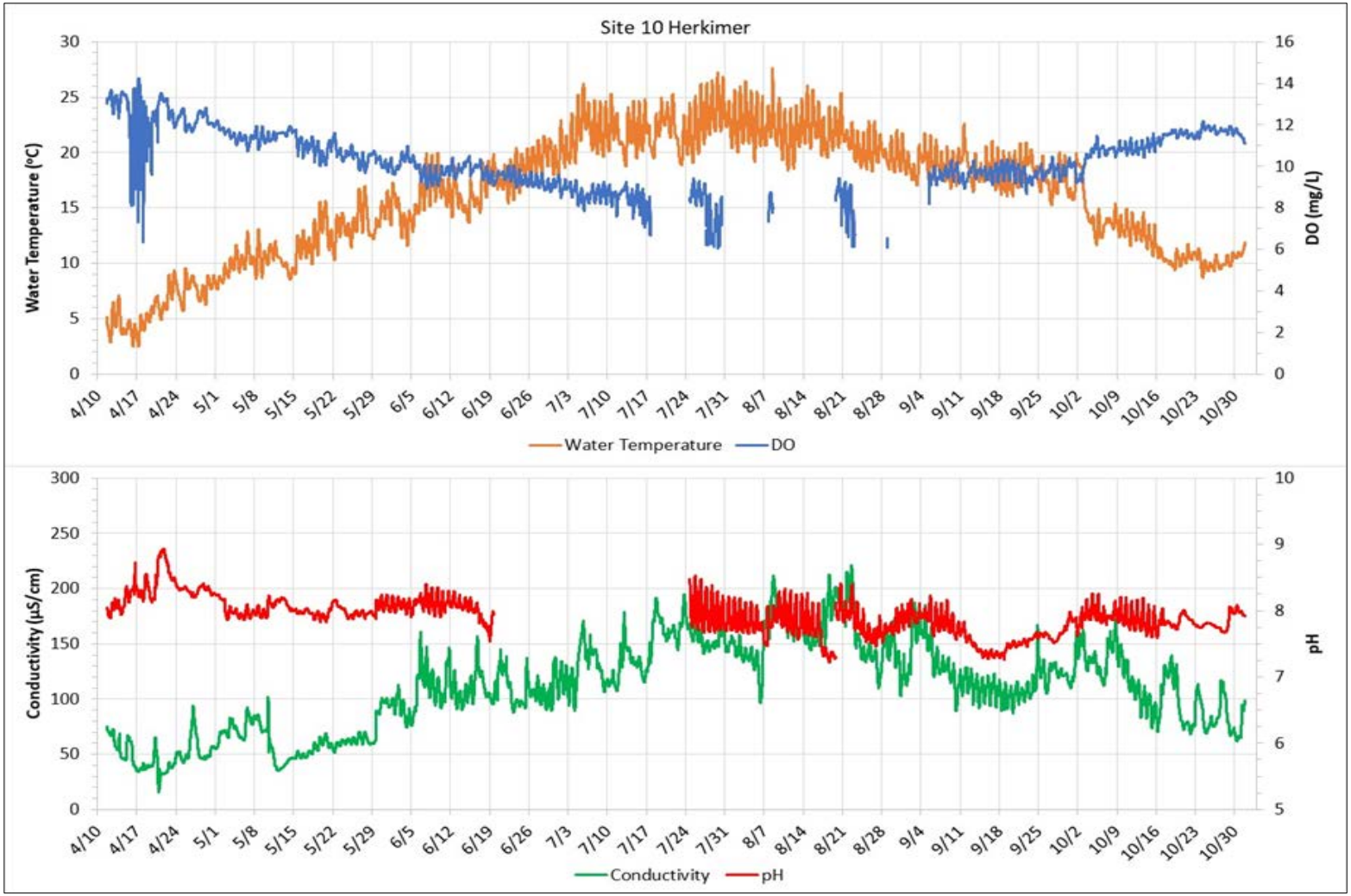


Brookfield Renewable

Results – Downstream West Canada Creek



Brookfield Renewable

Results – Downstream West Canada Creek

- Water quality at the six downstream sites reflected typical diurnal trends and changes in river flow.
- At the downstream West Canada Creek sites (Sites 5-10), water temperature reflected the typical seasonal trend of increasing during spring to maximum levels in July to mid-August followed by decreasing levels in late summer and fall
- DO was above the instantaneous and daily average water quality standards throughout the study period at Morgan Dam (Site 5), Poland (Site 6), downstream Brown Island (Site 8), and Herkimer (Site 10).
- At Newport (Site 7), the cause of reduced DO between September 26 and October 2 is ultimately unknown, but is believed to have resulted from sedimentation of the data logger based on field observation.

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Results – Downstream West Canada Creek

- At Kast Bridge (Site 9), DO was above the instantaneous standard except for short periods (15 minutes to 6 hours) on five days (August 24 through 28); DO was above the daily average water quality standard except for one day (August 28) (5.6 mg/L).
- pH was within the range of the water quality standard (6.5 to 8.5) during the monitoring period at Poland (Site 6), Newport (Site 7), and downstream Brown Island (Site 8).
- At Morgan Dam (Site 5), Kast Bridge (Site 9), and Herkimer (Site 10), pH was in attainment with the standard except for infrequent, brief excursions.
- Variability in conductivity at the downstream sites followed precipitation events and corresponded with increased river flow (as measured at Kast Bridge) and was likely the result of elevated runoff into West Canada Creek.

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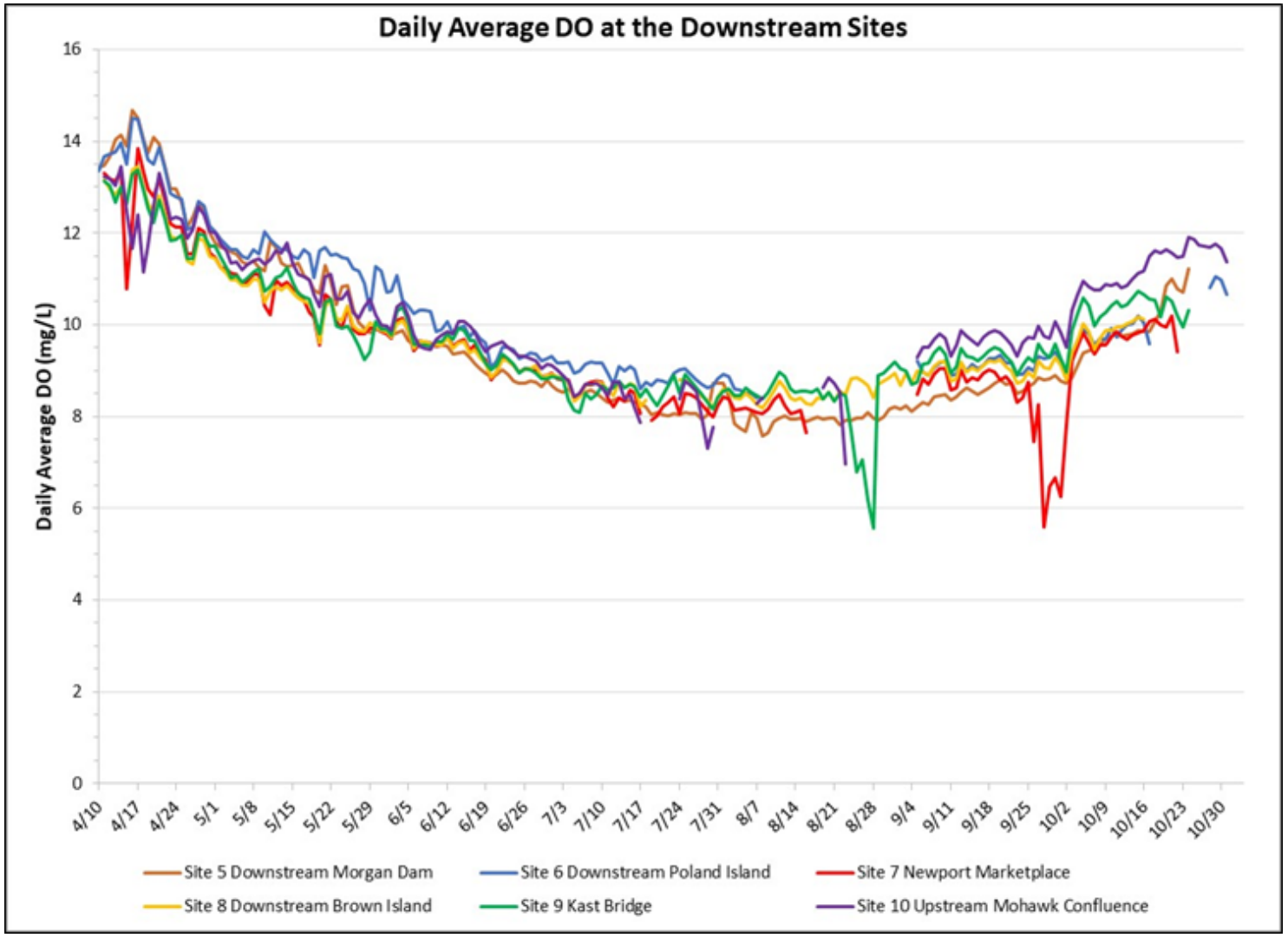
Results – Downstream West Canada Creek



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Recreation Use, Needs and Access Study

Brookfield Renewable

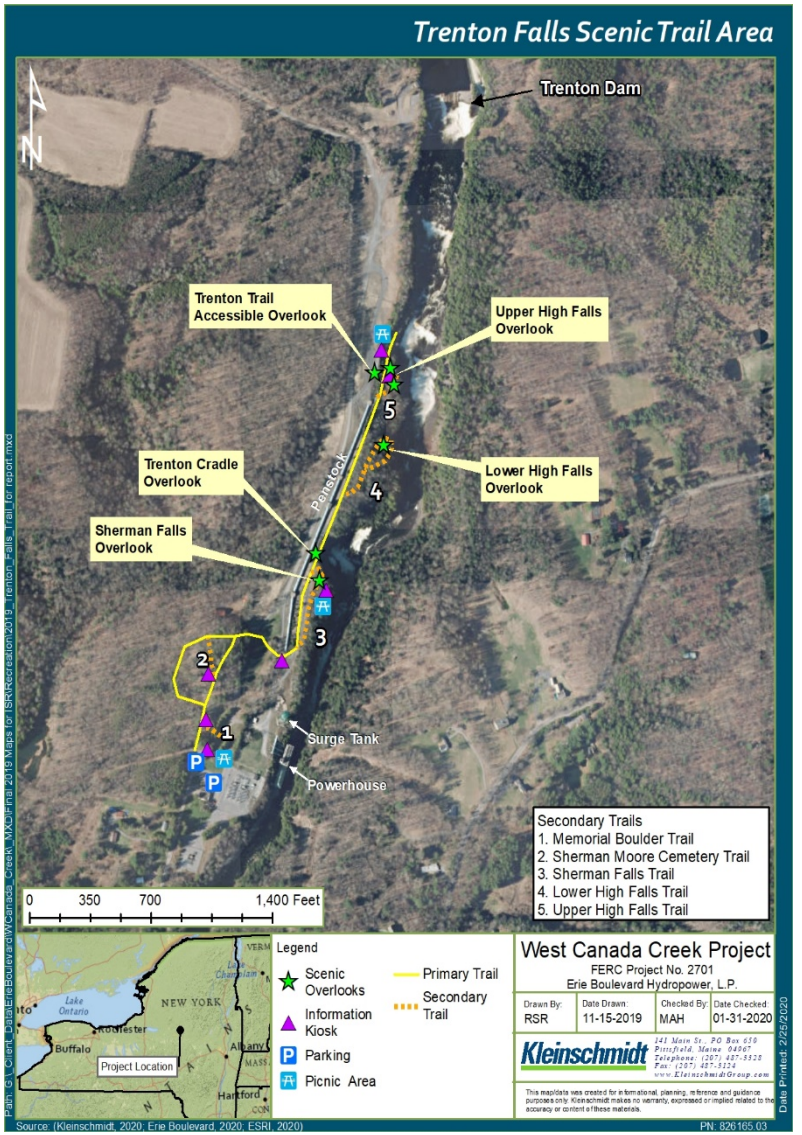
Study Purpose and Study Area

Study Purpose

- Gather information on existing recreation facilities, use, and estimated future demand and needs, as well as public access and safety at the Project.

Study Area – Project-Related

- Project Recreation Sites - Prospect boat launch and Trenton Trail facilities.
- Project Access and Safety - Project reservoirs, bypass reaches and adjacent shoreline lands to the existing Project boundary.



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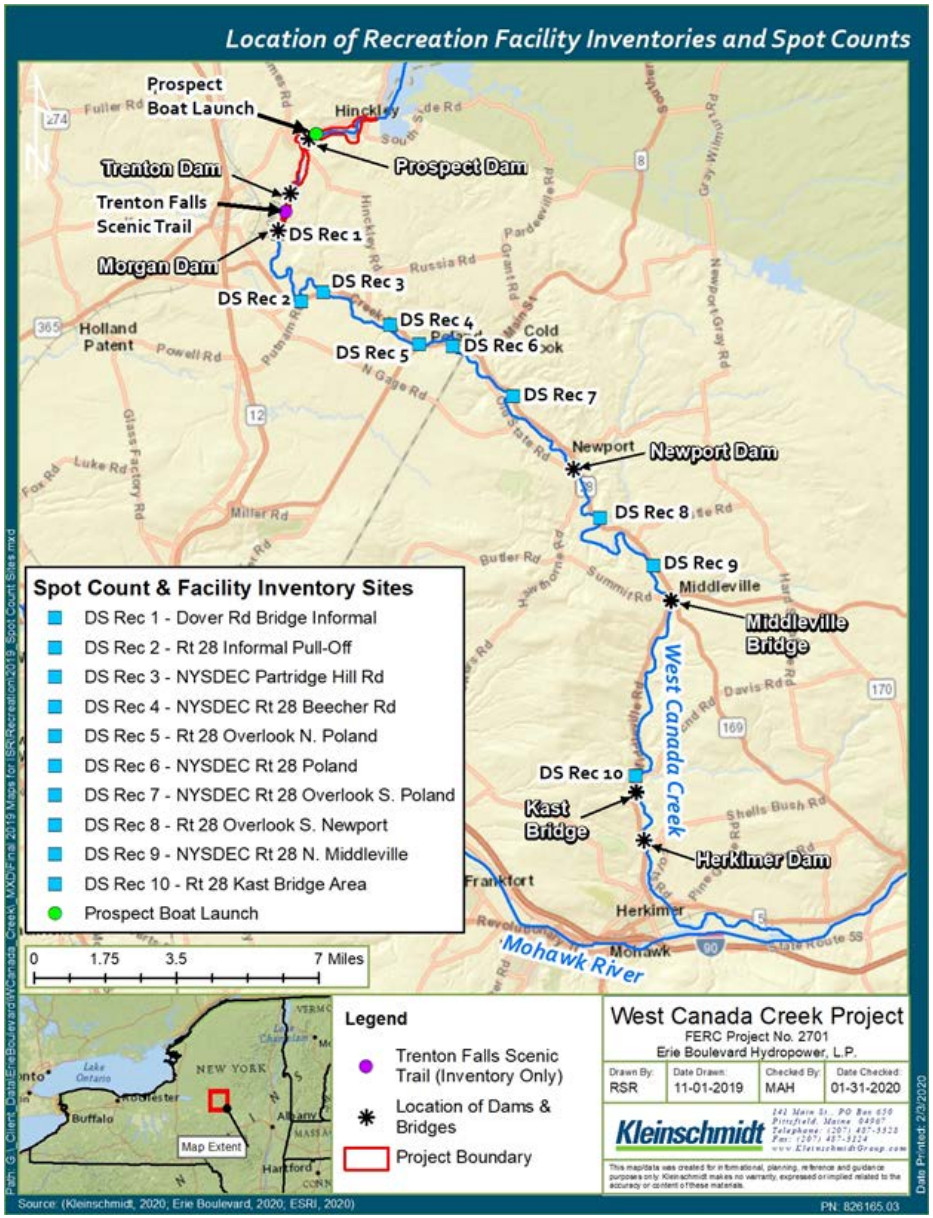
Study Area – Non-Project Sites

Downstream West Canada Creek

- Existing public access areas that serve the downstream reaches of West Canada Creek (i.e., Dover Road to Kast Bridge).
- To determine access area locations to include in the spot count and inventory:
  - Identified NYSDEC and NYSDOT public access locations along these reaches.
  - Reviewed the 2007 Creel Survey fishing access site locations.
  - Reviewed these locations with USFWS, NYSDEC, and AW.
- Resulted in a total of 10 downstream access sites being selected for the site inventory and spot count.



Methodology

Recreation Site Inventory

- Conducted at Project recreation sites and identified downstream access sites.

Spot and Traffic Counts

- Completed 11 spot counts at the Prospect boat launch, and the 10 downstream recreation sites, including weekday, weekend and holiday periods.
- Traffic counter at Prospect boat launch site between Memorial Day and Labor Day weekend.

Recreation Visitor Survey

- Survey was available Memorial Day weekend through Labor Day weekend; available online and at a drop box at the Prospect boat launch.
- Notification of the online survey provided on the Project relicensing website, the Prospect boat launch, NYSDEC downstream public access areas, public notice in the local newspaper, and social media sites.
- Conducted visitor intercept surveys during each day of the Trenton Falls Scenic Trail event.

Date	Time of Day	Day Type
5/17/2019	PM	Weekday
5/19/2019	AM	Weekend
5/26/2019	PM	Holiday (Memorial Day weekend)
6/14/2019	AM	Weekday
6/29/2019	AM	Weekend
7/5/2019	PM	Holiday (July 4th weekend)
7/7/2019	PM	Holiday (July 4th weekend)
7/27/2019	PM	Weekend
8/13/2019	PM	Weekday
8/24/2019	AM	Weekend
8/31/2019	AM	Holiday (Labor Day weekend)

RECREATION USE, NEEDS AND ACCESS STUDY

Brookfield Renewable

Methodology

Estimated Recreation Visitation and Projections

- Prospect and downstream sites - recreation visitation (recreation days) estimated based on average number of vehicles during the spot counts, median group size, and median length of visit.
- Estimated daily visitor hours were then extrapolated out to month and day type by multiplying by the number of days in the population.
- Trenton Falls Scenic Trail event based on actual counts of participants.
- Recreation use projections were based on percent change in population for Herkimer and Oneida counties and applied to the 2019 visitation estimate.

Public Access and Safety Assessment

- Characterized existing land use abutting the Project boundary and existing public safety mechanisms.

Variances from Approved Study Plan

- In accordance with FERC's SPD, Erie consulted with the NYSDEC, USFWS, AW, and refined the study plan methodology to identify the downstream access site locations, and refine survey instruments.
- Conducted an additional 3 spot counts for a total of 11 counts as compared to the approved study plan of a total of 8 spot counts.

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Results – Project Recreation Facilities

- Prospect boat launch is located on the north side of the impoundment, approximately 1,000-feet upstream from the Prospect Dam.
- The site is unstaffed and open from about Memorial Day to Labor Day.
- Facilities include gravel parking area for approximately 15 vehicles, overflow grass parking area, boat launch turnaround area, gravel boat launch, and signage.
- The site does not have any dedicated ADA accessible parking spaces, ADA signage, or an accessible facility for access to the reservoir.
- Provides recreational boating access for motorized (restricted to 10 horsepower and no jet skis) and carry-in boats.
- Recreation opportunities include canoeing, kayaking, motor boating, fishing, sightseeing, and nature study.

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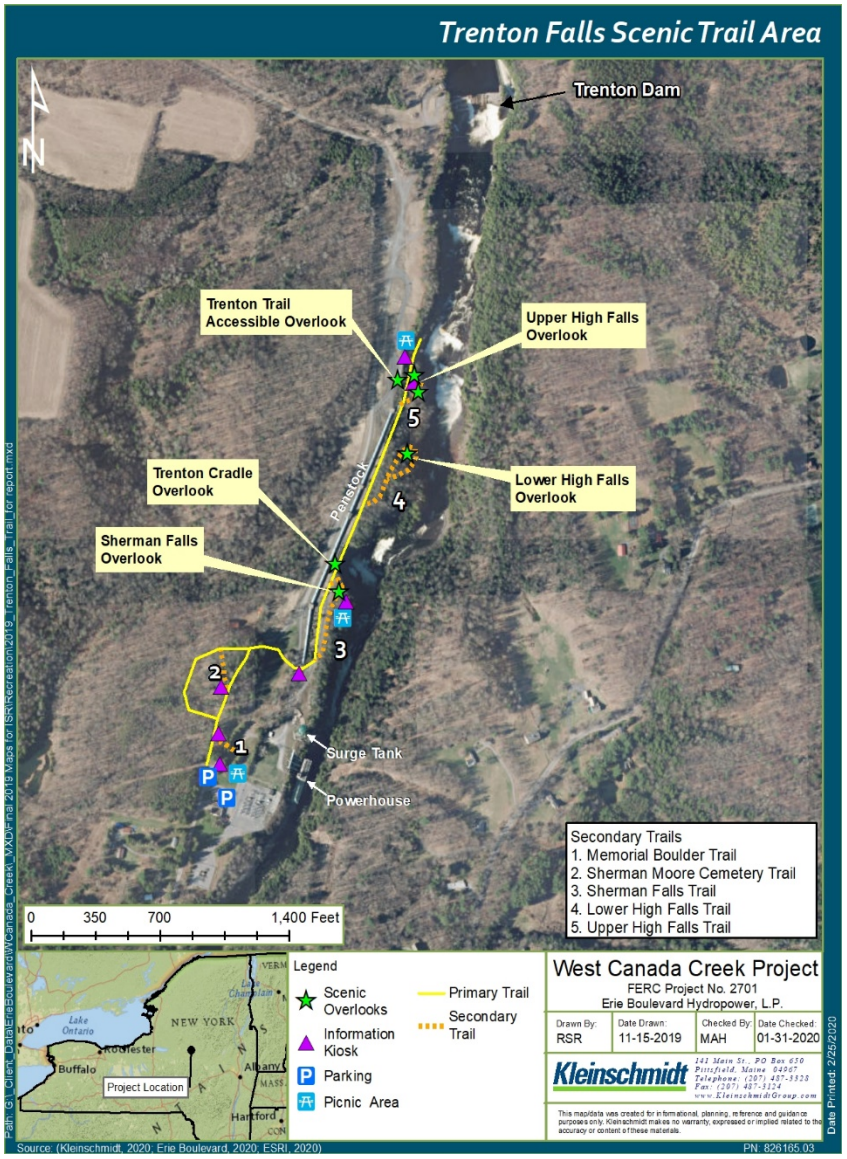
Results – Project Recreation Facilities

- Trenton Trails day-use scenic area and trails adjacent to the Trenton Gorge.
- Access provided on one or two weekends in the spring and one or two weekends in the fall since 2004 in partnership with the Town of Trenton.
- The trail traverses along portions of Project penstock and Trenton Falls gorge with view of the waterfalls.
- Facilities include picnic area, trails, six scenic overlooks, interpretive signage, porta potties, trash receptacles, and benches along the trail.
- Volunteers assist at the Trenton Trails event, local community groups provide historic and natural history information and sell refreshments.



Results – Estimated Recreation Visitation

Project Recreation Sites Estimated Use

- Estimated recreation visitation at the Project recreation sites was estimated to be 7,847 recreation days during the recreation season (Memorial Day through Labor Day).

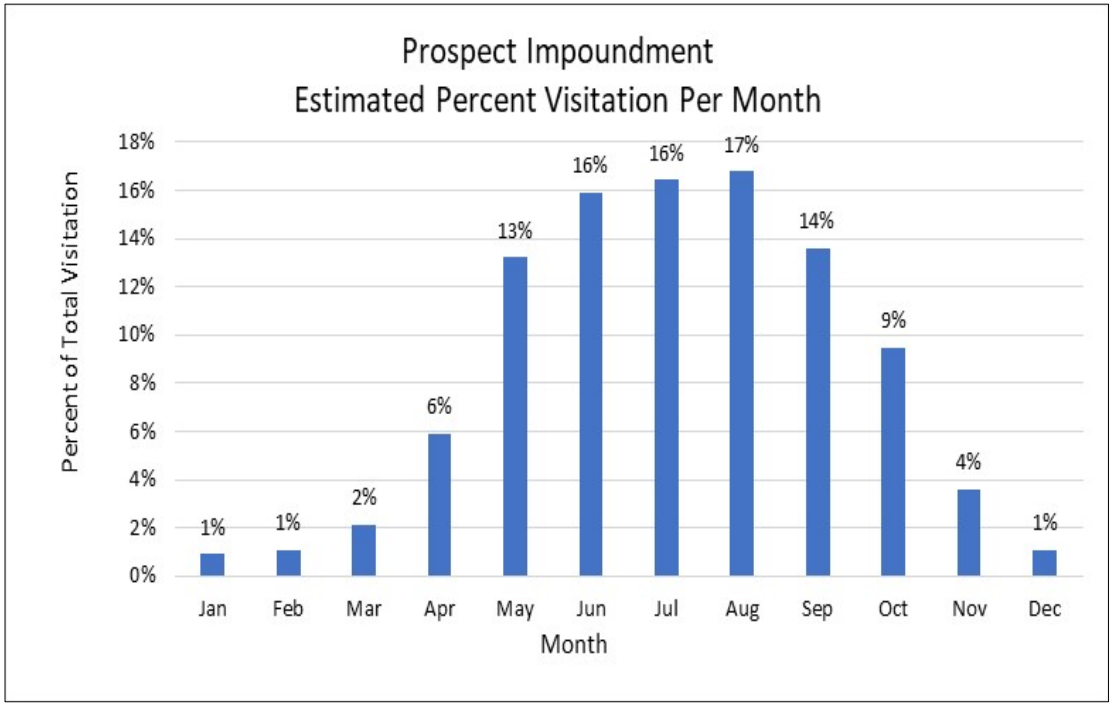
LOCATION	MAY	JUNE	JULY	AUGUST	SEPTEMBER	TOTAL
Prospect Boat Launch	144[1]	800	1072	736	128[2]	2,880
Trenton Trail Event	2,317[3]	NA	NA	NA	2,650[3]	4,967
Total Visitation	2,461	800	1072	736	2,778	7,847

[1] May 25 through 31
[2] Labor Day Weekend only (September 1 and 2, 2019)
[3] Trenton Trail Days Events May 18 and 19, September 14 and 15

- Estimated future visitation was approximately 2,736 at the Prospect Boat Launch Area and 4,719 at the Trenton Falls Scenic Trail Event for a total estimated 7,455 recreation days in 2040 at the Project.

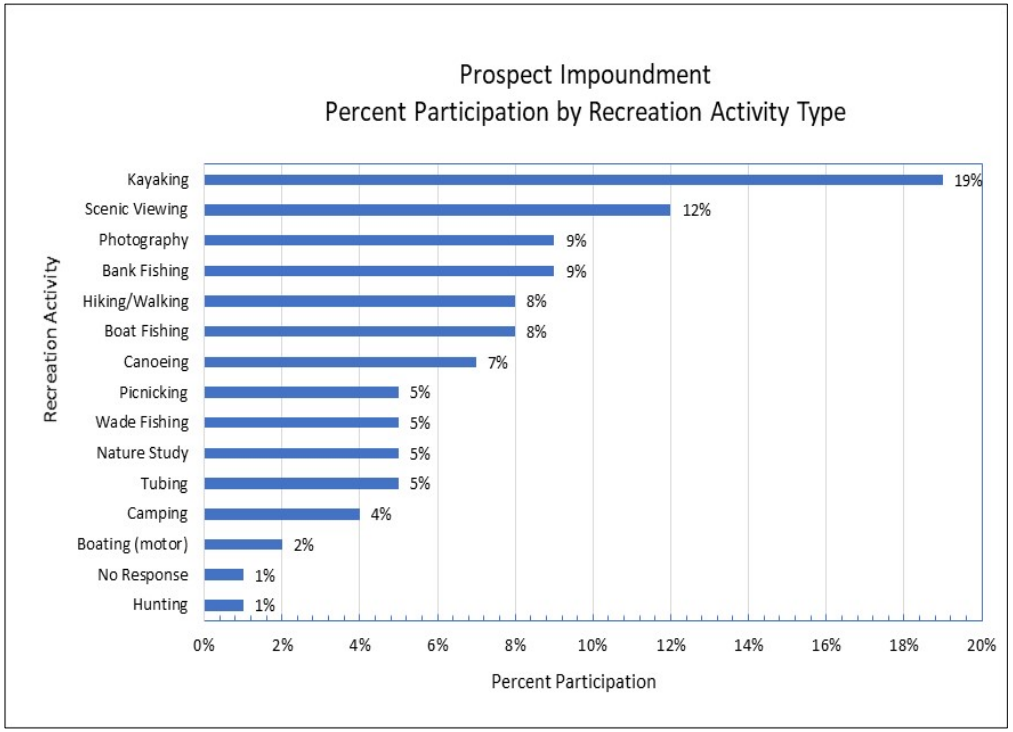
Results – Recreation Visitor Survey

- Received a total of 209 survey responses, including 31 paper surveys were from the kiosk at the Prospect boat launch and 178 online.
- The average number of visits to the Prospect impoundment each year was 18 with a median of 12 and a range of 1 to 120.
- The median length of visit to the Prospect impoundment was 3 hours, with a range of 0.5 hours to one adjacent landowner individual specifying a 3-day visit (72 hours).
- The median group size was 2 with a range of 1 to 30.
- Groups used between 1 and 8 vehicles to visit the Prospect impoundment with a median of 1 vehicle.
- The median number of miles traveled to the Prospect impoundment was 12 with a range of less than one mile to 1,000 miles.



Results – Recreation Visitor Survey – Prospect Launch

- Popular recreation activities on the Prospect impoundment are kayaking (19%), and scenic viewing (12%).
- Respondents rated their satisfaction with the water level in the Prospect impoundment as satisfied (28%), neutral (27%), very satisfied (18%) and dissatisfied (17%), with an average rating of 3.4, on a scale from 1 being very dissatisfied to 5 being very satisfied.
- Respondents rated the overall condition of the Prospect boat launch as excellent or good (51%), satisfactory (28%), fair (10%), poor (1%), or no response (10%).
- Respondents (36%) said that additional facilities are needed at the Prospect boat launch.
- Recommendations were a bathroom/porta potty, more parking, trash cans, and fishing access.



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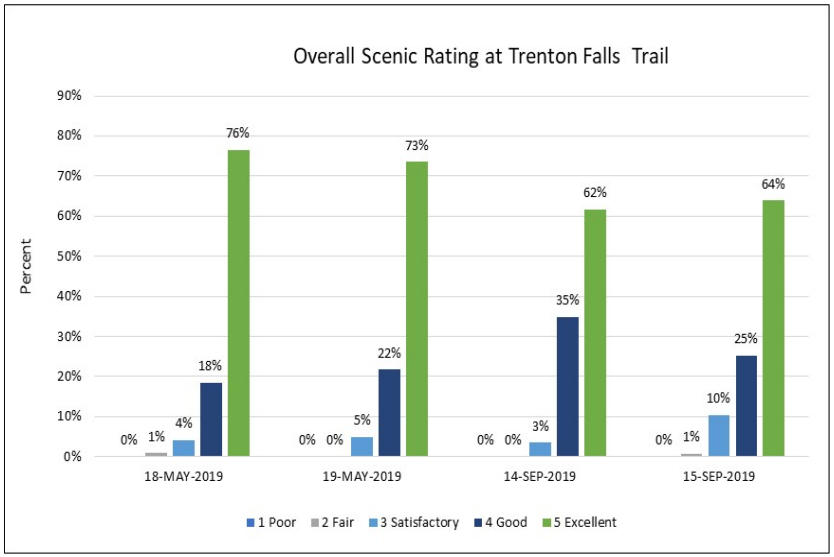
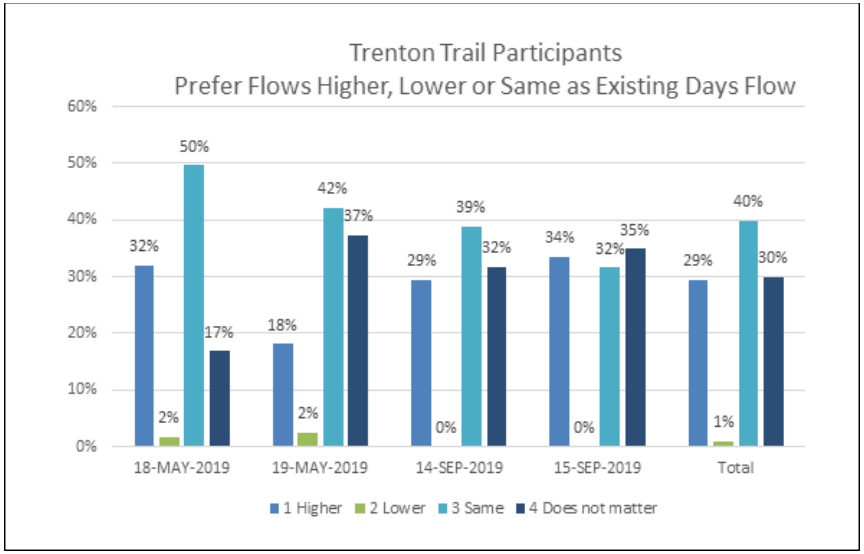
Results – Recreation Visitor Survey – Trenton Falls Scenic Trail

- Completed a total of 443 surveys during the 2019 Trenton Falls Scenic Trail events.
- The average group size was 3 people; ranged from one to an organized group of 16.
- The most common type of group was families (73%).
- Groups generally traveled in one vehicle to the event and drove an average of 21 miles (range <1 to 200 miles).
- Over half (58%) of the visitors attended the event previously.
- The length of visit ranged from 0.5 hours to 4 hours with an average of 1.2 hours.
- Respondents participated in scenic viewing and hiking/walking and some also participated in photography, visiting historic sites, nature study, picnicking.
- Most survey participants were very satisfied or satisfied (91%) with the available number and type of recreation facilities.

Results – Recreation Visitor Survey – Trenton Falls Scenic Trail

- The average flow rate through the Trenton Falls gorge during the Trenton Falls Scenic Trail events was approximately 325 cfs on May 18 and 19; approximately 250 cfs on September 14, and approximately 200 cfs on September 15.
- Respondents rated the scenic quality as excellent (69%) or good (25%).
- The average ratings for the individual overlooks were: Upper High Falls (rating of 4.7), Lower High Falls (rating of 4.6); Cradle Overlook (rating of 4.6), and Sherman Falls Overlook (rating of 4.4).





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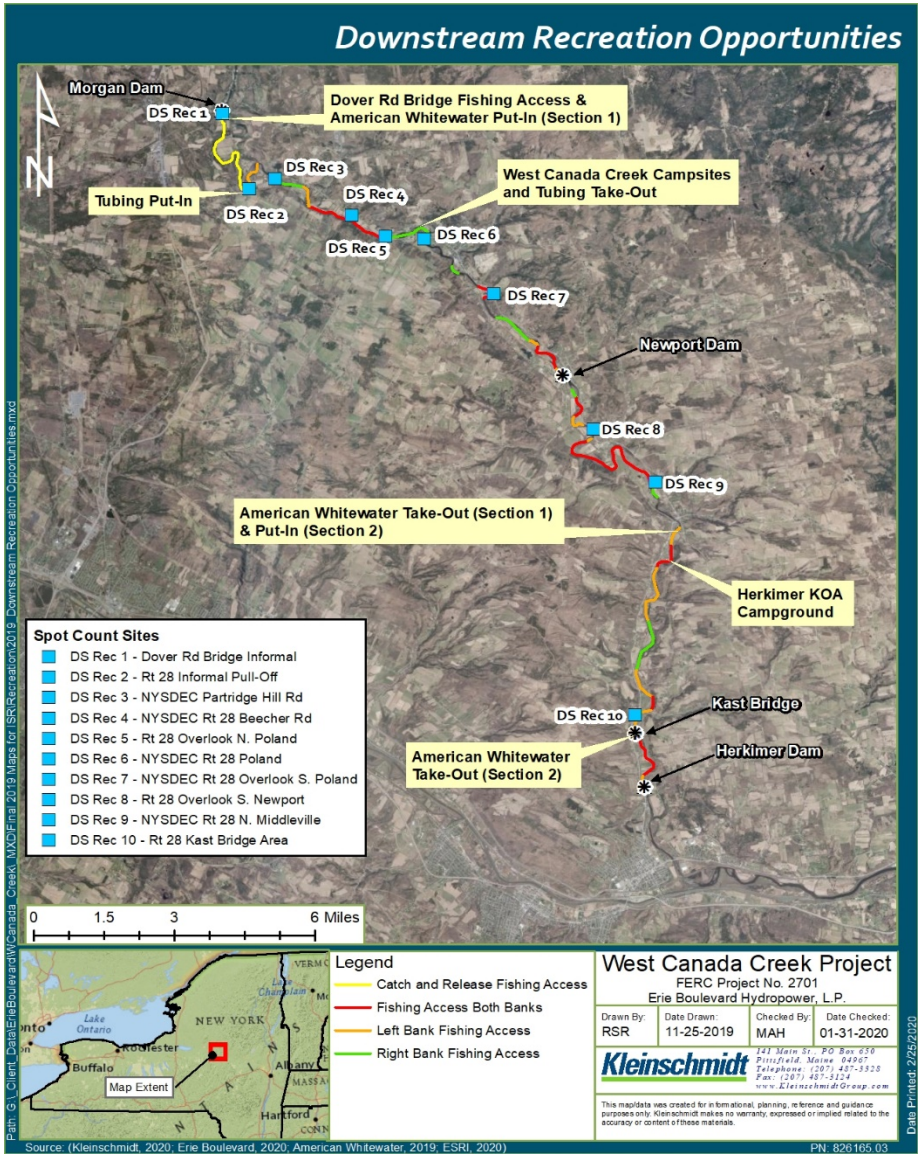
Results – Downstream West Canada Creek Recreation Opportunities

- Dover Road Bridge and extending approximately 2.5-miles downstream to the confluence of Cincinnati Creek is a catch and release
- AW identified whitewater boating Section 1 Class I-II, and Section Class II-II+.
- West Canada Creek Campground provides campground facilities, tubing and whitewater boating rentals, and shuttle services
- Herkimer KOA Resort and Campground.



Brookfield Renewable

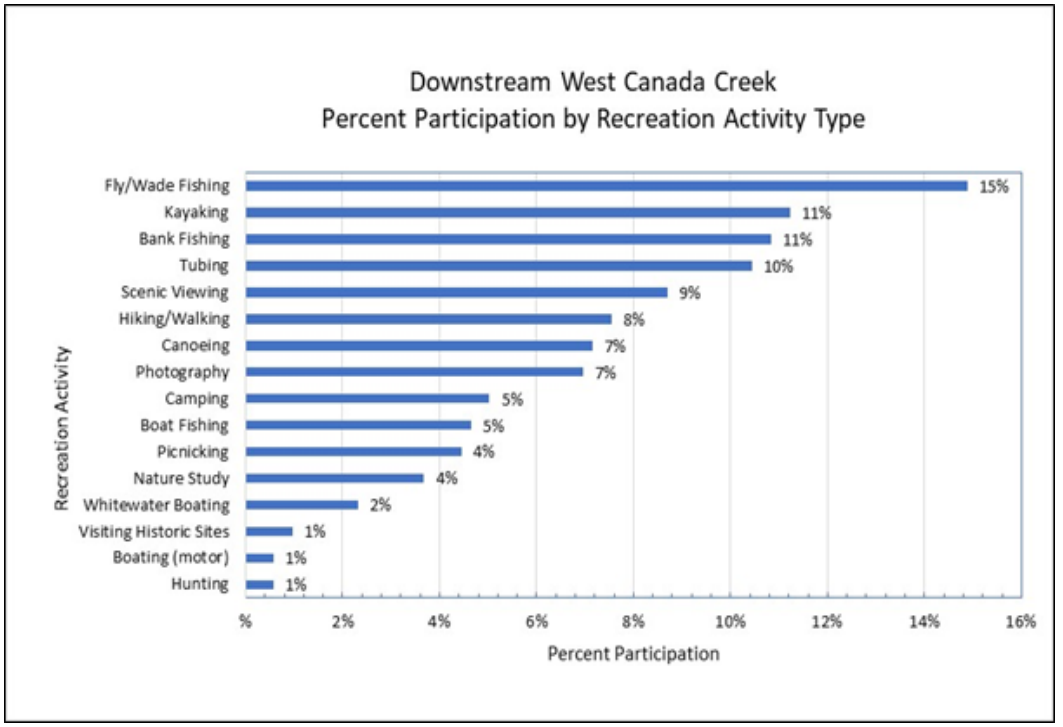
Results – Recreation Visitation Downstream West Canada Creek

- Participants visited their primary recreation site on West Canada Creek 19 times per year and stayed for 4 hours.
- The average group size was 3.7 people, and the average number of vehicles used to visit the primary site was 1.5 vehicles.
- The estimated overall visitation of the 10 downstream sites during the study period was approximately 14,144 visitors, with DS Rec 2, 3 and 5 sites receiving the greatest amount of visitors
- Recreation activities observed included: tubing (25%), bank fishing (11%) , fly/wade fishing (7%), picnicking (7%), walk/hike (3%), boating/boat fishing (2%), and other (45%), which included sightseeing, walking dog, swimming, New York State Fire Homeland Security training, or in parking area.

Brookfield Renewable

Results – Recreation Visitor Survey – Downstream Sites

- Survey respondents indicated recreation activities included fly/wade fishing (15%), kayaking (11%), bank fishing (11%), and tubing (10%).
- Respondents rated the overall condition of the primary site visited as excellent (11%), good (30%), satisfactory (31%), fair (24%), and poor (4%).
- Reasons why the condition was rated as less than satisfactory included poor/difficult access, mediocre launch sites, garbage, erosion and steep banks, and fluctuating water levels.



Results – Recreation Survey

- Respondents rated being satisfied (41%) or neutral (28%) with their fishing experience
- On average, anglers spent 3.7 hours fishing on a typical trip and catch 1.7 fish per hour.
- Anglers reported typically harvesting less than one fish and releasing an average of 3.7 fish.

Angling Technique	Fish Prospect Only Percent (%)	Fish WCC Only Percent (%)	Total (All Responses) Percent (%)
Bait Fishing	30	5	9
Fly Fishing	4	38	30
Artificial Lures	22	12	15
Bank Fishing	22	15	15
Boat Fishing	17	8	11
Wade Fishing	4	23	19
No Response	0	0	1

Downstream Water Flow Levels and Warning System

- Approximately 60% of survey participants scheduled recreation trips to West Canada Creek based on power generation flows, and 62% access flow information prior to their visit.
- Respondents obtain flow information from the SafeWaters website (39%), by a USGS gage (33%) and the SafeWaters phone line (8%).

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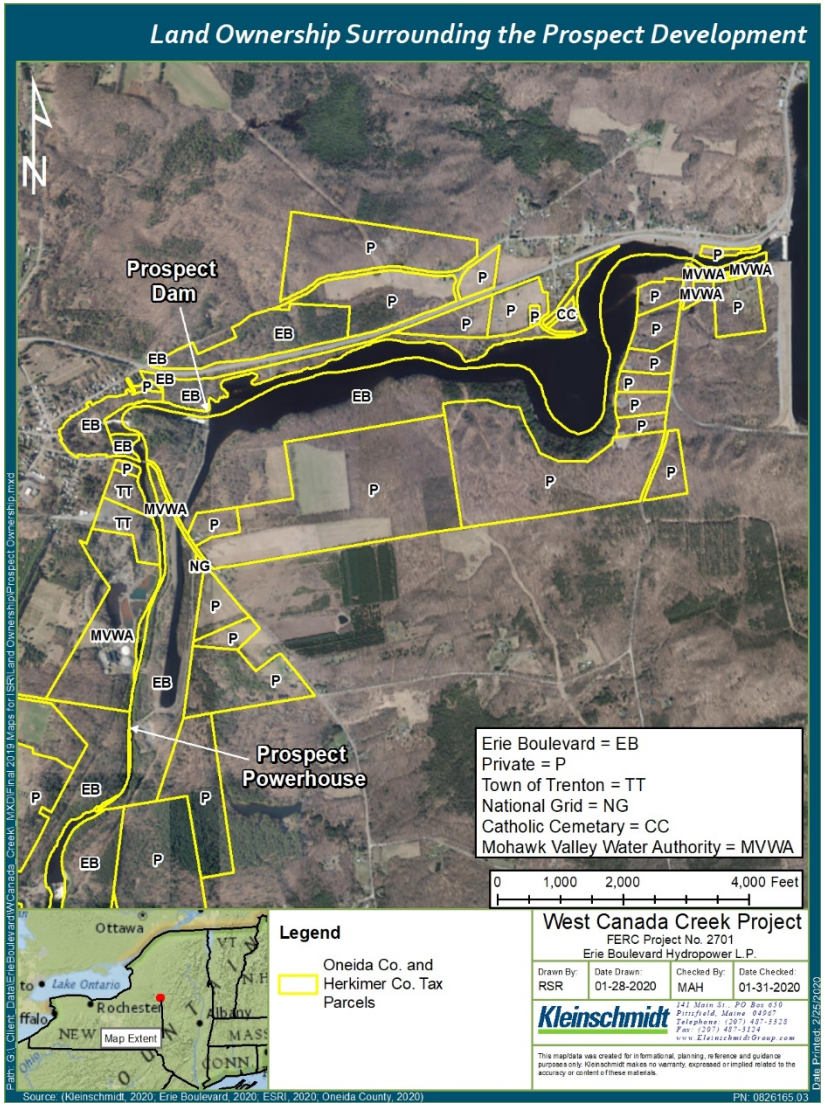
Results – Public Access and Safety

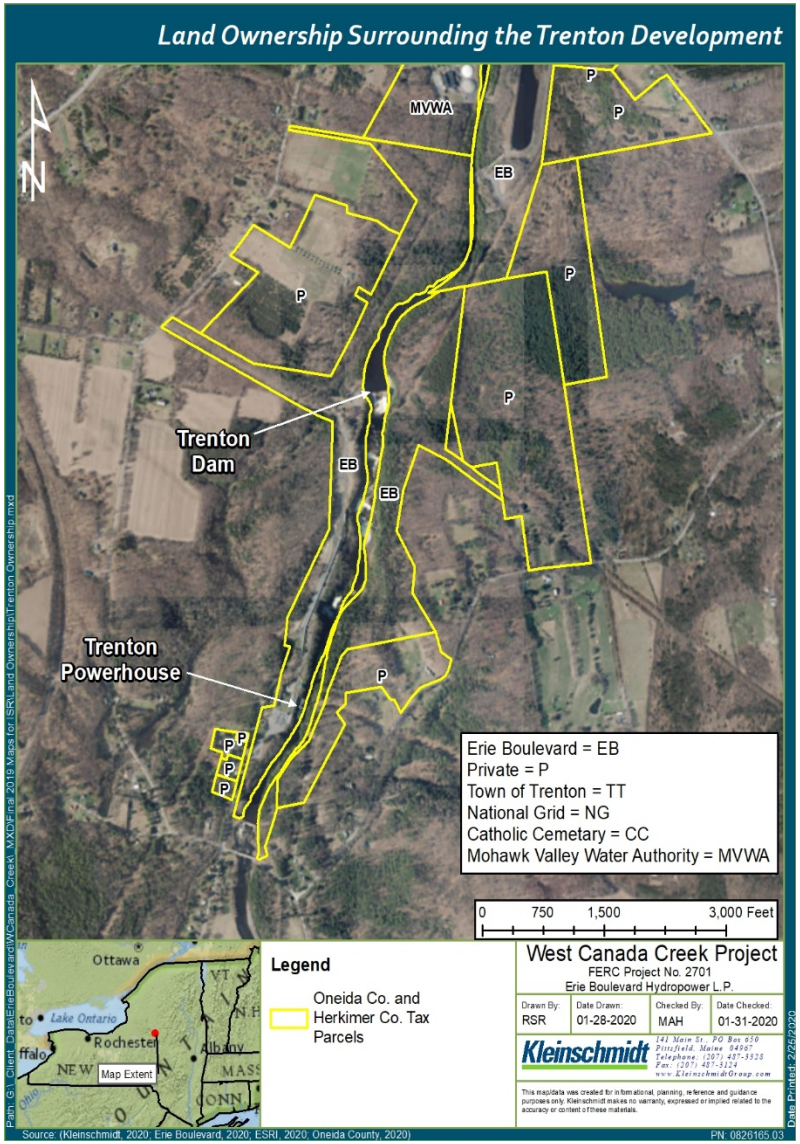
- Public access sites along the northern shoreline includes the existing Prospect boat launch and informal access.
- Prospect bypass reach is restricted to public access.
- Adjacent lands to the bypass are owned by Erie, Mohawk Valley Water Authority (MVWA), a private landowner, and the Town of Trenton.
- Prospect bypass eastern shoreline downstream of Military Bridge is a steep cliff (almost 100% of the shoreline) and provides no safe access.
- Approximately 70% of the Prospect bypass western shoreline is steep/cliff.
- The remaining area predominantly has loose rock, provides difficult access to the stream channel, and is adjacent to the MVWA parcel and associated infrastructure.



Brookfield Renewable

Results – Public Access and Safety

- The Trenton bypass reach traverses through the Trenton Falls gorge, adjacent shoreline is primarily wooded and undeveloped.
- The Trenton bypass reach is restricted to public access.
- The Trenton impoundment shorelines are wooded with steep vertical bedrock ledges along the narrow and gorge-like configuration.
- Adjacent land along the Trenton impoundment and bypass reach is owned by Erie along both shorelines, with adjacent private ownership.
- Erie, in partnership with the Town of Trenton, provide controlled public access to view the scenic Trenton Falls gorge.



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Results – Public Access and Safety

- Erie operates the West Canada Creek Project consistent with its commitment to public and employee safety.
- Erie restricts from public access such portions of the project waters, adjacent lands and project facilities due to safety concerns.
- Erie follows FERC's guidelines for public safety, including FERC's Guidelines for Public Safety at Hydropower Projects (FERC 2011), and Security Program for Hydropower Projects (FERC 2016).
  - Erie maintains a boat barrier on the north shore of the reservoir approximately 200 feet upstream from the dam.
  - Erie maintains a programmable logic controller (PLC) controlled public safety siren/strobe combination at the Prospect dam and a Fishermen Alert System (FAS) below the Trenton Powerhouse.
  - Erie provides information regarding flow releases at the Trenton Powerhouse via SafeWaters, a publicly accessible website and toll-free phone line.
  - Public safety warning signage.

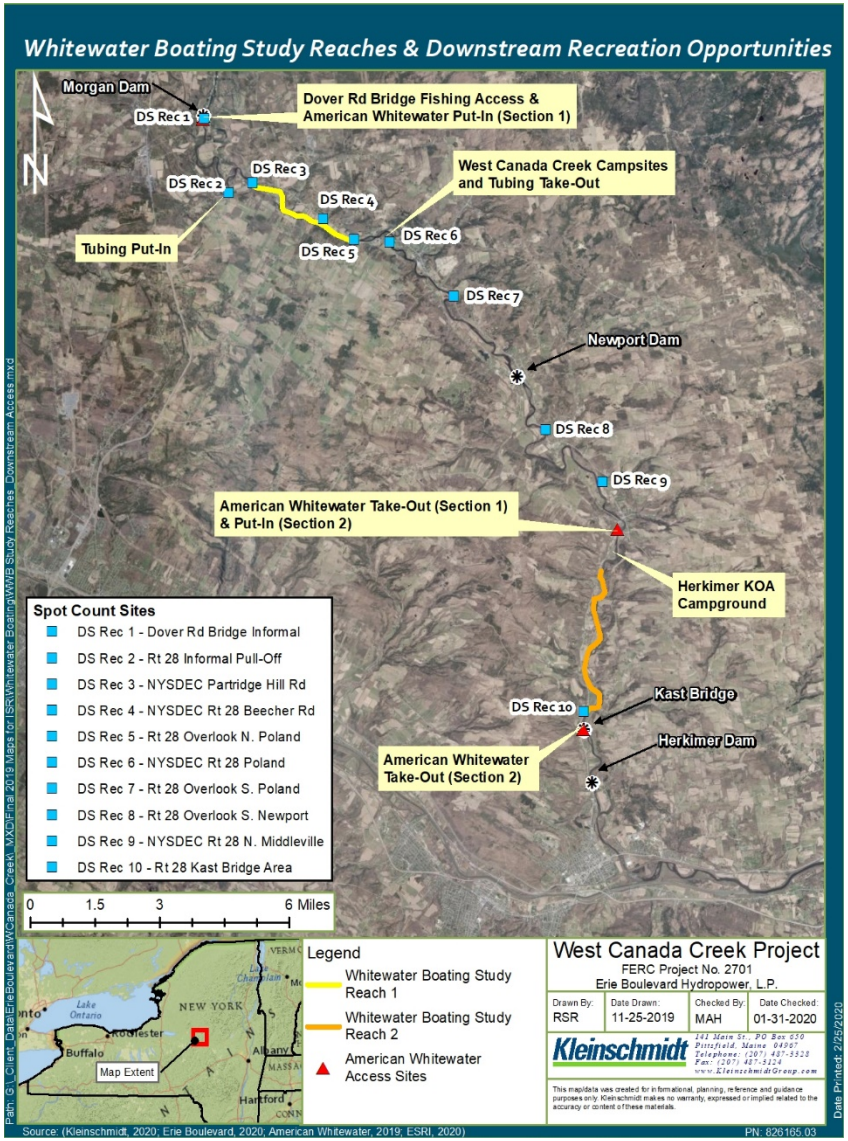
WHITEWATER BOATING FLOW AND ACCESS STUDY

WHITEWATER BOATING FLOW AND ACCESS STUDY

Brookfield Renewable

Study Purpose and Study Area

- Regional opportunities within approximately 1-hour drive from Project area.
- Assess whitewater boating opportunities and access of Prospect Bypass Reach.
- On-water controlled flow assessment downstream West Canada Creek downstream of Morgan dam to Kast Bridge.



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Methodology

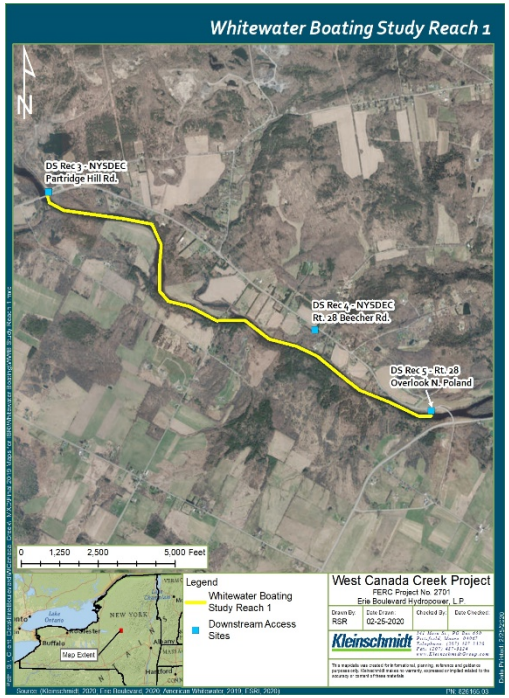
- Desktop assessment of regional whitewater boating opportunities within approximately 1-hour drive (60 miles) of the Project area.
- Characterize historic records of minimum, maximum, median, and average flow rates and seasonal variations for the previous 5-year period (ongoing).
- Review potential for whitewater boating opportunities within the Prospect bypass reach, including adjacent land ownership and access, potential put-in and take-out locations.
- Conduct an on-water controlled flow assessment to evaluate the suitability for whitewater boating opportunities and to assess the type of experience flows provide for the downstream study area
- In order to assist with logistics and based on consultation with the Working Group, identified representative reaches for the controlled flow assessment to include reaches within the AW identified sections (Section 1 and 2).
- Controlled flow assessment will focus on whitewater boating (canoe/kayak); information pertaining to tubing use obtained via rental information from the West Canada Creek tubing outfitter and the recreation visitor survey information.

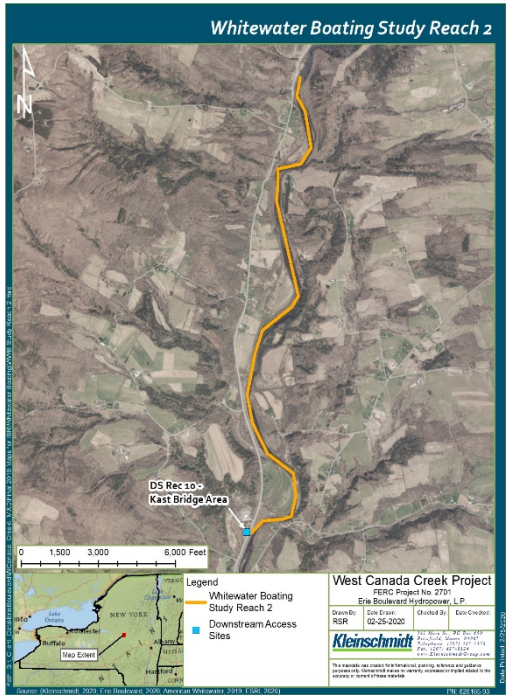
WHITEWATER BOATING FLOW AND ACCESS STUDY

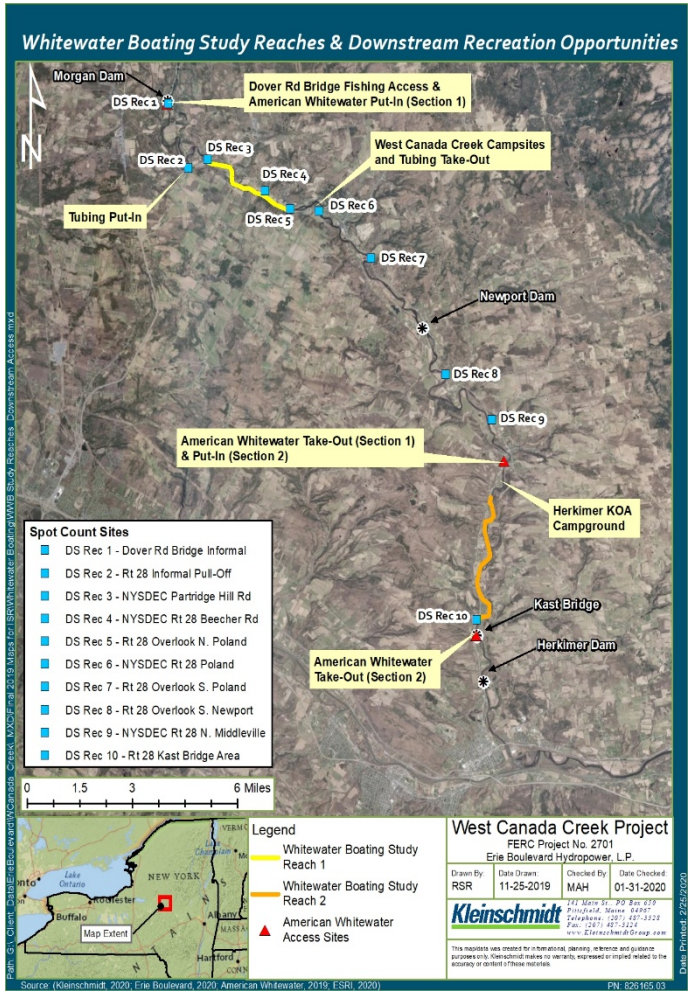
Brookfield Renewable

Methodology

- Upper reach put in DS Rec 3 site and take out DS Rec 5 site, approximately 3-mile run.
- Lower reach put-in at road-side pull-off and take out at Kast Bridge area near DS Rec 10 site, approximately 4-mile run.







WHITEWATER BOATING FLOW AND ACCESS STUDY

Brookfield Renewable

Methodology

- Evaluation will include controlled flow releases of approximately 600 cfs, 1,000 cfs and 1,400 cfs, as requested by AW and agreed upon with the Working Group.
- These flow releases may be subject to change based on logistical planning (travel times and downstream tributary inflows).
- Expert Panel will be no more than 10 people, targeting about 5 to 6 people per reach for logistical purposes.
- Expert Panel will complete evaluation pre-flow and post-flow assessment forms for each flow and study reach, and comparative flow post-evaluation form and focus group discussion after completing all of the controlled flow runs.
- Anticipated schedule will be within the May, June or July 2020 period depending on weather and flow conditions.

Variances from Approved Study Plan

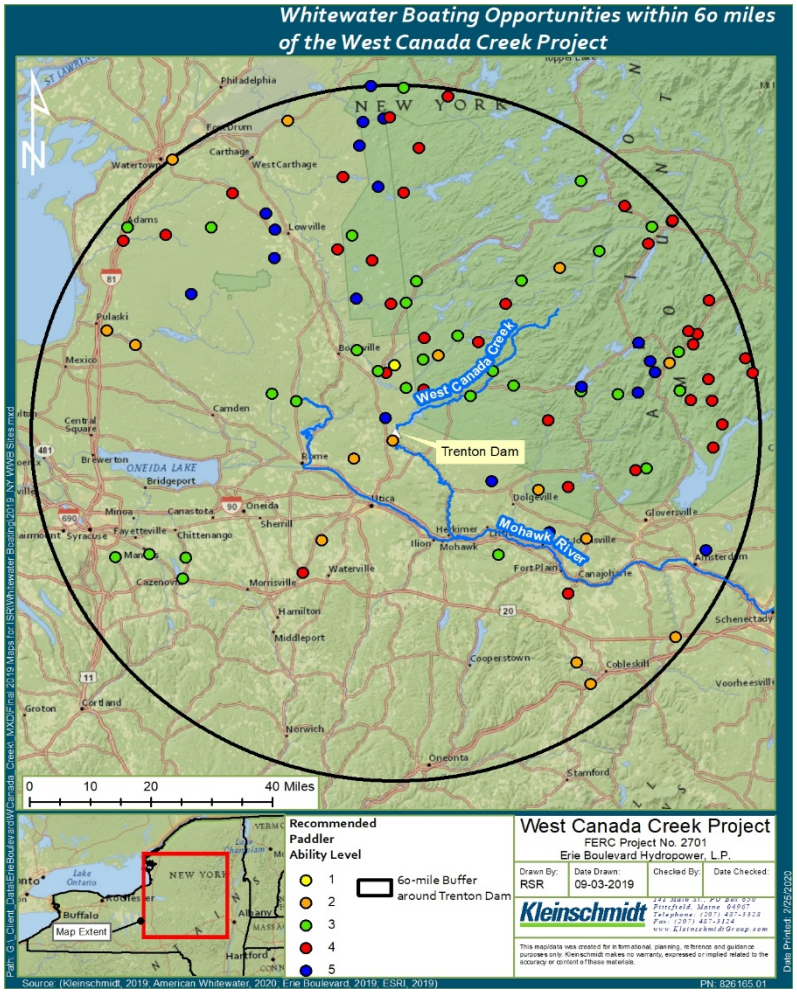
- Postponed controlled flow assessment until 2020 season due to higher flows, logistical challenges, colder weather and associated safety considerations of the participants.

Results – Regional Whitewater Boating Opportunities

Whitewater Boating Opportunities within Approximately 60 Miles of the West Canada Creek Project

River Name	Whitewater Boating Class	Approximate Length (River Miles)
Black (South Branch)	Class II-IV	8
Black River (Forestport - Norton Rd)	Class II-III	12
Cincinnati Creek	Class IV-V	4.5
East Canada Creek	Class II-IV	12
Fish Creek East Branch	Class II-IV	9.4
Indian (S. Branch Moose Tributary)	Class III-IV	8
Little Black Creek	Class II-V	5.5
Little Woodhill Creek	Class III	3.3
Mohawk River (West Branch)	Class II-III	7
Moose River	Class III-IV+	17
Moose River (Middle Branch)	Class II-IV	5
Moose River (South Branch)	Class II-IV	26
Nine Mile Creek	Class II	6
Nowadaga Creek	Class II-III	4.8
Oriskany Creek	Class II-III	1
Sprite Creek	Class II-II+	4.5
Spruce Creek	Class II-IV+	6.5
Spruce Creek	Class IV-V	6
Timmerman Creek	Class IV+	2.2
West Canada Creek (Ohio Gorge)	Class III	1.5
Wood Hull Creek	Class I-V	13.5

Source: AW 2020a, AW 2020b, Riverfacts 2020



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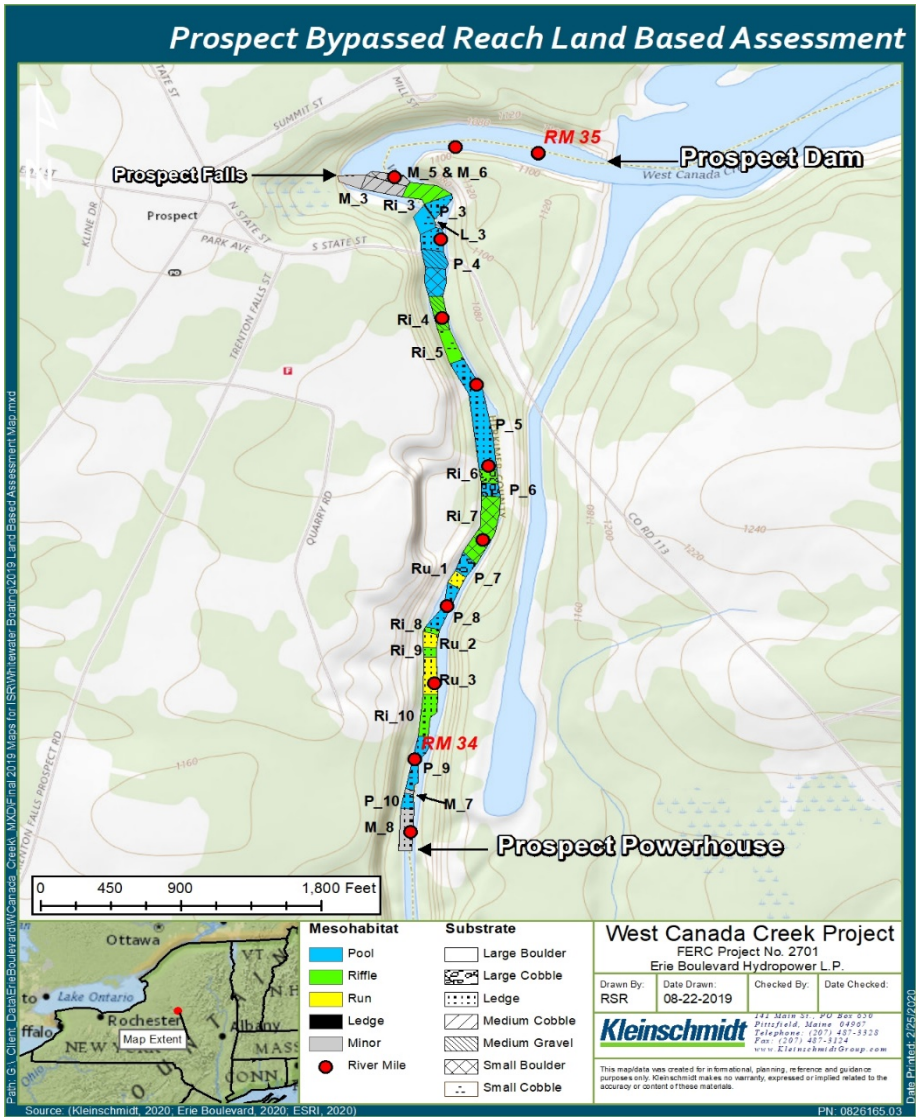
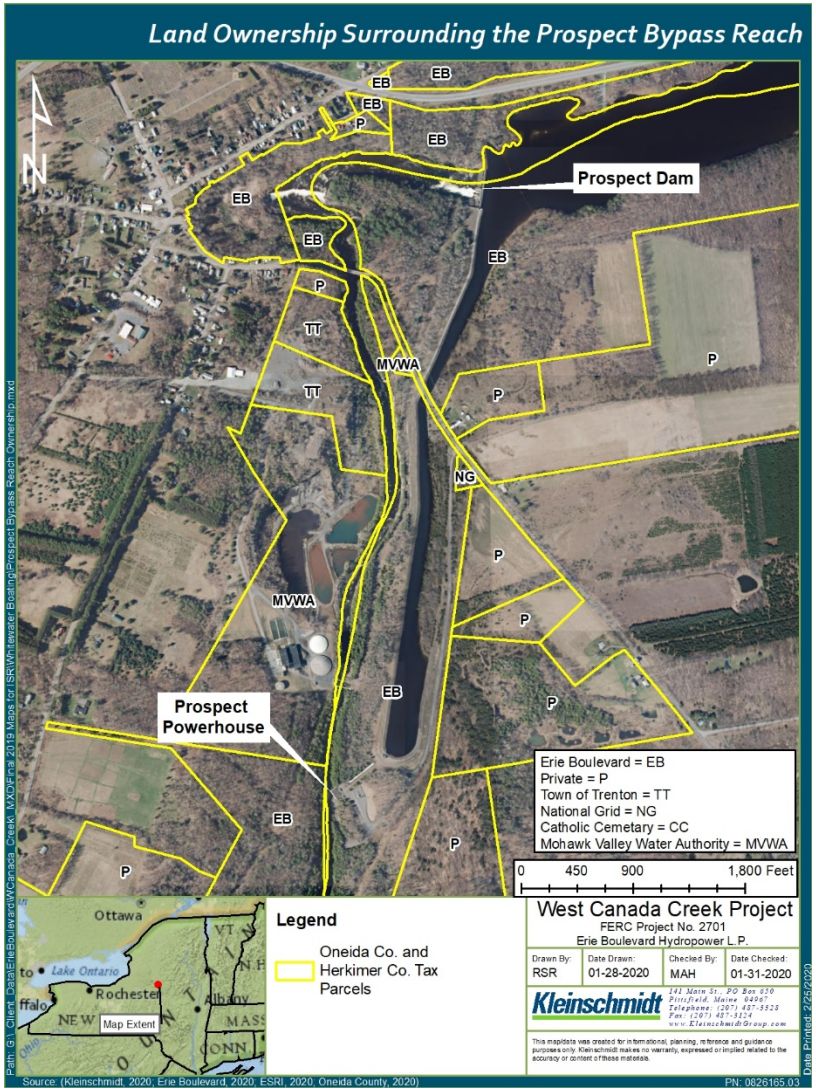
Results – Prospect Bypass Reach Assessment

- Mapped the Prospect bypass reach mesohabitat and substrates during the Mesohabitat Assessment Study.
- The reach between Military Bridge and Prospect Tailrace is approximately 0.8 mile in length.
- Almost 100 percent of the eastern shoreline is steep cliff and provides no access.
- Approximately 70 percent of the western shoreline is steep/cliff, remaining predominantly has loose rock; difficult access to stream channel.



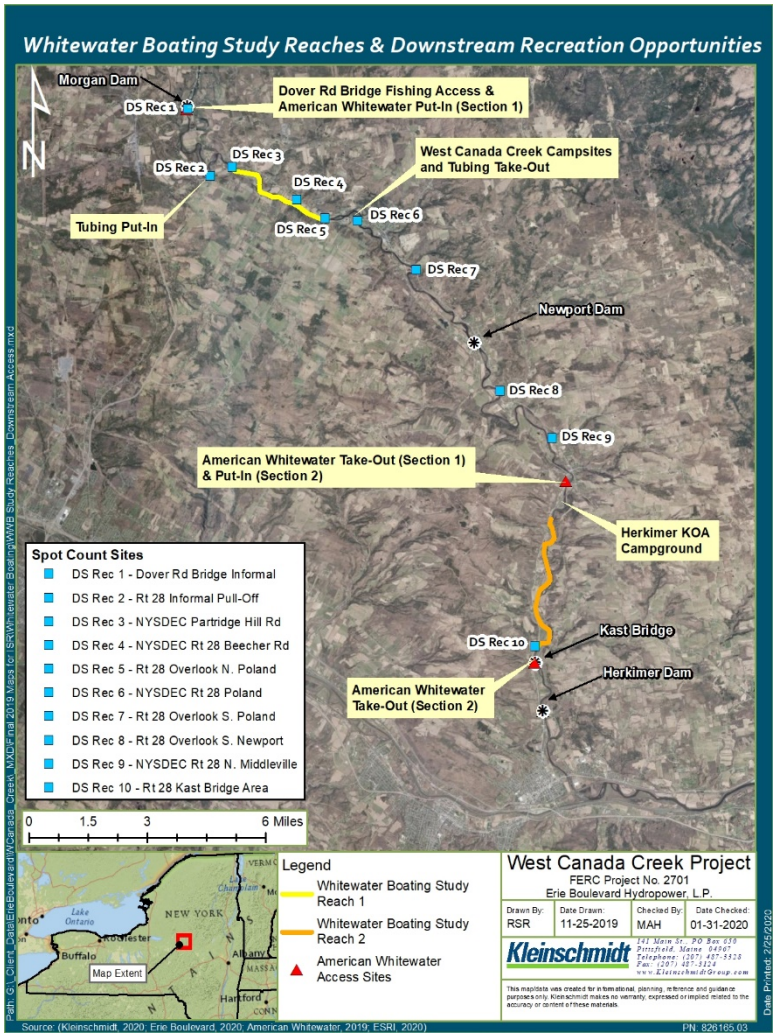
Results – Prospect Bypass Reach Assessment

- Eastern shoreline is primarily Erie-owned parcels, western shoreline ownership includes a private parcel, Town of Trenton, MVWA, and Erie.
- Conducted multiple consultation calls with USFWS, NYSDEC and AW, and conducted in-field review of potential put-in and take-out locations.
- AW is seeking additional infield assessment to evaluate potential whitewater boating features, and ingress and egress locations.
- Erie continues to have safety concerns with providing access given the significant egress issues, gorge-like banks with high cliffs and/or unstable rock outcroppings, in both the Prospect bypass reach and Trenton impoundment.
- Erie will consult with AW regarding any potential additional in-field assessment; any additional assessment would be conducted during the 2020 study season.



Results – Downstream Recreation Use, Access and Needs

- Recreation opportunities along West Canada Creek include angling, whitewater boating, tubing, picnicking, hiking/walking, sightseeing, and camping.
- AW identifies a Level I-II (beginner/intermediate) 28-mile long whitewater boating run beginning at the Dover Road Bridge and extending to Herkimer.
- Downstream reach supports recreational tubing opportunities starting about 2.5 miles downstream of Dover Road Bridge and extending about 5 miles downstream to the West Canada Creek Campground.
- According to the West Canada Creek Tubing website, flows of less than 300 cfs are considered poor floating conditions; flows of 301 cfs to 900 cfs are considered good floating conditions, flows of 900 cfs to 1,750 cfs are considered fast floating conditions; and at flows of over 1,750 cfs, no rentals are available.



Results – Downstream Flow Characterization

- Estimated flow travel time from Trenton tailrace down to Kast Bridge is approximately 6 to 8 hours depending on flow levels.
- In addition, based on review of Kast Bridge gage records and review of project operation releases, tributaries, such as Cincinnati Creek, can contribute significantly to overall flow in the downstream reaches during a significant rain event.
- Characterization of flow conditions and seasonal variations for the previous 5-year period will be provided in the Updated Study Report.
- Erie provides information regarding flow releases at the Trenton Powerhouse via SafeWaters, a publicly accessible website and toll-free phone line.

Aesthetic Assessment Study

AESTHETICS FLOW ASSESSMENT STUDY

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Study Purpose and Study Area

- Study Purpose
  - Document the existing aesthetic character and conditions in the Prospect and Trenton Falls bypass reaches;
  - Document key viewing locations and opportunities (including special event activities);
  - Collect photo documentation of various existing and controlled flow conditions within the Project bypass reaches; and
  - Conduct focus group assessments of controlled flow conditions at representative key viewing locations adjacent to the Project bypass reaches.
- Study Area
  - The Prospect and Trenton bypass reaches.

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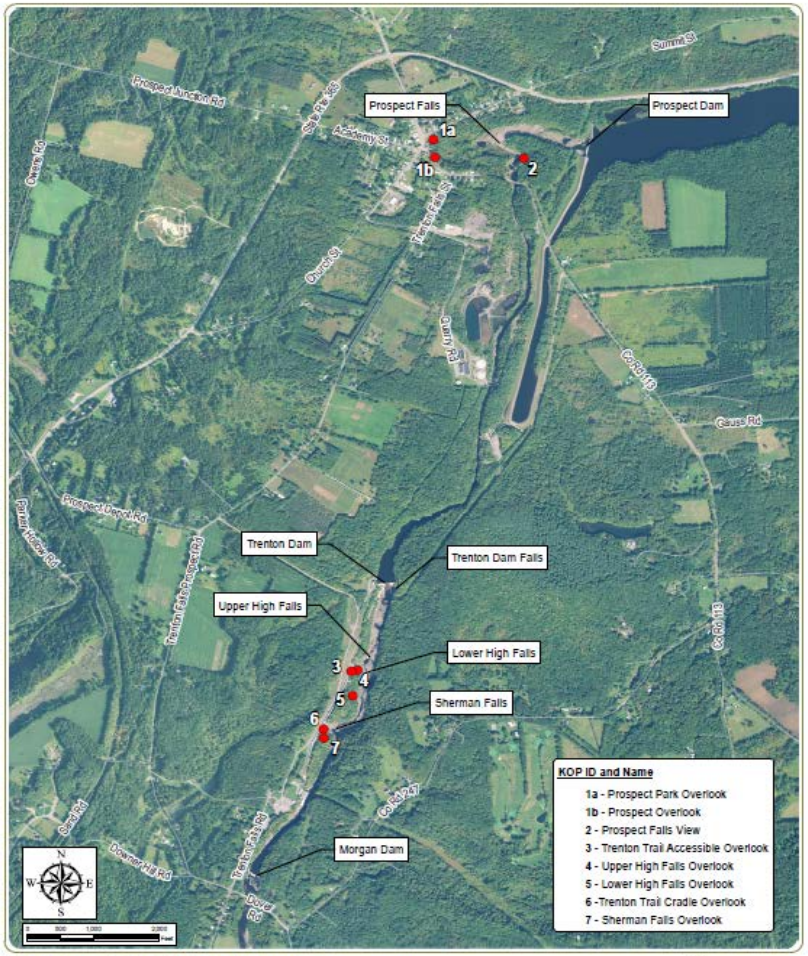
Methodology

- EDR characterized and documented (photographed) the identified Key Observation Points (KOPs) adjacent to the Project bypass reaches during both the leaf-on and leaf-off seasons.
- Erie consulted with the Recreation Working Group (USFWS, NYSDEC, AW and NYTU) regarding:
  - the KOP locations,
  - the selection of the KOPs for the in-field controlled flow evaluation,
  - identification of the targeted flow releases for the Prospect and Trenton bypass reaches during the aesthetic controlled flow evaluation, and
  - review of the evaluation forms and focus group questions.
- Working Group provided participants to serve on a focus group/rating panel for the in-field controlled flow assessment.
- The primary focus of the aesthetic evaluation was the evaluation of the various aesthetic attributes and the comparative analysis of these attributes under a range of evaluation flows.

Methodology – Selection of KOPs for Controlled Flow Evaluation

- A total of 8 KOPs were identified and documented, including 3 at the Prospect bypass reach and 5 at the Trenton bypass reach.
- In consultation with the Working Group, 5 representative KOP locations were selected for the controlled flow assessment.
- For the Prospect bypass reach two locations were selected:
  - KOP 1b view of the Prospect Falls waterfall from one of the Town of Trenton overlook areas.
  - KOP 2 is located on Project property in proximity to Prospect Falls and provides closer views of the Falls.
- For the Trenton Falls bypass area, three locations were selected:
  - KOP 4 view of the Upper High Falls and upstream Mill Dam Falls.
  - KOP 5 view of the Lower High Falls.
  - KOP 7 view of the Sherman Falls.



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Methodology- Controlled Flow Evaluation

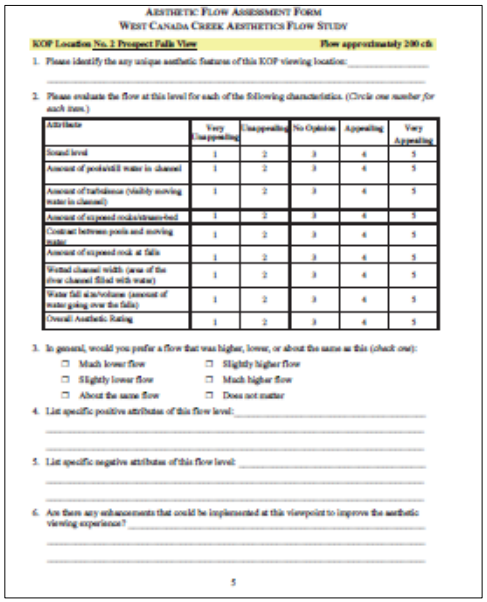
- Erie consulted with USFWS, NYSDEC, AW regarding the flow release ranges.
- Erie proposed aesthetic flow assessment releases of: Prospect bypass reach of leakage, 100 cfs and 200 cfs, and for the Trenton bypass reach of leakage, 200 cfs and 400 cfs.
- Consulted parties recommended that the evaluation remove the leakage flow, stating that sufficient information was provided for the aesthetic conditions during leakage and documented in photographs.
- Based on consultation, targeted flows for the assessment were 100, 200 and 300 cfs flow at Prospect bypass, and agreed to targeted flows of 100, 200 and 400 cfs at Trenton.

Summary of Flow Ranges during the Aesthetic Flow Assessment

Development	Target Flow (cfs)	Gate Opening (ft)	Average Pond Elevation (feet msl USGS)	Engineering Calculated Discharge Range (cfs)1
Prospect bypass reach	100	0.20	1159.0	99-107
	200	0.40	1159.1	198-214
	300	0.60	1159.1	296-319
Trenton bypass reach	100	0.65	1021.2	124-134
	200	1.25	1019.9	209-227
	400	1.85	1019.8	298-323

Methodology- Controlled Flow Evaluation

- Panel consisted of eight individuals, including three representatives from the NYSDEC, two representatives from the USFWS, one representative of AW, and one representative of the Town of Trenton, as well as an in-house visual expert from EDR.
- The rating panel completed the comparative evaluation form individually following the completion of all three controlled flow releases for each bypass reach, and participated in two focus group discussions following the comparative flow assessments.



AESTHETIC FLOW ASSESSMENT FORM
WEST CANADA CREEK AESTHETICS FLOW STUDY

KOP Location No. 2 Prospect Falls View — Flow approximately 200 cfs

1. Please identify the any unique aesthetic features of this KOP viewing location: _____

2. Please evaluate the flow at this level for each of the following characteristics. (*Circle one number for each item.*)

Attribute	Very Unappealing	Unappealing	No Opinion	Appealing	Very Appealing
Sound level	1	2	3	4	5
Amount of pools/still water in channel	1	2	3	4	5
Amount of turbulence (visibly moving water in channel)	1	2	3	4	5
Amount of exposed rocks/stream-bed	1	2	3	4	5
Contrast between pools and moving water	1	2	3	4	5
Amount of exposed rock at falls	1	2	3	4	5
Wetted channel width (area of the river channel filled with water)	1	2	3	4	5
Water fall size/volume (amount of water going over the falls)	1	2	3	4	5
Overall Aesthetic Rating	1	2	3	4	5

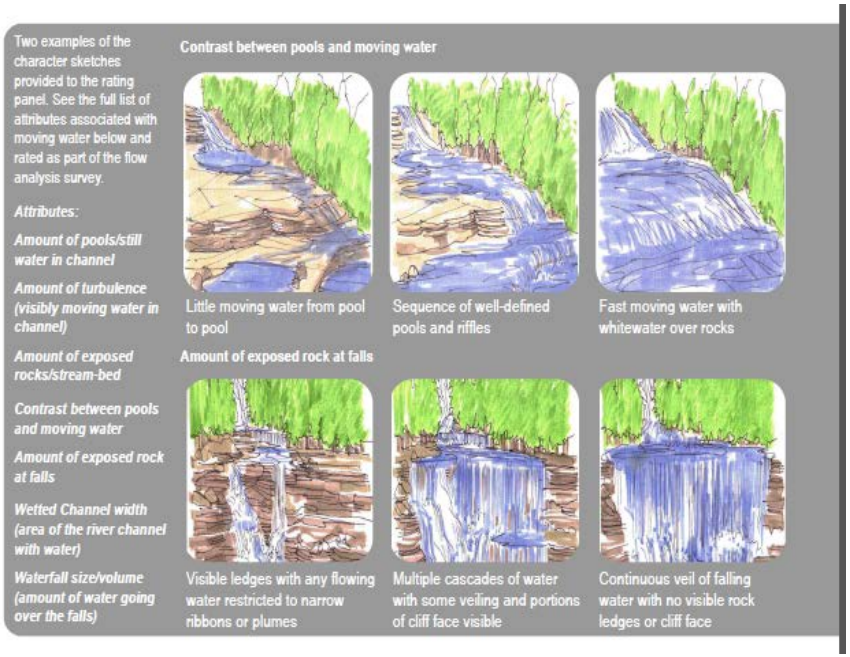
3. In general, would you prefer a flow that was higher, lower, or about the same as this (*check one*):
   - ☐ Much lower flow
   - ☐ Slightly lower flow
   - ☐ About the same flow
   - ☐ Slightly higher flow
   - ☐ Much higher flow
   - ☐ Does not matter

4. List specific positive attributes of this flow level: _____

5. List specific negative attributes of this flow level: _____

6. Are there any enhancements that could be implemented at this viewpoint to improve the aesthetic viewing experience? _____

5



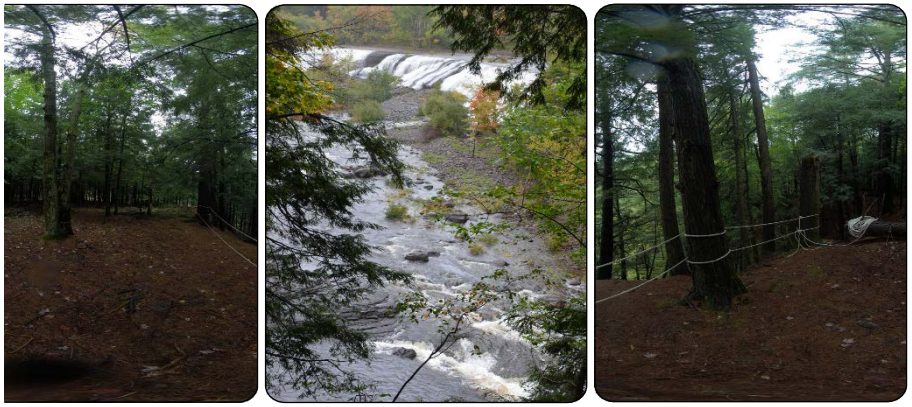
Results – Key Observation Points

KOP 1b - Prospect Falls Overlook

- Formalized roadside public viewing area on the northeast side of North State Street in the hamlet of Prospect.
- Cleared corridor allows for views of Prospect Falls in entirety.
- Falls are approximately 750 feet from the KOP, but close enough for the sound coming from the falls to be clearly audible.

KOP 2 – Prospect Falls (Undeveloped Location)

- Undeveloped, not publicly accessible and located behind an existing security fence installed by Erie for public safety purposes.
- Heavily forested area with viewing area located approximately 30 feet above the shoreline of the creek.
- Viewpoint provides closer, more intimate view of the falls.



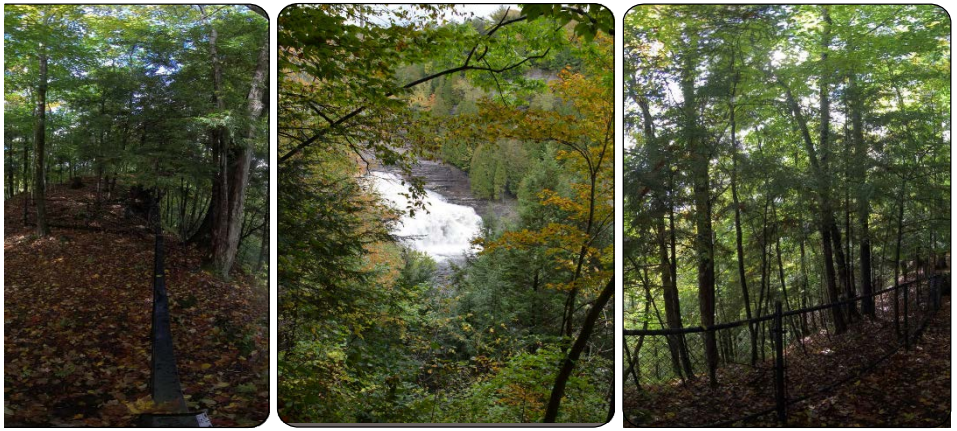
Results – Key Observation Points

KOP 4 –Upper High Falls Overlook

- View of Upper High Falls from two locations, one located at the end of the Trenton Falls trail and one at a lower elevation overlook.
- Located approximately 150 feet from the falls, provides long distance views upstream, revealing views of the Mill Falls dam waterfall.

KOP 5 –Lower High Falls

- Overlook located at the Lower High Falls trail secondary trail spur off the main Trenton Falls Trail.
- Base of the falls is approximately 350 feet from the KOP.
- Lower High Falls is a bedrock ledge, but is more stepped in character and less dramatic than Upper High Falls.



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Results – Key Observation Points

KOP 7 – Sherman Falls Overlook

- Located within a wooded setting at the terminus of the Sherman Falls secondary trail.
- Provides views to the river above the falls, Sherman Falls and the unique geological nature of the gorge.
- Powerful waterfall drop can be heard and felt from overlook location.

Results – Controlled Flow Evaluation

KOP 1b – Prospect Falls Overlook

Below is the mean score for each flow release and the difference between levels.

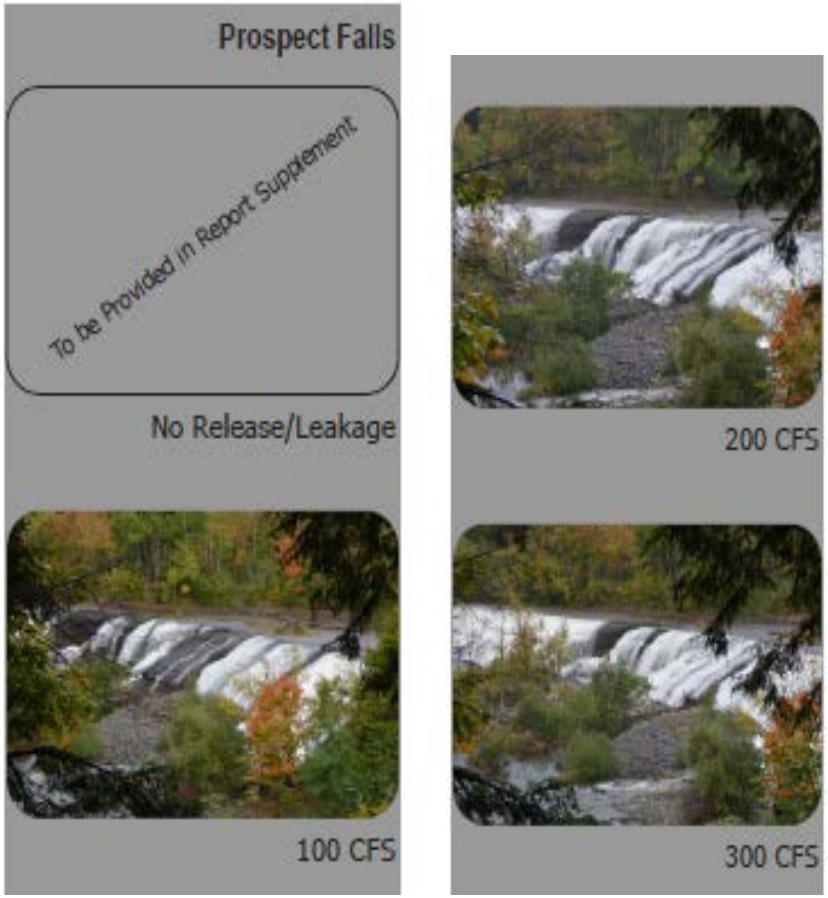
100 cfs	Mean Score	
	3.6	
		Difference
		+ 0.50
200 cfs	Mean Score	
	4.1	
		Difference
		+ 0.3
300 cfs	Mean Score	
	4.4	

Commonly used attribute descriptions used by the rating panel members during the flow assessment.

100 cfs	Positive descriptions at 100 cfs: **Sound (5), Veiling (4), Decent (2)** Negative descriptions at 100 cfs: **Lack of Turbulence (3), Thin (4), Limited Flow (2)**
200 cfs	Positive descriptions at 200 cfs: **Rock (4), Veiling (4), Sound (3), Riffle (3)** Negative descriptions at 200 cfs: **Rock Exposure (3)**
300 cfs	Positive descriptions at 300 cfs: **Riffle (3), Rock Face/Protrusion (3), Turbulence (2), Mist/ Spray (2), Color (2), Channels (2)** Negative descriptions at 300 cfs: **No Upstream/Above Falls Change (2), Minimal Rock Exposure (2)**

Results – Controlled Flow Evaluation

KOP 2 – Prospect Falls (Undeveloped Location)



Below is the mean score for each flow release and the difference between levels.

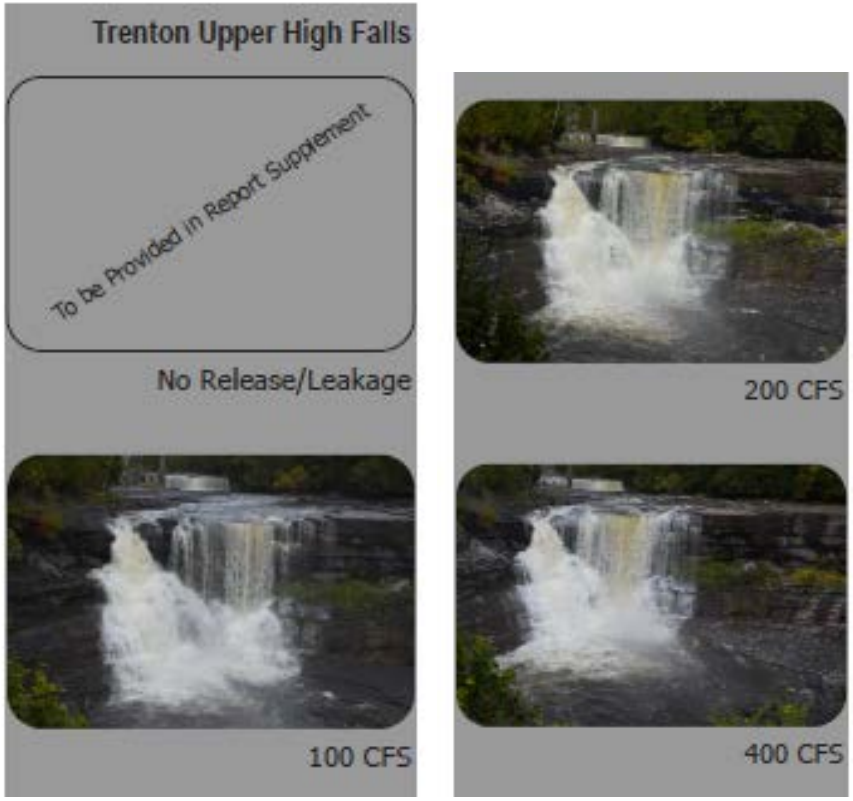
100 cfs	Mean Score	
	3.00	
		Difference
		+ 1.2
200 cfs	Mean Score	
	4.2	
		Difference
		+ 0.5
300 cfs	Mean Score	
	4.7	

Commonly used attribute descriptions used by the rating panel members during the flow assessment.

100 cfs	Positive descriptions at 100 cfs:
	Sound (4),
	Negative descriptions at 100 cfs:
	Minimal Flow/Minimal Interaction (2)
200 cfs	Positive descriptions at 200 cfs:
	Rock/Boulder (3), Sound (3)
	Negative descriptions at 200 cfs:
	No common descriptions
300 cfs	Positive descriptions at 300 cfs:
	Mist (4), Veil (3), Cascading (3), Angle of View (2)
	Negative descriptions at 300 cfs:
	Lack of Pools (2)

Results – Controlled Flow Evaluation

KOP 4 – Upper High Falls (Lower Viewing Area)



Below is the mean score for each flow release and the difference between levels.

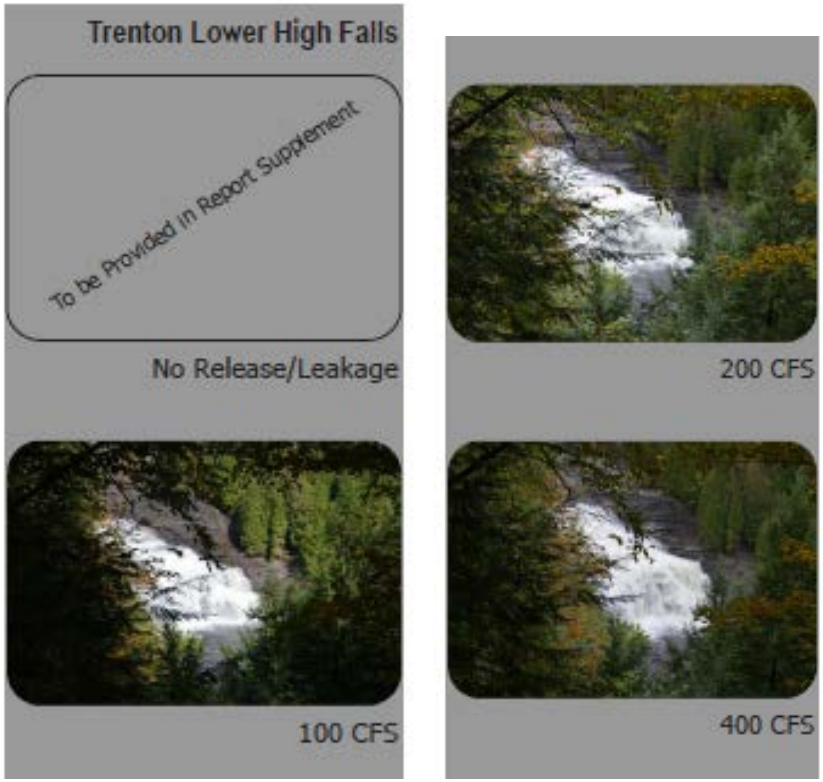
100 cfs	Mean Score	3.3
	Difference	+ 0.8
200 cfs	Mean Score	4.1
	Difference	+ 0.3
400 cfs	Mean Score	4.4

Commonly used attribute descriptions used by the rating panel members during the flow assessment.

100 cfs	Positive descriptions at 100 cfs:	**Crashing Sound (4), Spread of Veiling (3),**
	Negative descriptions at 100 cfs:	**Bare Rock/Dry Bedrock (7)**
200 cfs	Positive descriptions at 200 cfs:	**Mist (5), Cascading/Violent Cascading (4), Veiling (3)**
	Negative descriptions at 200 cfs:	**Exposed Rock/Bedrock (4)**
400 cfs	Positive descriptions at 400 cfs:	**Mist (7), Veil/Dramatic Veil/Deep Veil (2), Roar of Falls (2), Sound (2), Updraft/Wind (2), Channel (2)**
	Negative descriptions at 400 cfs:	**Bare Rock/Bedrock (3) Lack of Differentiation/Distinction (2)**

Results – Controlled Flow Evaluation

KOP 5 – Lower High Falls



Below is the mean score for each flow release and the difference between levels.

100 cfs	Mean Score	
	3.4	
		Difference
		+ 0.7
200 cfs	Mean Score	
	4.1	
		Difference
		+ 0.0
400 cfs	Mean Score	
	4.1	

Commonly used attribute descriptions used by the rating panel members during the flow assessment.

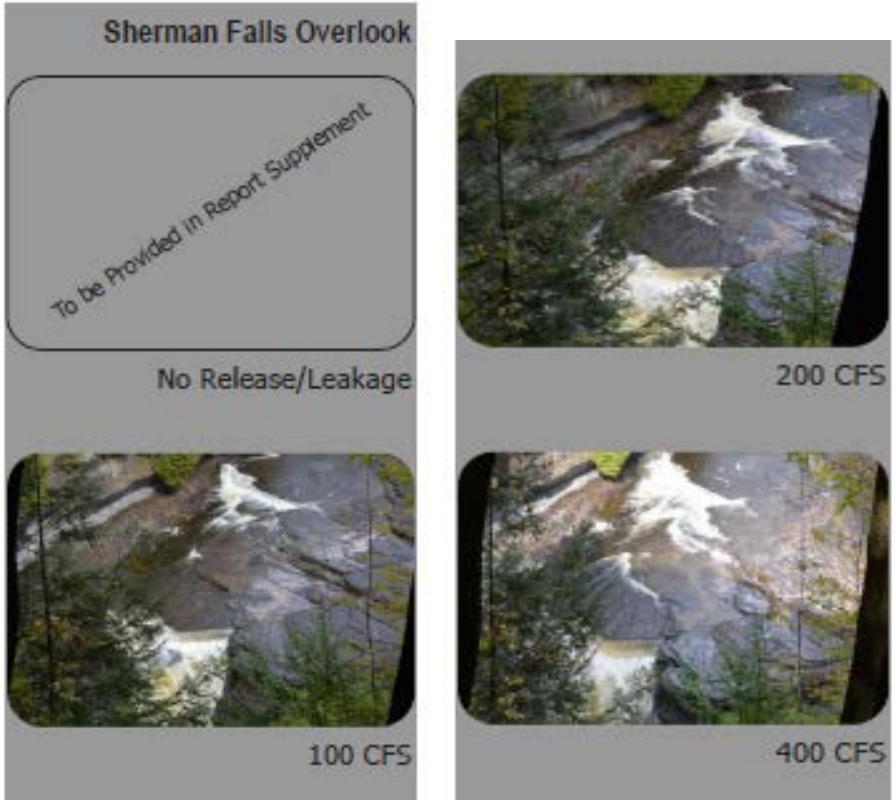
100 cfs	Positive descriptions at 100 cfs: **Veiling (3), Spans/Covers (2), Cascading (2), Sound (2), Rock (2)**
	Negative descriptions at 100 cfs: **Narrow View/Obscured (2)**
200 cfs	Positive descriptions at 200 cfs: **Rock/Boulder (3), Sound (3)**
	Negative descriptions at 200 cfs: **Narrow View/Obscured (2)**
400 cfs	Positive descriptions at 400 cfs: **Thunderous Sound (2), Mist (2)**
	Negative descriptions at 400 cfs: **No Common Descriptions**

AESTHETICS FLOW ASSESSMENT STUDY

Brookfield Renewable

Results – Controlled Flow Evaluation

KOP 7 – Sherman Falls Overlook



Below is the mean score for each flow release and the difference between levels.

100 cfs	Mean Score	**3.0**
	Difference	**+ 0.90**
200 cfs	Mean Score	**3.9**
	Difference	**+ 0.10**
400 cfs	Mean Score	**4.0**

Commonly used attribute descriptions used by the rating panel members during the flow assessment.

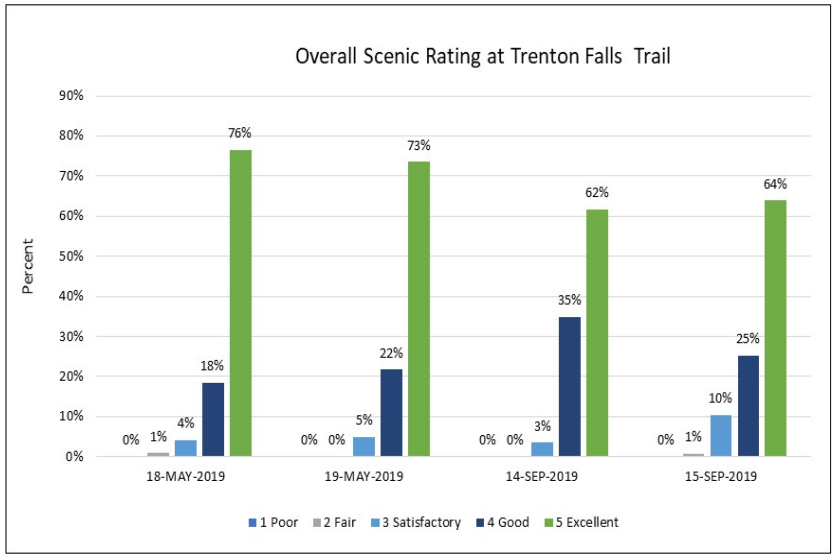
100 cfs	Positive descriptions at 100 cfs:	**Crashing Sound (6),**
	Negative descriptions at 100 cfs:	**Lack of Wetted/Covered Channel (3)**
200 cfs	Positive descriptions at 200 cfs:	**Wetted Width (4), Turbulent (3), Sheeting (2), Sound/ Volume**
	Negative descriptions at 200 cfs:	**Exposed Rock/Bedrock (2), Loss of Detail/Features (2)**
400 cfs	Positive descriptions at 400 cfs:	**Veil (3), Wetted Channel (3), Cascading (2), Upper Step (2), Sheeting/Sheet Flow (2)**
	Negative descriptions at 400 cfs:	**No Common Descriptions**

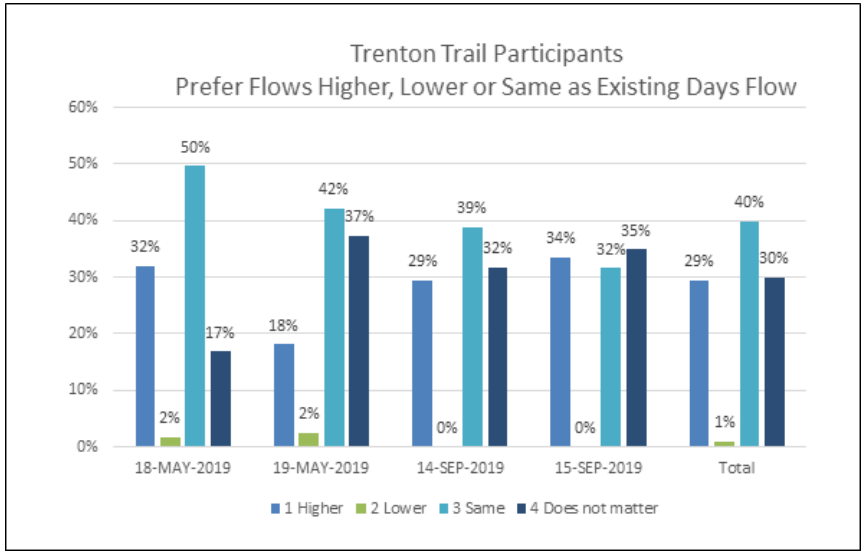
Results – Summary

- All of the evaluated flows provide significant aesthetic benefits when compared to the baseline (leakage) flows that are typically present in the Prospect and Trenton Falls bypass reaches.
- Even at the lowest flow evaluated (100 cfs), overall average aesthetic rating at all KOPs averaged greater than 3.0, indicating some level of visual appeal.
- Aside from the significant benefit of going from the baseline (leakage) flow to 100 cfs, the greatest incremental benefit was realized in both bypass reaches by going from 100 cfs to 200 cfs in Prospect, and 100 cfs to 200 cfs in Trenton.

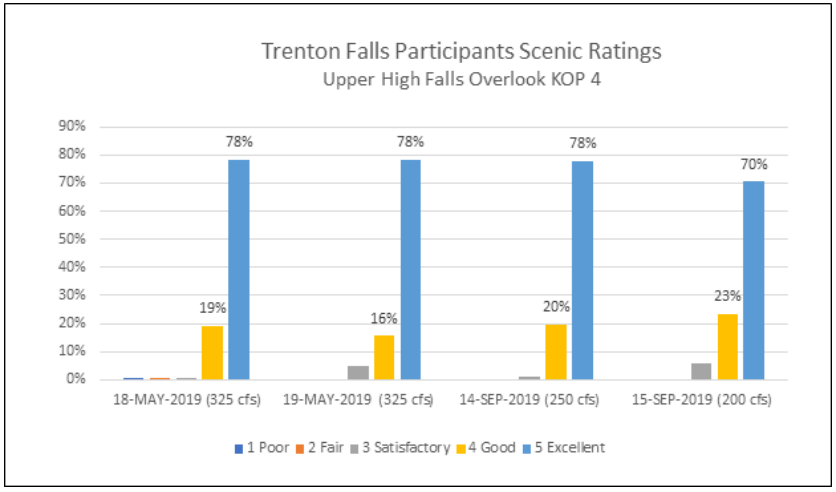
Results – Recreation Visitor Survey – Trenton Falls Scenic Trail

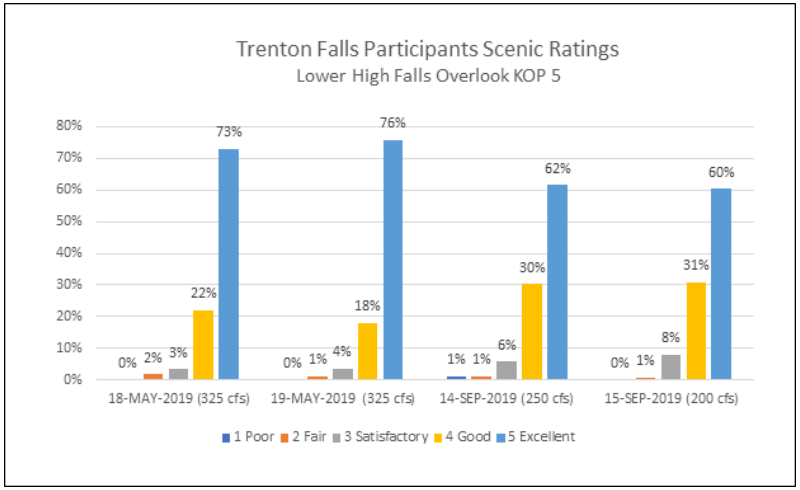
- At Trenton Falls, intercept surveys of visitors (443 surveys) during the 2019 Trenton Falls trail days indicated that flows released on these days (within the range of 200 to 325 cfs) were widely viewed as aesthetically appealing by the public.
- For the overall scenic quality, 94 percent of the respondents collectively (total across all days) rated the scenic quality as excellent (69 percent) or good (25 percent).
- The average rating for the overall scenic views was 4.6, on a scale from 1 to 5, with 1 being poor and 5 excellent.

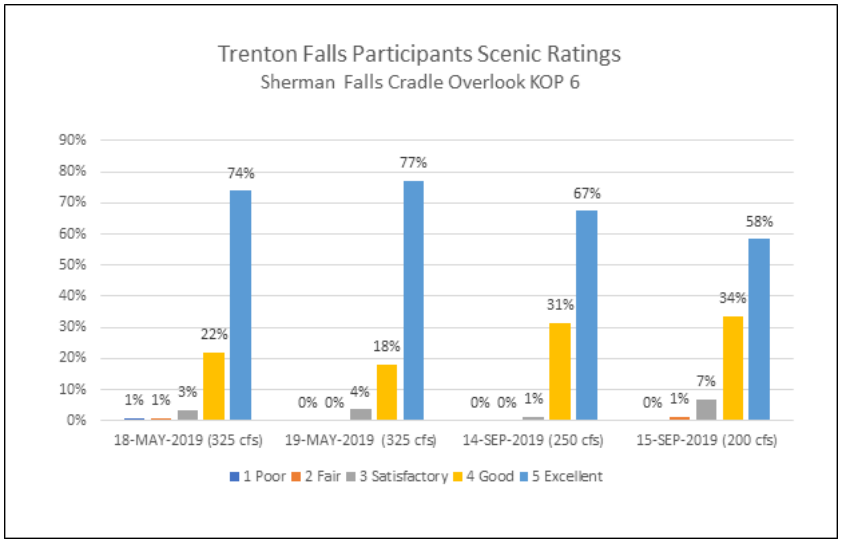


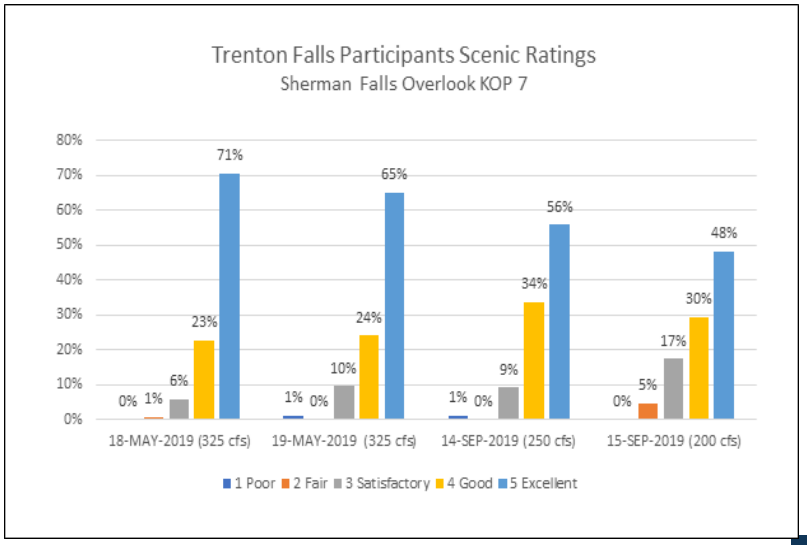


Results – Recreation Visitor Survey – Trenton Falls Scenic Trail









Next Steps

Next Steps

Brookfield Renewable

- Erie to file ISR meeting summary on **April 6, 2020**.
- Stakeholders file disagreements/requests to amend study plan by **May 6, 2020**.
- All stakeholders file responses to disagreements/amendment requests by **June 5, 2020**.
- FERC issues Director’s Determination on disagreements/amendments on **July 5, 2020**.
- Field work for Whitewater boating to be completed in 2020.
- Updated Study Report by **January 10, 2021.**

Information and Contacts

- Documents filed with the Commission will be available from FERC's eLibrary at under Docket P-2701.
- The eLibrary can be accessed through the FERC's homepage, at http://www.ferc.gov, or directly at https://elibrary.ferc.gov/idmws/search/fercgensearch.asp.
- Key relicensing documents can be downloaded from the Project's relicensing website at: http://www.westcanadacreekproject.com.
- All stakeholders are encouraged to contact Brookfield directly at any time with any questions or concerns about the Project:

Steven P. Murphy
Director, U.S. Licensing
Brookfield
33 West 1st Street South, Fulton, New York 13069
Phone: (315) 598-6130
steven.murphy@brookfieldrenewable.com

ATTACHMENT C

WEST CANADA CREEK PROCESS PLAN AND SCHEDULE

WEST CANADA CREEK HYDROELECTRIC PROJECT

RELICENSING PROCESS PLAN AND SCHEDULE

RESPONSIBLE PARTY	PRE-FILING MILESTONE	DEADLINE	FERC REGULATION
Erie	File Initial Study Report	3/7/2020	5.15(c)(1)
All Stakeholders	Initial Study Report Meeting	3/22/2020	5.15(c)(2)
Erie	File Initial Study Report Meeting Summary	4/6/2020	5.15(c)(3)
All Stakeholders	File Disagreements/Requests to Amend Study Plan	5/6/2020	5.15(c)(4)
All Stakeholders	File Responses to Disagreements/Amendment Requests	6/5/2020	5.15(c)(5)
FERC	Issue Director's Determination on Disagreements/Amendments	7/5/2020	5.15(c)(6)
Erie	Second Study Season	Spring- Fall 2020	5.15(a)
Erie	File Preliminary Licensing Proposal (or Draft License Application)	10/1/2020	5.16(a)-(c)
All Stakeholders	File Comments on Preliminary Licensing Proposal (or Draft License Application)	12/30/2020	5.16(e)
Erie	File Updated Study Report	1/10/2021	5.15(f)
All Stakeholders	Updated Study Report Meeting	1/25/2021	5.15(f)
Erie	File Updated Study Report Meeting Summary	2/9/2021	5.15(f)
Erie	File Final License Application	2/28/2021	5.17
All Stakeholders	File Disagreements/Requests to Amend Study Plan	3/11/2021	5.15(f)
Erie	Issue Public Notice of Final License Application Filing	3/15/2021	5.17(d)(2)
All Stakeholders	File Responses to Disagreements/Amendment Requests	4/10/2021	5.15(f)
FERC	Issue Director's Determination on Disagreements/Amendments	5/10/2021	5.15(f)

[1] Activities in shaded areas are not necessary if there are no study disputes.
[2] If the due date falls on a weekend or holiday, the deadline is the following business day.
[3] Early filings or issuances will not result in changes to these deadlines.