

WHITEWATER BOATING FLOW AND ACCESS STUDY PROGRESS REPORT

WEST CANADA CREEK HYDROELECTRIC PROJECT
FERC No. 2701-NY

Prepared for:

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DEFINITIONS OF TERMS, ACRONYMS, AND ABBREVIATIONS

AW	American Whitewater
Brookfield	Brookfield Renewable
cfs	cubic feet per second
Commission	Federal Energy Regulatory Commission
Erie or Licensee	Erie Boulevard Hydropower, L.P.
FERC	Federal Energy Regulatory Commission
ILP	Integrated Licensing Process
Interested Parties/ Stakeholders	The broad group of individuals and entities that have an interest in a proceeding
MVWA	Mohawk Valley Water Authority
NFCT	Northern Forest Canoe Trail
NYTU	New York Trout Unlimited
NYSDEC	New York State Department of Environmental Conservation
PAD	Pre-Application Document
Project	FERC Project No. 2701, West Canada Creek Project
Project Area	The area within the FERC project boundary
Project Boundary	The boundary line defined in the Project license issued by FERC that surrounds the Project
Project Vicinity	The general geographic area in which the Project is located; the towns of Trenton and Prospect, New York
PSP	Proposed Study Plan
Relicensing	The process of acquiring a new FERC license for an existing hydroelectric project upon expiration of the existing FERC license
Relicensing Participants	Individuals and entities that are actively participating in a proceeding
RSP	Revised Study Plan
SPD	Study Plan Determination
Tailrace	Channel through which water is discharged from the powerhouse turbines
UAV	unmanned aerial vehicle
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1.0 INTRODUCTION

Erie Boulevard Hydropower, L.P. (Erie or Licensee), a Brookfield Renewable company (Brookfield), is the Licensee, owner, and operator of the existing West Canada Creek Hydroelectric Project (FERC Project 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. A detailed description of the Project is provided in the Pre-Application Document (PAD) (Erie 2018).

The Federal Energy Regulatory Commission (FERC or Commission) issued the current license for the Project on March 18, 1983, which expires February 28, 2023. Erie is pursuing a new license under FERC's Integrated Licensing Process (ILP) and intends to file an application for a new license with FERC before February 28, 2021. On December 11, 2018, Erie filed a Revised Study Plan (RSP), and on March 7, 2019, FERC issued the Study Plan Determination (SPD) approving the RSP with modifications. On October 31, 2019, Erie requested a revision of the Process Plan and Schedule, and on December 5, 2019, FERC granted this revision to change the Initial Study Report filing date to March 7, 2020, to align with one year following the issuance of FERC's SPD.

As part of the study implementation and in accordance with FERC's SPD, Erie initiated consultation with agencies regarding aspects of the Project's relicensing studies. Erie reached out to the New York State Department of Environmental Conservation (NYSDEC), the U.S. Fish and Wildlife Service (USFWS), American Whitewater (AW), New York State Fish and Wildlife Management Board, New York Trout Unlimited (NYTU), and the Town of Trenton to conduct consultation calls on May 29, 2019, September 9, 2019, and September 12, 2019, regarding the methodology, survey instruments and various components of the Recreation Use, Needs, And Access Study, Whitewater Boating Flow and Access Study, and Aesthetics Flow Assessment. Attendees on the calls included representatives from the USFWS, NYSDEC, AW and NYTU (Working Group). Documentation of this consultation was provided in the Study Progress Reports filed with FERC and distributed to the stakeholders on July 29, 2019, and October 31, 2019.

Relative to the Whitewater Boating Flow and Access Study, Erie consulted with the Working Group regarding: the establishment of an Expert Panel; assessment of the Prospect bypass reach whitewater boating opportunities, access and safety considerations; and the downstream whitewater boating controlled flow assessment, including range of flow releases, survey instruments, reaches for assessment, and the controlled flow assessment participants, schedule and logistics. Based on this consultation, Erie has refined the study methodology and logistics. See Section 2.0 for information regarding methodology, and documentation of this consultation in the Study Progress Reports.¹

Erie made multiple attempts to implement the whitewater boating study as summarized in the Study Progress Reports. Due to anticipated higher flows, colder weather, shorter daylight periods and associated safety considerations of the participants, Erie, in consultation with AW, postponed the downstream controlled flow assessment study until the 2020 study season (anticipated May/June/July 2020).¹ Erie will consult with AW in the spring of 2020 to determine schedule for implementing the downstream controlled flow field study, and any additional assessment of the Prospect bypass reach assessment. See Section 3.0 for additional information regarding study progress and forthcoming anticipated field efforts for the 2020 study season.

Following is a progress report for the Whitewater Boating Flow and Access Study, including summary of consultation, description of the methodology, and data collection and analysis results conducted to date. Kleinschmidt Associates (Kleinschmidt) is conducting the Whitewater Boating Flow and Access Study. Erie will provide the results of the 2020 study season assessment in the Whitewater Boating Flow and Access Study in the Updated Study Report (USR) to be filed on or before January 10, 2021.²

¹ See consultation record in the Study Progress Reports filed with FERC on July 29, 2019, and October 31, 2019.

² See ISR for overall West Canada Creek Project relicensing process plan and schedule.

2.0 METHODOLOGY

The goal of the Whitewater Boating Flow and Access Study is to characterize and assess whitewater boating opportunities within the Prospect bypass reach and downstream of Trenton development within the proposed study area, including existing downstream public safety alert systems. Following are the key objectives of the study:

- Characterize whitewater boating opportunities within an hour's drive of the study area;
- Characterize hydrology data and operational constraints including historic records of minimum, maximum, and average flow rates and seasonal variations for the previous 5-year period;
- Assess public access opportunities and safety considerations for whitewater boating access at the Prospect bypass reach;
- Assess adequacy of existing put-in and take-out locations for the study area downstream of Trenton Station,
- Characterize the type of boating experience and potential demand; and
- Evaluate the potential effects of whitewater boating flow releases on other resources including recreational uses, aquatic resources, water quality and project generation.

The study methodology follows a step-wise or phased manner and study protocols generally follows accepted practices as provided in Whittaker, et. al (2005). The study consists of three phases:

- Phase 1- study planning and a desk-top analysis;
- Phase 2- a reconnaissance assessment of the Prospect Development bypassed reach; and
- Phase 3 - a controlled flow assessment of West Canada Creek downstream of the Trenton tailrace, from Morgan dam to the Kast Bridge.

2.1 STUDY AREA

For Phase 1 of the Whitewater Boating Flow and Access Study, the study areas include the Prospect bypass reach and West Canada Creek immediately below Morgan dam downstream to the confluence with the Mohawk River, and assessment of comparable recreation opportunities within 1-hour drive from the Project area. For Phase 2, the study area includes the Prospect bypass reach from below Prospect falls to the Prospect powerhouse (see Section 2.2.2). For Phase 3, the controlled flow study of downstream West Canada Creek, the study area includes West Canada Creek downstream of Morgan dam to Kast Bridge, within identified representative

reaches based on consultation with the Working Group (see Figure 2-1, and further discussion in Section 2.2.3).

2.2 DATA COLLECTION AND ANALYSIS

2.2.1 PHASE 1 - STUDY PLANNING AND DESK-TOP ANALYSIS

Phase 1 includes a desk-top literature review of existing available information about West Canada Creek existing downstream recreation opportunities, and regional whitewater boating opportunities within 1 hour of the Project area. The results of the review of regional opportunities are provided in Section 3.1. Information pertaining to river channel characteristics and substrates in downstream West Canada Creek is provided in the Aquatic Mesohabitat Assessment Report (Kleinschmidt 2020a). In addition, Kleinschmidt reviewed available hydrology information to characterize existing project hydrology data and operational constraints relative to downstream recreation boating releases. Kleinschmidt will characterize historic records of minimum, maximum, median, and average flow rates and seasonal variations for the previous 5-year period. Results of this assessment will be provided in the USR.

Kleinschmidt conducted a Recreation Use, Needs and Access Study that included inventory and spot counts of downstream public recreation access areas along West Canada Creek. Figure 2-1 denotes the location of downstream recreation opportunities and public access area.

Kleinschmidt also conducted a visitor survey that included questions regarding recreation use in these downstream reaches and effects of water level fluctuations on recreation activities. In addition, Kleinschmidt conducted an assessment of existing public access and safety of the West Canada Creek Project, including safety mechanisms and alerts immediately downstream of the Project. Information pertaining to the downstream access locations, survey results, and public access and safety assessment are provided in the Recreation Use, Needs and Access Study (Kleinschmidt 2020g).

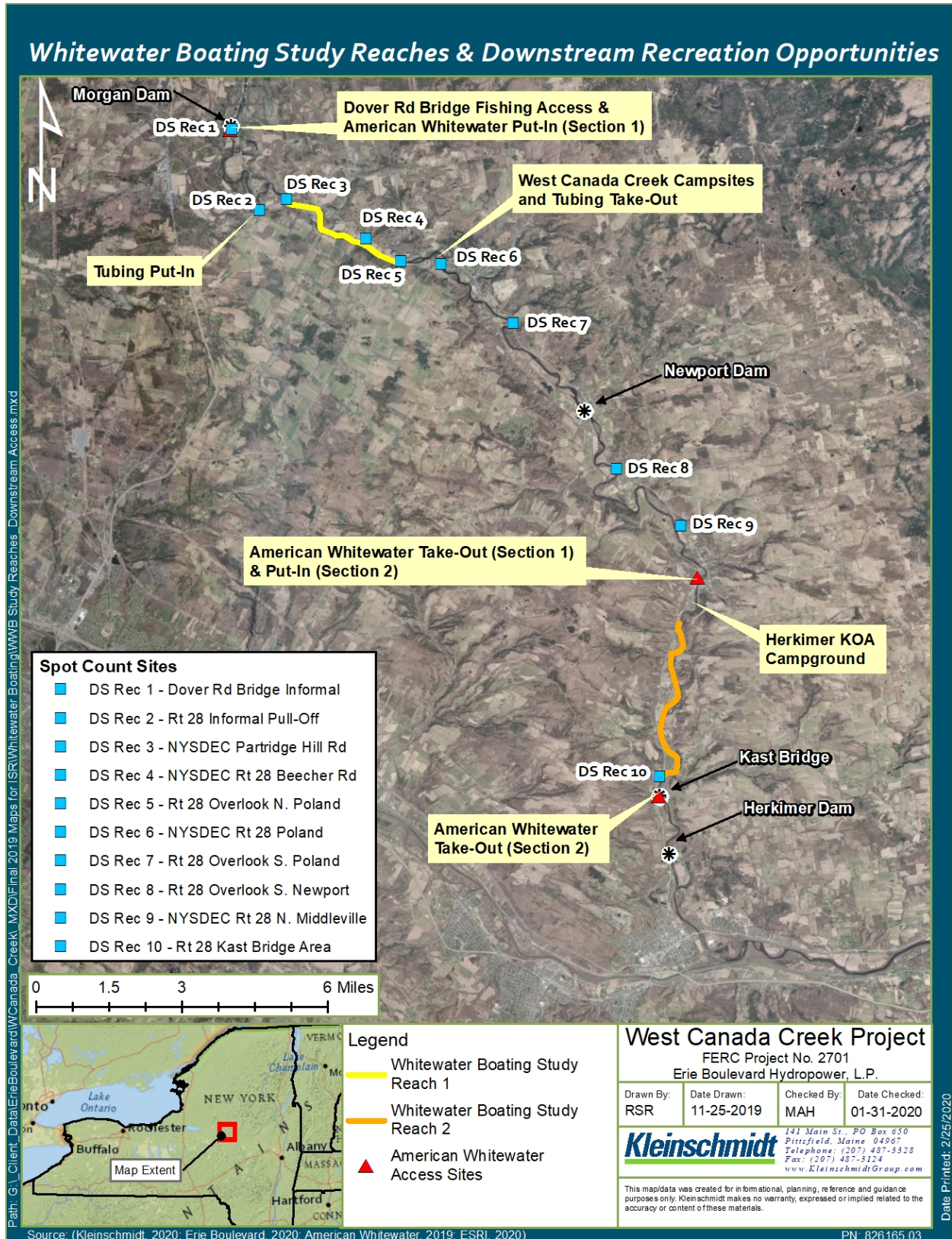


FIGURE 2-1 RECREATION OPPORTUNITIES DOWNSTREAM OF THE WEST CANADA CREEK PROJECT

Kleinschmidt developed and consulted with the Working Group regarding the controlled flow assessment survey forms and flow ranges for the downstream West Canada Creek whitewater boating controlled flow assessment (see Section 2.2.3 for additional details). Erie will develop a Project Safety Plan that identifies field safety protocols and procedures to be implemented during the field study component. All participants will be required to adhere to these requirements and applicable safety policies.

2.2.2 PHASE 2 - PROSPECT BYPASS REACH RECONNAISSANCE ASSESSMENT

Erie conducted consultation with the Working Group and several follow-up consultation calls with AW to review potential for whitewater boating opportunities within the Prospect bypass reach, including adjacent land ownership and access, potential put-in and take-out locations, and evaluation of specified controlled flow (600 cubic feet per second [cfs]) via unmanned aerial vehicle (UAV or drone) footage of the bypass reach. See Section 3.3 for additional discussion. Erie and representatives from AW and USFWS conducted an in-field review of the Prospect bypass reach on September 24, 2019, to review potential take-out locations in the event that a controlled flow assessment for this reach is conducted. Erie will consult with AW regarding any potential additional in-field assessment of the Prospect bypass reach for whitewater boating opportunities. Any additional assessment would be conducted during the 2020 study season.

2.2.3 PHASE 3 – ON-WATER CONTROLLED FLOW ASSESSMENT

Study Area

Kleinschmidt with the assistance of AW and a whitewater boating Expert Panel will 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. The downstream study area includes West Canada Creek downstream of Morgan dam to Kast Bridge, within identified representative reaches based on consultation with the Working Group. American Whitewater identifies two runs along this stretch with Section 1 extending from Dover Road to Route 29 in Middleville, and Section 2 from Route 29 in Middleville to Route 7 at Kast Bridge north of Herkimer. Section 1 is described as Class I-II and a pleasant moving water cruise. Section 2 is described as Class II-II+ and a classic teaching section with light rapids and flat sections (AW 2019).

In order to assist in the logistics of the whitewater boating study and based on consultation with the Working Group, the Expert Panel assessment will target portions of each reach (rather than the entire approximately 28 mile reach from Morgan Dam to Kast Bridge). The overall downstream West Canada Creek reach characteristics were reviewed with the Working Group, based on information pertaining to on-water experience (AW 2019), preliminary results of the Aquatic Mesohabitat Assessment (regarding West Canada Creek substrates and reach characteristics) (Kleinschmidt 2020a), information obtained via spot count observations, and desktop analysis (see Section 3.1). Figure 2-1 denotes the location of the two study reaches, one within the upper reach (approximately a 3 river mile run) (Figure 2-2) and within the lower reach (approximately a 4 river mile run) (Figure 2-3). These reaches provide the opportunity to assess representative stretches of both the upper and lower whitewater boating opportunities within the downstream West Canada Creek study area.

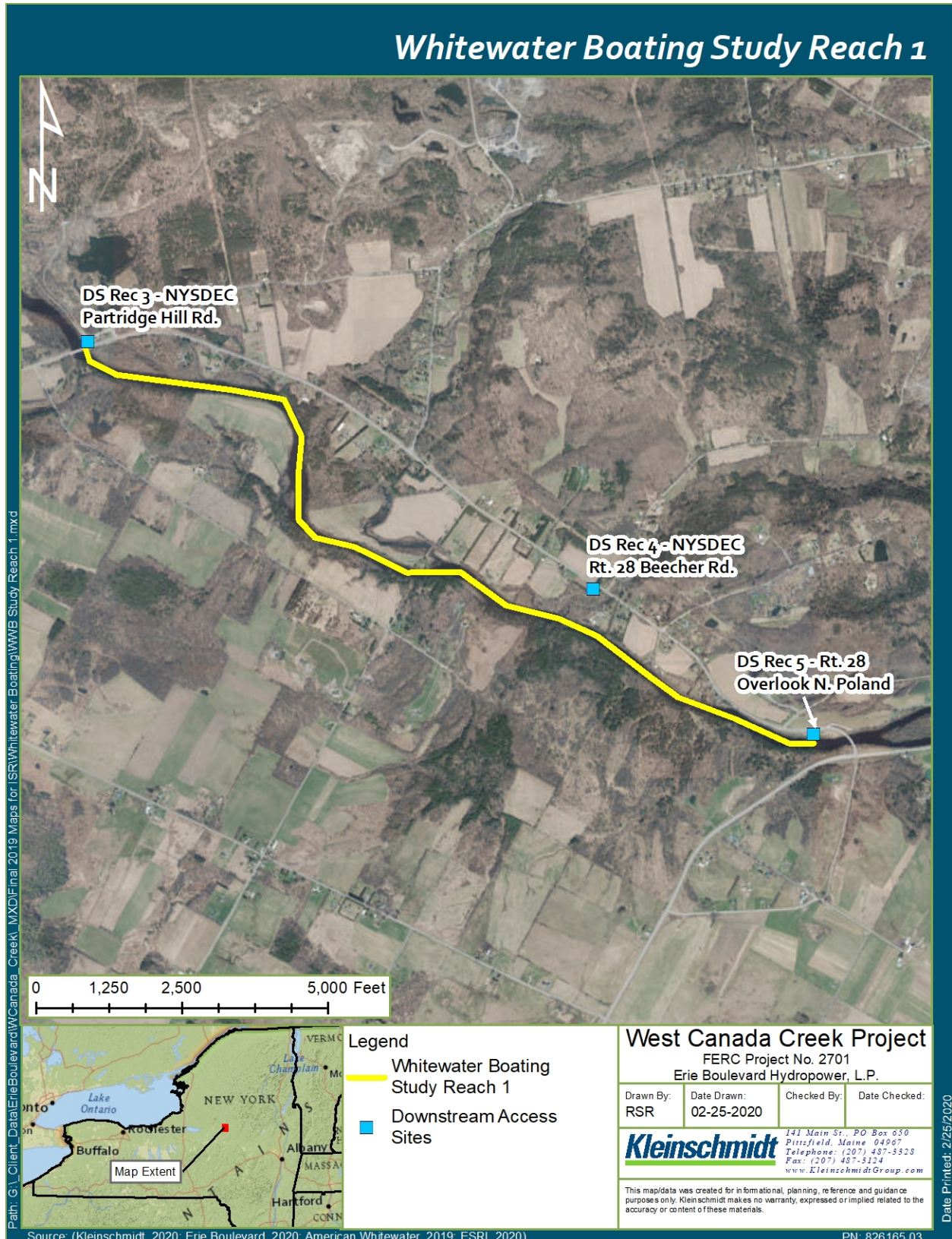


FIGURE 2-2 LOCATION OF THE UPPER SECTION STUDY REACHES

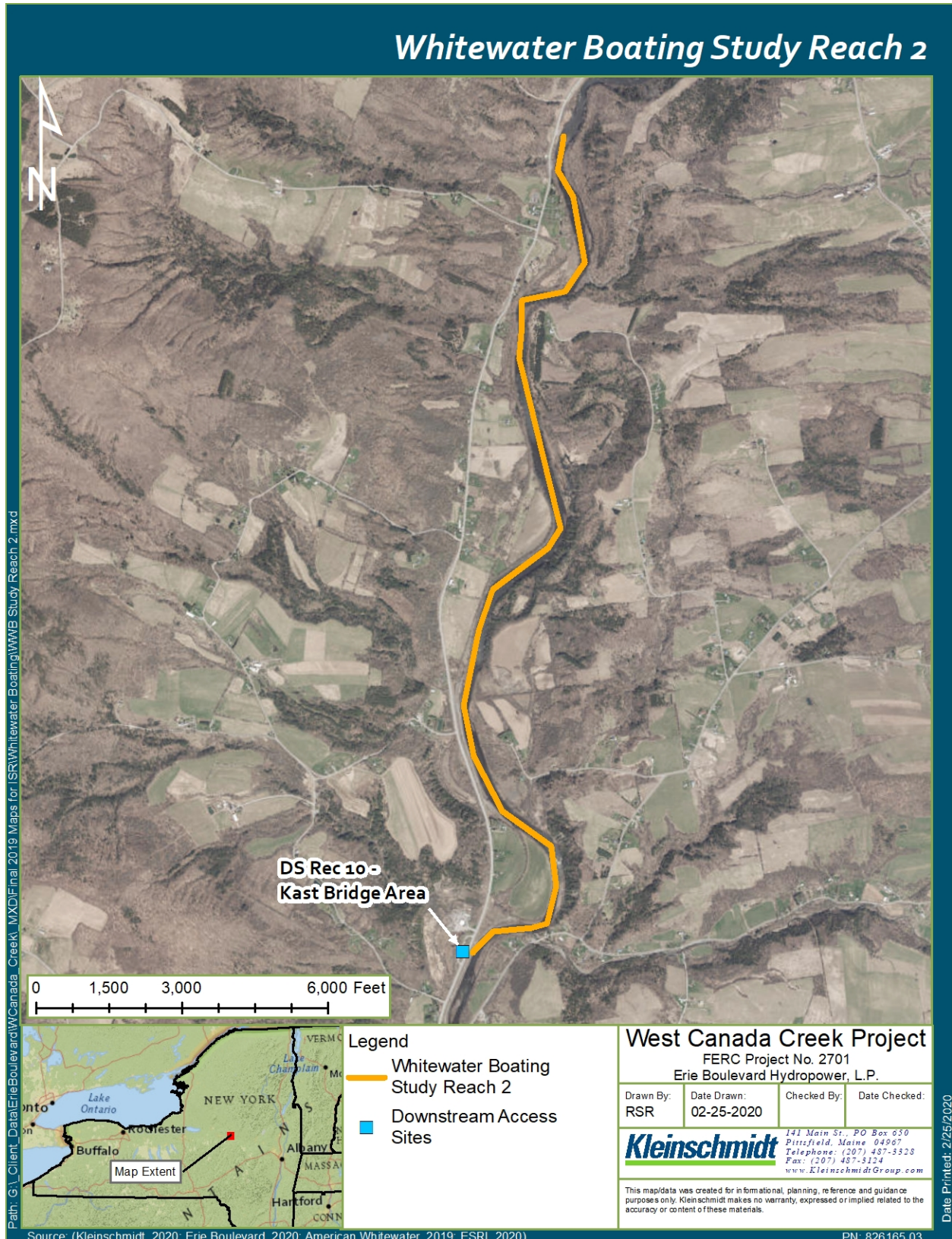


FIGURE 2-3 LOCATION OF THE LOWER SECTION STUDY REACHES

Target Flows for the Controlled Flow Assessment

For the downstream controlled flow assessment, Erie proposed in the RSP controlled flow releases of approximately 1,000 cfs and 1,400 cfs, within the range of potential station-controlled flow releases.³ The FERC SPD required that Erie consult with the Working Group to collaboratively determine the flow levels to be studied during the whitewater boating controlled release assessment. Based on additional consultation, AW proposed study flow releases of approximately 600 cfs, 1,000 cfs and 1,400 cfs. Based on this additional consultation, Kleinschmidt will conduct flow controlled flow releases of approximately 600 cfs, 1,000 cfs and 1,400 cfs, as requested by AW and discussed and agreed upon with the Working Group⁴. Consistent with discussions during the consultation process, these flow releases may be subject to change based on logistical planning (travel times and downstream tributary inflows).

Expert Panel Participants

During the 2019 study season, Kleinschmidt coordinated with AW to identify Expert Panel participants for the in-field whitewater boating controlled flow study efforts. Kleinschmidt will consult with AW to confirm participants for the 2020 season downstream West Canada Creek controlled flow study. The Expert Panel will be no more than 10 people, targeting about 5 to 6 people per reach for logistical purposes. Erie will develop a Project Safety Plan that identifies field safety protocols and procedures to be implemented during the field study component. All participants will be required to adhere to these requirements and applicable safety policies.

During consultation, the Working Group agreed that the downstream reach controlled flow assessment would focus on whitewater boating (canoe/kayak) and tubing participants would not be involved in the study assessment. Information pertaining to tubing use was obtained via information from the West Canada Creek tubing outfitter and Kleinschmidt's visitor survey information. The West Canada Creek Campground (tubing outfitter) provided a breakdown of several years' worth of data for use, and the outfitter's website provides a detailed breakdown of suitable flow conditions for tubing on West Canada Creek (See Section 3.3). This information is summarized in the Recreation Use, Needs, and Access Study (Kleinschmidt 2020g).

³ The maximum hydraulic capacity of Trenton Station is approximately 1,425 cfs.

⁴ See consultation record in the Study Progress Reports filed with FERC on July 29, 2019, and October 31, 2019.

Controlled Flow Assessment Forms

The Expert Panel will complete evaluation forms following the in-field controlled flow whitewater boating runs to document characteristics of the downstream reach with respect to:

- Estimate of typical trip durations and existing and potential ingress and egress locations.
- Description of features such as rapids and eddies, numbers of portages, likely “attraction” rapids, or other places where boaters are likely to stop or travel on land.
- Estimate of acceptable and optimal flow ranges for different types of whitewater boating opportunities (e.g., for different skill levels, boat types, or types of boating).
- Comparability to similar rivers in the region.
- Qualitative description and estimate of likely demand for boating opportunities.
- Review flow information needs and ability for existing gages to predict flow ranges (i.e., flows suitable for boating).
- Identify safety concerns related to flows, access, and channel features.

Participants will complete pre-flow and post-flow assessment forms for each flow and study reach. Participants will also complete comparative flow post-evaluation form and focus group discussion after completing all of the controlled flow runs. Kleinschmidt prepared and reviewed the pre-flow, post-flow and comparative flow evaluation forms, as well as the focus group questions, with the Working Group.⁵ See Appendix A for the assessment forms.

Study Schedule

Kleinschmidt will coordinate with AW to determine the schedule for the downstream controlled flow assessment study for the 2020 study season. The anticipated schedule will be within the May, June or July 2020 period depending on weather and flow conditions. Kleinschmidt anticipates the controlled flow assessment will involve: 1 day of field efforts for the reach above Newport, and 1.5 day of field efforts for the reach downstream of Newport. Kleinschmidt will consult with the NYSDEC to obtain necessary authorizations and permits to use NYSDEC access sites for study purposes.

⁵ See Study Progress Report 2, October 31, 2019, for documentation of consultation.

Erie will consult with AW regarding any potential additional in-field assessment of the Prospect bypass reach for whitewater boating opportunities. Any additional assessment of the Prospect bypass reach would be conducted during the 2020 study season.

2.3 VARIANCES FROM APPROVED STUDY PLAN

Due to anticipated higher flows, colder weather, shorter daylight periods and associated safety considerations of the participants, Erie, in consultation with AW, postponed the downstream controlled flow assessment study until the 2020 study season. The delay of the whitewater boating controlled flow study is a deviation from Erie's RSP. Erie has conducted the required consultation, refined the study methodology and logistics, and made multiple attempts to implement the whitewater boating study as summarized in the Study Progress Reports.⁶

⁶ See consultation record in the Study Progress Reports filed with FERC on July 29, 2019, and October 31, 2019.

3.0 STUDY PROGRESS UPDATE

3.1 REGIONAL WHITEWATER BOATING OPPORTUNITIES

The West Canada Creek Project is located just south of the Adirondack Park region within New York State. New York's Adirondack Region has over 3,000 lakes and 30,000 miles of rivers and streams, and is a popular destination for outdoor enthusiasts (Adirondack Park Agency 2020). Regional recreation opportunities include both whitewater and flatwater boating paddling opportunities, within the Adirondack region and also outside of the Adirondack Park.

Multiple lakes within the Project region offer flatwater boating opportunities, and rivers and creeks offer whitewater boating opportunities. North of the Project, the Northern Forest Canoe Trail (NFCT), a 740-mile long water trail extends from Old Forge, New York and to Fort Ken, Maine. The NFCT extends through 23 rivers and streams, and 59 lakes and ponds, and provides both flatwater and whitewater (Class I to Class IV+)⁷. boating opportunities (NFCT 2020).

Figure 3-1 denotes whitewater boating opportunity locations (general put-in locations) within approximately a 60-mile radius of the West Canada Creek Project. Whitewater boating opportunities range from Class I to Class IV+ reaches. Figure 3-1 data and paddler ability level is based on an American Whitewater map information, and denotes locations by paddler ability levels (1 through 5) (American Whitewater 2020b).

Table 3-1 provides a summary of the identified whitewater boating opportunities, including class designation and approximate run length, that are located within approximately 30 miles of the Project. These reaches provide over 160 river miles of whitewater boating opportunities within close vicinity to the West Canada Creek Project.

⁷ International Scale of River Difficulty, American Whitewater 2005. See Appendix A, Whitewater Boating Controlled Flow Study Assessment forms for additional description of the whitewater classifications.

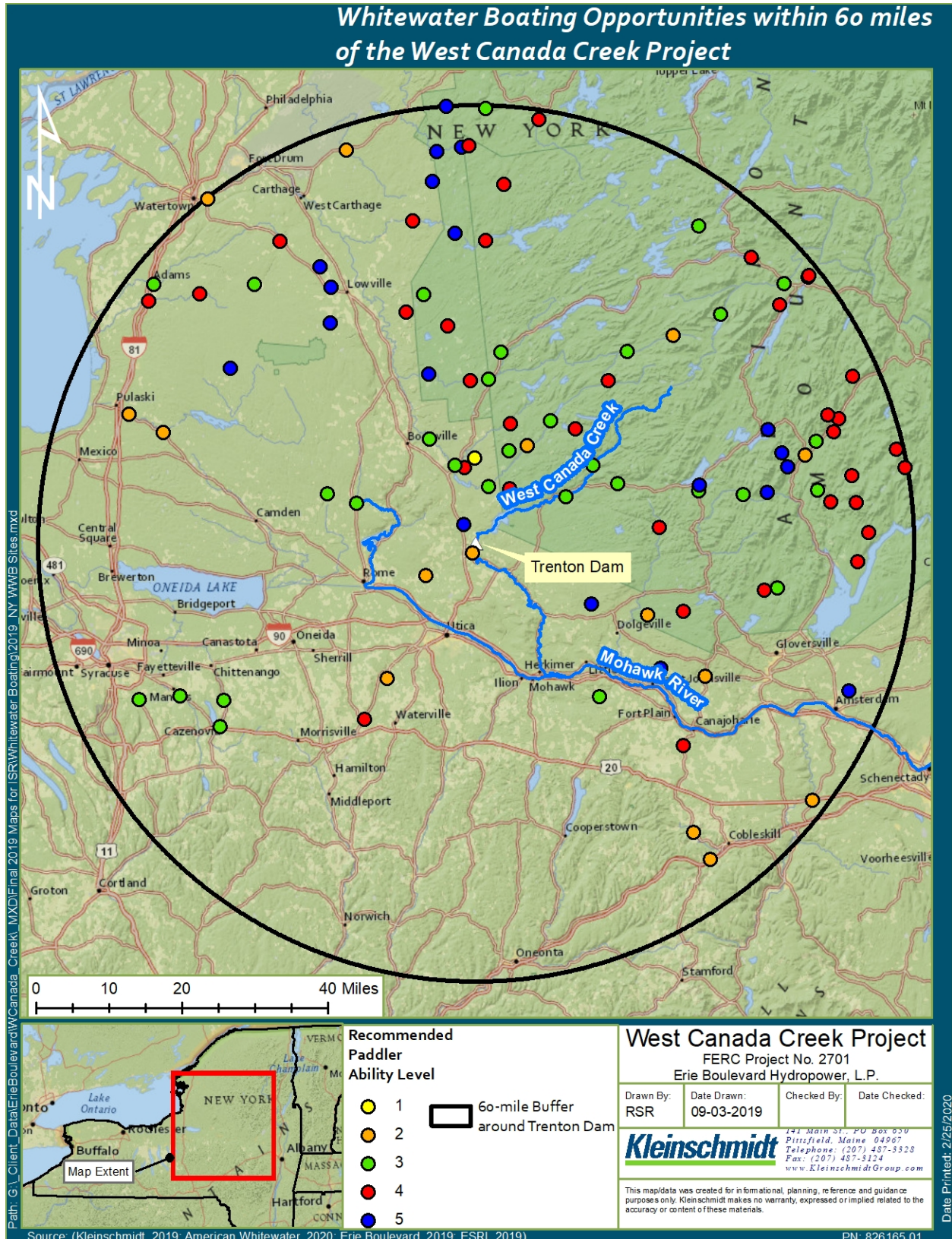


FIGURE 3-1 WHITewater BOATING OPPORTUNITIES WITHIN 60 MILES OF THE PROJECT
Source: AW 2020b

**TABLE 3-1 SUMMARY OF WHITEWATER BOATING OPPORTUNITIES WITHIN
APPROXIMATELY 30 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

3.2 PROSPECT BYPASS REACH RECONNAISSANCE ASSESSMENT

Kleinschmidt mapped the Prospect bypass reach mesohabitat and substrates during the Mesohabitat Assessment Study, denoting the substrate types including several pools, riffles (see Aquatic Mesohabitat Assessment Report, Kleinschmidt 2020a). 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. Figure 3-2 provides the documentation of Prospect bypass reach mesohabitat and substrates, as well as adjacent topographic information. Photos of the Prospect bypass reach during primarily leakage conditions are provided in Appendix B.

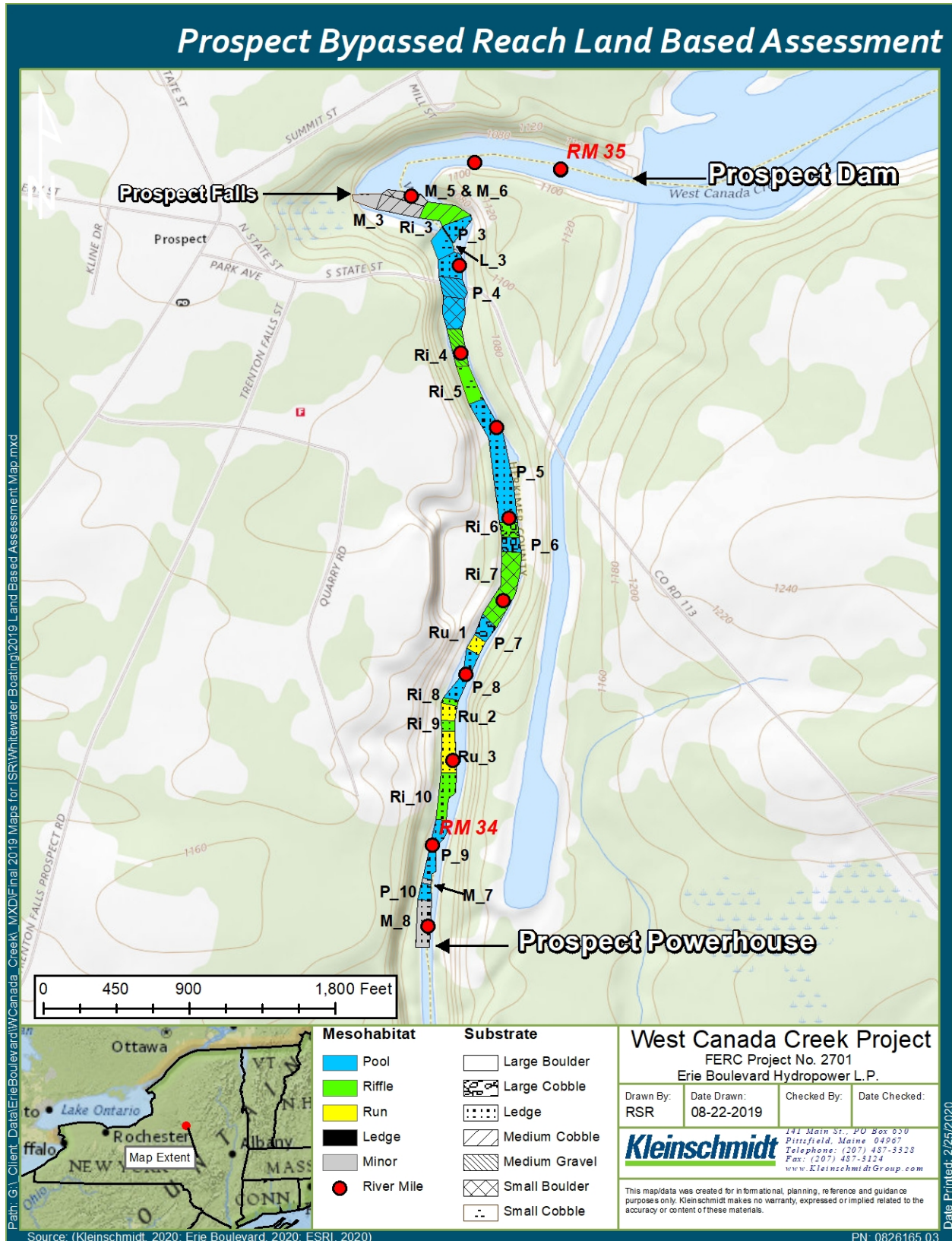


FIGURE 3-2 PROSPECT BYPASS REACH MESOHABITAT AND SUBSTRATES

Kleinschmidt identified adjacent landowners to the Prospect bypass reach. The eastern shoreline is comprised of primarily Erie-owned parcels, with one small parcel owned by the Mohawk Valley Water Authority (MVWA), which is in close proximity to, but not adjacent to the Prospect bypass reach. The western shoreline ownership includes a private parcel near military bridge, Town of Trenton lands, MVWA lands, and a small portion of Erie lands near the Prospect powerhouse (see Figure 3-3). See the Recreation Use, Needs, and Access Study (Kleinschmidt 2020g) for additional information regarding public access and safety assessment.

Erie consulted with USFWS, NYSDEC and AW (May 29, 2019) and USFWS, NYSDEC and AW and NYTU (September 9, 2019) regarding the status and methodology approach to the Whitewater Boating study, including the Prospect bypass reach. Erie conducted consultation with USFWS, NYSDEC and AW (September 12, 2019) to review additional information pertaining to Prospect bypass reach assessment of whitewater boating opportunities, including: adjacent land ownership; general topography and character of adjacent shoreline embankment; opportunities and limitations for ingress and egress locations; and potential whitewater boating features, including length of potential boating run and anticipated whitewater features.

Erie and representatives from AW and USFWS conducted in-field review of the Prospect bypass reach on September 24, 2019, to review potential put-in and take-out locations. At the request of AW, Erie collected additional drone footage of the Prospect bypass reach at flows of 600 cfs⁸. Erie reviewed the drone footage specific to whitewater features and access with representatives from AW on November 15, 2019, and December 12, 2019, to determine if additional study is warranted for the Prospect bypass whitewater boating study (see Appendix C). Following this review, AW stated that additional information was necessary and proposes conducting additional in-field assessment of the Prospect bypass reach to evaluate potential whitewater boating features, and further evaluation of potential ingress and egress locations. Erie will consult with AW to determine any additional in-field assessment of the Prospect bypass reach for whitewater boating opportunities during the 2020 study season. Documentation of any additional consultation and study will be provided in the Whitewater Boating Flow and Access Study in the USR.

⁸ Note that the Study Progress Report (October 31, 2019) incorrectly stated the drone footage captured flows of 500 cfs; flows captured during this assessment were within the range of approximately 600 cfs.

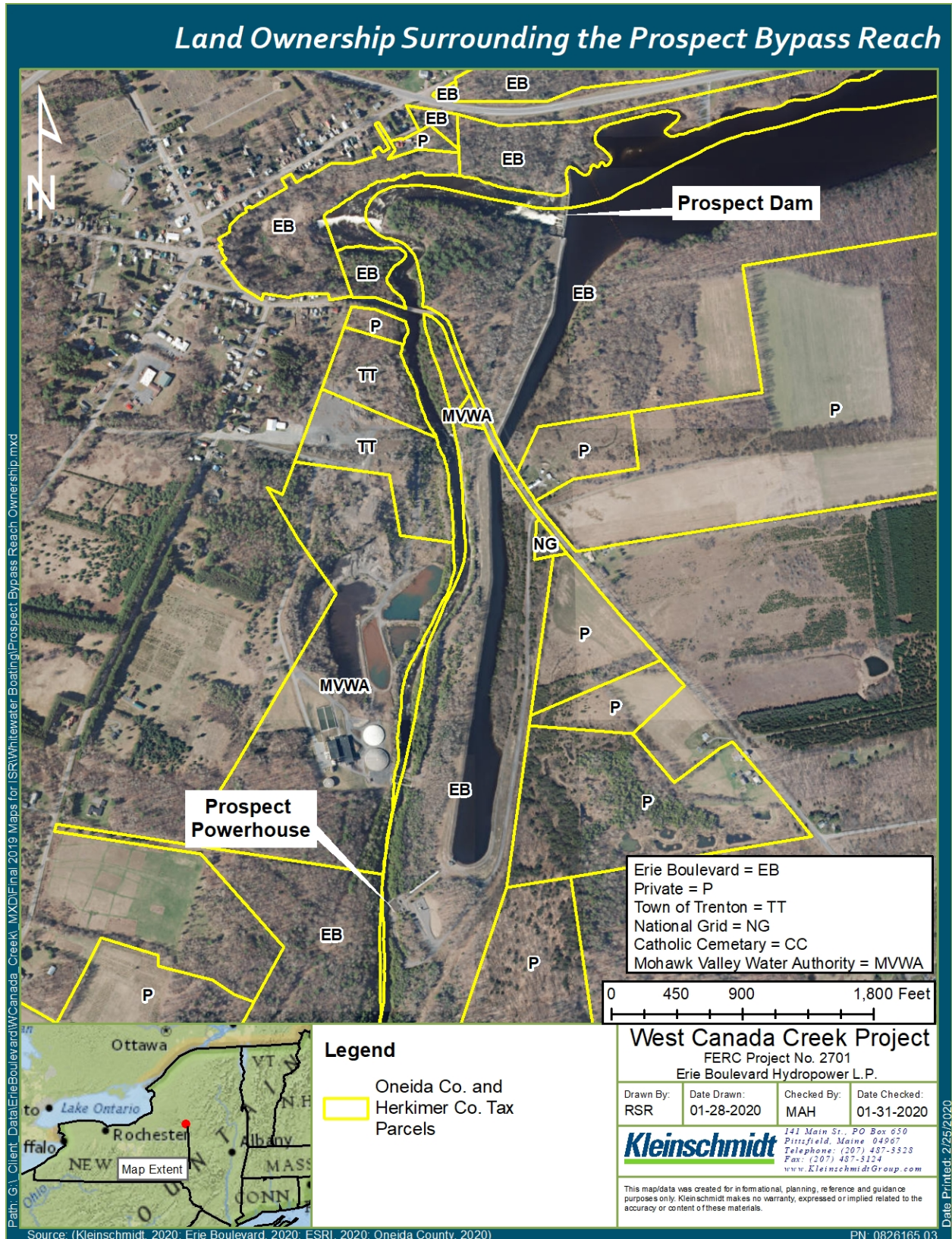


FIGURE 3-3 ADJACENT LAND OWNERSHIP PROSPECT BYPASS REACH

During consultation Erie again stated concerns with safety given the difficult access and gorge-like banks with high cliffs or unstable rock outcroppings along the Prospect bypass reach riverbanks. Erie also raised concerns in the immediate area of the Prospect tailrace regarding the narrow gorge-like channel, turbulent discharges from the Prospect powerhouse and close proximity of the undercut ledges adjacent to the Prospect Tailrace area (see Appendix B).

3.3 DOWNSTREAM WEST CANADA CREEK WHITEWATER BOATING OPPORTUNITIES

3.3.1 RECREATION ACCESS, USE AND NEEDS

Recreation opportunities along West Canada Creek downstream of the Trenton Development include angling, whitewater boating, tubing, picnicking, hiking/walking, sightseeing, and camping. American Whitewater identifies a Level I-II (beginner/intermediate) 28-mile long whitewater boating run beginning at the Dover Road Bridge and extending to Herkimer (American Whitewater 2019). American Whitewater identifies two runs along this stretch with Section 1 extending from Dover Road to Route 29 in Middleville, and Section 2 from Route 29 in Middleville to Route 7 at Kast Bridge north of Herkimer (Figure 2-1). Section 1 is described as Class I-II with one portage around the Newport Dam, and Section 2 is described as Class II-II+ (AW 2020a).

In addition to whitewater boating, the downstream reach supports recreational tubing opportunities starting below the catch and release section (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 and no canoe/kayak rentals are available; flows of 301 cfs to 900 cfs are considered good floating conditions and all rentals (canoe/kayak and tubing) are available; flows of 900 cfs to 1,750 cfs are considered fast floating conditions and all rentals are available; and at flows of over 1,750 cfs, no rentals are available (West Canada Creek Tubing 2019). The West Canada Creek Campsites reported that the number of tube rentals ranged from 156 to 928 annually during the 2015 to 2018 period, with average annual rental of 505 tubes. Kayak/canoe annual rentals ranged from 22 (2016) to 135 (2014), during the 2014 through 2018 period with average annual rental of 76 kayaks/canoes (personal communication with West Canada Creek Campground, 2019). See additional information in the Recreation Use, Needs, and Access Study (Kleinschmidt 2020g)

3.3.2 DOWNSTREAM FLOWS CHARACTERIZATION

The downstream West Canada Creek whitewater boating reach extends from below Morgan Dam (located approximately 1 mile below Trenton tailrace) downstream approximately 25 miles to Kast Bridge (see Figure 2-1). An existing USGS Gage is located at Kast Bridge (USGS 01346000). Based on level logger data, in-field experience, and input from AW, 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 in the downstream reach below Trenton (West Canada Creek from Trenton tailrace to confluence with Mohawk River), such as Cincinnati Creek, can contribute significantly to overall flow in the downstream reaches during a significant rain event. Kleinschmidt will characterize historic records of flow rates and seasonal variations for the previous 5-year period, and results of this assessment will be provided in the USR.

Erie provides information regarding flow releases at the Trenton Powerhouse via SafeWaters, a publicly accessible website and toll-free phone line (SafeWaters 2019). SafeWaters is updated daily and based on river gauge information, approximate forecasts, and estimated flows. The actual flows can vary and change quickly at any time. The SafeWaters information should be used as an additional source of information of potential flow ranges. Users are encouraged to always be alert and wear an approved flotation device and to never go in or near the water until the user knows and accepts the risks in the area (SafeWaters 2019).

3.3.3 ON-WATER CONTROLLED FLOW ASSESSMENT

Erie, in consultation with AW, scheduled the whitewater boating controlled flow study for several dates, including September 16 and October 7, and 8, October 15 and 16, October 18 and 19, and October 25 and 26, 2019. Each date was postponed due to field conditions that were not conducive to the controlled flow study (high flow events⁹) and participant availability. Kleinschmidt will implement the downstream controlled flow assessment study during the 2020 study season. Kleinschmidt will provide the results of the 2020 study season assessment in the Whitewater Boating Flow and Access Study in the USR.

⁹ Travel times and downstream tributary inflows were significant obstacles in 2019 scheduling attempts to complete the downstream flow assessment.

4.0 REFERENCES

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APPENDIX A

WHITEWATER BOATING CONTROLLED FLOW STUDY

ASSESSMENT FORMS

PRE-RUN FLOW BOATER INFORMATION FORM
WEST CANADA CREEK WHITEWATER BOATING FLOW AND ACCESS STUDY

Upstream or Downstream Reach: _____

Date: _____

THIS SECTION ASKS ABOUT YOU PERSONALLY

Participant Name: _____

Affiliation: _____

Home Zip Code: _____

Age: _____

Participant Email: _____

Cell Phone: _____

Gender of respondent: ☐ Male ☐ Female ☐ Prefer not to answer

THIS SECTION ASKS ABOUT YOUR BOATING OR TUBING EXPERIENCE

1. What is your primary activity for on-water boating or tubing activity? (*Check one box.*)

☐ Whitewater kayaking

☐ Flatwater kayaking

☐ Whitewater canoeing

☐ Flatwater canoeing

☐ Tubing/rafting

☐ Stand up paddle board (SUP)

☐ Other, *please specify* _____

2. How many total years have you been participating in whitewater boating or tubing activities? (*Fill in blank.*)

_____ years whitewater boating

_____ years tubing

3. How would you rate your skill level with whitewater boating? (*Check one box.*)

☐ Prefer flatwater float trips

☐ Intermediate (Class III whitewater)

☐ Beginner (Class I whitewater)

☐ Advanced (Class IV whitewater)

☐ Novice (Class II whitewater)

☐ Expert (Class V whitewater)

4. How many days per year do you typically spend whitewater boating or tubing? (*Fill in blank.*)

_____ days whitewater boating

_____ days tubing

THIS SECTION (Q 5-18) ASKS ABOUT YOUR EXPERIENCES IN THE REACHES OF WEST CANADA CREEK FROM BELOW MORGAN DAM DOWNSTREAM TO HERKIMER

5. How often do you typically participate in boating or tubing recreation activities on West Canada Creek? (*Check one box.*)

☐ Weekly / At least once per week

☐ At least once per year

☐ Monthly / At least once per month

☐ Less than one time per year

☐ Several times per year

☐ Never

6. During what month(s) do you typically participate in boating or tubing recreation activities on West Canada Creek? (*Check all that apply.*)

☐ January

☐ April

☐ July

☐ October

☐ February

☐ May

☐ August

☐ November

☐ March

☐ June

☐ September

☐ December

PRE-RUN FLOW EVALUATION FORM

WEST CANADA CREEK WHITEWATER BOATING FLOW AND ACCESS STUDY

7. In the past year, how many days have you participated in boating or tubing related recreation activities on West Canada Creek? *(Fill in blank.)*

_____ days whitewater boating

_____ days tubing

8. On a scale from 1 to 5, with 1 being not at all familiar, 3 being moderately familiar, and 5 being very familiar, how would you rate your familiarity with West Canada Creek? *(Circle one number.)*

1	2	3	4	5
Not at all Familiar	Somewhat Familiar	Moderately Familiar	Familiar	Very Familiar

9. How many years of experience do you have participating in boating or tubing related recreation activities on West Canada Creek? *(Fill in blank.)*

_____ years whitewater boating

_____ years tubing

10. What type of watercraft do you primarily use for boating or tubing related recreation activities on West Canada Creek? *(Check one box.)*

☐ 1 Person Open Canoe

☐ Inflatable Kayak

☐ 2 Person Open Canoe

☐ Inflatable Tube

☐ Closed Canoe

☐ Inflatable Raft

☐ Hardshell Kayak

☐ Other, *please specify*: _____

11. What section(s) of West Canada Creek downstream of the Morgan Dam do you typically use when participating in recreation activities? *(Check **all** that apply – please indicate specific location as appropriate.)*

☐ West Canada Creek - Below Morgan Dam to Newport Impoundment

☐ West Canada Creek - Below Newport Dam to Herkimer

☐ Other, *please specify*: _____

☐ I have not paddled the West Canada Creek downstream of the Trenton Development

12. What **put-in** access do you **typically** use when participating in boating or tubing on West Canada Creek downstream of the Trenton Development? *(Check one box.)*

☐ NYSDEC site, *please specify* _____

☐ Other, *please specify* _____

☐ None - I have not paddled the West Canada Creek downstream of the Trenton Development

13. What **take-out** access site do you **typically** use when participating in boating or tubing on West Canada Creek downstream of the Trenton Development? *(Check one box.)*

☐ NYSDEC site, *please specify* _____

☐ Other, *please specify* _____

☐ None - I have not paddled the West Canada Creek downstream of the Trenton Development

PRE-RUN FLOW EVALUATION FORM
WEST CANADA CREEK WHITEWATER BOATING FLOW AND ACCESS STUDY

14. What sources do you use to obtain information about flow levels prior to your trips? *(Check all that apply.)*

- | | |
|--|--|
| <input type="checkbox"/> USGS Kast Bridge Gage | <input type="checkbox"/> American Whitewater Website |
| <input type="checkbox"/> Safewaters Website | <input type="checkbox"/> Other, please specify_____ |

15. What flow ranges do you consider **acceptable** (boatable conditions) for your **whitewater boating** recreation activities on West Canada Creek? *(Check all that apply.)*

- | | |
|---|--|
| <input type="checkbox"/> less than 300 cfs | <input type="checkbox"/> >800 cfs to 1,000 cfs |
| <input type="checkbox"/> >300 cfs to 500 cfs | <input type="checkbox"/> >1,000 cfs to 1,200 cfs |
| <input type="checkbox"/> >500 cfs to 600 cfs | <input type="checkbox"/> 1,200 cfs to 1,400 cfs |
| <input type="checkbox"/> >600 cfs to 800 cfs | <input type="checkbox"/> >1,400 cfs |
| <input type="checkbox"/> Other, please specify_____ | <input type="checkbox"/> No Response |

What flow ranges do you consider **optimal** (best conditions) for your **whitewater boating** recreation activities on West Canada Creek? *(Please circle one flow range above).*

16. What flow ranges do you consider **acceptable** (floating conditions) for your **tubing/rafting** recreation activities on West Canada Creek? *(Check all that apply.)*

- | | |
|---|--|
| <input type="checkbox"/> less than 300 cfs | <input type="checkbox"/> >800 cfs to 1,000 cfs |
| <input type="checkbox"/> >300 cfs to 500 cfs | <input type="checkbox"/> >1,000 cfs to 1,200 cfs |
| <input type="checkbox"/> >500 cfs to 600 cfs | <input type="checkbox"/> 1,200 cfs to 1,400 cfs |
| <input type="checkbox"/> >600 cfs to 800 cfs | <input type="checkbox"/> >1,400 cfs |
| <input type="checkbox"/> Other, please specify_____ | <input type="checkbox"/> No Response |

What flow ranges do you consider **optimal** (best conditions) for your **tubing/rafting** recreation activities on West Canada Creek? *(Please circle one flow range above).*

17. Have fluctuations in water levels ever affected your ability to participate in boating or tubing recreation activities on West Canada Creek? *(Check one box.)*

- ☐ Yes ☐ No (Skip to Question 19) ☐ No Response

18. If you answered Yes to Question 17, please select how the fluctuations in water level affected your activity. *(Select all that apply)*

- ☐ Decided not to participate in activity
- ☐ Adjusted timing of visit to participate when flows were suitable for recreation activity
- ☐ Participated in a different activity on West Canada Creek
- ☐ Moved to a different location on West Canada Creek
- ☐ Avoided a specific area on West Canada Creek, please specify_____
- ☐ Other, please specify_____

THANK YOU FOR YOUR HELP! WE APPRECIATE YOUR TIME TODAY!

PRE-RUN FLOW EVALUATION FORM

WEST CANADA CREEK WHITEWATER BOATING FLOW AND ACCESS STUDY

WHITEWATER CLASSIFICATIONS

INTERNATIONAL SCALE OF RIVER DIFFICULTY

(Source: Safety Code of American Whitewater, 2005)

Class I: Beginner (Riffles) - Fast moving water with riffles and small waves. Few obstructions, all obvious and easily missed with little training. Risk to swimmers is slight; self-rescue is easy.

Class II: Novice- Straightforward rapids with wide, clear channels which are evident without scouting. Occasional maneuvering may be required, but rocks and medium-sized waves are easily missed by trained paddlers. Swimmers are seldom injured and group assistance, while helpful, is seldom needed. Rapids that are at the upper end of this difficulty range are designated “Class II+”

Class III: Intermediate - Rapids with moderate, irregular waves which may be difficult to avoid and which can swamp an open canoe. Complex maneuvers in fast current and good boat control in tight passages or around ledges are often required; large waves or strainers may be present but are easily avoided. Strong eddies and powerful current effects can be found, particularly on large-volume rivers. scouting is advisable for inexperienced parties. Injuries while swimming are rare; self-rescue is usually easy but group assistance may be required to avoid long swims. Rapids that are at the lower or upper end of this difficulty range are designated “Class III-” or “Class III+” respectively.

Class IV: Advanced -Intense, powerful but predictable rapids requiring precise boat handling in turbulent water. Depending on the character of the river, it may feature large, unavoidable waves and holes or constricted passages demanding fast maneuvers under pressure. A fast, reliable eddy turn may be needed to initiate maneuvers, scout rapids, or rest. Rapids may require “must” moves above dangerous hazards. Scouting may be necessary the first time down. Risk of injury to swimmers is moderate to high, and water conditions may make self-rescue difficult. Group assistance for rescue is often essential but requires practiced skills. A strong eskimo roll is highly recommended. Rapids that are at the lower or upper end of this difficulty range are designated “Class IV-” or “Class IV+” respectively.

Class V: Expert - Extremely long, obstructed, or very violent rapids which expose a paddler to added risk. Drops may contain large, unavoidable waves and holes or steep, congested chutes with complex, demanding routes. Rapids may continue for long distances between pools, demanding a high level of fitness. What eddies exist may be small, turbulent, or difficult to reach. At the high end of the scale, several of these factors may be combined. Scouting is recommended but may be difficult. Swims are dangerous, and rescue is often difficult even for experts. A very reliable eskimo roll, proper equipment, extensive experience, and practiced rescue skills are essential. Because of the large range of difficulty that exists beyond Class IV, Class 5 is an open-ended, multiple-level scale designated by class 5.0, 5.1, 5.2, etc. each of these levels is an order of magnitude more difficult than the last. Example: increasing difficulty from Class 5.0 to Class 5.1 is a similar order of magnitude as increasing from Class IV to Class 5.0.

POST-RUN FLOW EVALUATION FORM

WEST CANADA CREEK WHITEWATER BOATING FLOW AND ACCESS STUDY

Date: _____

Participant ID#: _____

THIS SECTION ASKS ABOUT YOUR PARTICIPATION IN WHITEWATER BOATING OR TUBING ON THE WEST CANADA CREEK TODAY

1. What section(s) of West Canada Creek downstream of the Morgan Dam was this run? *(Check one box).*
 - ☐ West Canada Creek - Below Morgan Dam to Newport Impoundment
 - ☐ West Canada Creek - Below Newport Dam to Herkimer
2. What was the flow (cfs) for this run? _____ cfs
3. What type of craft did you use on this run? *(Check one box.)*
 - ☐ 1 Person Open Canoe
 - ☐ 2 Person Open Canoe
 - ☐ Closed Canoe
 - ☐ Hardshell Kayak
 - ☐ Inflatable Kayak
 - ☐ Inflatable Tube
 - ☐ Inflatable Raft
 - ☐ Other, please specify: _____
4. What was your put-in and take-out location and times for this run on the West Canada Creek today? *(Fill in blank.)*

Put-in	Location: _____	Time: _____ am / pm
Take-out	Location: _____	Time: _____ am / pm
5. Was this your first time boating this reach?
 - ☐ Yes
 - ☐ No (Skip to Question 7)
 - ☐ No Response
6. If you answered *No* to Question 5, approximately how many times have you previously run this reach? _____
7. Please evaluate the suitability of this flow on West Canada Creek today for your primary activity for each experience level. *(Circle one rating number for each experience level or check "Don't Know" if you cannot provide a rating. Check one box for flow level rating.)*

Experience Level	Please Rate the Suitability of this Flow for Each Experience Level (Circle one number)						Flow was? (Check one box)		
	Unacceptable	Poor	Neutral	Good	Excellent	Don't Know	Too Low	Just Right	Too High
Class I (Rifles)	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Class II (Novice)	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Class III (Intermediate)	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Class IV (Advanced)	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Class V (Expert)	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

POST-RUN FLOW EVALUATION FORM

WEST CANADA CREEK WHITEWATER BOATING FLOW AND ACCESS STUDY

THIS SECTION ASKS ABOUT YOUR EXPERIENCE ON WEST CANADA CREEK TODAY

8. Please evaluate this flow for your primary activity and experience level for each of the following characteristics on *West Canada Creek today*. (Check N/A box if characteristic is not applicable to your activity. Circle one rating number for each characteristic. Check one box for flow level rating.)

Characteristic	N/A	Please Rate Each Characteristic (Circle one number)					Flow was? (Check one box)		
		Unacceptable	Poor	Neutral	Good	Excellent	Too Low	Just Right	Too High
Navigability	<input type="checkbox"/>	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wadeability	<input type="checkbox"/>	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Availability of Rapids	<input type="checkbox"/>	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Depth	<input type="checkbox"/>	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Availability of Whitewater "Play Areas"	<input type="checkbox"/>	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water Craft Rate of Travel	<input type="checkbox"/>	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exposure of Rocks	<input type="checkbox"/>	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exposure of Sand/Gravel Bars	<input type="checkbox"/>	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eddies	<input type="checkbox"/>	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Force of Water	<input type="checkbox"/>	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Speed of Water/Current	<input type="checkbox"/>	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety (due to flow levels)	<input type="checkbox"/>	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety (due to debris, other hazards)	<input type="checkbox"/>	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aesthetic Quality	<input type="checkbox"/>	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overall Quality	<input type="checkbox"/>	1	2	3	4	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Please provide a brief explanation of your rating of the overall quality of your experience or observation. (Fill in the blank.)

POST-RUN FLOW EVALUATION FORM
WEST CANADA CREEK WHITEWATER BOATING FLOW AND ACCESS STUDY

10. Did you experience, or did you observe any significant problems or specific safety hazards associated with your primary activity during this flow ***on West Canada Creek today?*** (Check one box.)

☐ Yes

☐ No (Skip to Question 12)

☐ No Response

11. Please provide the location and a brief description of any experienced or observed hazards during this flow on West Canada Creek today. (Fill in the blank.)

Location: _____ Description: _____

Location: _____ Description: _____

12. Did you experience, or did you observe any outstanding features or opportunities associated with your primary activity during this flow on West Canada Creek today? (Check one box.)

☐ Yes

☐ No (Skip to Question 14)

☐ No Response

13. Please provide a brief description and location of any experienced or observed outstanding features or opportunities during this flow ***on West Canada Creek today.*** (Fill in the blank.)

Location: _____ Description: _____

Location: _____ Description: _____

14. Compared to ***this flow level***, would you prefer a level that was higher, lower, or about the same for the activity you participated in or observed on West Canada Creek reach? (Circle one number.)

1	2	3	4	5
Much Lower	Lower	No Change	Higher	Much Higher

15. Given the opportunity, would you choose to participate in this activity on West Canada Creek at ***this flow level?*** (Check one box.)

☐ Yes

☐ No

☐ No Response

16. Why or why not? (Fill in the blank.) _____

17. Do you have any additional comments? (Fill in the blank.) _____

THANK YOU FOR YOUR HELP! WE APPRECIATE YOUR TIME TODAY!

POST-RUN FLOW EVALUATION FORM

WEST CANADA CREEK WHITEWATER BOATING FLOW AND ACCESS STUDY

WHITEWATER CLASSIFICATIONS

INTERNATIONAL SCALE OF RIVER DIFFICULTY

(Source: Safety Code of American Whitewater, 2005)

Class I: Riffles - Fast moving water with riffles and small waves. Few obstructions, all obvious and easily missed with little training. Risk to swimmers is slight; self-rescue is easy.

Class II: Novice - Straightforward rapids with wide, clear channels which are evident without scouting. Occasional maneuvering may be required, but rocks and medium-sized waves are easily missed by trained paddlers. Swimmers are seldom injured and group assistance, while helpful, is seldom needed. Rapids that are at the upper end of this difficulty range are designated "Class II+"

Class III: Intermediate - Rapids with moderate, irregular waves which may be difficult to avoid and which can swamp an open canoe. Complex maneuvers in fast current and good boat control in tight passages or around ledges are often required; large waves or strainers may be present but are easily avoided. Strong eddies and powerful current effects can be found, particularly on large-volume rivers. Scouting is advisable for inexperienced parties. Injuries while swimming are rare; self-rescue is usually easy but group assistance may be required to avoid long swims. Rapids that are at the lower or upper end of this difficulty range are designated "Class III-" or "Class III+" respectively.

Class IV: Advanced - Intense, powerful but predictable rapids requiring precise boat handling in turbulent water. Depending on the character of the river, it may feature large, unavoidable waves and holes or constricted passages demanding fast maneuvers under pressure. A fast, reliable eddy turn may be needed to initiate maneuvers, scout rapids, or rest. Rapids may require "must" moves above dangerous hazards. Scouting may be necessary the first time down. Risk of injury to swimmers is moderate to high, and water conditions may make self-rescue difficult. Group assistance for rescue is often essential but requires practiced skills. A strong eskimo roll is highly recommended. Rapids that are at the lower or upper end of this difficulty range are designated "Class IV-" or "Class IV+" respectively.

Class V: Expert - Extremely long, obstructed, or very violent rapids which expose a paddler to added risk. Drops may contain large, unavoidable waves and holes or steep, congested chutes with complex, demanding routes. Rapids may continue for long distances between pools, demanding a high level of fitness. What eddies exist may be small, turbulent, or difficult to reach. At the high end of the scale, several of these factors may be combined. Scouting is recommended but may be difficult. Swims are dangerous, and rescue is often difficult even for experts. A very reliable eskimo roll, proper equipment, extensive experience, and practiced rescue skills are essential. Because of the large range of difficulty that exists beyond Class IV, Class 5 is an open-ended, multiple-level scale designated by class 5.0, 5.1, 5.2, etc. each of these levels is an order of magnitude more difficult than the last. Example: increasing difficulty from Class 5.0 to Class 5.1 is a similar order of magnitude as increasing from Class IV to Class 5.0.

FLOW COMPARISON EVALUATION FORM
WEST CANADA CREEK WHITEWATER BOATING FLOW AND ACCESS STUDY

Date: _____

Participant ID#: _____

1. What section(s) of West Canada Creek downstream of the Morgan Dam was this run? (*Check one box*).
- ☐ West Canada Creek - Below Morgan Dam to Newport Impoundment
☐ West Canada Creek - Below Newport Dam to Herkimer
2. Which flows did you participate in? (*Check all that apply*.)
- ☐ 600 cfs ☐ 1,000 cfs ☐ 1,400 cfs
3. What type of craft did you use for your runs? (*Check one box*.)
- ☐ 1 Person Open Canoe ☐ Inflatable Kayak
☐ 2 Person Open Canoe ☐ Inflatable Tube
☐ Closed Canoe ☐ Inflatable Raft
☐ Hardshell Kayak ☐ Other, *please specify*: _____
4. How would you rate your skill level with whitewater boating? (*Check one box*.)
- ☐ Novice (Class II whitewater)
☐ Intermediate (Class III whitewater)
☐ Advanced (Class IV whitewater)
☐ Expert (Class V whitewater)
5. Which of the following best describes your desired experience for this reach? (*Check one*)
- ☐ I am interested in whitewater boating trips that include technical elements (e.g., powerful hydraulics, whitewater “play areas,” challenging rapids)
☐ I am interested in family-friendly, non-technical float trips that do not require previous technical boating experience, specialized equipment, or include challenging rapids.
☐ I am interested in floating/tubing activities
☐ I am interested in other activities, *please specify* _____
6. Please provide overall evaluations for the following flows based on your craft, skill level, and desired experience. Please consider all of the flow-dependent characteristics that contribute to high quality trips (e.g., boatability, challenge, safety, aesthetics, etc.).

Flow	Unacceptable	Poor	Neutral	Good	Excellent
600 cfs	1	2	3	4	5
1,000 cfs	1	2	3	4	5
1,400 cfs	1	2	3	4	5

FLOW COMPARISON EVALUATION FORM

WEST CANADA CREEK WHITEWATER BOATING FLOW AND ACCESS STUDY

7. Based on your desired experience selected in Question 6, your skill level, and craft, please specify the flows that you think would provide the following types of experiences on West Canda Creek. *(You may specify flows which you have not observed, but which you think would provide the type of experience specified.)*

Experience	Flow in cfs
What is the lowest flow that you consider acceptable for a minimum quality experience?	
What flow provides the highest quality (i.e., optimal flow) experience?	
What is the lowest flow that provides a safe experience?	
What is the highest flow that provides a safe experience?	
What is the highest flow you would consider boating?	

8. Compared to other river reaches of similar difficulty, how would you rate the boating opportunity on West Canada Creek (assume optimal flows). (Circle one number for each.)

Compared to river reaches of similar difficulty	Far Below Average	Below Average	Average	Above Average	Much Better than Average	No Response
Other rivers within a one-hour drive	1	2	3	4	5	NA
Other rivers in New York State	1	2	3	4	5	NA
Other rivers in the Northeast	1	2	3	4	5	NA

9. Please provide any additional comments or relevant information regarding the flows that you participated in today.

THANK YOU FOR YOUR PARTICIPATION!

FLOW COMPARISON EVALUATION FORM

WEST CANADA CREEK WHITEWATER BOATING FLOW AND ACCESS STUDY

WHITEWATER CLASSIFICATIONS

INTERNATIONAL SCALE OF RIVER DIFFICULTY

(Source: Safety Code of American Whitewater, 2005)

Class I: Riffles - Fast moving water with riffles and small waves. Few obstructions, all obvious and easily missed with little training. Risk to swimmers is slight; self-rescue is easy.

Class II: Novice- Straightforward rapids with wide, clear channels which are evident without scouting. Occasional maneuvering may be required, but rocks and medium-sized waves are easily missed by trained paddlers. Swimmers are seldom injured and group assistance, while helpful, is seldom needed. Rapids that are at the upper end of this difficulty range are designated "Class II+"

Class III: Intermediate - Rapids with moderate, irregular waves which may be difficult to avoid and which can swamp an open canoe. Complex maneuvers in fast current and good boat control in tight passages or around ledges are often required; large waves or strainers may be present but are easily avoided. Strong eddies and powerful current effects can be found, particularly on large-volume rivers. scouting is advisable for inexperienced parties. Injuries while swimming are rare; self-rescue is usually easy but group assistance may be required to avoid long swims. Rapids that are at the lower or upper end of this difficulty range are designated "Class III-" or "Class III+" respectively.

Class IV: Advanced -Intense, powerful but predictable rapids requiring precise boat handling in turbulent water. Depending on the character of the river, it may feature large, unavoidable waves and holes or constricted passages demanding fast maneuvers under pressure. A fast, reliable eddy turn may be needed to initiate maneuvers, scout rapids, or rest. Rapids may require "must" moves above dangerous hazards. Scouting may be necessary the first time down. Risk of injury to swimmers is moderate to high, and water conditions may make self-rescue difficult. Group assistance for rescue is often essential but requires practiced skills. A strong eskimo roll is highly recommended. Rapids that are at the lower or upper end of this difficulty range are designated "Class IV-" or "Class IV+" respectively.

Class V: Expert - Extremely long, obstructed, or very violent rapids which expose a paddler to added risk. Drops may contain large, unavoidable waves and holes or steep, congested chutes with complex, demanding routes. Rapids may continue for long distances between pools, demanding a high level of fitness. What eddies exist may be small, turbulent, or difficult to reach. At the high end of the scale, several of these factors may be combined. Scouting is recommended but may be difficult. Swims are dangerous, and rescue is often difficult even for experts. A very reliable eskimo roll, proper equipment, extensive experience, and practiced rescue skills are essential. Because of the large range of difficulty that exists beyond Class IV, Class 5 is an open-ended, multiple-level scale designated by class 5.0, 5.1, 5.2, etc. each of these levels is an order of magnitude more difficult than the last. Example: increasing difficulty from Class 5.0 to Class 5.1 is a similar order of magnitude as increasing from Class IV to Class 5.0.

POST RUN STUDY FOCUS GROUP DISCUSSION TOPICS
WEST CANADA CREEK WHITEWATER BOATING FLOW AND ACCESS STUDY

Topics to be discussed with the expert panel group following completion of the post-run individual evaluation forms:

1. Availability and suitability of the conditions of the put-in and take-out access locations.
2. What are the lowest, highest and optimal flow conditions that provide safe runs.
3. Discuss advantages and disadvantages of each flow.
4. Discuss the potential typical recreation use activity for the various flow ranges.
5. Identify challenging features, play areas, rapids or sections and rate their difficulty.
6. Discuss any encounters with other recreation user groups or any interaction or conflicts.
7. Discuss any safety concerns or considerations.
8. Overall evaluation of the sources of information for flow levels.
9. Overall evaluation of the sources of safety warnings for flow levels.
10. Overall evaluation on the range of water flows available.

APPENDIX B

PHOTOS OF PROSPECT BYPASS REACH AND TAILRACE AREA



FIGURE B-1. LOCATION OF PHOTOS FOR PROSPECT BYPASS REACH AND TAILRACE AREA



PHOTO B-1. LOOKING UPSTREAM TO MILITARY BRIDGE AREA



PHOTO B-2. LOOKING DOWNSTREAM OF MILITARY BRIDGE



PHOTO B-3. LOOKING DOWNSTREAM FROM BELOW WATERFALL AREA



PHOTO B-4. LOOKING UPSTREAM TO JUST BELOW MILITARY BRIDGE AREA



PHOTO B-5. LOOKING FURTHER DOWNSTREAM BELOW WATERFALL AREA



PHOTO B-6. LOOKING UPSTREAM TO WATERFALL AREA



PHOTO B-7. LOOKING FURTHER DOWNSTREAM NEAR ADJACENT MVWA LANDS



PHOTO B-8. LOOKING FURTHER DOWNSTREAM NEAR ADJACENT MVWA LANDS



PHOTO B-9. LOOKING UPSTREAM TO POWER CANAL



PHOTO B-10. LOOKING FURTHER DOWNSTREAM NEAR ADJACENT MVWA LANDS



PHOTO B-11. LOOKING UPSTREAM OF PROSPECT TAILRACE



PHOTO B-12. DOWNSTREAM OF PROSPECT TAILRACE



PHOTO B-13. PROSPECT TAILRACE AREA



PHOTO B-14. PROSPECT TAILRACE AREA



PHOTO B-15. PROSPECT TAILRACE AREA



PHOTO B-16. PROSPECT BELOW TAILRACE AREA

APPENDIX C

PHOTOS PROSPECT BYPASS REACH AT FLOWS OF APPROXIMATELY 600 CFS



FIGURE C-1. LOCATION OF PHOTOS FOR PROSPECT BYPASS REACH AND TAILRACE AREA AT APPROXIMATE 600 CFS



PHOTO C-1. BELOW PROSPECT FALLS (APPROXIMATELY 600 CFS)



PHOTO C-2. ABOVE MILITARY BRIDGE (APPROXIMATELY 600 CFS)



PHOTO C-3. BELOW MILITARY BRIDGE (APPROXIMATELY 600 CFS)



**PHOTO C-4. FURTHER DOWNSTREAM BELOW MILITARY BRIDGE
(APPROXIMATELY 600 CFS)**



PHOTO C-5. UPPER PROSPECT BYPASS REACH (APPROXIMATELY 600 CFS)



PHOTO C-6. MIDDLE PROSPECT BYPASS REACH (APPROXIMATELY 600 CFS)



PHOTO C-7. MIDDLE PROSPECT BYPASS REACH (APPROXIMATELY 600 CFS)



PHOTO C-8. MIDDLE PROSPECT BYPASS REACH (APPROXIMATELY 600 CFS)



PHOTO C-9. MIDDLE PROSPECT BYPASS REACH (APPROXIMATELY 600 CFS)

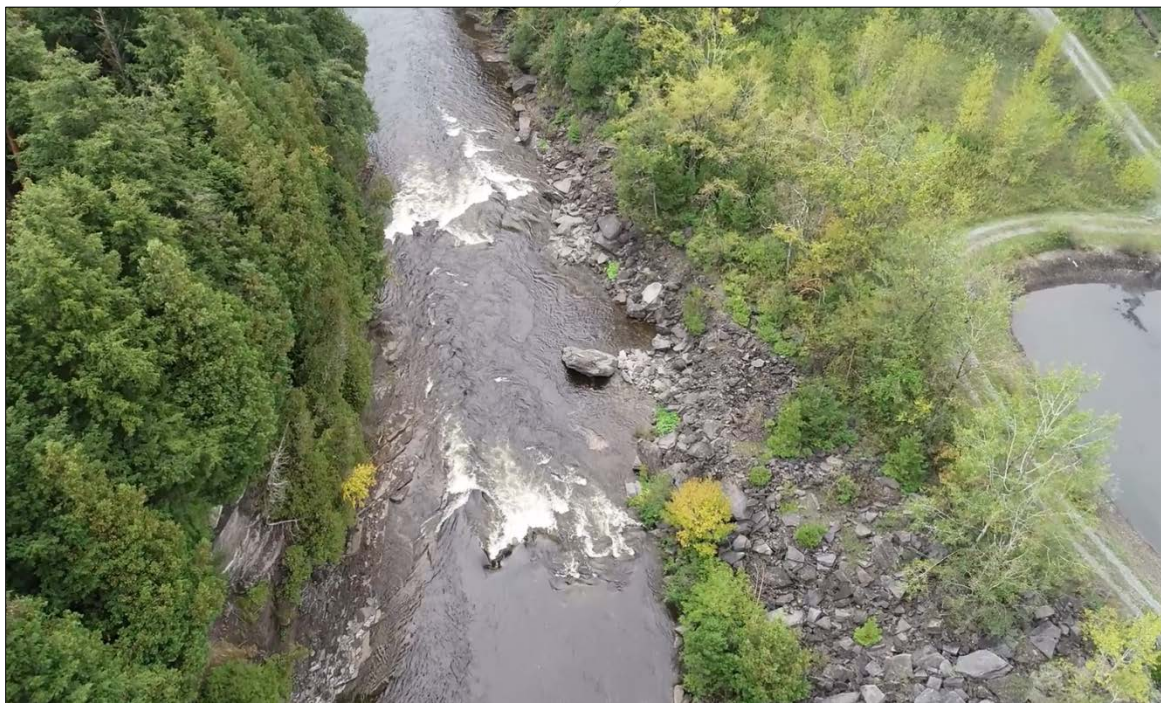


PHOTO C-10. MIDDLE PROSPECT BYPASS REACH (APPROXIMATELY 600 CFS)



PHOTO C-11. LOWER PROSPECT BYPASS REACH (APPROXIMATELY 600 CFS)



PHOTO C-12. LOWER PROSPECT BYPASS REACH (APPROXIMATELY 600 CFS)

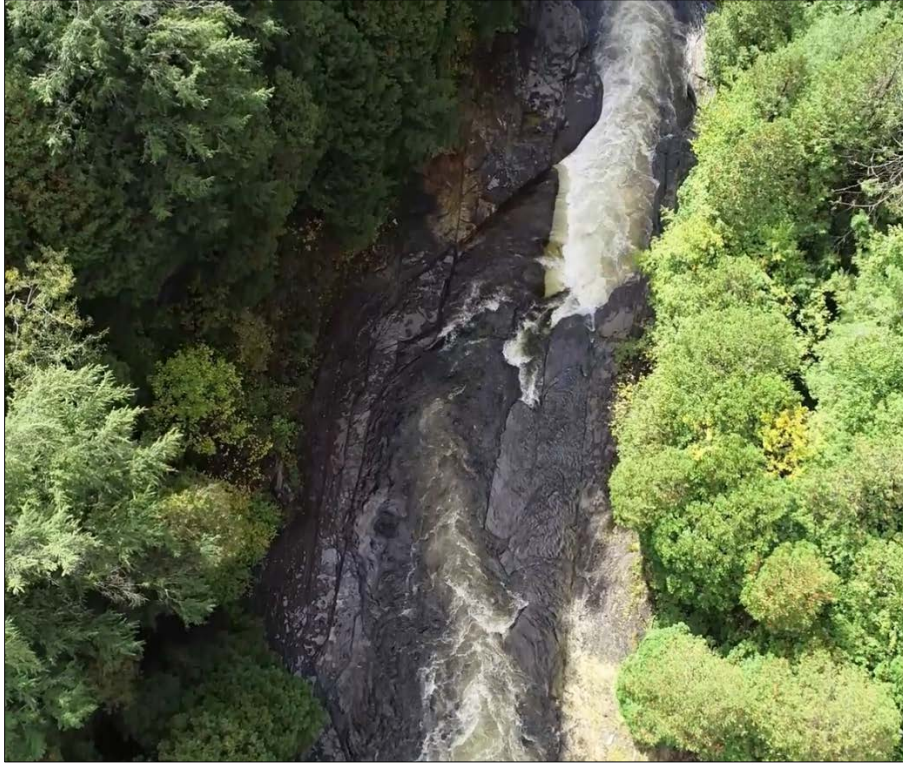


PHOTO C-13. LOWER PROSPECT BYPASS REACH (APPROXIMATELY 600 CFS)



PHOTO C-14. LOWER PROSPECT BYPASS REACH (APPROXIMATELY 600 CFS)



PHOTO C-15. TAILRACE AT PROSPECT POWERHOUSE (APPROXIMATELY 600 CFS)



PHOTO C-16. BELOW PROSPECT TAILRACE, UPPER END OF TRENTON IMPOUNDMENT (APPROXIMATELY 600 CFS)