Low-Impact Hydropower Institute

Re-Certification Application

LIHI Certificate No.128

Otter Creek Hydroelectric Project

(FERC No. 2558)

Prepared for:

Green Mountain Power Corporation

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January 2021

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ACRONYMS

A	
ADA	Americans with Disabilities Act
ANR	Agency of Natural Resources
APE	Area of Potential Effect
C	
CEII	Critical Energy Infrastructure Information
Central Vermont	Central Vermont
CFR	Code of Federal Regulations
cfs	cubic feet per second
Commission	Federal Energy Regulatory Commission
CSO	Combined Sewage Outflow
CVPS	Central Vermont Public Service Corporation
°C	Degrees Celsius
D	
DLA	Draft License Application
DO	Dissolved Oxygen
E	
EA	Environmental Assessment
EPA	Environmental Protection Agency
EPT	Ephemeroptera, Plecoptera, and Tricoptera
F	
°F	Degrees Fahrenheit
FERC	Federal Energy Regulatory Commission
Forest Service	U.S. Forest Service
FPC	Federal Power Commission
FPS	Feet per Second
ft	Foot/Feet
FWS	U.S. Fish and Wildlife Service
G	
GW	gigawatt
GWh	gigawatt hour
I	
IPaC	Information for Planning and Consultation

K

kV	kilovolt
kVA	Kilovolt-amp
KW	kilowatt
kWh	kilowatt hour

L

LIHI	Low Impact Hydroelectric Institute

M

Mg/L	Milligrams per liter
mm	millimeters
msl	mean sea level
MW	megawatt
Mwh	megawatt hour

P

PCB's	Polychlorinated biphenyls

R

ROR	Run-of-river
RM	River Mile

S

SHPO	State Historic Preservation Office
sq mi	Square Mile

T

TMDL	Total Maximum Daily Load

U

USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

V

VTANR	Vermont Agency of Natural Resources
VTDEC	Vermont Department of Environmental Conservation
VTFWD	Vermont Fish and Wildlife Department
VMPD	Vermont Marble Power Division of Omya Inc.

W

WQC	Water Quality Certificate
WTTF	Water Treatment Facility

Z

ZOE	Zone of Effect

LOW-IMPACT HYDROPOWER POWER INSTITUTE CERTIFICATION APPLICATION

Otter Creek Hydroelectric Project - LIHI Certificate No. 128 (FERC No. 2558)

1.0 FACILITY DESCRIPTION

The Otter Creek Hydroelectric Project (Project) is currently certified with the Low Impact Hydropower Institute (LIHI) as LIHI Certificate Number 128. The Project consists of three hydroelectric developments, Proctor, Beldens, and Huntington Falls, and is licensed as a single Federal Energy Regulatory Commission (FERC or Commission) Project (P-2558). Green Mountain Power Corporation (GMP) is the FERC Licensee, owner, and operator for the Project.

The Project developments are located on Otter Creek at river mile (RM) 64.2 (Proctor), RM 23.0 (Beldens), and RM 21.0 (Huntington Falls), listed from upstream to downstream. As shown in Figure 1-1, Otter Creek is in west-central Vermont within the Addison and Rutland counties, near the communities of Proctor, New Haven, and Weybridge. Otter Creek drains an area of 1,106 square miles (sq mi) and is located in the Champlain Valley. Otter Creek is approximately 100 miles long and flows northwesterly from the headwaters of Emerald Lake to its confluence with Lake Champlain, which borders the states of Vermont and New York (Figure 1-2). Lake Champlain flows north into the Richelieu River entering the Canadian Province of Quebec and eventually entering the St. Lawrence River.

The Project's current FERC license was issued on October 23, 2014 and will expire on October 1, 2054 (FERC License 2014). A Section 401 Water Quality Certificate (WQC) was issued by the Vermont Agency of Natural Resources (VTANR) Department of Environmental Conservation (VTDEC) on May 30, 2014 (WQC 2014), and was adopted into the FERC License.

Six additional dams operate on Otter Creek (Figure 1-3). Upstream of the Proctor Development the Emerald Lake Dam is located at RM 100, the Ripley Mills Dam is located at RM 72, and the Center Rutland Project (FERC No. 2445) is located at RM 71. In between the Proctor and Beldens Developments, the Middlebury Lower Hydroelectric Project (FERC No. 2737) is located at RM 24. Downstream of the Huntington Falls Development, the Weybridge Dam (FERC No. 2731) is located at RM 19.5 and the Vergennes Dam (FERC No. 2674) is located at RM 7.6. The Center Rutland Dam, Middlebury Lower Dam, Weybridge Dam, and Vergennes Dam are additionally owned and operated by GMP.

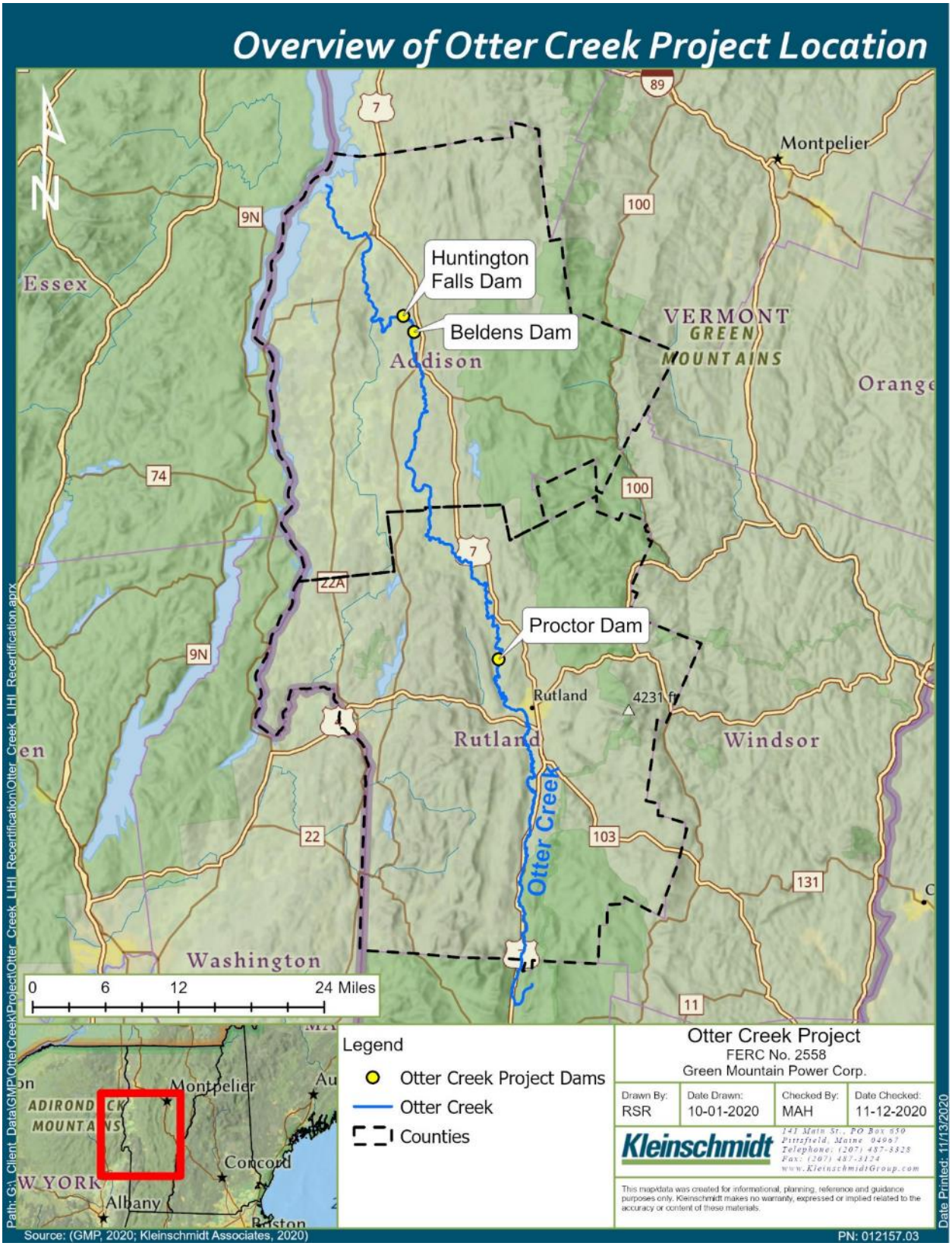

Figure 1-1 Overview of Otter Creek Project Location

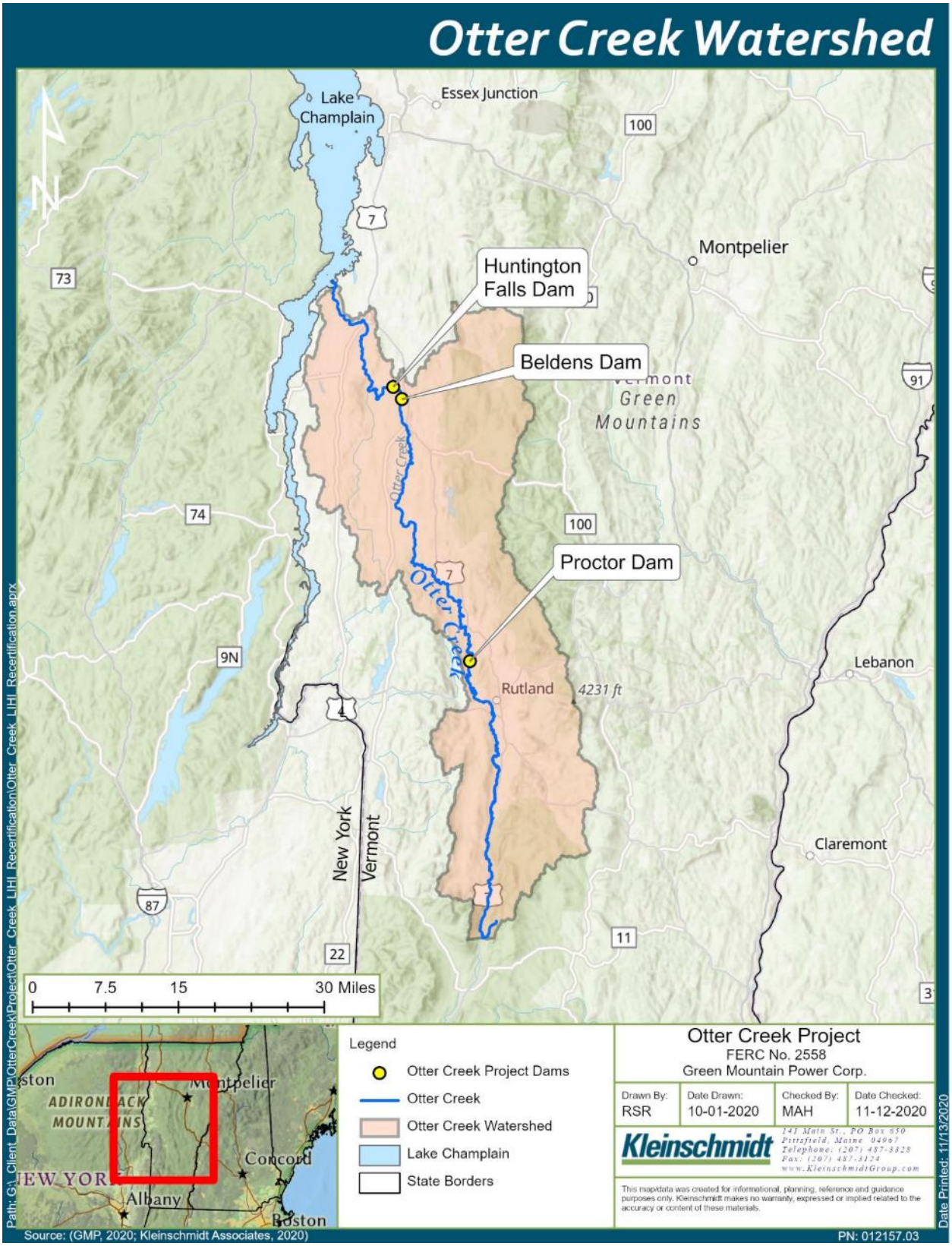

Figure 1-2 Otter Creek Watershed

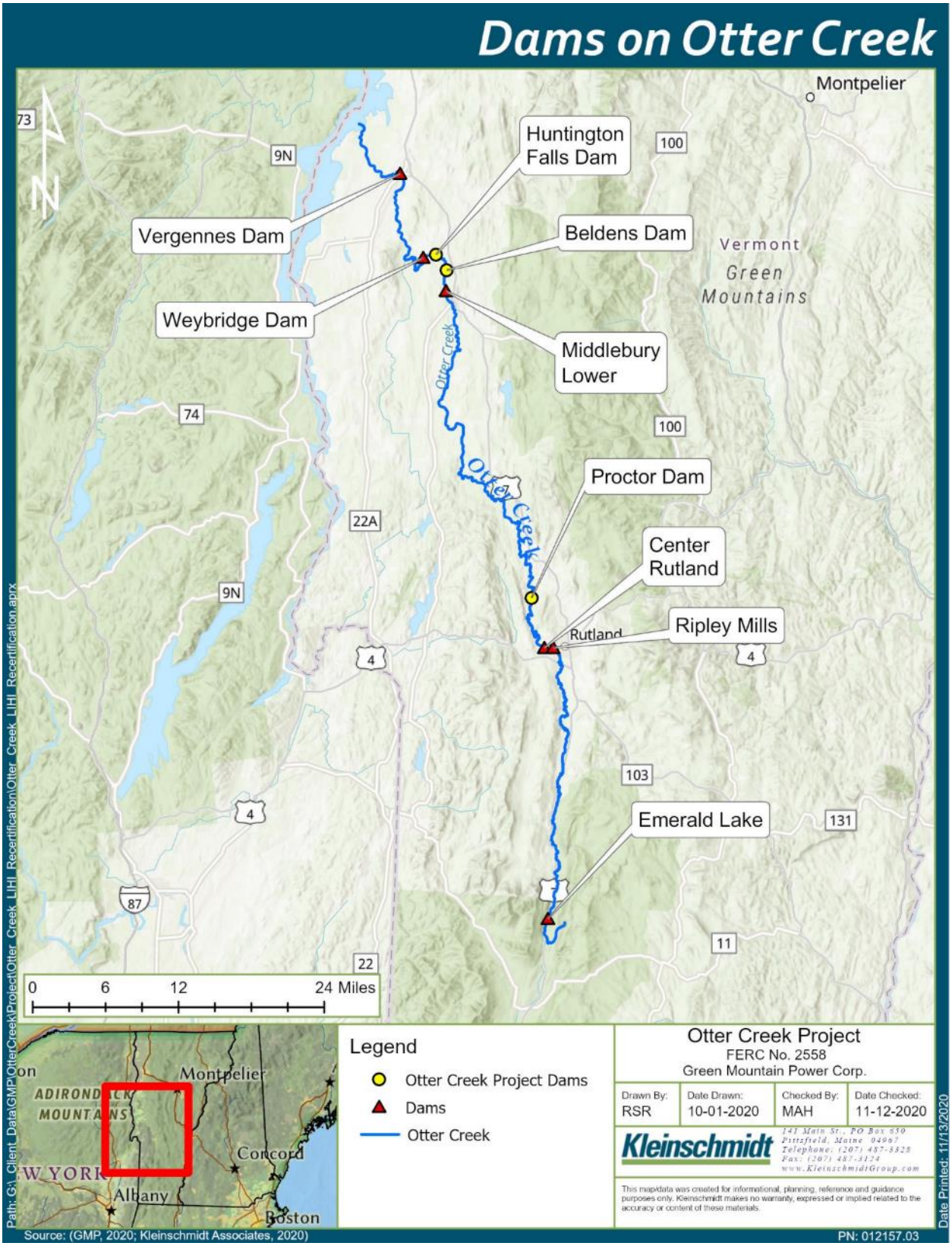

Figure 1-3 Dam Locations on Otter Creek

1.1 Project Description

1.1.1 Project Overview

The Otter Creek Project consists of three hydroelectric developments, Proctor, Beldens, and Huntington Falls, located at (RM) 64.2 (Proctor), RM 23.0 (Beldens), and RM 21.0 (Huntington Falls), listed from upstream to downstream. There is one non-Project associated dam (Middlebury Lower Dam) located between the Proctor and Beldens Developments. The Huntington Falls Development is directly downstream of Beldens. Table 1-1 provides an overview of Project developments and each Project development is further described in the below text.

Table 1-1 Otter Creek Project Facilities Overview

	Otter Creek Project Totals	Proctor Development	Beldens Development	Huntington Falls Development
Dams	4	1	2	1
Intake(s)	5	1	2	2
Powerhouse(s)	5	1	2	2
Penstock(s)	7	2	2	3
Tailrace	3	1	1	1
Bypass Reach(es)	4	1	2	1
Year Built		1905	1913	1910
Run-of-River		Modified R-O-R	True R-O-R	True R-O-R
MW	22.807 MW	10.233 MW	5.849 MW	6.725 MW

1.1.2 Proctor Development

The Proctor Development was built in 1905 and is the most upstream Development of the Otter Creek Project, located at river mile 64.2 in Proctor, Vermont (Photo 1-1). Approximately 608 acres of land and water are currently included within the Proctor Development boundary and it has 395.0 sq mi of upstream drainage area. Within the Proctor Development boundary is the powerhouse, dam, impoundment, bypass reach, two penstocks, a tailrace, a impoundment that extends 6 miles upstream of the dam, and tailrace extending 240-feet (ft) downstream from the powerhouse (Figure 1-4). The Bypass Reach, called Sutherland Falls, is 680-ft-long and drops approximately 100 ft in elevation (Photo 1-2). The Proctor Development also includes a 1,200-ft-long access road and a 265-ft-long access bridge located 760-ft downstream from the powerhouse that is used to access the powerhouse (Photo 1-3).

The Proctor Development impounds a surface area of 95 acres and a usable storage capacity of 275 acre-ft at a normal maximum water surface elevation of 469.5 above mean sea level (msl). The average weighted depth within the impoundment is 6.6 ft with 12.2 miles of shoreline. The substrate is comprised of mostly silt with little to no aquatic vegetation.

The Proctor Dam is a 128-ft-long, 13-ft-high masonry, concrete dam with a 3-ft-high inflatable flashboard system (Photo 1-4 and Photo 1-5). Inflow passes through a 17-ft-deep by 45-ft-wide by 115-ft-long gate forebay intake structure that contains trash racks with 1-inch clear bar spacing, angled at 45 degrees (Photo 1-6). Two steel penstocks convey water from the forebay to the powerhouse (Photo 1-7). One penstock is 9 ft in diameter and extends 354 ft from the dam to a surge tank. From the surge tank, the penstock bifurcates. One penstock continues as an 8-ft-diameter penstock for an additional 96 ft to the powerhouse. The other penstock is 7 ft in diameter and 500 ft long extending directly into the powerhouse.

The concrete masonry powerhouse is 33-ft by 100-ft and contains four Francis turbine generator units rated at 2.245 megawatts (MW), 1.715 MW, 1.719 MW, and 1.714 MW, respectively (Photo 1-8 and Photo 1-9). Additionally, there is a 28-ft by 48-ft steel extension of the powerhouse, which contains a 2.840 MW vertical Francis turbine generator unit. The total hydraulic capacity of the Proctor Development is 1,188-cfs and a total authorized installed capacity of 10.233 MW. Additionally, the Proctor Development contains generator leads, two banks of 0.48/4.16 kilovolts (kV) single-phase transformers and a 0.48/43.8 kV, three-winding transformer, and appurtenant facilities.

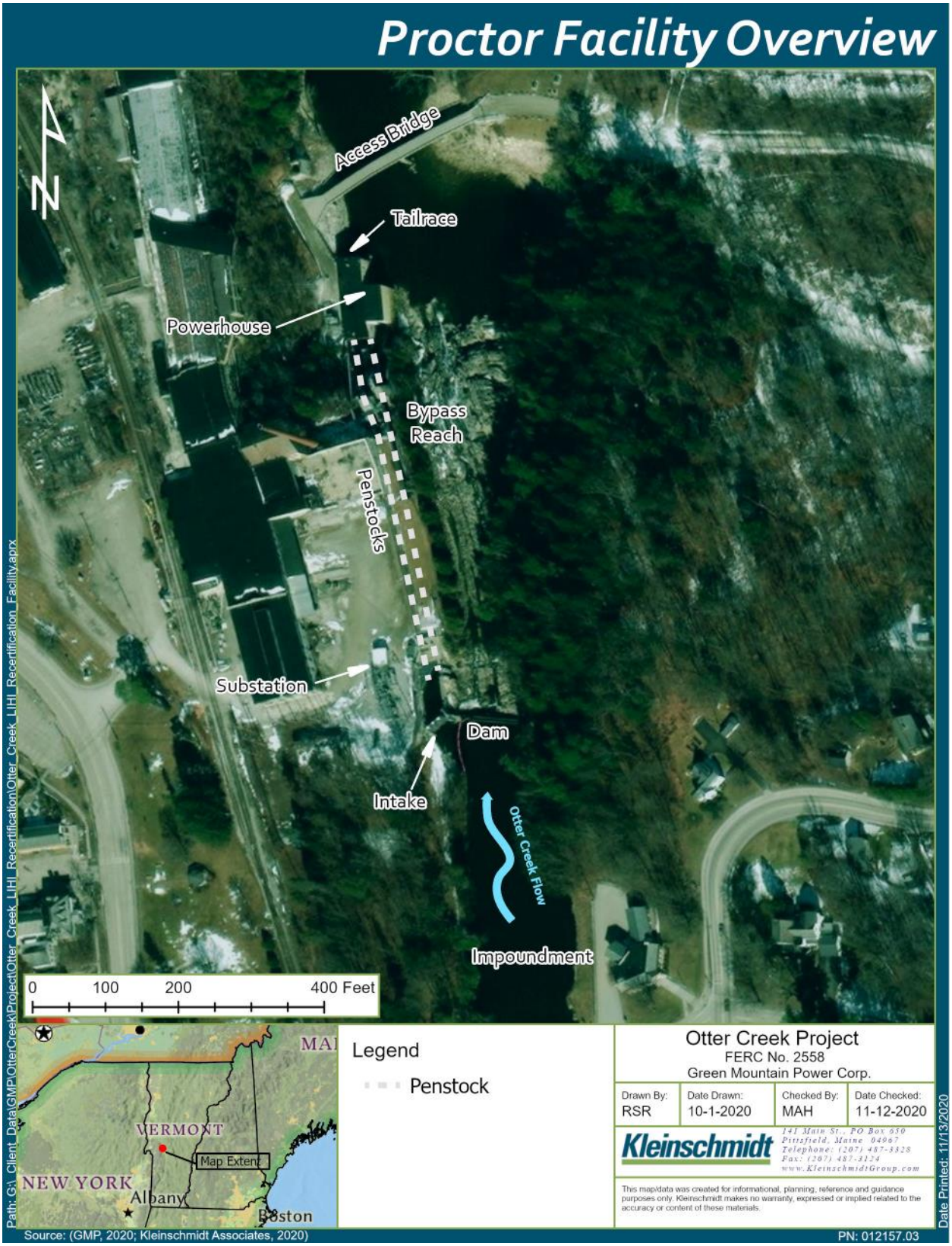

Figure 1-4 Proctor Development Facility Overview

Photo 1-1 Aerial View of the Proctor Development from 2011
***Note: the access bridge was not constructed yet when this photo was taken**

Photo 1-2 Aerial View of the Proctor Powerhouse and Tailrace from 2011*
***Note: the access bridge was not constructed yet when this photo was taken**

Photo 1-3 Powerhouse Access Bridge and Upstream View of the Proctor Development

Photo 1-4 Aerial Photograph of the Proctor Dam taken in 2011
***Note: the access bridge was not constructed yet when this photo was taken**

Photo 1-5 Proctor Dam

Photo 1-6 Proctor Intake Structure

Photo 1-7 Proctor Penstocks

Photo 1-8 Proctor Powerhouse and Access Bridge

Photo 1-9 Proctor Generating Units

1.1.3 Beldens Development

The Beldens Development built in 1913 is downstream of the Proctor Development and located at RM 23 in Beldens, Vermont (Photo 1-10). Approximately 82 acres of land and water are currently included within the Beldens Development boundary and has a drainage area of 632.5 sq mi. Within the Beldens Development boundary is the impoundment, two dams, two powerhouses, two intakes, two penstocks, two bypass reaches, and the tailrace. The Beldens Development boundary (Figure 1-5) also extends 1.8 miles upstream from the dam following the contour elevation of 286.5 ft msl and 550 ft downstream of the dam (Photo 1-11), enclosing all Beldens Development structures and recreational facilities.

The Beldens Development impoundment has a surface area of 22 acres and a usable storage capacity of 253 acre-ft at a normal maximum water surface elevation of 283 msl (Photo 1-12). The impoundment has approximately 4.2 miles of shoreline and the dominate substrate is silt, with little to no aquatic vegetation.

The Beldens Dam is concrete with 2.5 ft-high wooden flashboards and comprises of two sections on either side of a bedrock island, creating two bypass reaches. The Eastern section of the dam (East Dam) is 24-ft-high, 57-ft-long, with a 150-ft-long bypass reach

that extends to the tailrace (Photo 1-13). The western section of the dam (West Dam) is 15-ft-high, 56-ft-long, with a 450-ft-long bypass reach that also extends to the tailrace (Photo 1-14 and Photo 1-15).

The Beldens Development has two intake structures equipped with trash racks. One intake on the East Dam is approximately 79-ft-long with a 40-ft-long and 13-ft-high trash rack with vertical bars and 3-inch clear spacing. The second intake on the West Dam is 35-ft-long with a trash rack 26-ft-wide by 13-ft with 1 1/8-inch clear spacing. Two steel penstocks convey water from the forebay to two separate powerhouses. The first penstock is steel and begins at 12-ft in diameter then bifurcates into two 10-ft diameter sections approximately 30-ft long which lead to the original powerhouse (Powerhouse-1) (Photo 1-16). The other concrete penstock is 12-ft in diameter and 45-ft-long leading to a newer powerhouse (Powerhouse-2).

Powerhouse-1 is a concrete and masonry structure (Photo 1-17) that is 40-ft by 44-ft and houses two horizontal Francis turbine generator units, rated at 0.80 MW and 0.949 MW, respectively. Powerhouse-2 is a concrete structure (Photo 1-18) that is 40-ft by 75-ft and houses a 4.10 MW rated horizontal Kaplan turbine generator unit. The total hydraulic capacity of the Beldens Development is 2,000-cfs and a total authorized installed capacity of 5.849 MW. Additionally, the Beldens Development contains generator leads, 2.4/46 kV step-up transformer bank, and appurtenant facilities.

Figure 1-5 Beldens Development Facility Overview

Photo 1-10 Aerial Photo of the Beldens Development taken in 2011

Photo 1-11 Beldens Tailrace

Photo 1-12 Beldens Impoundment

Photo 1-13 Beldens Eastern Dam

Photo 1-14 Beldens Western Dam

Photo 1-15 Beldens Western Bypass Reach

Photo 1-16 Beldens Steel Bifurcated Penstock Leading to Powerhouse-1

Photo 1-17 Beldens Powerhouse-1

Photo 1-18 Aerial View of both Beldens Powerhouses, Penstocks and the Western Dam, Photo taken in 2011

1.1.4 Huntington Falls Development

The Huntington Falls Development built in 1910 is two miles downstream of the Beldens Dam and located at RM 21 in Weybridge, Vermont (Photo 1-19). Approximately 74 acres of land and water are included within the Huntington Falls Development boundary and has a drainage area of 752 sq mi. Within the Huntington Falls Development boundary is the dam, impoundment, bypass reach, two powerhouses, two intakes, three penstocks, and the tailrace. The Huntington Falls Development boundary (Figure 1-6) also extends 1.3 miles upstream from the dam following the contour elevation of 230 ft msl and 500 ft downstream of the dam (Photo 1-20), enclosing all Huntington Falls Development structures and recreational facilities.

The Huntington Falls Development impounds a surface area of 23 acres and a usable storage capacity of 234.16 acre-ft at a normal maximum water surface elevation of 217.8 ft msl (Photo 1-21). The impoundment has approximately 1.2 miles of shoreline and the dominate substrate is silt, with little to no aquatic vegetation.

The Huntington Falls Dam is composed of a 187-ft-long, 31-ft-high concrete dam with a 2.5-ft-high inflatable flashboard system (Photo 1-18). Inflow from the impoundment passes through two intakes; water is conveyed through three penstocks that lead to two powerhouses. Intake racks at Unit 1 and 2 are approximately 20-ft-high by 40-ft-wide with

13-ft-high by 26-ft-wide trash racks with bar spacing of 1.125 inches on center. The intake at unit 3 is 38-ft-high by 40-ft-wide with 16-ft-high by 30-ft-wide trash racks with 2-inch clear bar spacing and orientated parallel to river flow.

Two steel penstocks are 10-ft in diameter and 30-ft-long which lead to the original powerhouse (Powerhouse-1). The third penstock is concrete and 12-ft in diameter and 75-ft-long that leads to a concrete powerhouse (Powerhouse-2).

Powerhouse-1 is the original brick powerhouse and is 42-ft by 60-ft (Photo 1-19). It contains two horizontal Francis turbine generating units with a combined authorized capacity of 2.625 MW. Powerhouse-2 is a 40-ft by 75-ft concrete powerhouse (Photo 1-20) and contains one horizontal Kaplan turbine-generator unit with an authorized capacity of 4.1 MW. The total hydraulic capacity of the Huntington Falls Development is 2,250-cfs and a total authorized installed capacity of 6.725 MW. Additionally, the Huntington Falls Development contains generator leads, 2.4/46 kV step-up transformer bank, and appurtenant facilities.

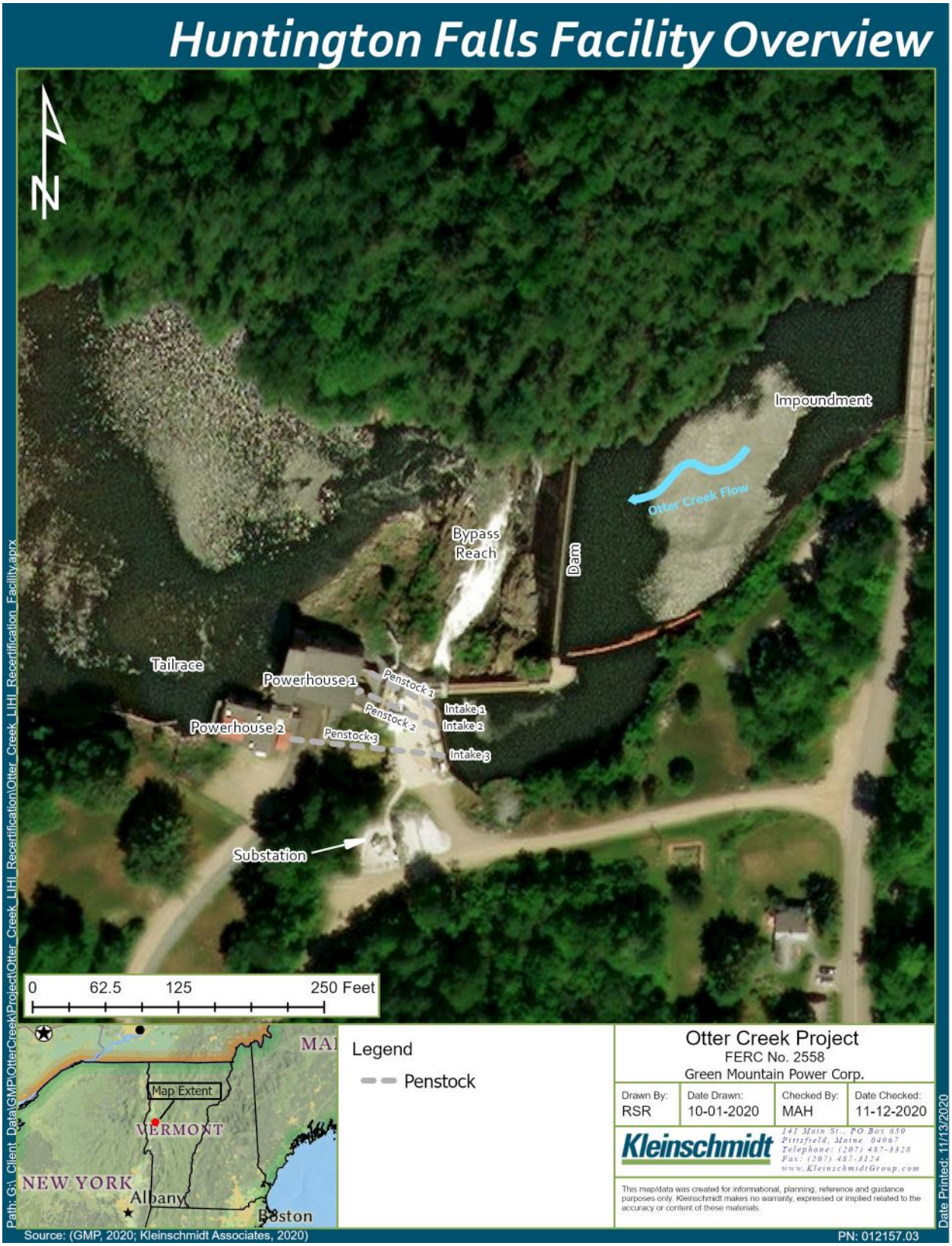

Figure 1-6 Huntington Falls Development Facility Overview

Photo 1-19 Aerial View of the Huntington Falls Development in 2011

Photo 1-20 Huntington Falls Dam and Bypassed Reach

Photo 1-21 Huntington Falls Impoundment

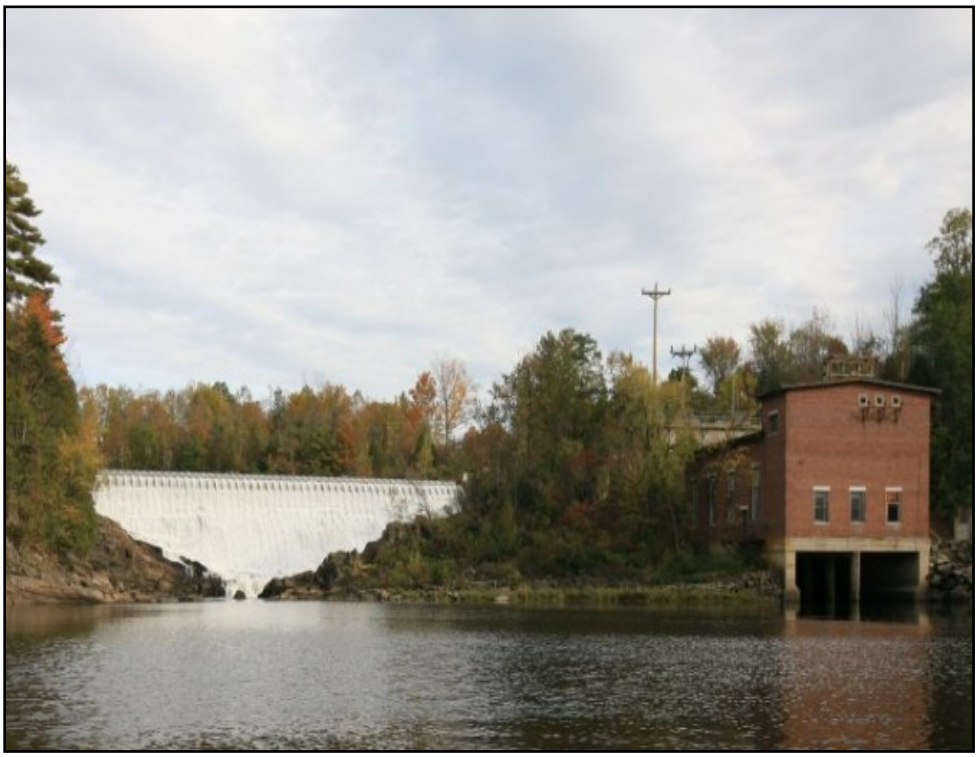

Photo 1-22 Huntington Falls Dam, Powerhouse-1 and Tailrace

Photo 1-23 Huntington Falls Powerhouse-1 (top) and Powerhouse-2 (bottom)

1.2 Facility Description Information – Otter Creek Project LIHI #128

Information Type	Variable Description	Response (and reference to further details)
Name of the Facility	Facility name	The Otter Creek Hydroelectric Project (Project) consists of three separate Developments (Proctor, Beldens, Huntington Falls Developments) and is a single FERC licensed Project.
	(FERC Project Name)	Otter Creek Hydroelectric Project (FERC Project No. 2558)
Reason for applying for LIHI Certification	1. To participate in state RPS program (specify the state and the total MW/MWh associated with that participation (value and % of facility total MW/MWh) 2. To participate in voluntary REC market (e.g., Green-e) 3. To satisfy a direct energy buyer's purchasing requirement 4. To satisfy the facility's own corporate sustainability goals 5. For the facility's corporate marketing purposes 6. Other (describe)	LIHI Recertification & to participate in the voluntary REC market.
	If applicable, amount of annual generation (MWh and % of total generation) for which RECs are currently received or are expected to be received upon LIHI Certification	GMP receives Massachusetts Class II RECs for 100% of Beldens and Huntington Falls outputs and 80.67% of Proctor outputs.
Location	River name (USGS proper name)	Otter Creek
	Watershed name (select region, click on the area of interest until the 8-digit HUC number appears. Then identify watershed name and HUC-8 number from the map at: https://water.usgs.gov/wsc/map_index.html)	Otter Creek Watershed - 02010002

	Nearest town, county, and state	Proctor, New Haven, and Weybridge, within Addison and Rutland Counties, Vermont.
	River mile of dam	The Otter Creek Project is between river miles 21.0 and 64.2 on Otter Creek. Proctor Development: 64.2 RM Beldens Development: 23.0 RM Huntington Falls Development: 21.0 RM
	Next major river	The Huntington Falls Development is the furthest downstream of the three Developments and is approximately 21 river miles upstream of Otter Creek's confluence with Lake Champlain in Ferrisburgh, Vermont.
	Geographic latitude / longitude	43° 39' 44.97" N / 73° 02' 01.37" W (Proctor)
		44° 03' 07.48" N / 73° 10' 37.85" W (Beldens)
		44° 04' 14.32" N / 73° 11' 43.41" W (Huntington Falls)
Facility Owner	Application contact names: Please see Section 5.0 for the Facility Contacts Form.	Mr. John Greenan, P.E. Green Mountain Power Corporation (GMP) 2154 Post Road, Rutland, VT 05701
	Facility owner company and authorized owner representative name.	Mr. John Greenan, P.E. (GMP)
	FERC licensee company name (if different from owner)	GMP
	Representative in LIHI certification	Mr. John Greenan, PE, GMP Katie Sellers & Karen Bishop, Kleinschmidt Associates
Regulatory Status	FERC Project Number (e.g., P-xxxx), issuance and expiration dates	Otter Creek Project (FERC Project No. 2558) • 40-year license • Issued October 23, 2014 • Expires October 1, 2054
	FERC license type or special classification (e.g., "qualified conduit")	Major Project License
	Water Quality Certificate identifier and issuance date, plus source agency name	A Section 401 Water Quality Certificate (WQC) was issued by the Vermont Department of Environmental Conservation (VTDEC) on

		May 30, 2014 (WQC 2014), and was adopted into the new FERC License.
	Hyperlinks to key electronic records on FERC e-library website or other publicly accessible data repositories. (For example, the FERC license or exemption, recent FERC Orders, Water Quality Certificates, Endangered Species Act documents, Special Use Permits from the U.S. Forest Service, 3rd-party agreements about water or land management, grants of right-of-way, U.S. Army Corps of Engineers permits, and other regulatory documents. If extensive, the list of hyperlinks can be provided separately in the application.	FERC License 2014 2014 Water Quality Certificate Operation and Compliance Plan Spill Prevention Control and Counter Measures Plan Terrestrial Monitoring and Management Plan Programmatic Agreement Recreation Plan Final Environmental Assessment 2013 Otter Creek Tactical Basin Plan 2019
Powerhouse	Date of initial operation (past or future for operational applications) **For recertifications: Indicate if installed capacity has changed since last certification**	Proctor: 1905 Beldens: 1913 Huntington Falls: 1910 No change in installed capacity since last certification.
	Average annual generation (MWh) and period of record used **For recertifications: Indicate if average annual generation has changed since last certification**	Otter Creek Project: 2014 – 41,248,468 kWh 2015 – 45,346,508 kWh 2016 – 12,496,829 kWh 2017 – 53,409,163 kWh 2018 – 70,858,000 kWh 2019 – 71,344,000 kWh Average: 49,117 MWh (2014-2019) Total installed capacity is 22.807 MW: Proctor: 10.233 MW Beldens: 5.849 MW Huntington Falls: 6.725 MW

	Mode of operation (run-of-river, peaking, pulsing, seasonal storage, diversion, etc.) **For recertifications: Indicate if mode of operation has changed since last certification**	Proctor: modified run-of-river Beldens and Huntington Falls: True run-of-river Project operation has not changed since the last LIHI certification.
	Number, type, and size of turbine/generators, including maximum and minimum hydraulic capacity and maximum and minimum output of each turbine and generator unit	See Section 1 for description of each Development.
	Trashrack clear spacing (inches) for each trashrack	Proctor: 1 inch Beldens: 3 inches (East Dam), 1.125 inches (Right Dam) Huntington Falls: 1.125 inches and 2 inches
	Approach water velocity (ft/s) at each intake if known	Proctor: 1.9 ft/s Huntington Falls: 1.8 ft/s Beldens: The Beldens Development approach velocity was not calculated as part of the last relicensing effort. Because no facility or operational changes were proposed for Beldens, resource agencies did not raise concerns regarding approach velocity and/or entrainment.
	Dates and types of major equipment upgrades. **For recertifications: Indicate only those since last certification**	The FERC-approved Huntington Falls Redevelopment Project was completed in 2017. This redevelopment Project was approved under the last LIHI Certification process. LIHI was notified of the Huntington Falls redevelopment completion in 2017.
	Dates, purpose, and type of any recent operational changes. **For recertifications: Indicate only those since last certification**	The FERC-approved Huntington Falls Redevelopment Project was completed in 2017. This redevelopment Project was approved under the last LIHI Certification process. LIHI was notified of the Huntington Falls redevelopment completion in 2017. The Huntington Falls redevelopment project replaced units 1 and 2 with new turbine-

		generators that increased the development's nameplate capacity from 5.5 MW to 6.725 MW. This increased maximum hydraulic capacity from 2,010 cfs to 2,250 cfs. Redevelopment of the Huntington Falls Development also included physical modifications so that the required 66 cfs minimum flow could be provided after redevelopment was completed.
	Plans, authorization, and regulatory activities for any facility upgrades or license or exemption amendments	No Project upgrades are planned at this time.
Dam or Diversion	Date of original dam or diversion construction and description and dates of subsequent dam or diversion structure modifications	Proctor Dam was constructed in 1905 with a second powerhouse built in 1984. The intake and forebay were also modified in 2013 to improve hydraulic efficacy. Beldens Dam was constructed in 1913, with the second powerhouse built in 1988. Huntington Falls Dam was constructed in 1910, with the second powerhouse built in 1989.
	Dam or diversion structure length, height including separately the height of any flashboards, inflatable dams, etc. and describe seasonal operation of flashboards and the like	Proctor Dam: 13 ft, 3-ft-high inflatable flashboard Beldens Dam (East): 24 ft, 2.5-ft-high wooden flashboards Beldens Dam (West): 15 ft, 2.5-ft-high wooden flashboards Huntington Falls: 31 ft, 2.5-ft-high inflatable flashboards
	Spillway maximum hydraulic capacity	Spillway elevation (ft.) (msl) / hydraulic capacity (cfs): Proctor: 466.5 ft (469.5 ft. with flashboards) msl / 1,188 cfs Beldens: 280.5 ft (283 ft. with flashboards) msl / 2,000 cfs

		Huntington Falls: 215.3 ft (217.8 ft. with flashboards) msl / 2,250 cfs
	Length and type of each penstock and water conveyance structure between the impoundment and powerhouse	Proctor: • One riveted steel penstock: 9 ft in diameter that extends 354 ft from the Dam to a surge tank, which then decreases to 8 feet in diameter and continues an additional 96 ft to the powerhouse • One spiral welded steel penstock that is 7-ft in diameter and extends 500 ft to the powerhouse. Beldens: • One steel penstock that is 12-ft in diameter which bifurcates into two, 10-ft diameter sections approximately 30-ft long that lead to Powerhouse-1 (original powerhouse). • One concrete penstock is 12-ft in diameter and 45-ft-long and leads to Powerhouse-2 (newer powerhouse). Huntington Falls: • Two steel Penstocks 10-ft in diameter and 30-ft-long which lead to Powerhouse-1 (original powerhouse). • One concrete penstock 12-ft in diameter and 75-ft-long that leads to Powerhouse-2 (newer powerhouse).
	Designated facility purposes (e.g., power, navigation, flood control, water supply, etc.)	Power Generation
Conduit Facilities Only	Date of conduit construction and primary purpose of conduit	N/A
	Source water	Otter Creek
	Receiving water and location of discharge	Otter Creek

Impoundment and Watershed	Authorized maximum and minimum impoundment water surface elevations **For recertifications: Indicate if these values have changed since last certification**	Proctor: modified run-of-river, Operated in true run-of-river mode between July 1 through April 30 when inflow is less than 200 cfs, and from May 1 to June 30 when inflow is less than 400 cfs. All other times, 1.5 ft drawdown and refill cycle (peaking mode). Beldens and Huntington Falls: True run-of-river. Project operation, as licensed, has not changed since the last LIHI certification. Huntington Falls redevelopment, is now complete.
	Normal operating elevations and normal fluctuation range **For recertifications: Indicate if these values have changed since last certification**	Normal Operation Elevations: Proctor: 469.5 msl run-of-river target elevation 468.0 to 469.5 during peaking operations Beldens: 283.0 msl run-of-river target elevation Huntington Falls: 217.8 msl run-of-river target elevation Project operation, as licensed, has not changed since the last LIHI certification. Huntington Falls redevelopment, is now complete.
	Gross storage volume and surface area at full pool **For recertifications: Indicate if these values have changed since last certification**	Proctor: 275.5 acre-ft, 95 acres surface area Beldens: 252.2 acre-ft, 22 acres surface area Huntington Falls: 234.2 acre-ft, 23 acres surface area The Projects' impoundments do not contain sufficient storage capability to significantly influence river flows. These quantities have not changed since the last LIHI certification.

	Usable storage volume and surface area **For recertifications: Indicate if these values have changed since last certification**	Proctor: The impoundment has a surface area of 95 acres and a usable storage capacity of 275 acre-ft at a normal maximum water surface elevation of 469.5 above msl. Beldens: The impoundment has a surface area of 22 acres and a usable storage capacity of 253 acre-ft at a normal maximum water surface elevation of 283 msl. Huntington Falls: The impoundment has a surface area of 23 acres and a usable storage capacity of 234.16 acre-ft at a normal maximum water surface elevation of 217.8 ft msl. Project values have not changed since the last LIHI certification.
	Describe requirements related to impoundment inflow and outflow, elevation restrictions (e.g., fluctuation limits, seasonality) up/down ramping and refill rate restrictions.	Proctor: Modified run-of-river facility. Operates in true run-of-river mode between July 1 through April 30 when inflow is less than 200 cfs, and from May 1 to June 30 when inflow is less than 400 cfs. All other times, 1.5 ft drawdown and refill cycle (peaking mode). During peaking operations, maximum powerhouse discharges are implemented (see section 3.1.1.1) Beldens: True run-of-river mode. A bypass conservation flow of 35 cfs, with 10 cfs spilled over the East Dam and 25 cfs over the West Dam, shall be released at all times. Huntington Falls: True run-of-river mode where instantaneous inflows to the impoundment at all times. A bypass conservation flow of 66 cfs is released at all times through a bypass gate.

	Upstream dams by name, ownership and river mile. If FERC licensed or exempt, please provide FERC Project number of these dams. Indicate which upstream dams have downstream fish passage.	Six additional Dams operate on Otter Creek (see Figure 1-2). Upstream of the Projects' Proctor Development the: • Emerald Lake Dam (State of Vermont) is located at RM 100, • Ripley Mills Dam (Rutland Plywood Corporation) is located at RM 72, • Center Rutland Dam (GMP) (FERC No. 2445) is located at RM 71. In between the Projects' Proctor and Beldens Developments, the: • Middlebury Lower Dam (GMP) (FERC No. 2737) is located at RM 24. No downstream fish passage provided at upstream dams.
	Downstream dams by name, ownership, river mile and FERC number if FERC licensed or exempt. Indicate which downstream dams have upstream fish passage	Downstream of the Projects' Huntington Falls Development, the: • Weybridge Dam (GMPC) (FERC No. 2731) is located at RM 19.5 • Vergennes Dam (GMPC) (FERC No. 2674) is located at RM 7.6. No upstream fish passage provided at downstream dams.
	Operating agreements with upstream or downstream facilities that affect water availability and facility operation	N/A

	Area of land (acres) and area of water (acres) inside FERC Project boundary or under facility control. Indicate locations and acres of flowage rights versus fee-owned property.	Proctor: Approximately 608 acres of land and water are currently included within the Proctor Development boundary. The impoundment 275.48 acre-ft of usable storage capacity. The impoundment has a surface area of 95 acres and a usable storage capacity of 275 acre-ft at a normal maximum water surface elevation of 469.5 above msl. Beldens: Approximately 82 acres of land and water are currently included within the Beldens Development boundary and has a drainage area of 632.5 sq mi. The impoundment has a surface area of 22 acres and a usable storage capacity of 253 acre-ft at a normal maximum water surface elevation of 283 msl Huntington Falls: Approximately 74 acres of land and water are currently included within the Huntington Falls Development boundary and has a drainage area of 752 sq mi. The impoundment has a surface area of 23 acres and a usable storage capacity of 234.16 acre-ft at a normal maximum water surface elevation of 217.8 ft msl
Hydrologic Setting	Average annual flow at the dam, and period of record used	Average annual flow: Proctor: 670 cfs Beldens: 1,049 cfs Huntington Falls: 1,247 cfs (Source: WQC, years 1903 - 2012)
	Average monthly flows and period of record used	Average monthly flows in cfs (2010-2019) from the closest upstream USGS Gage.

Month	Proctor (cfs)	Beldens (cfs)	*Hunting-ton Falls (cfs)
USGS Gage #	04282000	04282500	04282500 + 04282525
January	631	1,170	1,374
February	632	1,060	1,249
March	810	1,540	1,819
April	1,410	2,480	3,006
May	841	1,770	2,113
June	580	1,210	1,490
July	391	871	1,032
August	328	486	611
September	256	575	669
October	564	905	1,114
November	544	988	1,170
December	736	1,220	1,478

*Huntington Falls is a combination of the Middlebury USGS Gage and New Haven River USGS Gage, which is located directly above stream of the Huntington Falls Development. This combination compensates for additional inflow from the New Haven River and is likely representative of flows at the Huntington Falls Development.

Location and name of closest stream gaging stations above and below the facility	**Proctor**: Above: USGS gage Otter Creek at Center of Rutland, VT (04282000) Below: USGS gage Neshobe River at Brandon, Vt (0428220) **Beldens** Above: USGS gage Otter Creek at Middlebury VT (04282500) Below: USGS gage New Haven River at Brooksville, NR Middlebury, VT (04282525)

<table>
<tr><td></td><td></td><td>Huntington Falls
<u>Above</u>: USGS gage New Haven River at Brooksville, NR Middlebury, VT (04282525)
<u>Below</u>: USGS gage Otter Creek BLW Vergennes Falls, at Vergennes, VT (04282576)</td></tr>
<tr><td></td><td>Watershed area at the dam (in square miles). Identify if this value is prorated from gage locations and provide the basis for proration calculation.</td><td>Proctor: 362 sq mi
Beldens: 635 sq mi
Huntington Falls: 755 sq mi</td></tr>
<tr><td></td><td>Other facility specific hydrologic information (e.g., average hydrograph)</td><td>N/A</td></tr>
<tr><td>Designated Zones of Effect</td><td>Numbers and names of each zone of effect (e.g., Zone 1: Impoundment)

River mile of upstream and downstream limits of each zone of effect (e.g., Zone 1 Impoundment: RM 6.3 - 5.1)</td><td>
<table>
<tr><td>Proctor Impoundment ZOE</td><td>RM 70.2 to 64.2</td></tr>
<tr><td>Proctor Bypass Reach ZOE</td><td>RM 64.2 to 64.13</td></tr>
<tr><td>Proctor Tailrace ZOE</td><td>RM 64.13 to 64.1</td></tr>
<tr><td>Beldens Impoundment ZOE</td><td>RM 23.0 to 21.2</td></tr>
<tr><td>Beldens Bypass Reaches 1&2 ZOE</td><td>RM 21.2 to 21.1</td></tr>
<tr><td>Beldens Tailrace ZOE</td><td>RM 21.1 to 21.0</td></tr>
<tr><td>Huntington Falls Impoundment ZOE</td><td>RM 21.0 to 19.7</td></tr>
<tr><td>Huntington Falls Bypass Reach ZOE</td><td>RM 19.7 to 19.65</td></tr>
<tr><td>Huntington Falls Tailrace ZOE</td><td>RM 19.65 to 19.6</td></tr>
</table>
</td></tr>
</table>

Note: All elevations are to USGS mean sea level (msl) datum, unless otherwise specified.

2.0 STANDARDS MATRICES

2.1 Multiple ZOEs

Zone No.	Zone Name	Approxi-mate River Mile (RM) at upper and lower extent of Zone	Criterion							
			A	B	C	D	E	F	G	H
			Ecologi-cal Flows	Water Quality	Upstream Fish Passage	Downstream Fish Passage	Shoreline and Watershed Protection	Threatened and Endangered Species	Cultural and Historic Resources	Recreational Resources
1	Proctor Impoundment	RM 70.2 - 64.2	2	2	1	1	1	2	2	2
2	Proctor Bypassed Reach	RM 64.2 - 64.13	2	2	1	1	1	2	2	2
3	Proctor Tailrace	RM 64.13 - 64.1	2	2	1	1	1	2	2	2
4	Beldens Impoundment	RM 23 - 21.2	2	2	1	1	1	2	2	2
5	Beldens Bypassed Reaches (east and west)	RM 21.2 - 21.1	2	2	1	1	1	2	2	2
6	Beldens Tailrace	RM 21.1 - 21.0	2	2	1	1	1	2	2	2
7	Huntington Falls	RM 21.0 - 19.7	2	2	1	1	1	2	2	2

Zone No.	Zone Name	Approxi-mate River Mile (RM) at upper and lower extent of Zone	Criterion							
			A	B	C	D	E	F	G	H
			Ecologi-cal Flows	Water Quality	Upstream Fish Passage	Downstream Fish Passage	Shoreline and Watershed Protection	Threatened and Endangered Species	Cultural and Historic Resources	Recreational Resources
	Impoundment									
8	Huntington Falls Bypassed Reach	RM 19.7 - 19.65	2	2	1	1	1	2	2	2
9	Huntington Falls Tailrace	RM 19.65 - 19.6	2	2	1	1	1	2	2	2

2.1.1 Designated Zones of Effect

Each of the three Otter Creek Developments has an Impoundment, Bypassed Reach, and Tailrace Zones of Effect (ZOE) as shown below in Figure 2-1 for Proctor, Figure 2-2 for Beldens, and Figure 2-3 for Huntington Falls. The Beldens and Huntington Falls Developments are within two river miles of each other and therefore the Beldens Tailrace ZOE abuts the Huntington Falls Impoundment ZOE (Figure 2-4).

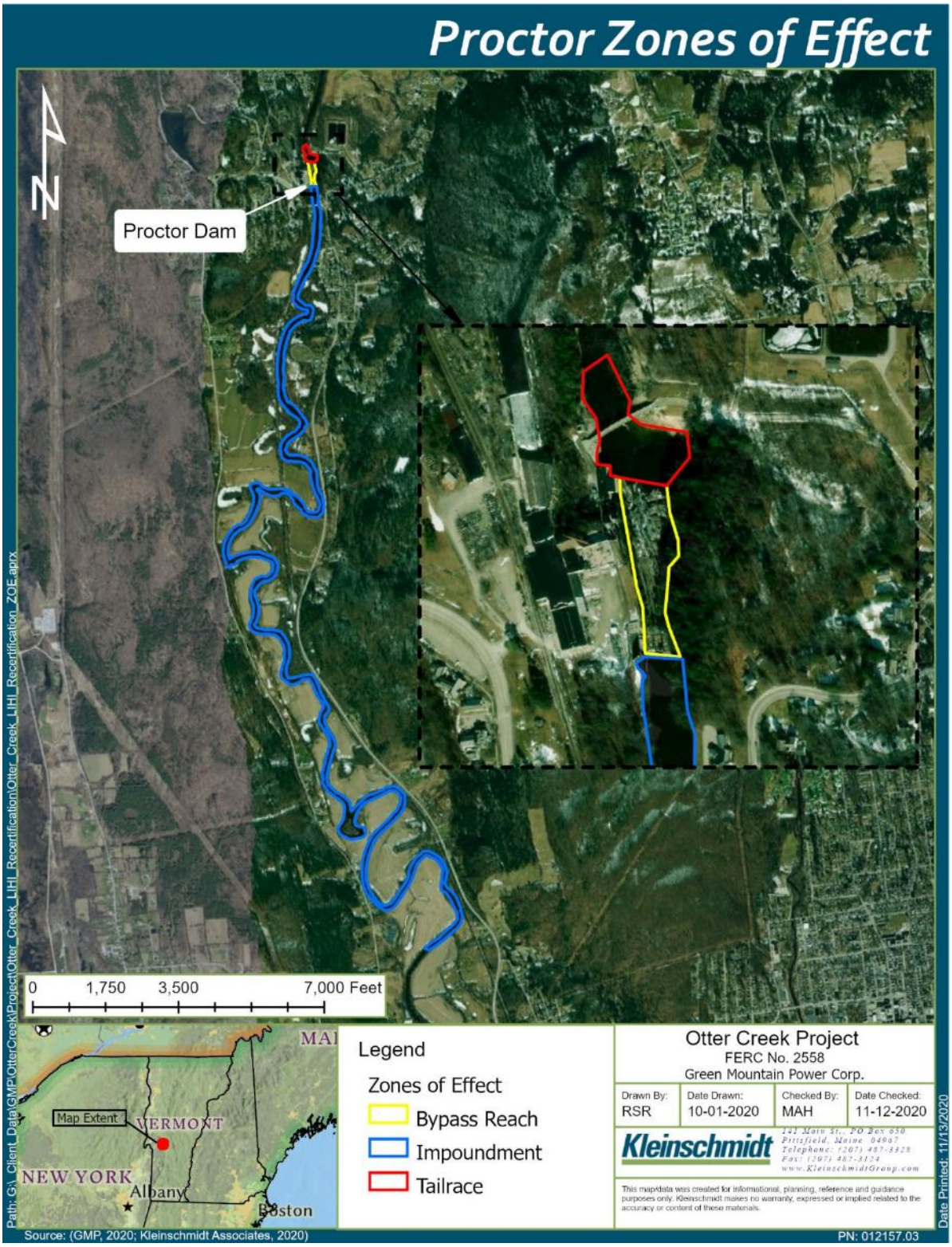

Figure 2-1 Proctor Development Zones of Effect

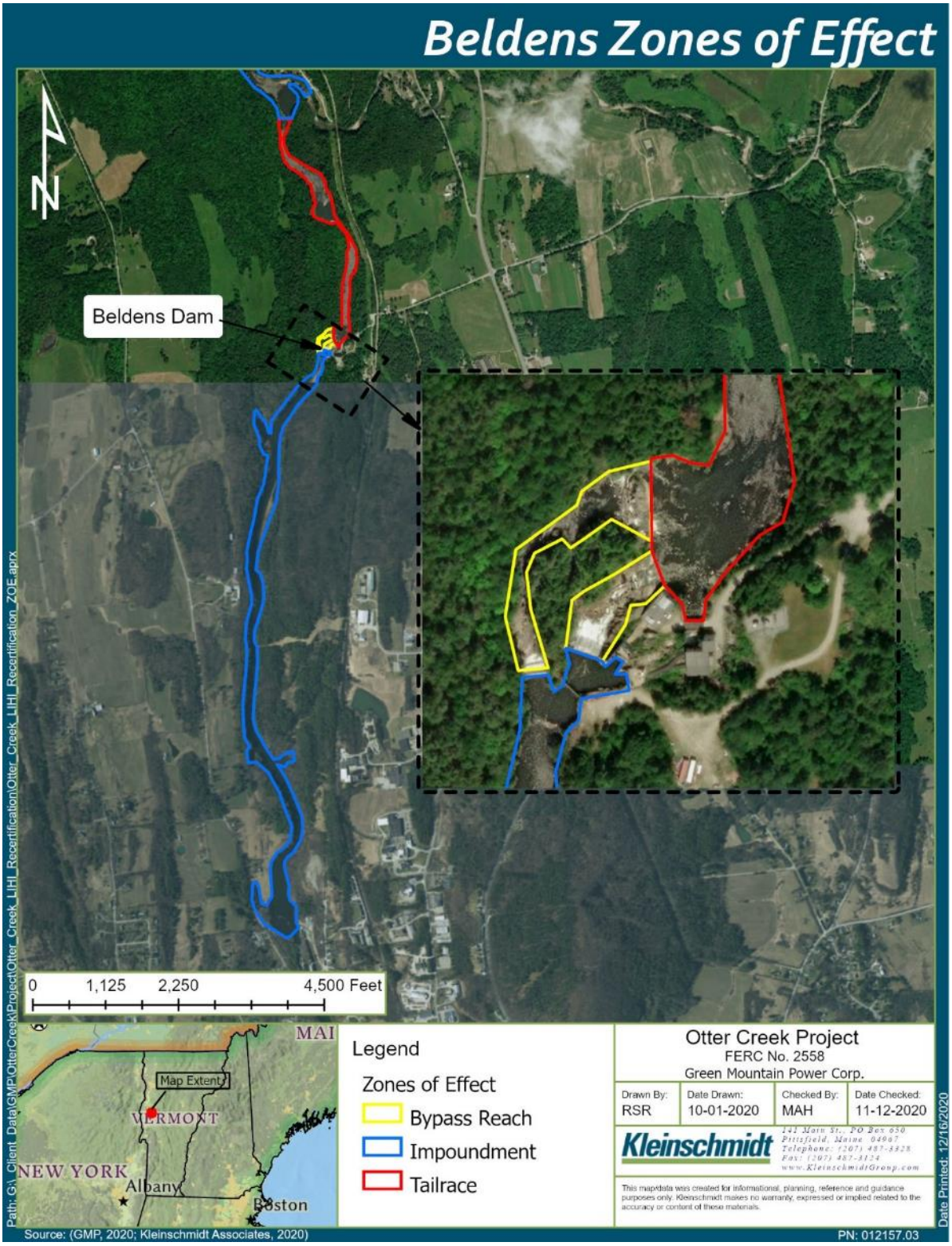

Figure 2-2 Beldens Development Zones of Effect

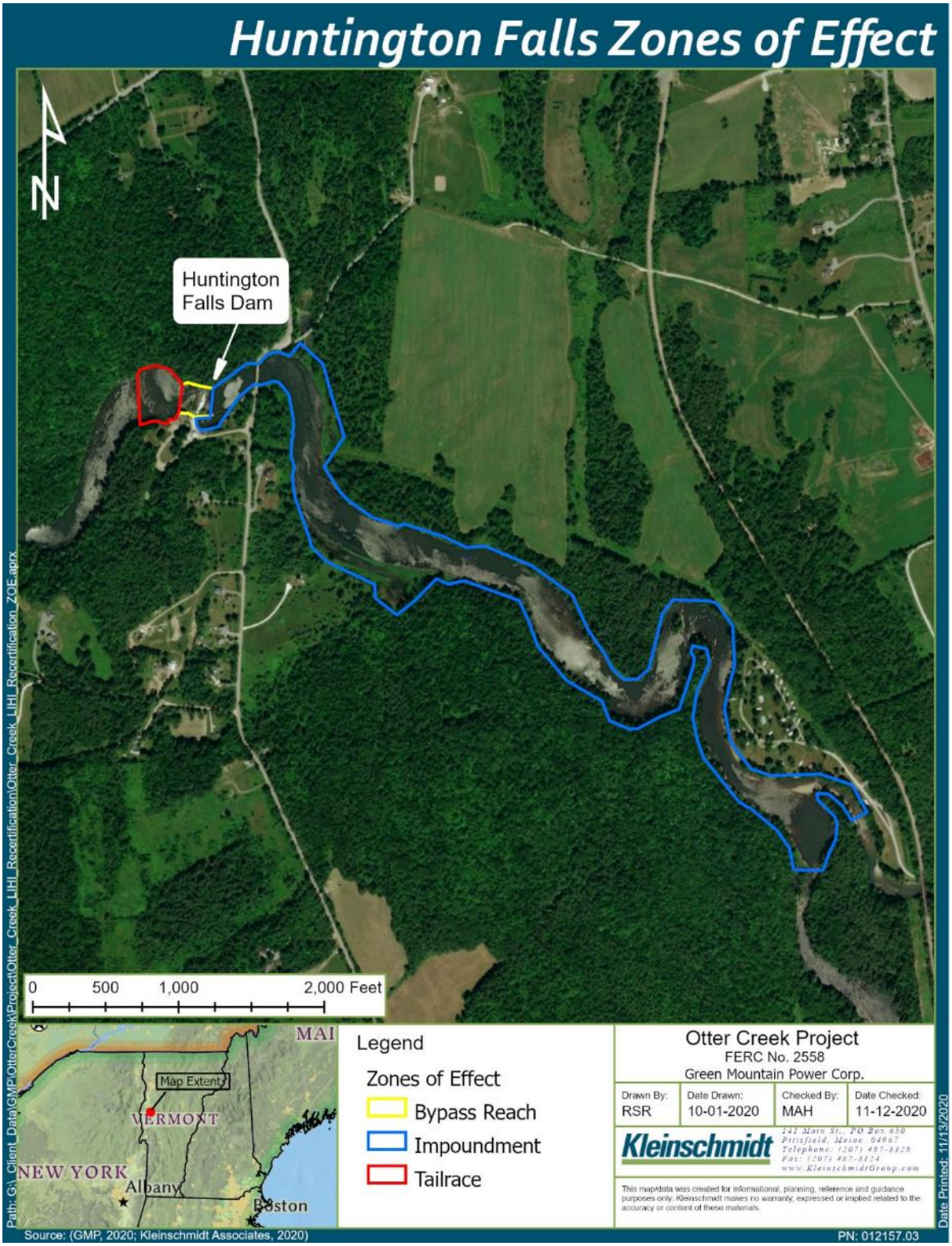

Figure 2-3 Huntington Falls Development Zones of Effect

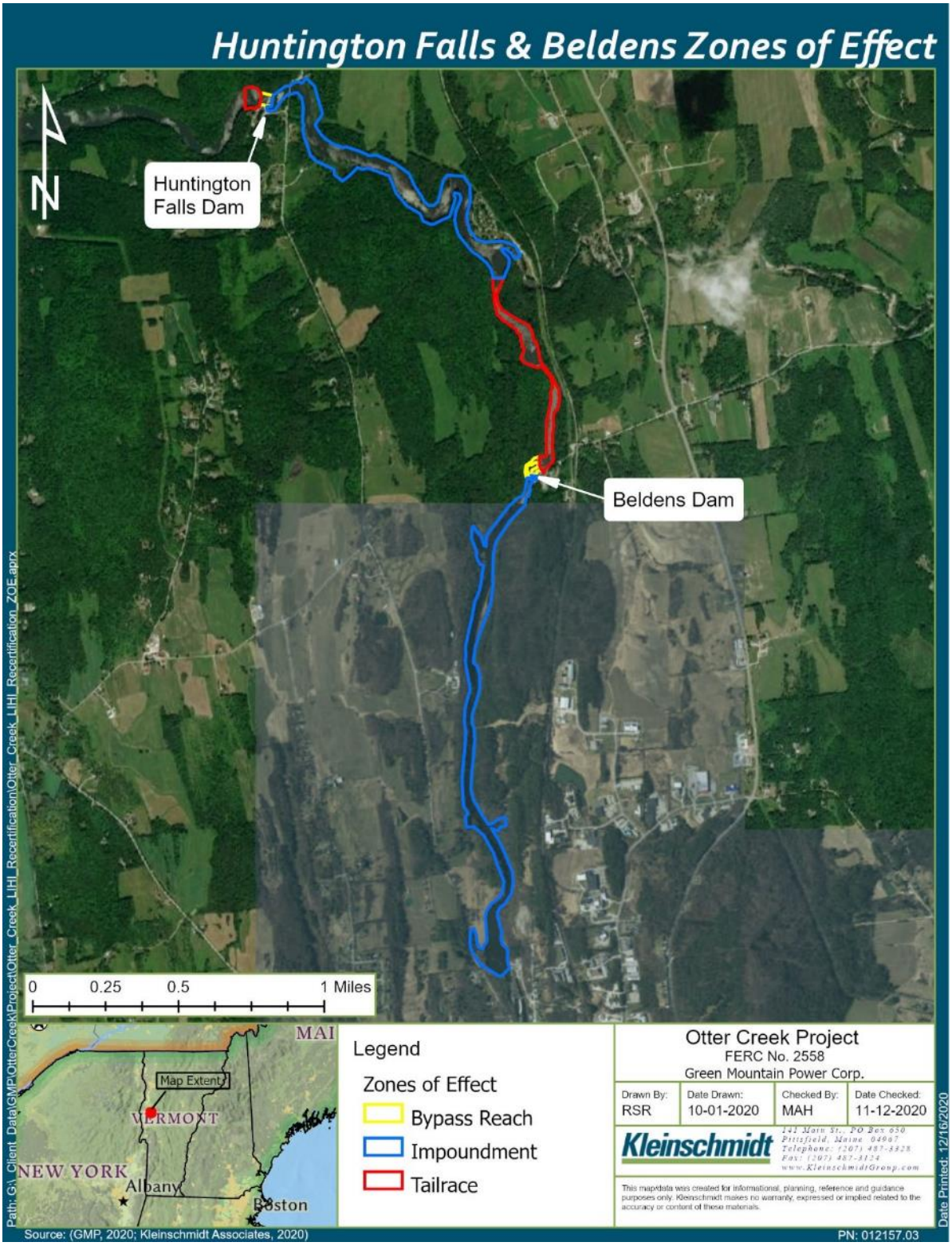

Figure 2-4 Huntington Falls and Beldens Developments Zones of Effect

3.0 SUPPORTING INFORMATION

3.1 Ecological Flows Standards

3.1.1 All ZOEs

CRITERION	*STANDARD*	*INSTRUCTIONS*
A	2	Agency Recommendation: • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement. • Explain how the recommendation relates to agency management goals and objectives for fish and wildlife. • Explain how the recommendation provides fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations). • Explain how flows are monitored for compliance.

Background

The Vermont Agency of Natural Resources (VTANR) Department of Environmental Conservation (VTDEC) issued a Section 401 Water Quality Certificate (WQC) to the Otter Creek Project on May 30, 2014 (WQC 2014), that was adopted into the Project's 2014 FERC License (FERC License 2014). Condition D of Article 401 and the WQC required the development of a flow management and monitoring plan for the project.

GMP developed and submitted to FERC an Operation and Compliance Plan on July 21, 2015. GMP consulted with the VTDEC and United States Fish and Wildlife Service (USFWS) during development of this plan. On January 26, 2015 VTDEC submitted comments on the draft plan. On April 22, 2015 GMP requested to extend

the deadline for filing the plan until July 21, 2015 to allow time to address and incorporate the VTDEC comments and recommendations. This extension was granted by FERC on May 14, 2015. On October 21, 2015 the USFWS deferred reviewing the plan to the VTDEC. The Operation and Compliance Plan meets the requirements of Condition D of the WQC as well as Article 401 and therefore was approved by FERC on May 10, 2016.

If GMP determines that flows through the Project deviate from license requirements, then GMP will self-report to VTANR, FERC, and USFWS. Reporting will occur within 10 days once data of the incident is available, in accordance with license Article 401. The report shall, to the extent possible, identify the cause, severity, and duration of the incident, and any observed or reported adverse environmental impacts resulting from the incident.

The report will also include the following:

- Operational data necessary to determine compliance with operational requirements of the project license.
- Description of any corrective measures implemented at the time of occurrence and the measures implemented or proposed to ensure that similar incidents do not reoccur.
- Comments or correspondence, if any received from the resource agencies regarding the incident.

3.1.1.1 Proctor Impoundment ZOE

Under normal operations, the Proctor Dam impounds a surface area of 95 acres and a usable storage capacity of 275 acre-ft at a normal maximum water surface elevation of 469.5 ft above msl.

As required by the FERC License, the Proctor Development operates in a "modified run-of-river mode." The Project's WQC requires that during normal operation, GMP maintains the impoundment water surface elevation at or near the top of the inflatable flashboards (469.5 ft msl). Inflow to the Proctor Development is either released through the powerhouse, passed over the dam or a combination of both.

During peaking operations, the impoundment is operated between elevations 468.0 ft. msl and 469.5 ft msl.

Field and desktop analyses were conducted to analyze river topography and hydraulic conditions under various operating conditions (FERC 2009). GMP and VTANR agreed to the seasonal maximum ratios between maximum and minimum daily flows may be allowed for peaking operations as follows (FERC 2015):

MAY 1 THROUGH JUNE 30	
River Inflow (cfs)	Description of Operations
<400	Operate in true run-of-river mode with outflows equaling inflows on an instantaneous basis.
≥ 400	Operate in peaking mode with total turbine discharge no more than 1.5 times inflow over 24 hours.

JULY 1 THROUGH JULY 15	
River Inflow (cfs)	Description of Operations
<200	Operate in true run-of-river mode with outflows equaling inflows on an instantaneous basis.
200-399	Operate in peaking mode with total turbine discharge no more than 1.5 times inflow over 24 hours.
≥ 400	Operate in peaking mode with total turbine discharge no more than 2.0 times inflow over 24 hours.

JULY 16 THROUGH APRIL 30	
River Inflow (cfs)	Description of Operations
<200	Operate in true run-of-river mode with outflows equaling inflows on an instantaneous basis.
200-399	Operate in peaking mode with total turbine discharge no more than 2.5 times inflow over 24 hours.
≥ 400	Operate in peaking mode with total turbine discharge no more than 3.0 times inflow over 24 hours.

Following a drawdown of the Prospect Impoundment associated with maintenance or emergency purposes, 90 percent of the inflow will be released downstream, with 10 percent of inflow stored to refill reservoirs. Flows are maintained through the bypass conservation flow gate valve and through turbine(s) by adjusting generation in order to draw the impoundment below the crest of the dam. During impoundment refill, turbine discharge is manually adjusted to maintain 90 percent of inflow below the Proctor Development (FERC 2015).

3.1.1.2 Proctor Bypassed ZOE

The Proctor Development creates an isolated, high gradient, 680-ft-long bypassed reach (i.e., Sutherland Falls), which drops approximately 100 ft in elevation from the base of the Proctor Dam to the tailrace. As required by the WQC, a conservation flow of 60 cfs to the bypassed reach is released at the dam at all times. Conservation flow is provided by an automated 36-inch diameter gate valve adjacent to the spillway abutment and intake. This valve is designed to automatically adjust to pre-determined gate positions based on the impoundment elevation to maintain the 60 cfs conservation bypass flow (FERC 2015). Based on a combination of habitat suitability analysis and aesthetic flow evaluation, GMP and VTANR agreed on the conservation flow of 60 cfs (FERC 2012). This flow keeps the bypass wetted year-round and provides more stable habitat conditions for aquatic resources (FERC 2013). Before relicensing, no conservation flow was required (VTANR 2014).

3.1.1.3 Proctor Tailrace ZOE

The Proctor tailrace extends a short 240 ft downstream of the powerhouse. During normal operations, the maximum hydraulic capacity of the station is 1,188 cfs. Operating the Proctor Development as a modified run-of-river project provides a more stable environment for aquatic resources for both upstream and downstream compared to the operating protocols from the previous license (4-ft drawdowns) (FERC 2013). Additionally, the modified run-of-river mode increases tailrace flows during low flow conditions which improves aquatic habitat directly downstream (FERC 2013).

3.1.1.4 Beldens Impoundment ZOE

As required by the FERC License, GMP operates the Beldens Development in true run-of-river mode. Under normal operations, the Beldens Dam impounds a surface area of 22 acres and a usable storage capacity of 253 acre-ft at a normal maximum water surface elevation of 283 ft above msl.

Following a drawdown of the Beldens Impoundment associated with maintenance or emergency purposes, 90 percent of the inflow will be released downstream, with 10 percent of inflow stored to refill reservoirs. When flashboards are not in place, GMP will draw down the impoundment to just below the Beldens Dam crest to provide safe working conditions for staff. VTANR will be consulted before drawdowns occur in regard to timing and duration in order to minimize interruption of conservation flows to the bypasses to the extent practical.

3.1.1.5 Beldens Bypassed ZOE

The Beldens Development has two separate bypassed reaches: (1) a 150-ft-long bypassed reach extending from the base of the Beldens East Dam to the tailrace; and (2) a 450-ft-long bypassed reach extending from the base of the Beldens West Dam to the tailrace.

Under normal operations, as required by the Project's WQC, inflow from the Beldens Development is either released through the powerhouse or passed over the spillway. The current Project license requires that GMP provides a continuous conservation flow of 35 cfs into the bypass reaches (or instantaneous inflow if less), with 10 cfs over the East Dam and 25 cfs over the West Dam with an impoundment target elevation

of 283.0 ft msl. These flow rates were based upon water quality and habitat data collected during relicensing. GMP and VTANR agreed that a bypass conservation flow of 25 cfs in the west channel would improve habitat suitability from a velocity perspective in the bypass reach pools. Due to habitat being limited in the East and crossover channels, the VTANR agreed that 10 cfs spilled at the East Dam would be sufficient.

Bypass conservation flows are provided via spill over the East Dam, with 2 inches above the top of the flashboards to pass 10 cfs. At the West Dam, spill is provided from a combination of 2 inches of spill over the flashboards and passing flow through either an 18-inch by 31-inch weir cutout in top of the flashboards or a 12-inch by 32-inch cutout lower in the flashboard section. When flashboards are not in place, GMP maintains the impoundment level 3.25 inches above the crest of both dams to ensure minimum conservation flow is achieved (FERC 2015).

3.1.1.6 Beldens Tailrace ZOE

The Beldens Tailrace extends down to the Huntington Fall Impoundment. Under normal operations, the Beldens Development has a total combined hydraulic capacity of 2,000-cfs. The Beldens Development operates as run-of-river and provides instantaneous flows downstream of the powerhouse. This in addition with the increased minimum flow entering the bypass provides habitat for aquatic organisms.

3.1.1.7 Huntington Falls Impoundment ZOE

As required by the FERC License, the licensee operates the Huntington Falls Development in true run-of-river mode. Under normal operations, the Huntington Falls Dam impounds a surface area of 23 acres and a usable storage capacity of 234.16 acre-ft at a normal maximum water surface elevation of 217.8 ft above msl. River flows between 100 cfs and 2,010 cfs are used for power generation. Flows less than 100 cfs and in excess of 2,010 cfs are spilled over the dam crest and into the bypassed reach.

During impoundment drawdowns for maintenance or emergencies, bypass flows will be maintained through the bypass conservation flow gate and flow through turbines will be decreased by adjusting generation in order to draw the impoundment down below the crest of the dam. Following the drawdown, 90 percent of the inflow will be released downstream, with 10 percent of inflow stored to refill reservoirs. Flashboards

may be deflated during high flows to reduce risk of flood of the intakes and powerhouses.

3.1.1.8 Huntington Falls Bypassed Reach ZOE

The Huntington Falls Development creates a 215-ft-long bypassed reach. Inflow from the Huntington Falls Development is either released through the powerhouse or passed over the spillway. The current Project license requires that GMP provide a continuous flow of 66 cfs, or inflow to the impoundment (whichever is less) with an impoundment target elevation of 217.8 ft msl. GMP completed installation of a new gate in 2017 to facilitate the bypass conservation flow (Photo 3-1). Before the gate was installed, only about 48 cfs was being released into the bypassed reach with approval from FERC.

Increasing the conservation flow from the previously licensed15 cfs to the currently licensed 66 cfs was decided based on recommendations from the VTANR to provide more suitable habitat in the bypassed reach. A flow of 66 cfs was deemed effective in achieving edge velocity suitability. Due to the physical characteristics of the ledge outcropping at the base of the dam, flows released on the southern end of the dam enter the bypass which helps achieve the intended velocity conditions.

Photo 3-1 View of Minimum Flow Through the New Minimum Flow Gate on the Right Side of Huntington Dam

3.1.1.9 Huntington Falls Tailrace ZOE

The Huntington Falls Tailrace extends approximately 300 ft downstream of the two Development powerhouses. Under normal operations, the Huntington Falls Development has a total combined hydraulic capacity of 2,250-cfs. During run-of-river conditions, inflow and outflow are equal. When maintenance is needed, the impoundment will be drawdown below the crest of the dam by the conservation flow gate and flow through turbines. During dam drawdowns, 90 percent of the inflow will be released downstream, with 10 percent of inflow stored to refill reservoirs.

3.1.2 Compliance

The following is a compliance summary related to all ZOEs under Article 401 and 402 of the licenses since the last LIHI Certification period (January 7, 2016 – current):

- GMP filed an Application for Temporary Amendment of the License on December 15, 2015 to reduce flows.
    - Construction on the Huntington Falls gate in the power canal was needed to release a minimum bypass flow of 66 cfs required by Condition B of the WQC. GMP requested to modify the license to allow only 48 cfs over the spillway during this construction period since 66 cfs was not feasible.
- Order to Temporarily Amend the License was issued by FERC on May 10, 2016.
- GMP Requested to Cancel the Order modifying the bypass conversion flow on April 10, 2017 after construction was complete.
- FERC granted the Expiration of Temporary Minimum Flow Amendment on May 23, 2017.
    - The filing on April 10, 2017 did not comply with the filing schedule mandated in the May 10, 2016 Order. No disciplinary action was taken.

Ecological Flow Conclusion

On December 17, 2020, GMP's consultant, Kleinschmidt Associates reached out to VTDEC and USFWS regarding agency review of project compliance with ecological flows. In an email dated December 18, 2020 (Attachment A), VTDEC requested one year of operational data be submitted to the Department for compliance review. GMP is presently preparing the data for VTDEC review and will provide this data to VTDEC for review shortly.

3.2 Water Quality Standards

3.2.1 All ZOEs

CRITERION	STANDARD	INSTRUCTIONS
B	2	Agency Recommendation: • Provide a copy of the most recent Water Quality Certificate and any subsequent amendments, including the date(s) of issuance. If more than 10 years old, provide documentation that the certification terms and conditions remain valid and in effect for the facility (e.g., a letter from the agency). • Identify any other agency recommendations related to water quality and explain their scientific or technical basis. • Describe all compliance activities related to water quality and any agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

The VTDEC issued a Water Quality Certificate for the Otter Creek Hydroelectric Project on May 30, 2014. The VTDEC certified that continued operation and maintenance of the Project will not cause violation of Vermont's Water Quality Standards. This Project is in compliance with section 301, 302, 303, 306 and 307 of federal Clean Water Act, 33 U.S.C. §1251 et seq., as amended and other appropriate requirements of state law.

Otter Creek is defined as a Class B waterway, which is managed as a high-quality waterway with minimal, minor or moderate changes to aquatic biota or habitat. Designated uses for Class B waters include aquatic biota, wildlife and aquatic habitat, swimming and other primary contact recreation, boating, fishing, other recreational uses, water supplies, and agricultural uses (VTDEC 2017). Surface waters impounded by hydroelectric dams and downstream of the facilities are classified as class B(2) level of quality. Common water quality issues related to hydroelectric facility are caused by flow modifications, however none of the Otter Creek Projects owned and operated by GMP are identified as causing water quality issues as cited in the 2019 Otter Creek Basin Tactical Plan (VTDEC 2019). This likely due to the Project developments operating as true run-of-river or modified run-of-river.

There are multiple sections within Otter Creek that has special designated use classifications. The upper Otter Creek is classified as B(1) recreational fishing waters which supports wild, self-sustaining salmonid populations. The rest of the river reach is classified for B(2) fishing habitat which contains both a cold and warm water fisheries. Directly downstream of the Proctor bypassed reach to Beldens Dam is classified as warm water fishery, as well as downstream of Huntington Falls Dam. Between the Beldens Dam and Huntington Falls Dam is considered a coldwater fishery (VTDEC 2019). Turbidity, dissolved oxygen (DO) and water temperature standards vary according to classified habitat types and are listed in Table 3.1 (VTDEC 2019). From Dorset to Ferrisburgh, Otter Creek is also classified as B(4) for flat water, which provides multiple fish and wildlife access areas. Between Otter Creek Gorge and Fall to Middlebury and Weybridge, there are multiple B(5) white water access locations.

Table 3-1 Vermont Water Quality Standards for Class B Waters Applicable to Otter Creek Waters (Source: FERC 2013 and VTDEC 2019)

<table>
<tr><th>Parameter</th><th colspan="2">Standard</th></tr>
<tr><td rowspan="8">Temperature</td><td colspan="2">Cold Water Fish Habitat
If the maximum temperature is below 680F as a rolling seven-day mean of maximum daily water temperatures for the entire period from June 1 to September 30 of any year, the total increase from the ambient temperature due to all discharges and activities shall not exceed 1.0°F.

If the maximum temperature is above 68° F as a rolling seven-day mean of maximum daily water temperatures for the entire period from June 1 to September 30 of any year, there shall be no increase in temperature due to all discharges and activities.</td></tr>
<tr><td colspan="2">Warm Water Fish Habitat – The total increase from the ambient temperature due to all discharges and activities shall not exceed the following temperature criteria:</td></tr>
<tr><td>Ambient temperature:</td><td>Total allowable increase above ambient</td></tr>
<tr><td>Above 66º F</td><td>1º F</td></tr>
<tr><td>63º to 66º F</td><td>2º F</td></tr>
<tr><td>59 ºF to 62º F</td><td>3º F</td></tr>
<tr><td>55 ºF to 58º F</td><td>4º F</td></tr>
<tr><td>Below 55º F</td><td>5º F</td></tr>
</table>

Dissolved oxygen (mg/L)	Cold Water Fish Habitat - Not less than 7 mg/L and 75 percent saturation at all times, nor less than 95 percent saturation during late egg maturation and larval development of salmonids in areas that the Secretary of Vermont ANR determines are salmonid spawning or nursery areas important to the establishment or maintenance of the fishery resource. Not less than 6 mg/L and 70 percent saturation at all times in all other waters designated as a cold water fish habitat. Warm Water Fish Habitat - Not less than 5 mg/L and 60 percent saturation at all times.
pH	Values shall be maintained within the range of 6.5 and 8.5.
Total Nitrogen (mg/L)	Not to exceed 5.0 mg/L as NO3-N at flows exceeding low median monthly flows, in Class B waters.
Total Phosphorus	In all waters, total phosphorous loadings shall be limited so that they will not contribute to the acceleration of eutrophication or the stimulation of the growth of aquatic biota in a manner that prevents the full support of uses.
Turbidity	-Cold Water Fish Habitat waters - Not to exceed 10 NTU. -Warm Water Fish Habitat waters - Not to exceed 25 NTU.
E. coli	Not to exceed 77 organisms/100 ml.[a]
Mercury	-Human Consumption of Water and Organisms: 0.14 -Maximum Allowable Concentration - Acute Criteria: 2.4 -Average Allowable Concentration - Chronic Criteria: 0.012

[a] This limit can be waived by the Secretary of Vermont ANR between October 31 and April 1 provided that no health hazard is created.

The primary water quality concern for Otter Creek is elevated levels of E. coli and phosphorus pollution. The Vermont Agency of Natural Resource previously determined the likely cause of these elevated concentrations is agricultural run-off and effluents from wastewater treatment facilities (WWTF) (VTDEC 2011, FERC 2013, and VTDEC 2019). Agricultural run-off contributes to 49 percent of the phosphorus pollution in Otter Creek. Phosphorus pollution can create harmful algal blooms which threatens clean water within Otter Creek and Lake Champlain. Both bodies of water provide recreation and drinking water uses, as well as aquatic life and habitat functions (VTDEC 2019). Additionally, eight wastewater facilities discharge into the Otter Creek Watershed with five of them located directly on the mainstem. The Proctor WWTF is just below the Proctor Bypass reach at RM 63.8. The Middlebury WWTF discharges upstream of the Beldens Project at RM 25.2 (VTANR 2014). Agricultural run off and wastewater treatment facilities have been identified as point

and non-point pollutant sources for *E. coli* and phosphorus within the Otter Creek watershed (VTDEC 2019).

Three sections of Otter Creek have been identified as impaired by Vermont 2018's List of Impaired Waters (VTDEC 2018). According to this report, standards pursuant to the Section 303(d) of the Clean Water Act have not been met within these areas of the river. Upstream of the Proctor Development, water quality is impaired by *E. coli* from the Rutland WWTF. Near the Beldens Development, impaired waters are attributed to *E. coli* pollution originating from combined sewage outflows (CSO), failing septic systems, and agricultural and urbanization of the Middlebury and Adison County areas (VTDEC 2011, VTDEC 2018). Otter Creek in Ferrisburgh, where Otter Creek meets Lake Champlain, is classified as impaired due to elevated levels of Polychlorinated biphenyls (PCBs) in Lake Trout, elevated levels of mercury in Walleye and elevated levels of phosphorus (VTDEC 2018).

To prevent introduction of hazardous material into Project waters, GMP in accordance with license Article 402, filed a Spill Prevention Control and Counter Measures Plan which was approved by the Commission on February 5, 2015. This plan is intended to minimize the potential for hazardous materials spill and ensure that procedures are in place to minimize the extent and adverse effects of hazardous materials spills that occur during construction activities and ongoing operation and maintenance of the Project. Additionally, in accordance with Article 404, GMP filed a Terrestrial Monitoring and Management Plan with FERC in April 2016. The purpose of this plan is to re-vegetate areas disturbed by construction activities authorized under the license, prevent the spread of invasive plants, and protect federally protected wildlife species and their respective habitats within the Project area. This plan was filed prior to GMP's construction of recreation enhancements required by the FERC license and WQC. The Terrestrial Monitoring and Management Plan was approved by FERC on May 25, 2016. These plans assist GMP with compliance with state water quality standards.

3.2.1.1 Proctor Impoundment ZOE

Classified as coldwater fishery based on state water quality parameters (VTDEC 2019).

The Proctor Impoundment is considered to have impaired water quality from *E. coli* pollution (VTDEC 2018). This pollution originates from the Rutland City WWTF collection system passing CSOs. This impairs the waterbody's use for contact recreation (swimming) and aesthetics (VTDEC 2018).

3.2.1.2 Proctor Bypass ZOE

Classified as warmwater fishery based on state water quality parameters (VTDEC 2019).

As with the impoundment, the Proctor Bypass is likely to have impaired water quality from upstream *E. coli* pollution. This pollution originates from the Rutland City WWTF collection system passing CSOs (VTDEC 2018).

3.2.1.3 Proctor Tailrace ZOE

Classified as coldwater fishery based on state water quality parameters (VTDEC 2019).

As with the impoundment and bypassed reach, Proctor Tailrace is likely to have impaired water quality from upstream *E. coli* pollution. This pollution originates from the Rutland City WWTF collection system passing CSOs (VTDEC 2018).

3.2.1.4 Beldens Impoundment ZOE

Classified as warmwater fishery based on state water quality parameters (VTDEC 2019).

Beldens Impoundment has impaired waters from *E. coli* pollution originating CSO, failing septic systems, agricultural and urbanization of the Middlebury and Adison County area (VTDEC 2011, VTDEC 2018). The lack of riparian buffers and proximity of Otter Creek to agricultural uses are a likely source of bacterial contamination (VTDEC 2011). See Figure 3-1 for state sampling locations of bacteria.

3.2.1.5 Beldens Bypass ZOE

Classified as coldwater fishery based on state water quality parameters (VTDEC 2019).

The Belden Bypass may be impaired by upstream *E. coli* pollution from agricultural run-off, failed septic systems, Middlebury CSOs and urbanization directly upstream of the Beldens Development (VTDEC 2011, VTDEC 2018).

3.2.1.6 Beldens Tailrace ZOE

Classified as coldwater fishery based on state water quality parameters (VTDEC 2019).

The Beldens Tailrace was classified as impaired in 2011 due to *E. coli* pollution from agricultural run-off, failed septic systems, Middlebury CSOs and urbanization directly upstream of the Beldens Development (VTDEC 2011).

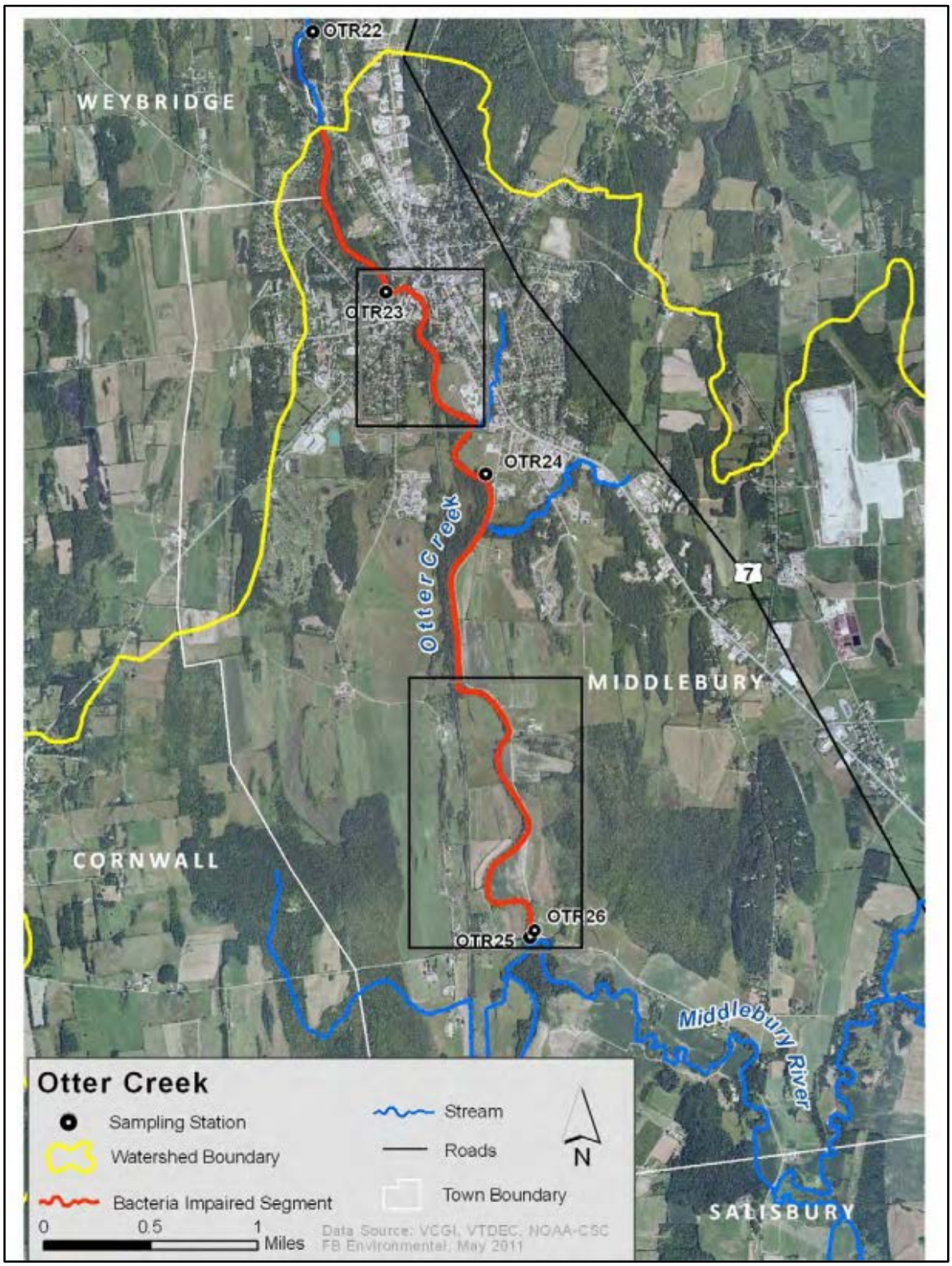

Figure 3-1 Map of Sampling Locations near the Beldens Project Conducted by the State of Vermont from the 2011 Total Maximum Daily Load (TMDL) for Bacteria Impaired Waters (VTDEC 2011)

3.2.1.7 Huntington Falls Impoundment ZOE

Classified as coldwater fish habitat based on state water quality parameters (VTDEC 2019).

There are no documented water quality impairments for this section of Otter Creek.

3.2.1.8 Huntington Falls Bypass ZOE

Classified as warmwater fish habitat based on state water quality parameters VTDEC 2019).

There are no documented water quality impairments for this section of Otter Creek.

3.2.1.9 Huntington Falls Tailrace ZOE

Classified as warmwater fish habitat based on state water quality parameters (VTDEC 2019).

Downstream of the Otter Creek Projects in Ferrisburgh, where Otter Creek meets Lake Champlain, is classified as impaired due to elevated levels of PCB's in Lake Trout, elevated levels of mercury in Walleye and elevated levels of phosphorus (VTDEC 2018). The presence of PCBs and mercury has been linked to atmospheric deposition. (VTDEC 2020, VTDEC 2014b).

3.2.2 Compliance

The Project has been in compliance with the WQC since the last LIHI Certification period (January 7, 2016 – current).

Water Quality Standards Conclusion

On December 17, 2020, GMP's consultant, Kleinschmidt Associates reached out to VTDEC and USFWS regarding agency review of project compliance with LIHI standards inclusive of Water Quality. In an email dated December 18, 2020 (Attachment A), VTDEC requested one year of operational data be submitted to the Department for compliance review. GMP is presently preparing the data for VTDEC review and will provide this data to VTDEC for review shortly. It is anticipated that VTDEC will provide comprehensive review feedback on LIHI standards upon review of the data and in their final response.

Downstream of the Otter Creek Project in the Otter Creek – Lake Champlain section in Ferrisburgh, Otter Creek is classified as impaired due to elevated levels of PCBs in lake trout. In lower Otter Creek below the Vergennes Wastewater Treatment Facility and downstream of the Otter Creek Project, Otter Creek is classified as impaired because of *E. coli* presence. The reach of Otter Creek in the vicinity of the Rutland Wastewater Treatment Facility and upstream of the Otter Creek Project is listed as impaired water because of *E. coli* presence (Vermont DEC 2014b).

3.3 Upstream Fish Passage Standards

3.3.1 All ZOEs

CRITERION	*STANDARD*	*INSTRUCTIONS*
C	1	Not Applicable/ De Minimis Effect: • Explain why the facility does not impose a barrier to upstream fish passage in the designated zone. • Document available fish distribution data and the lack of migratory fish species in the vicinity. • If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.

No fishway prescriptions or reservations of authority were filed under Section 18 of the Federal Power Act (FPA) in the FERC 2014 License. There are no natural or historical populations of anadromous or catadromous fishes that occur within Otter Creek (FERC 2013). Since no fish species depend on upstream movement to complete their life cycles, passage is not required at any of the Project developments. Additionally, a natural set of falls below the Huntington Falls Development would likely prevent any upstream migration, further suggesting no historical fish migration from Lake Champlain (FPC 1976). The Project did not contribute to extirpation of migratory fish species since none have historically been found within the river system.

If the status of Otter Creek fish populations or fisheries management objectives change, the VTDEC WQC Condition E-Fish Passage requires the Licensee to provide upstream or downstream passage. Since the implementation of the license in 2014, GMP has not been notified of changes in fisheries management objectives for the Otter Creek.

Fishes directly documented within the Otter Creek Wildlife Management Area (located upstream of the Project) include; Brown Trout (*Salmo trutta*), Brook Trout (*Salvelinus fontinalis*), Rainbow Trout (*Oncorhynchus mykiss*), Blacknose Dace (*Rhinichthys atratulus*), Longnose Dace (*Rhinichthys cataractae*), Bluntnose Minnow (*Pimephales notatus*), Fathead Minnow (*Pimephales promelas*), and Spottail Shiner (*Notropis hudsonius*) (VTFWD, n.d.). In 2020, Rainbow Trout (n=5,500) , Brown Trout (n=2,215) and Brook Trout (n=250) were all stocked throughout Otter Creek, for a

total of 7,965 fishes (VTFWD 2020). Fish species identified within the Otter Creek Watershed are listed in Table 3-2.

Table 3-2 Fish Species Known to Occur in the Otter Creek Watershed (Source: FERC 2013)

Common Name	Scientific Name	Native Species (Y/N)
Banded killifish [a]	*Fundulus diaphanus*	Y
Bluegill [a, c]	*Lepomis macrochirus*	Y
Bluntnosed minnow [b]	*Pimephales notatus*	Y
Brook trout	*Salvelinus fontinalis*	Y
Brown trout [a, c]	*Salmo trutta*	N
Brown bullhead [a, c]	*Ameiurus nebulosus*	Y
Burbot [c]	*Lota lota*	Y
Common shiner [a, b, c]	*Luxilus cornutus*	Y
Creek chub [b]	*Semotilus atromaculatus*	Y
Cutlips minnow [b]	*Exoglossum maxillingua*	Y
Fallfish [a, b, c]	*Semotilus corporalis*	Y
Golden shiner [a]	*Notemigonus crysoleucas*	Y
Largemouth bass [c]	*Micropterus salmoides*	Y
Longnosed dace [b]	*Rhinichthys cataractae*	Y
Carp [a]	*Cyprinus carpio*	N
Northern pike [a, c]	*Exos lucius*	Y
Pumpkinseed [a, c]	*Lepomis gibbosus*	Y
Rainbow trout [a, c]	*Oncorhynchus mykiss*	N
Rock bass [b, c]	*Ambloplites rupestris*	Y
Slimy sculpin	*Cottus asper*	Y
Smallmouth bass [a, c]	*Micrpterus dolomieu*	Y
Spottail shiner [a]	*Notropis hudsonius*	Y

Tesselated darter [b]	*Etheostoma olmstedi*	Y
Yellow perch [a, b, c]	*Perca flavescens*	Y
White sucker [a, b]	*Catostomus commersoni*	Y

[a] 1977 Vermont FWD survey results, provided by Rod Wentworth, Vermont FWD, December 13, 2006.
[b] 1989 Vermont Department of Environmental Conservation (VTDEC) survey results, provided by Rich Langdon, VTDEC, December 21, 2006.
[c] Final environmental assessment for the Weybridge Hydropower Project (FERC, 2000).

3.3.1.1 Proctor Impoundment, Bypass and Tailrace ZOES

No fishway prescriptions.

3.3.1.2 Beldens Impoundment, Bypass and Tailrace ZOES

No fishway prescriptions.

3.3.1.3 Huntington Falls Impoundment, Bypass and Tailrace ZOES

No fishway prescriptions.

3.3.2 Compliance

The Project has been in compliance with all fish passage criteria since the last LIHI Certification period (January 7, 2016 – current).

Upstream Passage Conclusion

The Project has been operated in accordance with its water quality requirements; upstream fish passage is not required.

3.4 Downstream Fish Passage Standards

3.4.1 All ZOEs

CRITERION	*STANDARD*	*INSTRUCTIONS*
D	1	<u>Not Applicable/ De Minimis Effect:</u> • Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g. entrainment into hydropower turbines). • For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles. • Document available fish distribution data and the lack of migratory fish species in the vicinity. • If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.

No fishway prescriptions or reservations of authority were filed under Section 18 of the FPA in the FERC 2014 License. There are no natural or historical populations of anadromous or catadromous fish species that occur within Otter Creek. Since no fishes depend on downstream movement to complete their life cycles, passage is not required at the Project developments. The Project did not contribute to extirpation of migratory fish species since none have historically been found within the river system.

If the status of Otter Creek fish populations or fisheries management objectives change, the VTDEC WQC Condition E - Fish Passage requires the Licensee to provide upstream or downstream passage. Since the implementation of the license in 2014, GMP has not been notified of changes in fisheries management objectives for Otter Creek.

GMP has taken precautions to prevent impingement and entrainment at the Project developments. Intake racks are designed to prevent entrainment and impingement of fishes with appropriate bar spacing (detailed below).

See Section 3.3.1 for complete list of fishes found within the Project area.

3.4.1.1 Proctor Impoundment ZOE

The Proctor Development is equipped with a 57 ft wide by 13.5 ft high full-depth trash racks, situated at a 45-degree angle to river flow with 1-inch clear spacing.

3.4.1.2 Proctor Bypass and Tailrace ZOE

N/A

3.4.1.3 Beldens Impoundment ZOE

The Beldens Development has two sets of trash racks. One trash rack is 40 ft long and 13 ft high with vertical bars and 3 inches clear spacing. The other trash rack is approximately 26 ft wide by 13 ft with 1 1/8-inch clear openings.

3.4.1.4 Beldens Bypass and Tailrace ZOE

N/A

3.4.1.5 Huntington Falls Impoundment ZOE

The Huntington Falls Development has two intakes and two sets of trash racks. Units 1 and 2 have a trash rack that is 26 ft wide and 13 ft high with 1-1/8 inches clear bar spacing. Unit three was replaced in 2017 with a 30 ft wide and 16 ft wide trash rack that has 2-inch clear bar spacing and is oriented parallel to river flow with an approach velocity of 1.8 fps. This trash rack replacement was approved by the VTDEC on April 5, 2016, citing its consistency with the WQC and minimization of potential impingement and entrainment of resident fishes. After construction, FERC confirmed approval of the construction in a 2017 FERC Dam Safety Inspection Report.

3.4.1.6 Huntington Falls Bypass and Tailrace ZOEs

N/A

3.4.2 Compliance

The Project has been in compliance with all fish passage criteria since the last LIHI Certification period (January 7, 2016 – current).

Downstream Passage Conclusion

The Project has been operated in accordance with its water quality requirements. Downstream passage is not required, GMP reduces potential fish impingement and entrainment hazards.

3.5 Shoreline and Watershed Protection Standards

3.5.1 All ZOEs

CRITERION	*STANDARD*	*INSTRUCTIONS*
E	1	Not Applicable / De Minimis Effect: • If there are no lands with significant ecological value associated with the facility, document and justify this (e.g., describe the land use and land cover within the Project boundary). • Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.

Per the 2014 Project license, no Shoreline Management Plan is required for the Otter Creek Project. Provided the Project's true to modified run-of-river operations and that most of the project shoreline consists of bedrock, shoreline erosion is minimal. The Project impoundments generally have vegetated forested buffers along the river's edge.

Per 2014 License Article 404, GMP implements a FERC approved Terrestrial Monitoring and Management Plan. This plan outlines re-vegetation efforts after ground disturbance during construction to reduce the spread of invasive plants and protect federally listed wildlife species and habitats.

The Otter Creek Wildlife Management Area is located in Mount Tabor, Vermont, upstream of the Otter Creek Project developments. Since the Project developments are located downstream from the Otter Creek Wildlife Management Area and operated as true run-of-river or modified run-of-river, it is unlikely they have any impact on this management area.

Project Developments land use, cover and ecologically significant lands are described below.

3.5.1.1 Proctor Impoundment, Bypass and Tailrace ZOE

The Proctor Development is located in a deciduous and hardwood mixed forest, interspersed with wetland and agricultural lands (Figure 3-2). The Impoundment is bordered by corn fields, pumpkin patches, cattle pastures and fragmented forested areas. Approximately 45 percent of the Proctor Development's shoreline is agricultural lands. The shoreline is generally steep and surrounded by forested areas. There are no wetlands

directly adjacent to the dam or powerhouse but there are wetlands located just outside of the Proctor Development boundary northeast of the Proctor Dam (Figure 3-3) (FERC 2013).

The Vermont Natural Resources Atlas was used in December 2020 to identify ecologically significant lands within or in proximity to the Proctor Developments boundaries. No vernal pools were identified in close proximity to the Proctor Development or vicinity. Class II Wetlands were identified in all ZOE's but are not expected to be impacted since the Proctor Development operates in a modified run-of-river mode.

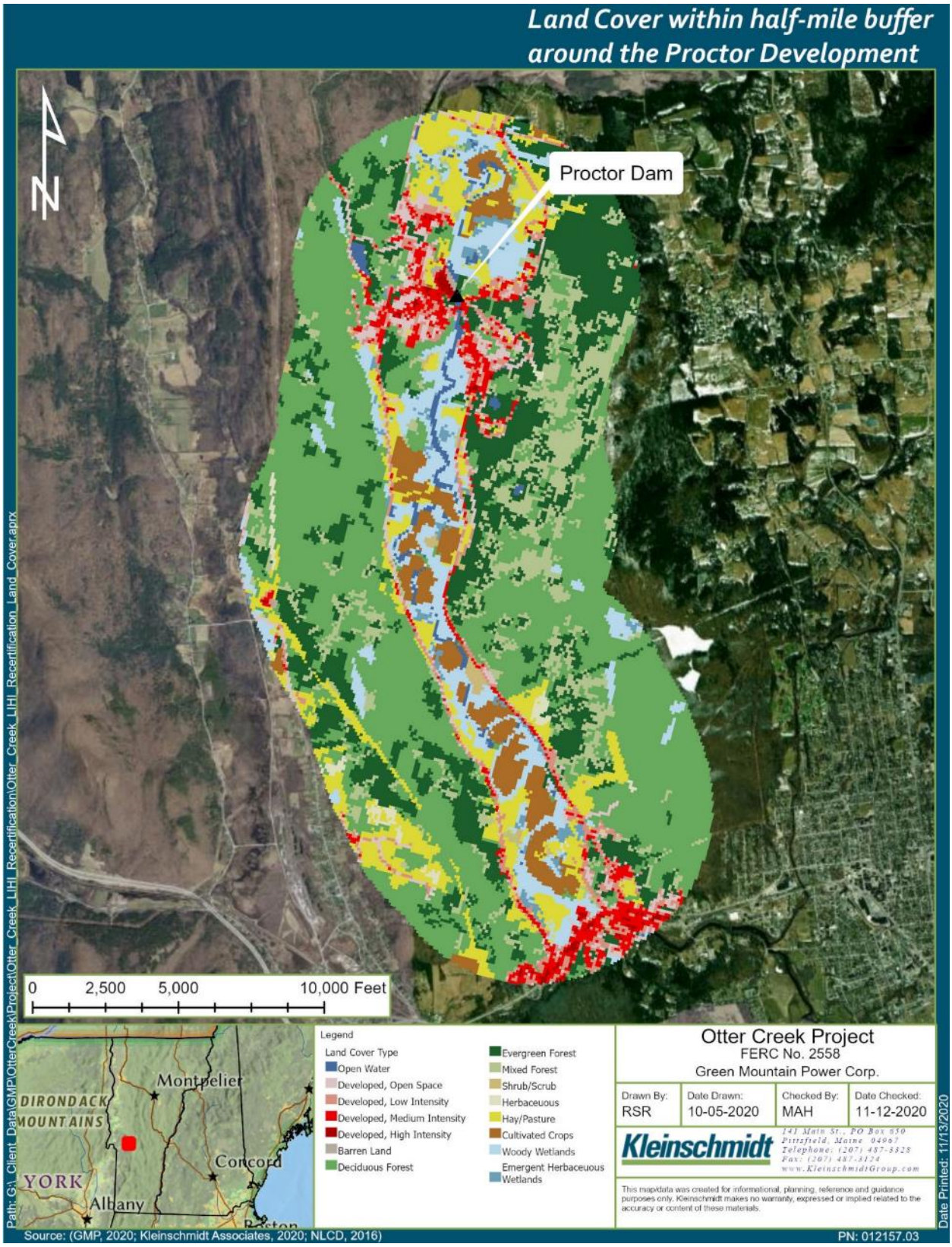

Figure 3-2 Land Cover Within 0.5-Mile of Proctor Development ZOEs

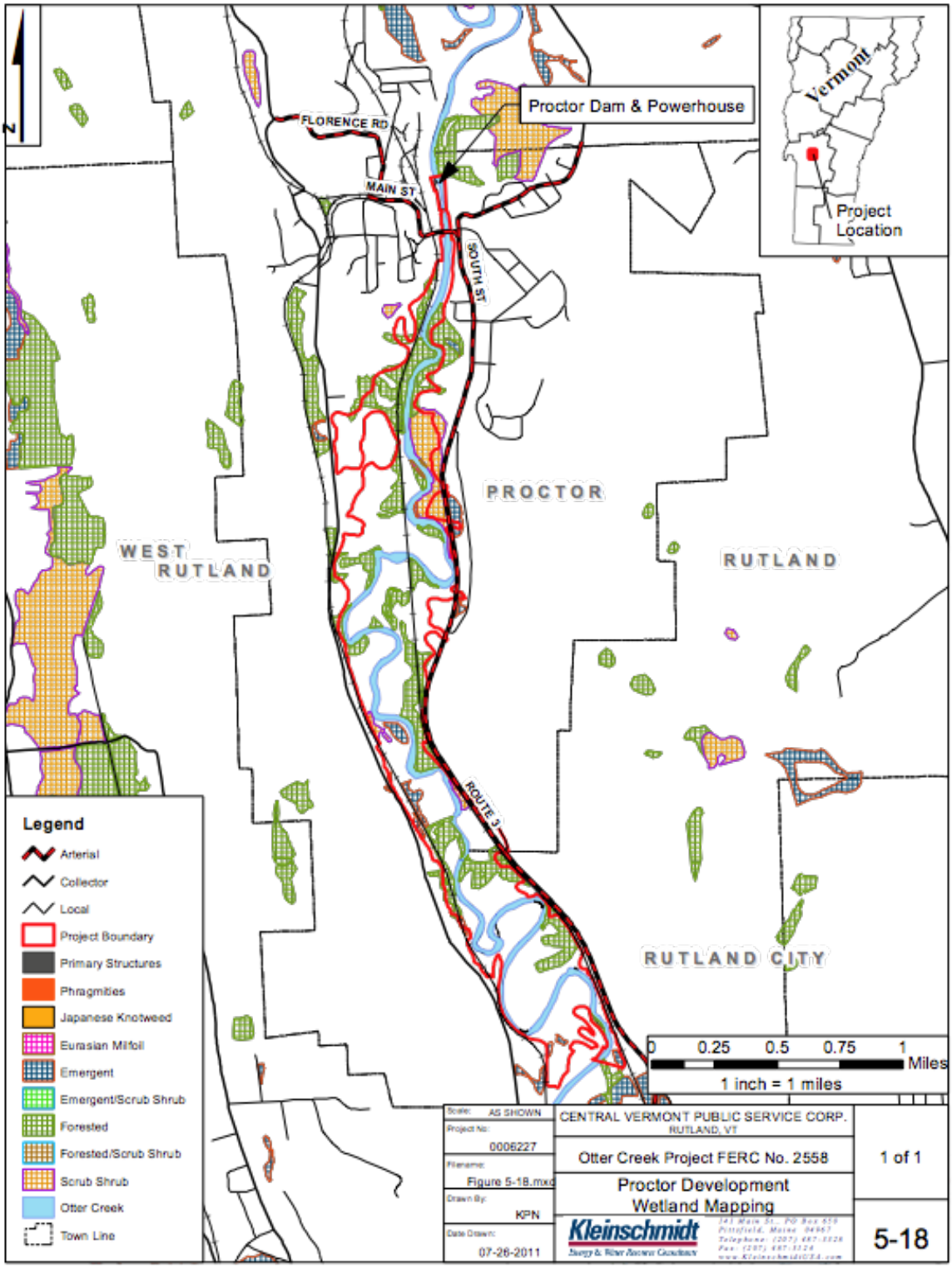

Figure 3-3 Wetland and Invasive Species Mapping at the Proctor Development (Source: Central Vermont, 2011)

3.5.1.2 Beldens Impoundment, Bypass and Tailrace ZOE

The Beldens Development is located within mixed hardwood, coniferous stands, deciduous scrub-shrub habitat, small wetlands, agricultural lands and residential areas (Figure 3-4). Generally, the shoreline is steep and heavily forested, with over 70% of the shoreline being forested. There are no wetlands directly adjacent to the dam or powerhouse (Figure 3-5) (FERC 2013).

The Vermont Natural Resources Atlas was used in December 2020 to identify ecologically significant lands within or in proximity to the Beldens Developments boundaries. The Otter Creek Gorge Land Trust was the only conservation land close the Beldens Project. No vernal pools were identified near the Beldens Development. Class II wetlands were identified along some sections of the impoundment and directly upstream of the Beldens Dam. It is not expected the Beldens Project will impact these wetlands since the Beldens Project operates as run-of-river.

3.5.1.3 Huntington Falls Impoundment, Bypass and Tailrace ZOE

The Huntington Falls Development is located within mixed hardwood, coniferous stands, deciduous scrub-shrub habitat, small wetlands, agricultural lands, and residential areas (Figure 3-4). Generally, the shoreline is steep and heavily forested, with over 65 percent of the shoreline being forested. There are no wetlands directly adjacent to the dam or powerhouse, but forested wetlands are located within the Huntington Falls Development boundary just southeast of the dam (Figure 3-5) (FERC 2013).

The Vermont Natural Resources Atlas was used in December 2020 to identify ecologically significant lands within or in proximity to the Huntington Falls Developments boundaries. Class II wetlands were identified near the tailrace of the Huntington Falls Dam. It is not expected the Huntington Falls Project will impact these wetlands since the Huntington Falls Project operates as run-of-river.

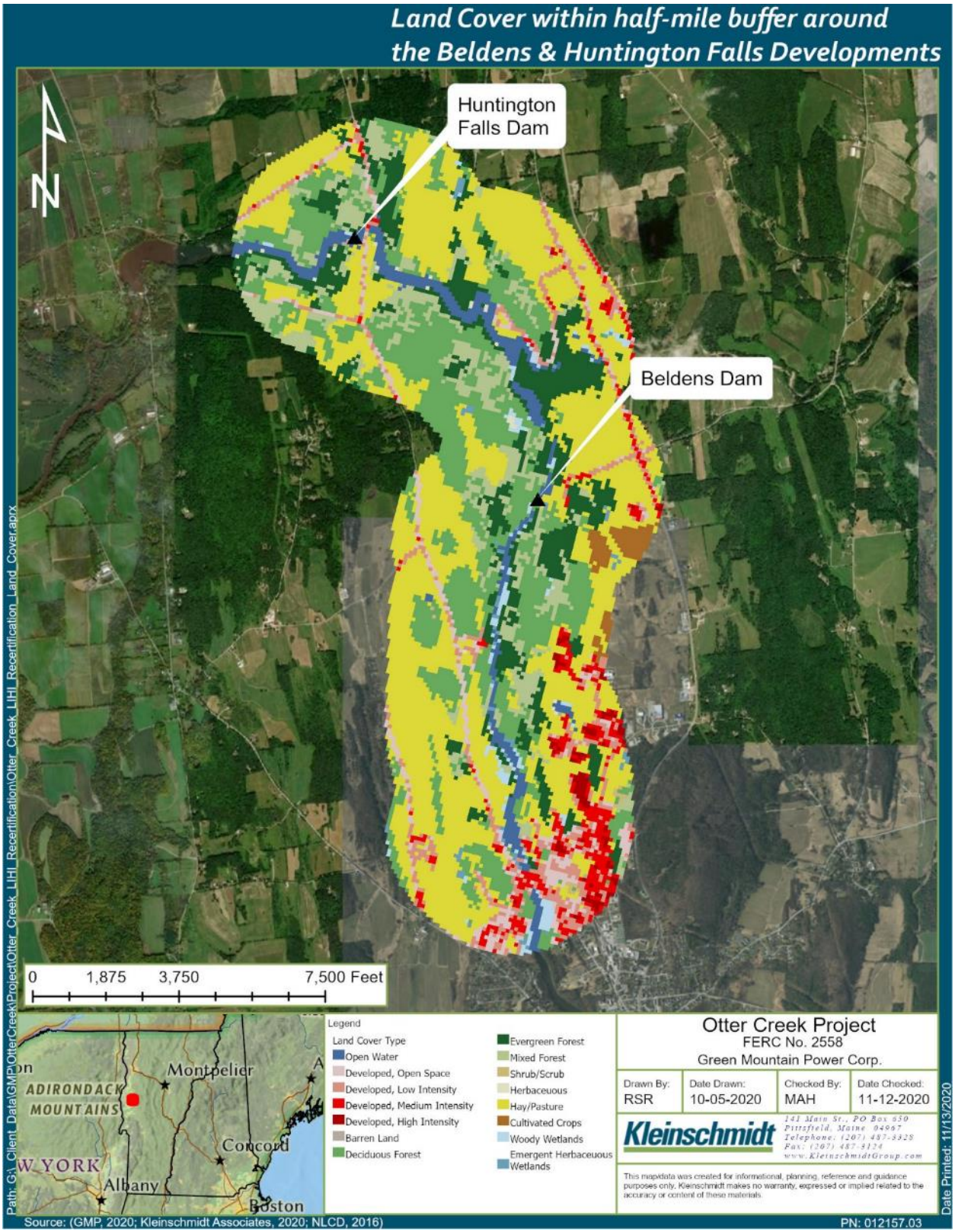

Figure 3-4 Land Cover Within 0.5-Mile of Beldens and Huntington Falls Developments ZOEs

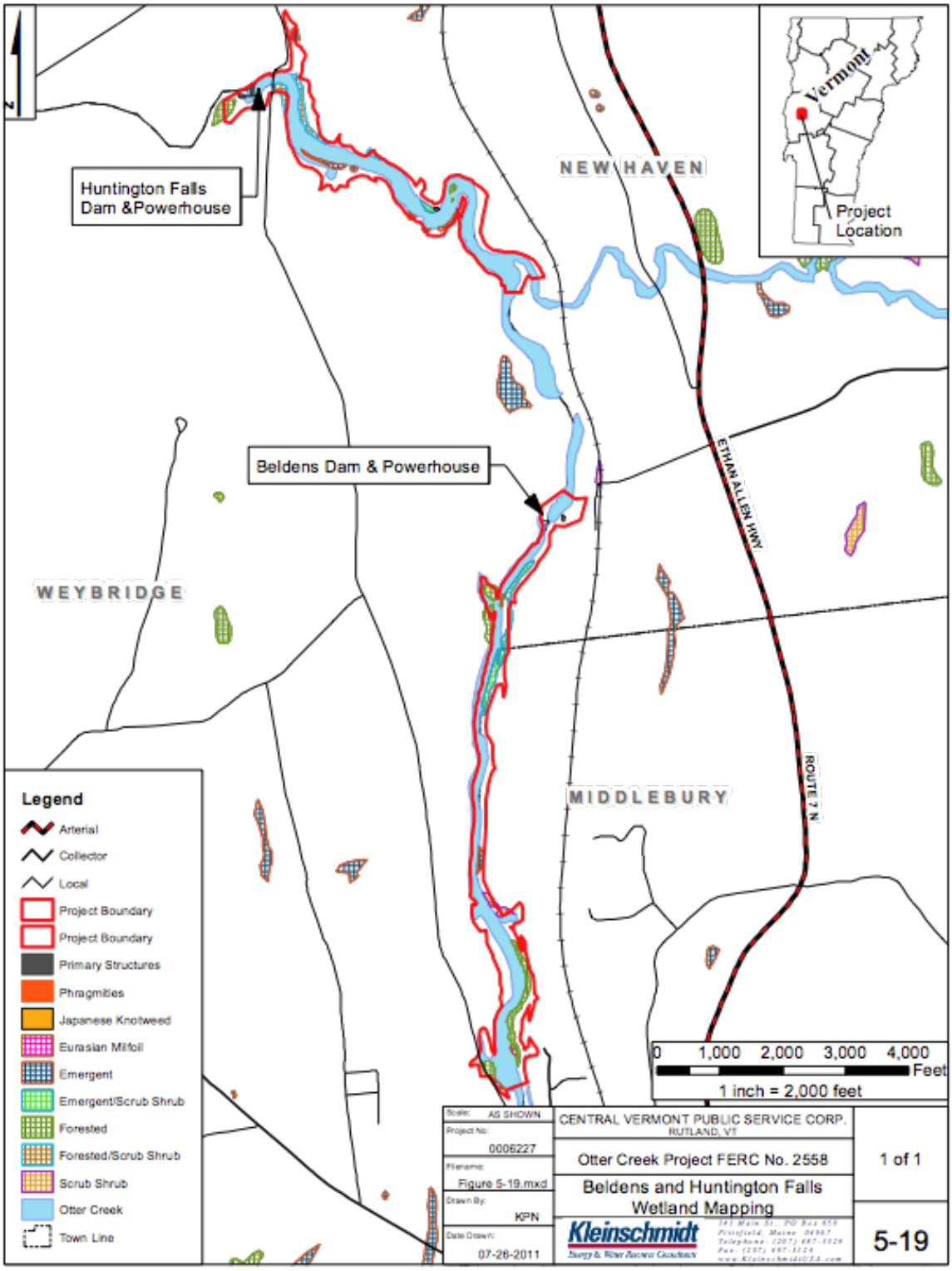

Figure 3-5 Wetland and Invasive Species Mapping at the Beldens and Huntington Falls Developments (Source: Central Vermont, 2011)

3.5.2 Compliance

The Project has been in compliance with the 2014 License regarding Shoreline and Watershed Protection efforts since the last LIHI Certification period (January 7, 2016 – current).

Shoreline and Watershed Protection Standards Conclusion

No official Shoreline Management Plan is required for the Otter Creek Project, but protection of the shoreline occurs during operation by operating as a true run-of-river facility or modified run-of-river facility. If construction is required, the Terrestrial Monitoring and Management Plan is implemented to reduce any negative impacts from construction activities.

3.6 Threatened and Endangered Species Standards

3.6.1 All ZOEs

CRITERION	*STANDARD*	*INSTRUCTIONS*
F	2	<u>Finding of No Negative Effects:</u> • Identify all federal and state listed species that are or may be in the immediate facility area based on current data from the appropriate state and federal natural resource management agencies. • Provide documentation that there is no demonstrable negative effect of the facility on any listed species in the area from an appropriate natural resource management agency or provide documentation that habitat for the species does not exist within the ZOE or is not impacted by facility operations.

<u>Mammals</u>

Federally listed endangered and threatened species within the Projects' ZOEs were identified using the USFWS Information for Planning and Consultation (IPaC) website in November and December 2020 (USFWS 2020a,b). One federally listed endangered species, the Indiana Bat (*Myotis sodalist*) and one federally listed threatened species, the Northern Long Eared Bat (*Myotis septentrionalis*), may be found within the Project's vicinity (USFWS 2020a,b). Both species of bats are considered endangered by the State of Vermont (VTFWD 2015). During Project surveys in 2008 for endangered, threatened and rare species conducted by Vermont Marble Power Division of Omya, Inc (VMPD), no Indiana Bats or Northern Long-eared Bats were observed. However, suitable habitat including floodplain and upland forest does occur adjacent to Otter Creek (VMPD 2009). It is possible these bats feed within the Project boundary, though no critical habitat is contained within Project boundaries for either species (USFWS 2020a,b). Run-of-river to modified run-of-river operation of the Project is not anticipated to negatively impact either of the bats that may transiently utilize the area.

Migratory Birds

Migratory birds within the Projects' ZOEs were identified using the USFWS IpaC website in November and December 2020 (USFWS 2020). The Proctor Development potentially has nine (9) migratory birds, the Beldens Development potentially has twelve (12) migratory birds and the Huntington Falls Development potentially has six (6) migratory birds within the ZOEs. Bird species, federal status, state status and Development locations are summarized in Table 3-4.

Table 3-3 Species of Migratory Birds Found within the ZOE for each Otter Creek Hydroelectric Development, "X" Denotes the Presence of the Bird Species within the Development Vicinity (Source: USFWS 2020a, 2020b and VTFWD 2015)

Common Name	Scientific Name	Federal Status	Vermont State Status	Proctor Development	Beldens Development	Huntington Falls Development
Bald Eagle	*Haliaeetus leucocephalus*	Non-BCC Vulnerable	Endangered	X	X	X
Black-billed Cuckoo	*Coccyzus erythropthalmus*	BCC Rangewide (CON)	Not Listed	X	X	N/A
Bobolink	*Dolichonyx oryzivorus*	BCC Rangewide (CON)	Not Listed	X	X	X
Buff-breasted Sandpiper	*Calidris subruficollis*	BCC Rangewide (CON)	Not Listed	N/A	X	N/A
Canada Warbler	*Cardellina canadensis*	BCC Rangewide (CON)	Not Listed	X	X	N/A
Eastern Whip-poor-will	*Antrostomus vociferus*	BCC Rangewide (CON)	Endangered	N/A	X	X
Evening Grosbeak	*Coccothraustes vespertinus*	BCC Rangewide (CON)	Not Listed	X	N/A	N/A
Golden Eagle	*Aquila chrysaetos*	Non-BCC Vulnerable	Not Listed	N/A	X	N/A
Golden-winged Warbler	*Vermivora chrysoptera*	BCC Rangewide (CON)	Not Listed	N/A	X	N/A
Lesser Yellowlegs	*Tringa flavipes*	BCC Rangewide (CON)	Not Listed	X	X	X
Prairie Warbler	*Dendroica discolor*	BCC Rangewide (CON)	Not Listed	X	N/A	N/A
Rusty Blackbird	*Euphagus carolinus*	BCC Rangewide (CON)	Endangered	X	N/A	N/A

Semipalmated Sandpiper	*Calidris pusilla*	BCC Rangewide (CON)	Not Listed	N/A	X	N/A
Snowy Owl	*Bubo scandiacus*	BCC Rangewide (CON)	Not Listed	N/A	X	X
Wood Thrush	*Hylocichla mustelina*	BCC Rangewide (CON)	Not Listed	X	X	X

Common Name	Scientific Name	Federal Status	Vermont State Status	Proctor Development	Beldens Development	Huntington Falls Development
Bald Eagle	*Haliaeetus leucocephalus*	Non-BCC Vulnerable	Endangered	X	X	X
Black-billed Cuckoo	*Coccyzus erythropthalmus*	BCC Rangewide (CON)	Not Listed	X	X	N/A
Bobolink	*Dolichonyx oryzivorus*	BCC Rangewide (CON)	Not Listed	X	X	X
Buff-breasted Sandpiper	*Calidris subruficollis*	BCC Rangewide (CON)	Not Listed	N/A	X	N/A
Canada Warbler	*Cardellina canadensis*	BCC Rangewide (CON)	Not Listed	X	X	N/A
Eastern Whip-poor-will	*Antrostomus vociferus*	BCC Rangewide (CON)	Endangered	N/A	X	X
Evening Grosbeak	*Coccothraustes vespertinus*	BCC Rangewide (CON)	Not Listed	X	N/A	N/A
Golden Eagle	*Aquila chrysaetos*	Non-BCC Vulnerable	Not Listed	N/A	X	N/A
Golden-winged Warbler	*Vermivora chrysoptera*	BCC Rangewide (CON)	Not Listed	N/A	X	N/A
Lesser Yellowlegs	*Tringa flavipes*	BCC Rangewide (CON)	Not Listed	X	X	X
Prairie Warbler	*Dendroica discolor*	BCC Rangewide (CON)	Not Listed	X	N/A	N/A
Rusty Blackbird	*Euphagus carolinus*	BCC Rangewide (CON)	Endangered	X	N/A	N/A
Semipalmated Sandpiper	*Calidris pusilla*	BCC Rangewide (CON)	Not Listed	N/A	X	N/A
Snowy Owl	*Bubo scandiacus*	BCC Rangewide (CON)	Not Listed	N/A	X	X
Wood Thrush	*Hylocichla mustelina*	BCC Rangewide (CON)	Not Listed	X	X	X

Mussels

There are seventeen (17) native freshwater mussels found in Vermont, nine (9) of these species may occur within the Otter Creek Watershed and are listed in Table 3-5. Out of these nine (9) species, four (4) mussels are state-listed in Vermont (FERC 2013). Three of the species are listed as state endangered; the fluted-shell (*Lasmigona costata*), pink heelsplitter (*Potamilus alatus*), and black sandshell (*Ligumia recta*), the Giant Floater (*Pyganodon grandis*), is listed as threatened and the Creek heelsplitter is considered rare (VTFWD 2015 and WQC). None of these species of mussels are considered threatened or endangered federally (VTFWD 2015).

Green Mountain Power developed an Operation and Compliance Plan (in consultation with resource agencies and approved by FERC) which will reduce the Project's potential adverse effects on mussels within impoundments when drawdowns and refill are required (FERC 2013). During any drawdown and refill operation at all of the Developments, 90 percent of the Project inflow would be released immediately downstream of the powerhouse tailraces while using the remaining 10 percent to refill impoundments within a timely manner (FERC 2013).

Table 3-4 Freshwater Mussel Species Likely to Occur in the Otter Creek Project Area (Source: Central Vermont, 2011 and FERC 2013)

Common Name	Scientific Name
Creek heelsplitter[r]	*Lasmigona compressa*
Eastern elliptio	*Elliptio complanata*
Eastern floater	*Pyganodon c. cataracta*
Eastern lampmussel	*Lampsilis radiata*
Triangle floater	*Alasmidonta undulata*
Fluted-shell[e]	*Lasmigona costata*
Pink heelsplitter[e]	*Potamilus alatus*
Black sandshell[e]	*Ligumia recta*
Giant floater[t]	*Pyganodon grandis*

[e] Denotes a state-listed endangered species.

[t] Denotes a state-listed threatened species.

[r] Denotes a state-listed rare species.

Amphibians

There are two amphibian species that are listed as rare in Vermont that may occur within the Project vicinity, the Four-toed Salamander (*Hemidactylium scutatum*) and the Mudpuppuy (*Necturus maculosus*) (VTANR 2014). It is not anticipated that the Project will impact these species.

Botanical

Additionally, there are five rare vascular plants species that occur within the Project vicinity: Water Sedge (*Carex aquatilis*), Loose Sedge (*Carex laxiculmis*), Stiff Gentian (*Gentianella quinquefolia*), Slender Pondweed (*Potamogeton filiformis var. borealis*) and Small Dropseed (*Sporobolus neglectus*) (VTANR 2014). It is not anticipated that the Project will impact these species with continued implementation of the FERC approved Terrestrial Monitoring and Management Plan..

3.6.1.1 All Proctor ZOEs

Based on a November 2020 USFWS IPaC Report (Attachment B), the Northern Long-eared Bat was the only federal and state endangered species identified within the Proctor Development area. Potential Indiana Bat summer habitat overlaps with Proctor Project lands (VTANR Atlas 2020) but no critical habitat was identified within any of the ZOEs in the IPac . Nine (9) Migratory Birds were also identified to potentially occur within the Proctor Development area (Table 3-4).

In 2008 and 2009 a mussel survey was conducted by VMPD to assess the impacts of emergency drawdowns on freshwater mussels. No freshwater mussels or evidence of middens or empty shells were observed within the Proctor Impoundment. This indicated mussel distribution and abundance within the impoundment is limited, demonstrating drawdowns and modified run-of-river operations would likely have minimal impact. Several species were collected downstream of the Proctor Bypass including Eastern elliptio (*Elliptio complanate*), Eastern Floater (*Pyganodon c. cataracta*) and Eastern lampmussel (*Lampsilis radiata*). No federally listed or state listed endangered or threatened species were found.

In May 2012, another mussel survey was conducted by Biodrawveristy LLC, on behalf of Central Vermont Public Service Corporation (CVPS) prior to construction of the tailrace bridge. Three species of mussels were found, Eastern elliptio (*Elliptio*

complanate), Eastern lampmussel (*Lampsilis radiata*) and one Triangle floater (*Alasmidonta undulata*). No federally listed or state listed endangered or threatened species were found.

3.6.1.2 All Beldens ZOEs

Based on a December 2020 USFWS IPaC Report, the Northern Long-eared Bat and Indiana Bat have the potential to occur within the Beldens Development area and are both listed as endangered in the State of Vermont. The Northern Long-eared Bat is federally listed as endangered while the Indiana bat is listed as threatened. Observed Indiana Bat summer habitat overlaps with Beldens Project lands (VTANR Atlas 2020) but no critical habitat was identified within any of the ZOEs in the IPac. Twelve (12) Migratory Birds were also identified to potentially occur in the Beldens Development area (Table 3-4).

The Giant floater, state-listed as threatened and Fluted-shell, state-listed as endangered, are reported in the Beldens Development vicinity between Weybridge and Middlebury and therefore may occur downstream of Beldens Development (Fichtel and Smith 1995, FERC 2013).

3.6.1.3 All Huntington Falls ZOEs

Based on a November 2020 USFWS IPaC Report, the Northern Long-eared Bat and Indiana Bat have the potential to occur within the Huntington Falls Development area and are both listed as endangered in the State of Vermont. The Northern Long-eared Bat is federally listed as endangered while the Indiana Bat is listed as threatened. Observed Indiana Bat summer habitat overlaps with Huntington Falls Project lands (VTANR Atlas 2020) but no critical habitat was identified within any of the ZOEs in the IPac. Six (6) Migratory Birds were also identified to potentially occur in the Huntington Falls Development area (Table 3-4).

The Giant floater, state listed as threatened, and the Fluted-shell, state listed as endangered, are reported in the Huntington Falls Development vicinity between Weybridge and Middlebury and therefore may occur within the Huntington Falls Development (Fichtel and Smith 1995, FERC 2013). Below the Huntington Falls Development, in the lower watershed, Black Sandshell mussels and Pink heelsplitters, both state-listed as endangered, have been reported within Otter Creek (Fichtel and Smith, 1995).

3.6.2 Compliance

The Project has been in compliance with the FERC 2014 License regarding Threatened and Endangered Species Standards since the last LIHI Certification period (January 7, 2016 – current).

In accordance with 2014 FERC License Article 404, GMP implements the Project Terrestrial Monitoring and Management Plan components prior to any Project construction activities so to ensure the protection of protected wildlife species.

Threatened and Endangered Species Standards Conclusion

The Otter Creek Project has been operating in accordance with the 2014 FERC License and has not had an incidental takes of any state or federally threatened or endangered species.

3.7 Cultural and Historic Resource Standards

3.7.1 All ZOEs

CRITERION	*STANDARD*	*INSTRUCTIONS*
G	2	Approved Plan: • Provide documentation of all approved state, provincial, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility. • Document that the facility is in compliance with all such plans.

The Otter Creek Hydroelectric Facility operates in compliance with FERC License Article 406 Programmatic Agreement executed on December 30, 2013 and Historic Properties Management Plan (HPMP) filed on March 18, 2013 (No public access to the HPMP, privileged document).

Within the Otter Creek Hydroelectric Project's Area of Potential Effect (APE) a Phase I survey was conducted in archaeological sensitive areas in 2010, followed by Phase II surveys in 2011 and 2012. Phase II surveys were conducted to determine if any of the identified sites in Phase I were eligible for the National Register (FERC 2013).

3.7.1.1 Proctor Impoundment, Bypass, and Tailrace ZOEs

The Proctor Development is eligible for listing in the National Register under Criterion A as it is the first and largest of the three Developments designed and built by Vermont Marble.[1] Additionally, the Proctor Development is eligible under Criterion C because the powerhouse is faced in marble, which is rare in hydroelectric powerhouses (FERC 2013).

There were five archeological sensitive areas surveyed at the Proctor Development during the surveys in 2010 and 2011. Some areas were unable to be surveyed because landowner permission was not granted. Site VT-RU-604 was identified as an

[1] Vermont Marble was once one of the largest producers of marble in the world and provided marble for the construction of the Washington Monument and the Tomb of the Unknown Solider at Arlington National Cemetery (FERC 2013).

archeological site from the Late Archaic Period and eligible for the National Register. Phase II survey also identified the previously unrecorded archaeological site VT-RU-627 which is from the Late Woodland Period and is eligible for the National Register (FERC 2013).

3.7.1.2 Beldens Impoundment, Bypass, and Tailrace ZOEs

The Beldens Development is eligible for listing in the National Register under Criterion A due to its association with Vermont Marble and Criterion C for difficult site planning, engineering and design (FERC 2013).

Phase I survey work identified six archaeological sites and one historic Euroamerican site within the APE. Sites VT-AD-1540, VT-AD-1541, VT-AD-1549, VT-AD-1556, VT-AD-1557, and VT-AD-1558 are eligible for the National Register. Five of these sites are archaeological sites ranging from the Late Archaic to Woodland period. One of the archaeological sites was not eligible for the National Register. The Historic Site is the Belden Falls Marble company Mill complex (FERC 2013).

3.7.1.3 Huntington Falls Impoundment, Bypass and Tailrace ZOEs

The Huntington Falls Development is eligible for listing in the National Register under Criterion A due to its association with Vermont Marble and Criterion C for difficult site planning, engineer and design (FERC 2013).

Seven archaeological sites and two historic Euroamerican sites were identified within the Huntington Falls Development APE during Phase I survey. Archaeological sites VT-AD-350, VT-AD-1544, VT-AD-1546, VT-AD-1547, VT-AD-1550, and VT-AD-1555 were determined to be eligible for the National Register during Phase II surveys. These sites range from the Late Archaic and Woodland Periods. The remaining archaeological site and both of the historical sites were not eligible for the National Register (FERC 2013).

Summary for all ZOES

GMP's continued implementation of the HPMP ensures compliance with historic and cultural resource standards. In accordance with the HPMP, GMP annually monitors the Project's historical sites. Additionally, operating in true Run-of-River mode and

modified Run-of-river mode maintains conditions within the impoundments and downstream areas of Otter Creek.

3.7.2 Compliance

The Project has been in compliance with the 2014 License Article 406, Programmatic Agreement and Historic Properties Management Plan (HPMP) since the last LIHI Certification period (January 7, 2016 – current).

3.8 Recreational Resources Standards

3.8.1 All ZOEs

CRITERION	*STANDARD*	*INSTRUCTIONS*
H	2	Agency Recommendation: • Document any comprehensive resource agency recommendations and enforceable recreation plan that is in place for recreational access or accommodations. • Document that the facility is in compliance with all such recommendations and plans.

The Otter Creek Hydroelectric Project operates in compliance with the Project Recreation Plan as required by 2014 FERC License Article 405 and Water Quality Certificate Condition H - Recreational Facilities. GMP submitted a Recreation Plan on May 31, 2016 pursuant to article 405 of the license. The Recreation Plan was approved by FERC on September 8, 2016.

The Otter Creek Hydroelectric Project recreational areas are free to the public and primarily provide shoreline access for angling, canoeing/kayaking, parking, picnicking facilities and sight-seeing. The Proctor Development does not provide any formal recreational areas but allows for access to the river and sightseeing. The Beldens and Huntington Falls Developments do offer formal and informal recreational areas. The Project's recreation facilities, as approved within FERC's January 16, 2018 Order Amending Recreation Plan are summarized below in Table 3-6.

Table 3-5 Recreational Facility Enhancements at the Otter Creek Projects (Source: FERC Order Amending Recreation Plan January 2018)

Recreation Site Name	Recreation Facilities[2]
Proctor Development	
Tailrace Access Site	Portage put-in (natural beach); access road; walkway connecting put-in and access road; three accessible picnic tables; parking for approximately six vehicles (one ADA space); two interpretive signs; seasonal sanitation facilities.

[2] Each development has wayfinding, regulatory, and warning signs.

Recreation Site Name	Recreation Facilities[2]
Beldens Development	
Portage Take-Out	Portage take-out; path with boardwalk (part of portage route).
Portage Put-In	Put-in (stone ramp); stairway; kiosk and interpretive sign upstream along portage route; seasonal sanitation facilities.
Observation Deck	Two-level observation deck with bench seating on each level; one interpretive sign.
Picnic Area	Three accessible picnic tables; parking for approximately six vehicles.
Huntington Falls Development	
Portage Take-Out	Portage take-out; path connecting take-out to informal roadside parking area.
Portage Put-In	Portage put-in; stairway with attached canoe slide; seasonal sanitation facilities.
Picnic Area	Three accessible picnic tables; one interpretive sign; parking for approximately three vehicles (one ADA space).

3.8.1.1 Proctor Impoundment ZOE

While there are no formal public recreational facilities within the Proctor impoundment, the Proctor Impoundment can be accessed informally at the St. Dominic's Catholic Church parking lot, which serves at the egress for hand-carry, non-motorized watercraft.

3.8.1.2 Proctor Bypass ZOE

The Proctor Bypass, called Sutherland Falls, can be viewed from the top in the parking area for the adjacent Marble Museum. Additionally, there is a park and picnic area adjacent to the Marble Museum that is not related to the Proctor Development. Sutherland Falls can also be viewed from downstream via the Proctor Tailrace access area (see below).

3.8.1.3 Proctor Tailrace ZOE

The Proctor Tailrace can be accessed via an unpaved road adjacent to the former Proctor Town wastewater treatment facility. This area provides access to shoreline angling, and

hand-carry access for non-motorized watercrafts. The portage is a natural beach which is connected to the access road via a walkway (Photo 3-2). There are six available parking spaces, with one of them being compliant with the Americans with Disabilities Act (ADA), three ADA compliant picnic tables, Directional signage for Canoe/Kayak access, seasonal sanitation facilities, and two interpretive signs about Otter Creek and the Marble Industry.

Photo 3-2 Proctor Informal Tailrace Access

3.8.1.4 Beldens Impoundment ZOE

The "Trail Around Middlebury," located in the Otter Creek Gorge Preserve, traverses the western side of the tailrace and impoundment. The trail then crosses over the impoundment via the Don and Peggy Arnold Swinging Bridge (Photo 3-3). This bridge connects the island separating the two sections of the Beldens Dam. The bridge offers views of the impoundment, bypass reach, tailrace and the Beldens Development. These hiking trails can be accessed from a parking lot adjacent to the Beldens Development. A portage take out with a sign is located before the boat barrier on the eastern side on the impoundment (Photo 3-4). A portage trail leads downstream and a boardwalk was put in to traverse a wetland area (Photo 3-5).

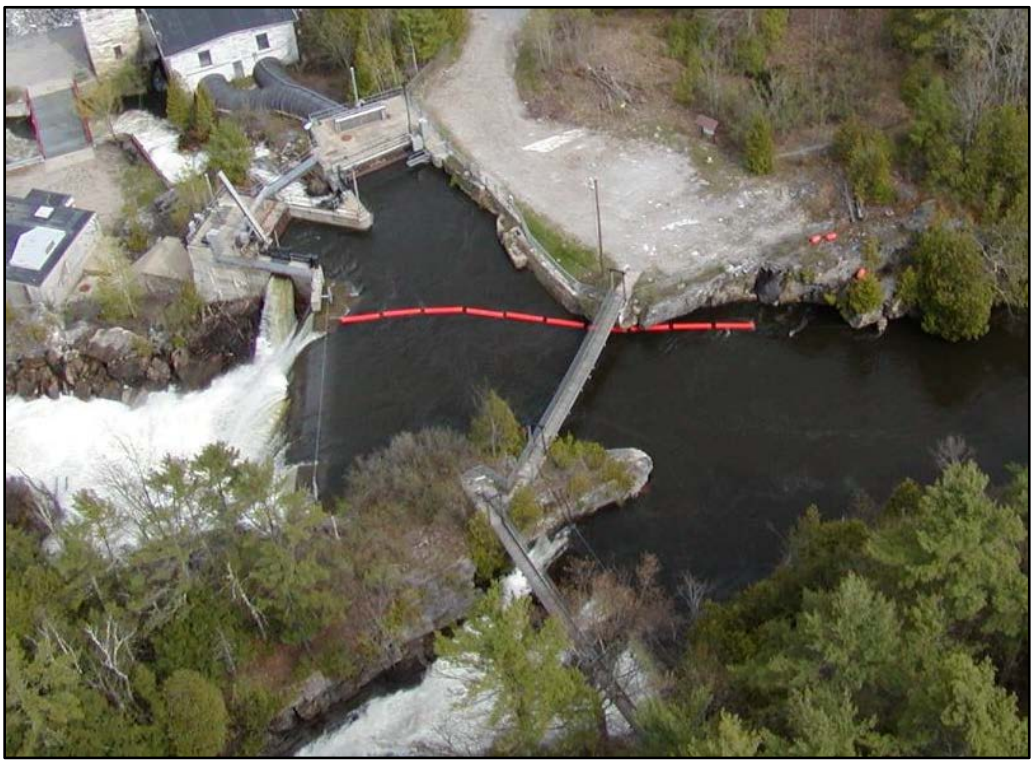

Photo 3-3 Aerial View of the Don and Peggy Swinging Bridge

Photo 3-4 Beldens Canoe Portage Sign Take-Out

Photo 3-5 Beldens Boardwalk Portage Take-out

3.8.1.5 Beldens Bypass ZOE

The Bypass area can be viewed via a sightseeing platform located near the tailrace (see below) and when crossing the Don and Peggy Arnold Swinging Bridge.

3.8.1.6 Beldens Tailrace ZOE

GMP provides a Portage Put-In Stairway from the facility driveway to the put-in location and a two-level observation deck with bench seating on one level (Photo 3-6 and Photo 3-7). The viewing platform has one interpretive sign and offers views of the tailrace, Beldens Development, and bypass reach (Photo 3-8). This site provides space for river access and shoreline angling. Additionally, the Beldens Development provides a picnic area with grills and 3 concrete picnic tables that are ADA compliant (Photo 3-9). The parking lot for this picnic area can fit approximately 6 vehicles. The "Trail Around Middlebury" also follows the downstream from tailrace.

Photo 3-6 Beldens Upper Landing and Canoe Slide

Photo 3-7 Beldens Middle Viewing Deck

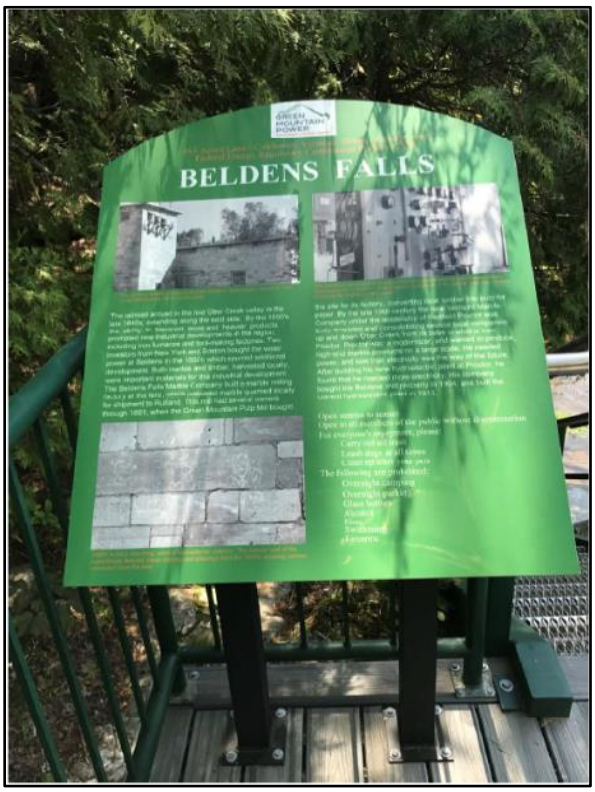

Photo 3-8 Beldens Interpretive Sign on the Lower Deck of the Portage Put-In

Photo 3-9 Beldens Picnic Tables and Pads

3.8.1.7 Huntington Falls Impoundment ZOE

The Huntington Falls Impoundment has a canoe take out and directional signage located upstream of the Morgan Horse Farm Road adjacent to the bridge. This site has a small trail/hand-carry boat launch path and informal roadside parking. The trail follows the Dam across the road, crossing the impoundment, and leads to just downstream of the powerhouse. This site serves as the egress for the canoe portage trail which wraps around the Beldens Development facilities allowing access to the tailrace. There is also a picnic area and overlook (Photo 3-10), which has three ADA compliant concrete picnic tables, one interpretive sign (Photo 3-11) and seasonal sanitation facilities. Parking is available for approximately three vehicles, with one space being ADA complaint (Photo 3-12).

Photo 3-10 Huntington Falls Picnic Area

Photo 3-11 Interpretive sign at the Huntington Falls Facility

Photo 3-12 Parking and picnic area at Huntington Falls

3.8.1.8 Huntington Falls Bypass ZOE

No public access available.

3.8.1.9 Huntington Falls Tailrace ZOE

The Hunting Falls Tailrace is accessible via the trail from the impoundment and provides a stairway with an attached canoe slide and seasonal sanitation facilities (Photo 3-13).

Photo 3-13 View of Canoe Put-in Stairway with Canoe/Kayak Slide

3.8.2 Compliance

The Project has been in compliance with the 2014 License regarding recreational facilities since the last LIHI Certification period (January 7, 2016 – current). All recreation facilities per the Project's Recreation Plan have been constructed. A FERC Environmental Inspection of the three Developments was completed on July 19, 2018 and the recreational facilities were considered to be in good condition and compliant with part 8 of the Commission's regulation.

4.0 REFERENCES

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5.0 CONTACTS FORMS

5.1 Applicant Contact Information

Project Owner:	
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Consulting Firm / Agent for LIHI Program (if different from above):	
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5.2 State, Federal, Provincial, and Tribal Resource Agency Contacts

Agency Contact		***Area of Responsibility***
Agency Name	Vermont Department of Environmental Conservation	☒ Flows ☒ Water Quality ☒ Fish/Wildlife ☒ Watershed ☒ T & E Species ☐ Cultural/Historic ☒ Recreation
Name and Title	Eric Davis, River Ecologist	
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Agency Contact		***Area of Responsibility***
Agency Name	Vermont Department of Environmental Conservation	☒ Flows ☒ Water Quality ☒ Fish/Wildlife ☒ Watershed ☒ T & E Species ☐ Cultural/Historic ☒ Recreation
Name and Title	Jeff Crocker, Streamflow Protection Coordinator	
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Agency Contact		***Area of Responsibility***
Agency Name	Vermont Department of Environmental Conservation	☒ Flows ☒ Water Quality ☒ Fish/Wildlife ☒ Watershed ☒ T & E Species ☐ Cultural/Historic ☒ Recreation
Name and Title	Betsy Simard, River Ecologist	
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Agency Contact		***Area of Responsibility***
Agency Name	Vermont Fish and Wildlife Department	☐ Flows ☐ Water Quality
Name and Title	Bob Popp, Botanist	
Phone	802-476-0127	

Email address	Bob.Popp@vermont.gov	☐ Fish/Wildlife ☐ Watershed ☒ T & E Species ☐ Cultural/Historic ☐ Recreation
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Agency Contact		***Area of Responsibility***
Agency Name	Vermont Division for Historic Preservation	☐ Flows ☐ Water Quality ☐ Fish/Wildlife ☐ Watershed ☐ T & E Species ☒ Cultural/Historic ☐ Recreation
Name and Title	Elizabeth Peebles, Historic Resources Specialist	
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Agency Contact		***Area of Responsibility***
Agency Name	Vermont Division for Historic Preservation	☐ Flows ☐ Water Quality ☐ Fish/Wildlife ☐ Watershed ☐ T & E Species ☒ Cultural/Historic ☐ Recreation
Name and Title	Scott Dillon, HP Senior Review Coordinator	
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Agency Contact		***Area of Responsibility***
Agency Name	U.S. Fish and Wildlife	☐ Flows ☐ Water Quality ☒ Fish/Wildlife ☐ Watershed ☒ T & E Species ☐ Cultural/Historic ☐ Recreation
Name and Title	Melissa Grader, Wildlife Biologist	
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Mailing Address	New England Field Office 70 Commercial Street, Suite 300 Concord, NH 03301	

6.0 SWORN STATEMENT

As an Authorized Representative of Green Mountain Power Corporation, the Undersigned attests that the material presented in the application is true and complete.

The Undersigned acknowledges that the primary goal of the Low Impact Hydropower Institute's certification program is public benefit, and that the LIHI Governing Board and its agents are not responsible for financial or other private consequences of its certification decisions.

The Undersigned further acknowledges that if LIHI Certification of the applying facility is granted, the LIHI Certification Mark License Agreement must be executed prior to marketing the electricity product as LIHI Certified®.

The Undersigned further agrees to hold the Low Impact Hydropower Institute, the Governing Board and its agents harmless for any decision rendered on this or other applications, from any consequences of disclosing or publishing any submitted certification application materials to the public, or on any other action pursuant to the Low Impact Hydropower Institute's certification program.

_____

[To be provided in finalized application]

Company Name: Green Mountain Power Corporation

Authorized Representative:

Name: John Greenan

Title: _____

Authorized Signature: _____

Date: _____

7.0 ATTACHMENTS

ATTACHMENT A

AGENCY CONSULTATION

From:	Davis, Eric
To:	Katie Sellers; Crocker, Jeff; Simard, Betsy; Popp, Bob; Grader, Melissa
Cc:	Karen Bishop; Fatima Oswald
Subject:	RE: Otter Creek Hydroelectric Project - LIHI Recertification
Date:	Friday, December 18, 2020 10:29:51 AM
Attachments:	image004.png

Hi Katie,

Thank you for proactively reaching out regarding the recertification of the Otter Creek Hydroelectric Project. To evaluate compliance with water quality certification and FERC license conditions, the Agency has developed a practice of requesting the prior full water year of operations data, which in this case would be the 2019 WY (Oct. 2018 through Sept. 2019). Specific to the review of the Otter Creek Hydroelectric Project, review of this data is of particular interest due to it being the first review since construction of the many improvements and upgrades associated with the recent relicensing.

Thanks again for touching base on this review,
Eric

VERMONT

Due to the coronavirus (COVID-19), the Agency of Natural Resources is taking additional safety measures to protect our employees, partners, and the public. We anticipate we will be working remotely until at least March 31, 2021 and encourage you to communicate electronically or via phone to the greatest extent possible. Thank you for your patience and understanding that responses may occasionally be delayed.

Eric Davis | River Ecologist (he/him)
Vermont Department of Environmental Conservation
Watershed Management Division, Rivers Program
Davis 3, 1 National Life Dr |Montpelier, VT 05620-3522
802-490-6180 (cell) | eric.davis@vermont.gov
https://dec.vermont.gov/watershed/rivers

From: Katie Sellers <Katie.Sellers@KleinschmidtGroup.com>
Sent: Thursday, December 17, 2020 3:41 PM
To: Crocker, Jeff <Jeff.Crocker@vermont.gov>; Davis, Eric <Eric.Davis@vermont.gov>; Simard, Betsy <Betsy.Simard@vermont.gov>; Popp, Bob <Bob.Popp@vermont.gov>; Grader, Melissa <melissa_grader@fws.gov>
Cc: Karen Bishop <Karen.Bishop@Kleinschmidtgroup.com>; Fatima Oswald <Fatima.Oswald@Kleinschmidtgroup.com>
Subject: Otter Creek Hydroelectric Project - LIHI Recertification

EXTERNAL SENDER: Do not open attachments or click on links unless you recognize and trust the sender.

Afternoon All – Green Mountain Power is applying for Low Impact Hydropower Institute (LIHI) re-certification for the Otter Creek Hydroelectric Project (FERC No. 2558). The Otter Creek Project

consists of three hydroelectric developments (Proctor, Beldens, and Huntington Falls) and is located on the Otter Creek in Addison and Rutland Counties, Vermont.

In accordance with LIHI's standards, we are pulling together a review of project License compliance in regards to the following topics:

- Ecological Flows
- Water Quality
- Upstream Fish Passage – not applicable to this project
- Downstream Fish Passage and Protection
- Shoreline and Watershed Protection
- Threatened and Endangered Species Protection
- Cultural and Historic Resource Protection
- Recreational Resources

Per LIHI re-certification requirements, I wanted to touch base with the Vermont Agency of Natural Resources and U.S. Fish and Wildlife Service regarding feedback on facility compliance with assigned FERC License articles. As a recap of the Otter Creek Project's status, the Project has not changed operations (all three developments are run-of-river and provide minimum bypass flows) since its recent relicensing in 2014, the minimum flow gate construction at Huntington Falls was completed in 2017, and recreation improvements as required in the license and WQC have been completed as well. A KMZ of the project's zones of effects that are evaluated in accordance with LIHI's standards is attached for your reference.

Thank you in advance for your time and help with this re-certification effort. If you have any questions please let me know. Best, Katie

Kathryn Sellers Reynolds, M.S.
Regulatory Coordinator
Kleinschmidt
Office: 207-416-1218
www.KleinschmidtGroup.com
*Providing **practical** solutions for **complex** problems affecting energy, water, and the environment*

ATTACHMENT B

2020 USFWS INFORMATION FOR PLANNING AND CONSULTATIONS (IPAC)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To: November 06, 2020
Consultation Code: 05E1NE00-2021-SLI-0380
Event Code: 05E1NE00-2021-E-01153
Project Name: Proctor Project - ZoE - LIHI 2020 - GMP

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2021-SLI-0380

Event Code: 05E1NE00-2021-E-01153

Project Name: Proctor Project - ZoE - LIHI 2020 - GMP

Project Type: DAM

Project Description: includes tailrace, bypass, and impoundment

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.63880699995306N73.04143583346695W

Counties: Rutland, VT

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

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In Reply Refer To: December 14, 2020
Consultation Code: 05E1NE00-2021-SLI-0726
Event Code: 05E1NE00-2021-E-02192
Project Name: Beldens Project (Extended) - ZoE - LIHI 2020 - GMP

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

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70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2021-SLI-0726

Event Code: 05E1NE00-2021-E-02192

Project Name: Beldens Project (Extended) - ZoE - LIHI 2020 - GMP

Project Type: DAM

Project Description: Impoundment, bypass reach and tailrace - extended to the Huntington Falls impoundment

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/44.04493316103266N73.18082810016887W

Counties: Addison, VT

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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Mammals

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

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http://www.fws.gov/newengland

In Reply Refer To: November 06, 2020
Consultation Code: 05E1NE00-2021-SLI-0381
Event Code: 05E1NE00-2021-E-01155
Project Name: Huntington Falls Project - ZoE - LIHI 2020 - GMP

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

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This species list is provided by:

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Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2021-SLI-0381

Event Code: 05E1NE00-2021-E-01155

Project Name: Huntington Falls Project - ZoE - LIHI 2020 - GMP

Project Type: DAM

Project Description: Includes tailrace, bypasses and impoundment

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/44.06650712615621N73.18267324834105W

Counties: Addison, VT

Endangered Species Act Species

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Critical habitats

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