



NORTH SIDE ENERGY CENTER

Case No. 17-F-0598

1001.23 Exhibit 23

Water Resources and Aquatic Ecology

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Exhibit 23: Water Resources and Aquatic Ecology

This Exhibit will track the requirements of Stipulation 23, dated February 10, 2021, and therefore, the requirements of 16 New York Codes, Rules, and Regulations (NYCRR) § 1001.23.

As noted throughout this Exhibit, potential impacts to water resources and aquatic ecology as a result of the Project are anticipated to be minimal. Groundwater recharge will continue to occur as it does under present conditions and, in some instances, stormwater infiltration will increase as portions of the Project Area regularly disturbed by agricultural practices will consist of a stabilized vegetated ground cover during operation of the solar energy center (refer to section 23(a)(3) below). Additionally, protective measures will be in place during construction in order to avoid potential impacts to groundwater wells adjacent to the Project Area (section 23(a)(3)). Project Components have been sited to avoid temporary or permanent impacts to waterbodies to the maximum extent practicable. As noted in section 23(c)(3), construction of the Project is anticipated to result in only approximately 30 linear feet (approximately 0.0006 acres or approximately 28 square feet) of permanent disturbance to waterbodies identified during on-site wetland and stream delineations. Finally, existing stormwater drainage patterns will be maintained to the maximum extent practicable. The Project has been designed in accordance with and the Applicant will seek coverage under the NYSDEC State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (GP-0- 20-001). Finally, a preliminary Stormwater Pollution Prevention Plan outlining best management practices to be utilized during construction has been prepared (see section 23(d)(1)) to minimize potential impacts to water resources.

23(a) Groundwater

(1) Hydrologic Character

According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), the average representative depth to the water table within the Project Area is 1.8 feet (0.55 meters) and the depth to restrictive layer ranges from 17 inches to greater than 80 inches. This data was obtained from the USDA NRCS Web Soil Survey tool, which lists depth to restrictive layers and water table by soil map unit for a given area of interest. Findings of the geotechnical investigations on-site indicate groundwater at depths ranging from soil surface to 17.5 feet below ground surface (bgs) in the borings while drilling, and stabilized

groundwater within temporary wells at depths ranging between the soil surface and 5 feet bgs. However, groundwater conditions may vary by season and due to weather conditions.

Bedrock was not encountered during geotechnical investigations performed on-site. The Preliminary Geotechnical Engineering Report for the Project Area is provided as Appendix 21-1. Bedrock depths are depicted visually in Figure 21-3 in Exhibit 21. Figure 23-1 depicts the depth to high groundwater across the Project Area based on USDA NRCS data.

At the depths estimated by the USDA NRCS soil report, and as encountered by geotechnical survey, most construction is not expected to intercept or affect groundwater on-site. Posts will be embedded to depths between approximately 9 to 13 feet bgs. Based on the results from the geotechnical investigation, groundwater may be experienced anywhere below the surface. Therefore, temporary dewatering may be required during construction if perched water, groundwater, or seepage is encountered. Further discussion of groundwater avoidance, minimization or minimization methods has been included in Section 23(c)(4) of this exhibit.

Conditions encountered during subsurface investigations are generalized as depicted below in Table 23-1.

Table 23-1. Generalized Geotechnical Review Results

Description	Approximate Depth to Bottom of Stratum (feet)	Material Description	Relative Density/ Consistency
Stratum 1 – Glaciolacustrine Deposits	0 to 20	Fine-grained (fine sand, silt, and clay) sediments with gravel	Very soft to very stiff or loose to medium dense
Stratum 2 – Glacial Till	0 to 20	Mixtures of sand and silt with gravel, cobbles, and boulders	Medium dense to very dense
Source: Preliminary Geotechnical Engineering Report, Terracon Consultants-NY, Inc., 2020			

(2) Map of Groundwater Aquifers and Groundwater Recharge Areas

The USGS has completed hydrogeologic mapping projects in cooperation with New York State and local agencies. The distribution and hydrogeologic characteristics of the unconsolidated

aquifers are presented at the 1:250,000 scale in a series of five maps that were published in 1988 in cooperation with the New York State Department of Environmental Conservation (NYSDEC). More detailed hydrogeologic maps are available for selected aquifers at 1:24,000 scale. Since 1980, 33 of these aquifer maps have been published in cooperation with the NYSDEC and Department of Health (NYSDOH) and various local agencies. The aquifer maps generally include a series of 1:24,000 maps showing aquifer boundaries, surficial geology, location of wells and test holes, and the water table or potentiometric surface (USGS, n.d.). However, these maps are not available for the Project Area.

Sole source aquifers (SSA) are defined by the United States Environmental Protection Agency (EPA) as aquifers that supply at least 50 percent of the drinking water for their service areas. There are no reasonable alternative drinking sources should these aquifers become contaminated (EPA, 2017). The Project does not overlay any EPA-listed SSAs. The nearest sole source aquifer is approximately 78 miles southwest of the Project Area, near Watertown, NY in Jefferson, Lewis, and Oswego Counties. This aquifer is identified as the Northern Tug Hill Glacial Sole Source Aquifer, Federal Register ID 71 FR 64524 (EPA, n.d.).

The Project Area does not overlay any NYSDEC-listed primary aquifers. The closest primary aquifer is the Fulton Aquifer approximately 130 miles southwest of the Project Area's western limit in southwest Oswego County, New York (Anderson et al., 1982). Primary aquifers are defined by the USGS and the NYSDEC as *"highly productive aquifers presently utilized as sources of water supply by major municipal water supply systems"* (NYSDEC, 1990).

The Project Area overlays one NYSDEC-listed principal aquifer as depicted in Figure 23-2. A small portion (approximately 6.22 acres in size) of a principal aquifer is located on the far western boundary of the Project Area. No development is proposed in this area. This principal aquifer is an unconfined NYSDEC Principal Aquifer, identification number 174. As opposed to primary aquifers, principal aquifers, as per the NYSDEC, are aquifers known to be highly productive or whose geology suggests abundant potential water supply, but which are not intensively used as sources of water supply by major municipal systems at the present time. No impacts are anticipated to this portion of the aquifer.

According to the *Principal Aquifers of the United States* (USGS, 2003), the Project Area does overlay a USGS-listed principal aquifer. This aquifer is identified as New York and New England carbonate-rock aquifers (USGS, 2003). The USGS defines a principal aquifer as "a regional

extensive aquifer or aquifer system that has the potential to be used as a source of potable water” (USGS, 2003). No impacts are anticipated to this aquifer. Groundwater aquifers and publicly available groundwater well information is mapped in Figure 23-2. The data on groundwater aquifers and recharge areas was obtained through the NYSDEC Division of Water Resources, Bureau of Water Management. Specific information pertaining to local mapped groundwater aquifers and groundwater wells are described in detail throughout this section.

The groundwater monitoring sites nearest the Project Area are Local Number St-404, located approximately 5.3 miles west of the Project Area (USGS 445216074593001), and Local Number St-40, near Brasher Falls, NY, located approximately 7 miles southeast of the Project Area (USGS 444904074455201) (USGS, 2020). Based on data collected at USGS groundwater monitoring site (USGS 445216074593001) Local number St-404, the average annual depth to the New York and New England carbonate-rock aquifer’s water level is approximately 15.6 feet below land surface, with seasonal variation of approximately 14.27 feet to 17.30 feet below land surface.

In order to identify existing groundwater wells within the Project Area, a Freedom of Information Law (FOIL) (Public Officers Law, Article 6 Sections 84-90) request was sent to the NYSDEC on January 7, 2021; and a request letter was sent to the St. Lawrence County Public Health Department on January 7, 2021 to identify the locations of existing water wells within 500 feet of the Project Area. Though no blasting is proposed, the Applicant also sent letters to landowners within 2,000 feet of the Project Area requesting locations of wells to conservatively account for potential blasting and array post installation locations, as applicable. These letters requested any information pertaining to groundwater wells (including location, construction logs, depths, and descriptions of encountered bedrock) within and near the Project Area as described above. Results of this survey are further discussed below in Section 23(a)(4). In addition, a FOIL request was sent to the NYSDOH on July 23, 2020 requesting information on public water supply systems within 2 miles of the Project Area. A response from the NYSDOH was received on August 3, 2020 and is detailed below in Section 23(c)(2). A response from the NYSDEC was received on February 4, 2021 and advised that a diligent search of the files maintained produced no responsive records. At the time of the filing of this Application, the Applicant is still awaiting response from the St. Lawrence County Public Health Department to determine if they have record information on groundwater wells. Copies of the correspondence and responses received to date are included in Appendix 23-1.

The NYSDEC's Water Well Program Information Search Wizard and publicly available NYSDEC Water Wells KMZ was consulted to obtain well information. The results of the search concluded that there are two groundwater wells within 2,000 feet of the Project Area, including well ST1831, located approximately 575 feet south of the Project Area, and well ST4011, located approximately 250 feet south of the Project Area. The depth of each well is 85 feet and 76 feet, respectively. Additionally, the depth to groundwater for well ST1831 is 80 feet with a recorded yield of 15 gallons per minute (GPM). The depth to groundwater for well ST4011 is zero feet with a recorded yield of 20 GPM. No wells were identified within the Project Area through this search. Locations of wells obtained from the search are mapped in Figure 23-2. There are no available well completion reports associated with these two wells.

(3) Impacts on Groundwater Quality and Quantity

No permanent impacts to aquifers (primary, principal, or sole source) or groundwater are anticipated to result from this Project. There is potential for minor and temporary adverse impacts to the local water that will be avoided, minimized, or mitigated through best management practices (BMPs) including measures proposed in the Stormwater Pollution Prevention Plan (SWPPP) provided as Appendix 23-3.

Temporary impacts to groundwater could potentially occur through the introduction of pollutants from inadvertent discharges of petroleum or other chemicals used during the construction, operation, or maintenance phases of the Project. These discharges could result from mechanical failures in construction, operation, and maintenance equipment, and through spills during the refueling of equipment. Impacts to groundwater, however, are not anticipated due to the implementation of required avoidance, minimization, and mitigation measures, which will be strictly adhered to. These measures will be outlined in the Project's Spill Prevention, Containment, and Countermeasure (SPC) Plan that will be filed prior to construction/operation of the Project as typically required by a certificate condition.

The Project will add only a small area of impervious surface, 14 acres (0.6% of the Project Area), to the landscape through the placement of equipment pads, the collection substation, access roads and the Point of Interconnection (POI) switchyard. These impervious areas will be dispersed throughout the Project Area and will have, at most, a negligible effect on groundwater recharge for the local region. The construction of these impervious surfaces is typical of construction projects throughout New York State with methods approved by the NYSDEC. Beneath the solar arrays and within the overall majority of the Project Area will be pervious land

cover (grass) that will allow for continued infiltration of stormwater runoff as occurs under existing site conditions. In areas of the site currently utilized for agricultural purposes, the proposed vegetated ground cover beneath the arrays will allow for greater infiltration than areas regularly disturbed by agricultural practices.

Within the Project Area, depths to the seasonal high-water table is approximated to range from the surface in isolated areas, to approximately 4 feet bgs (Appendix 21-1). Proposed access roads are impervious and designed to distribute runoff as sheet flow to roadside buffers where it will infiltrate the groundwater. It is presumed that groundwater may be encountered in poorly drained soils, areas with a characteristic shallow water table, areas which contain seasonally perched groundwater, or areas where semi-impervious or impervious layers of substrata do not permit groundwater to permeate deeply within the soil profile (i.e., aquitards and aquicludes). Furthermore, the ponding of surface waters and the pooling of water due to significant precipitation events could occur in open excavation areas or depressions during the construction phases of the Project.

To further minimize impacts to groundwater, pier and post-driving activities will not be conducted within 100 feet of any existing active water well. Additionally, the Applicant will utilize a qualified third party to conduct testing of potability of water wells both prior to construction and following the completion of construction. The Applicant will conduct potability testing for active water wells of a non-participating parcel (provided the Applicant is granted access by the property owner) should the well exist within 100 feet of Project collection lines or access roads, 200 feet of pier and post installation activities, and 500 feet of any horizontal directional drilling (HDD) operations.

Project construction and operation is not anticipated to cause any impacts to drinking water. Measures contained in the SWPPP and SPC will be taken to avoid, minimize, and mitigate for impacts to surface water and groundwater. Additionally, the Project will not have adverse impacts on public or private water wells. If a resident feels that their well water has been adversely affected by Project construction or operation, they may file a formal complaint to the Applicant through the Complaint Resolution Plan (Appendix 12-3).

Plans for notification and complaint resolution during construction of the Project for owners/operators of public and private wells within a one-mile radius of the Project Area are detailed in Exhibit 12 of this Application and the full Complaint Resolution Plan is available in Appendix 12-3. If, as a result of Project construction, should an active potable water well no longer

meet federal or state potable water testing, the Applicant will work with the well owner to reach an agreeable resolution.

Blasting and/or rock excavation techniques are not anticipated within the Project Area based on the geotechnical investigation and proposed excavation depths. However, a Blasting Plan has been prepared in the event that blasting is determined to be required. The Blasting Plan is provided in Appendix 21-3.

(4) Private Well Survey Results

To help collect information on private wells adjacent to the Project Area, 288 well survey questionnaires were mailed to landowners of tax parcels within 500 feet of the Project Area. As previously noted, though no blasting is proposed, the Applicant also sent well surveys to landowners of tax parcels within 2,000 feet of the Project Area to conservatively account for potential blasting and array post installation locations. Included in the survey were questions about the size, yield, depth, and quality of water obtained from well(s) on the property, location in relation to any buildings on the property, if any type of water treatment system had ever been installed at the property, and if any issues had ever occurred with wells identified on the property. The letter also contained a phone number to reach a TRC consultant if the recipient had any questions, along with a stamped self-addressed envelope to facilitate returns to TRC on behalf of the Applicant. As of December 16, 2020, TRC received 71 responses to the survey questionnaire. Of the 71 surveys received, 54 respondents indicated the presence of wells on their property. A total of 66 wells were accounted for by these 54 respondents, of which 61 wells are considered active, and five wells are currently not in use. Sixteen survey responses indicated no wells on the property, and one survey respondent indicated the presence of wells on their property as “unknown”. There are two water well locations identified within the Project Area located on tax parcels 17.002-1-1.11 and 10.004-12-1. These tax parcels will be utilized for collector lines only and are not anticipated to be impacted by pier and post driving activities. Therefore, there are no anticipated groundwater impacts associated with these wells. See Figure 23-3 for approximate private well locations as determined by survey responses.

Based on the results and level of detail provided within each response, the depths of private wells ranged from approximately 15 feet to 250 feet below grade with averages around 90 feet. Groundwater discharge from wells reported in this survey ranged from 8.5 gpm to 60 gpm with averages around 26.5 gpm. The completed responses are attached in Appendix 23-2. However,

they have been redacted from this submittal to protect landowner confidentiality. If any additional well survey responses are received after December 16, 2020, they will be provided in a later filing.

23(b) Surface Water

(1) Surface Water Map

The locations of surface waters, including perennial, intermittent and ephemeral streams, within the Study Area are mapped in Figure 23-4. This map was generated from publicly available data from the NYSDEC, Environmental Systems Research Institute (Esri), USGS, National Wetland Inventory (NWI), and waterbody data collected during on-site waterbody and wetland delineations at the Project Area. On-site survey data for surface waters was also provided to NYSDEC and New York State Department of Public Service (NYSDPS) as shapefiles and in tabular format that can be cross-referenced to the maps.

23(c) Potential Sources of Water for Construction Uses

Final details relating to Project construction, including final locations of potential sources of water for construction use, as necessary, are not certain at this time as an Engineering, Procurement, and Construction (EPC) Contractor has not yet been selected for the Project. Options under consideration include trucking in water, use of an existing landowner's well within the Project Area, and/or installing a well. Regardless of the source selected, water use during construction is expected to be minimal.

Though not anticipated to be required, if necessary for Project construction, concrete batch plants will be located within either the indicated laydown areas or the substation yard. Concrete trucks shall use designated concrete washout facilities, which will be placed outside of active agricultural lands. Additionally, detail regarding BMPs for invasive species control, including the use of invasive species wash stations may be found in Appendix 22-7. A discussion regarding fire control and emergency management may found in Appendix 18-2.

(1) Surface Water Characteristics

The Study Area is located within the NYSDEC-defined St. Lawrence River major drainage basin. This major drainage basin drains an area of 300,000 square miles entirely within New York State (NYSDEC, 2009). The watershed drains the northern and western Adirondack Mountains and the lake plain region of the Saint Lawrence Valley (NYSDEC, 2009). All of St. Lawrence County is within this drainage basin and includes the drainages of the St. Lawrence River and most of the

major tributary watersheds to the 185 miles of the St. Lawrence River shoreline (NYSDEC, 2009). Water quality measurements for rivers are generally good with no major water quality concerns (NYSDEC, 2009).

The Project Area is located within the USGS-defined Raquette Sub-Basin (HUC 04150305). At the watershed level, the Project Area is located within the Lower Raquette River Watershed (HUC 0415030507). At the sub-watershed level, the Project Area is located within the Squeak Brook Watershed (HUC 041503050705) and Hutchins Creek-Raquette River Watershed (HUC 041503050706).

The NYSDEC has implemented regulations addressing State-listed protected waterbodies in reference to Title 5 of Article 15 within the New York State Environmental Conservation Law (ECL) (Protection of Waters). Any action which disturbs the bed or banks of these protected waterbodies requires the issuance of a permit, except that permit is supplanted by Article 10 of the Public Service Law (PSL) and the approval is instead issued as part of the Certificate.

The NYSDEC has classified waterbodies State-wide with the following letters or grades: AA, AA(T), A, A(T), B, B(T), C, C(T), and D. Class AA or A waterbodies are reserved for the waterbodies with the highest water quality. AA or A classes indicate that the best use of the waterbody can be as a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. Class B waters are suggested to only be used for primary and secondary contact recreation and fishing. The best usage of Class C waters is fishing and non-contact related activities. Class D waters represent the poorest water quality standard and activities within this water class are advised to not occur. Waters with classifications A, B, and C may also have a standard of (T), indicating that it may support a trout population, or (TS), indicating that it may support trout spawning events. Certain waters of the State are listed as protected due to their classification level.

Waterbodies with a classification of AA, A, B, or C with a standard of (T) or (TS) are collectively referred to as "protected waterbodies," and are subject to the provisions of the Protection of Waters regulations. Special requirements apply to sustain (T) and (TS) waters that support sensitive fisheries resources. There are five NYSDEC-classified waterbodies mapped in the Project Area. However, none of the waterbodies are classified as a protected waterbody. Table 23-2 below lists the NYSDEC-classified mapped waterbodies within the Project Area and their State classifications. Figure 23-4 portrays their locations relative to the Project Area. In addition

to those NYSDEC-mapped waterbodies listed below, a few small unnamed and unmapped (by NYSDEC) waterbodies and tributaries are present within the Project Area. Waterbodies within 500 feet of any Project Components have been mapped through a desktop analysis and are identified on Figure 23-4.

Table 23-2. NYSDEC-Mapped Streams within the Project Area

NYSDEC Stream Name	NYS Major Drainage Basin	USGS HUC 8 Sub-basin and Name	NYSDEC Classification and Standard
910-453 Squeak Brook and Tribs (Earls Creek)	St. Lawrence River	04150305 (St. Lawrence River)	C
910-454 Squeak Brook and Tribs	St. Lawrence River	04150305 (St. Lawrence River)	D
910-455 Squeak Brook and Tribs	St. Lawrence River	04150305 (St. Lawrence River)	D
910-452 Squeak Brook and Tribs	St. Lawrence River	04150305 (St. Lawrence River)	C
910-456 Squeak Brook and Tribs	St. Lawrence River	04150305 (St. Lawrence River)	D

Wetland and waterbody delineations occurred in the summer of 2017, summer of 2019, and spring and summer of 2020. A full description of the wetland and waterbody delineation methodology and the results of the surveys can be reviewed in the Wetland and Stream Delineation Report located in Appendix 22-5. A total of 11 stream features and 37 wetland features were identified during the delineation efforts. These stream features incorporate portions of the NYSDEC-mapped streams and unmapped streams identified by field staff. A total of seven perennial and four ephemeral stream features were documented.

An inquiry was sent to the NYSDEC Division of Fish, Wildlife & Marine Resources on November 24, 2020, requesting site specific data on the fish species which reside in the waterbodies that cross or are proximate to the Study Area to determine the potential impacts to local aquatic species due to the Project. Waterbodies that are encompassed in the Study Area and incorporated into the information request include Earls Creek (Class C) and Squeak Brook (Class C). Minor tributaries associated with these waterbodies were also included in the inquiry.

All fish species listed within the NYSDEC Statewide Fisheries Database which are related to the waterbodies were also included in the master wildlife inventory list attached in Appendix 22-1. A

total of 39 fish species in Squeak Brook and 17 fish species in Earl's Creek were identified as a result of the inquiry. The NYSDEC response provided fish species for Squeak Brook and Earl's Creek only. A response from NYSDEC provided an Excel spreadsheet with historical fisheries data (prior to 1987) and recent fisheries data (from 1987 to present), including surveys that have been completed.

A complete list of freshwater fish species that are presumed to occur within the Project Area can be found in the master wildlife inventory list attached in Appendix 22-1.

It is assumed, based on current distribution data within the NYSDEC's list of Common Aquatic Invasive Species of New York (n.d.), that no common invasive aquatic species occur within the vicinity of the Project Area. No species from the NYSDEC list were observed during wetland and waterbody delineations. Due to the location of the Project Area in the watershed, most of the Project Area does not consist of waterbodies large enough to support these aquatic invasive species.

(2) Downstream Drinking Water Supply Intakes

A letter request for public water supply information was sent to the NYSDOH on July 23, 2020 requesting public water supply information within the Project Area and a response was received on August 3, 2020. Copies of the correspondence and responses received are included in Appendix 23-1.

The closest downstream public water supply identified by the NYSDOH that is utilized as a drinking water intake is the Village of Massena Water Treatment Plant, operated by the Village of Massena in St. Lawrence County. This treatment plant is located approximately 1.9 miles downstream of the Project Area at a latitude and longitude of [REDACTED], [REDACTED] (PWS ID: NY4404390). The Massena Water Treatment Plant serves as a community water system for approximately 16,729 people in the Village and Town of Massena through 5,406 Village residential service connections and 740 commercial connections (Village of Massena, 2019). The source water to the plant is the St. Lawrence River through the Massena Intake located on Route 131, north of the Village of Massena (Village of Massena, 2019). Treated water is distributed through an underground piping system that serves the residents of the Village of Massena (Village of Massena, 2019). The Project is not expected to have any adverse impacts on the water quality of the St. Lawrence River and therefore no impacts on the downstream drinking water supply for the Village of Massena.

The second public water system identified by NYSDOH is a chlorination system, located at the St. Lawrence Centre Mall near Grass River, in Massena, NY at a latitude and longitude of [REDACTED], - [REDACTED] (PWS ID: NY4430124). It is classified as a non-transient non-community water system in St. Lawrence County that is not utilized as a drinking water intake. This chlorination system is located approximately 1.8 miles downstream of the Project Area. The Project is not expected to have any adverse impacts on the water quality of the Grass River and therefore no impacts to this facility are anticipated.

(3) Surface Water Impacts

Project Components have been sited to avoid temporary or permanent impacts to wetlands and waterbodies to the maximum extent practicable. There are 50.5 acres of temporary and 7 acres of permanent non-mapped wetland impacts anticipated for the Project and ten stream crossings required. Refer to Exhibit 22 for a more detailed discussion of wetlands and measures employed to avoid, minimize or mitigate potential impacts. Certain construction activities have the potential to result in direct and/or indirect impacts to surface waters. These activities include the installation of access roads, installation of collection lines, and the development of temporary staging areas and workspaces around the solar arrays, collection substation, and POI switchyard. Impacts related to the construction of access road crossing will be minimized to the maximum extent practicable by utilizing existing crossings and crossing at narrow waterbody locations where feasible. In addition, implementation of the BMPs in the SPC and SWPPP will avoid or minimize impacts to the maximum extent practicable.

The Applicant evaluated potential temporary and permanent impacts to surface waters resulting from the construction and operation of the Project based on the Project design as shown in the Preliminary Design Drawings (Appendix 11-1). Construction of the Project is anticipated to result in approximately 1,143 linear feet of temporary disturbance and 30 linear feet of permanent disturbance to waterbodies identified during on-site wetland and stream delineation.

Impacts to wetlands and streams have been minimized and avoided through the siting of Project Components after surveys were completed to avoid wetlands and waterbodies to the maximum extent practicable and siting stream crossings in locations of existing access ways, or along narrow sections of stream channels to reduce impact numbers. Exhibit 22 addresses wetlands. Table 23-3 lists a summary of the potential impacts to waterbodies due to Project Component placement and/or construction.

Table 23-3. Impacts to Streams

Field ID	Flow Regime ¹	Linear Feet within Project Area	Potential Jurisdiction	NYSDEC Classification	Temporary Impact (Linear Feet)	Permanent Impact (Linear Feet)	Project Component	Method of Crossing
S-AC-01	REPH	295.00	-	-	-	-	-	-
S-AC-02	RUP	7395.00	USACE	D	506	4	Fence, Remaining Fenced Area, Remaining Tree Clearing, Access Rd, Remaining LOD	HDD
S-AMC-03	RUP	673.00	USACE	C	-	-	-	-
S-FCA-02	REPH	32.00	-	-	-	-	-	-
S-FCA-03	REPH	62.00	-	-	-	-	-	-
S-FCA-04	RUP	861.00	USACE	-	-	-	-	-
S-FCA-05	RUP	528.00	USACE	D	-	-	-	-
S-JBB-1	RUP	11657.00	USACE	C	622	-	Fence, Remaining Fenced Area, Remaining Tree Clearing, Remaining LOD	HDD
S-WSH-1	REPH	158.00	-	C	15	26	Remaining Tree Clearing, Access Rd, Culvert, Collection Lines/HDD Bore Pits, Remaining LOD	-
S-WSH-2	RUP	1256.92	USACE	C	-	-	-	-
S-WSH-3	RUP	944.95	USACE	D	-	-	-	-

1. Flow Regime: REPH – Ephemeral, RIN – Intermittent, RUP – Perennial, UNK - Unknown

As indicated in Table 23-3 and on the Preliminary Design Drawings in Appendix 11-1, there will be a total of two stream crossings that are not a NYSDEC-protected waterbody, and therefore not

regulated under Article 15 of the ECL. The crossings will be constructed in accordance with United States Army Corps of Engineers (USACE) regulations and conditions. The Project will comply with the following proposed BMPs to prevent and reduce stream impacts: temporary equipment bridge, dam and pump stream crossing, open cut stream crossing, flumed stream crossing, dewatering basin, sediment filter bag, stream bank matting, and trench plugs. Final BMPs will be submitted to the Secretary or as part of a Compliance Filing.

Three open water wetlands/ponds including W-JJB-2, W-WSH-3, and WB-FCA-01 were observed onsite. The location of these wetlands can be observed on sheets 1, 19, and 15 of Figure 22-3, respectively. Anticipated temporary and permanent impacts to delineated open water wetlands/ponds, resulting from Project-related construction and operation, were calculated. Table 23-4 below lists all associated open-water wetlands within the Project Area. No Project Components have been sited within or adjacent to these open water wetlands. Therefore, construction and operation of the Project is anticipated to result in no permanent or temporary disturbance to open-water resources.

Table 23-4. Impacts to Open Water Wetlands (Ponds)

Field ID	Type ¹	Acres Within Project Area	Potential Jurisdiction	Temporary Impact (Acre)	Permanent Impact (Acre)	Related Component
W-JJB-2	PUB	1.19	USACE	-	-	-
W-WSH-3	PUB	0.86	USACE	0.03	-	Collector (5ft wide), LOD
WB-FCA-01	PUB	0.01	-	-	-	-
1. Type: PEM – Palustrine emergent, PSS – Palustrine scrub-shrub, PFO – Palustrine forested, PUB - Palustrine unconsolidated bottom						

The Applicant will take measures to avoid or minimize siltation events pursuant to the Final SWPPP. A preliminary SWPPP is contained in Appendix 23-3 of this Application.

As noted earlier in this Exhibit, there is one surface drinking water intake downstream of the Project Area and within the Study Area. Based on the information obtained, the Project will not result in impacts to water-supply intakes. All practicable measures will be taken by the Applicant to avoid, minimize, and mitigate any impacts to surface waters through the measures adopted in the SWPPP and SPC Plan.

In keeping with guidance outlined by the NYSDPS and NYSDEC, the Applicant will develop a SPC Plan that also will be utilized to avoid or minimize the potential for the release of hazardous chemicals into local natural resources. The SPC Plan will assist in the avoidance, minimization, and mitigation of surface water impacts to protect local drinking water supplies.

(4) Ground Water Mitigation Methods

Site planning was done to avoid impacts to groundwater to the maximum extent practicable as explained in Section 23(a)(3). Pre-construction planning for the Project will be completed with the understanding that groundwater could be encountered due to the variable seasonal high water table throughout the Project Area. Conventional sump and pump methods are anticipated to be adequate to control any accumulation of groundwater in shallow trenches or ponded surface water in low-lying areas utilized during construction. The sediment laden water removed during these dewatering activities will be filtered and discharged in upland locations avoiding waterbodies and wetlands to the extent practical.

Dewatering will likely occur if shallow groundwater is encountered during the construction phase of the Project. If dewatering is required, a temporary pit or designed sediment trap will be utilized and placed in well-drained areas and upland areas. These sediment traps will not be placed within or directly adjacent to waterbodies and outside of wetlands area to the maximum extent practicable. Sediment traps will collect excess sediment in turbid waters and filter out cleaner water, discharging it into a pre-determined stable discharge area. Dewatering techniques will follow the standard actions of pumping accumulated water to a device (e.g., sediment filter bag, silt fence barrier, sediment trap) which will decrease the discharge velocity of water outflow and trap any suspended sediment prior to out letting to well-drained undisturbed areas. Additionally, construction of the Project will adhere to the SPC plan and SWPPP guidelines which prevent the contamination of and/or erosion due to surface water runoff or groundwater discharge, thereby avoiding significant adverse impacts to any water resources.

In areas where construction activity occurs below the water table, there is always some potential to impact localized groundwater flow regimes if precautions are not taken. At the Project Area, since minimal subsurface work is proposed, it is assumed groundwater could flow around the disturbance area and assume normal flow regimes further downslope. If groundwater infiltrates work areas that occur below the water table, removal of the groundwater by pumping could slightly decrease the level of local water tables within the vicinity of the construction activity. Any impact, however, will be minimal, localized, and temporary. Measures to restore the groundwater will be

implemented. All water subject to the pumping operations will be pumped to the surface and discharged in an approved technique for decreasing its outlet velocity. Slowly discharged water through sediment bags or grass detention basins as appropriate, will be allowed to permeate back into the ground and re-settle below the water table downslope. Where possible, the location selected for re-infiltration into the water table will occur on permeable soils, which will help increase the rate of infiltration and reduce net loss of water volumes to evaporation. As stated above, construction of the Project will adhere to the SPC Plan and SWPPP guidelines which prevent the contamination of and/or erosion due to surface water runoff or groundwater discharge, thereby avoiding significant adverse impacts to associated water resources.

Groundwater migration events could result from the installation of buried interconnect lines which may facilitate groundwater travel along the loosened soils surrounding the buried collection line. It is believed water could collect in the trench and migrate along the trench route to areas downslope. However, it is presumed there will be no net loss of groundwater as volumes will be naturally allowed to infiltrate back into the water table at lower elevations. Trench plugs may be used where deemed appropriate in any areas potentially affecting wetland resources.

The Project is not expected to have adverse impacts on public or private groundwater wells. Any impacts to groundwater due to the Project will be minimal, localized, and temporary. In the unlikely event a local resident believes that their well water has been adversely impacted by the Project construction or operation, they may file a formal complaint, which will be responded to by the Applicant through the Complaint Resolution Plan mentioned previously (Appendix 12-3).

(5) Surface Water Mitigation Methods

The use of existing and narrow crossings of surface waters will help minimize direct impacts to surface waters. To the maximum extent practicable, Project Components have been sited to avoid or minimize both temporary and permanent impacts to surface waters. Project Components will avoid surface waters to the maximum extent practicable. Temporary construction facilities (staging areas, etc.) will avoid surface water and impacts to surface water to the maximum extent practicable as shown in the Preliminary Design Drawings (Appendix 11-1). Furthermore, the number and overall impacts of access roads crossing surface waters will be minimized by using existing access road crossings when possible.

When the crossing of a surface water resource is deemed necessary for the Project, BMPs will be put into place following the guidelines and requirements put forth by the NYSDEC, NYSDPS,

and USACE. Proper briefing and signage will be utilized with construction crews to dictate areas where equipment access is prohibited. Crossing will occur only along properly permitted access roads or using temporary matting to traverse delineated waterbodies. Also, a selection of activities will be restricted within a predetermined buffer zone around delineated waterbodies. These buffer restrictions will include no equipment refueling or washing in the buffer area, no storage of petroleum or chemical materials, no disposal of concrete or wash water, no amassing of construction debris or accumulation of slash materials in the area, no use of herbicides within the area, and no actions that may result in the degradation of waterbody banks or steep slopes above water resources.

During construction, the use of silt fences, hay bales, siltation catch basins, check dams, and other standardized sedimentation control measures will be installed and maintained throughout the Project and until impact areas become stabilized as determined by the Environmental Monitor. To facilitate soil stabilization, exposed soils will be seeded and mulched in a timely manner to reduce the risk of sedimentation events arising from storm events. Control measures will be dictated in the Project SWPPP. Their locations and design will be shown on appropriate construction drawings.

As part of Article 10 requirements, an Environmental Monitor (EM) will be in place throughout the work period and during the restoration period to inspect and assess sedimentation risk and mitigate any unforeseen issues specific to the nature of the Project Area. Dewatering will likely occur if shallow groundwater is encountered during the construction phase of the Project. Refer to Section 23(b)(5) for additional detail on dewatering methods.

Thermal changes to waterbodies due to clearing vegetation is unlikely, as there is minimal tree clearing adjacent to streams proposed. Changes to in-stream structure and morphology of streams are not expected or will be minimal due to the use of culverts and temporary crossings. The effect of turbidity on nearby aquatic habitat will be reduced by following the SWPPP and other guidelines imposed by the regulatory agencies. Consultation with the New York Natural Heritage Project (NYNHP) indicated records of state-listed threatened species, the eastern sand darter (*Ammocrypta pellucida*), within the vicinity of the Project Area. However, there are no anticipated impacts to or take of State-listed threatened and endangered species, species of special concern, or species of greatest conservation need in aquatic habitat in the Project Area, as these species, based upon investigation of publicly available information, are not indicated to occur in the Project Area. Refer to Section 22(g) and Section 22(o)(2) for further discussion on impacts to state and

federally listed species. Refer to Section 22(d)(1) for further discussion on suitable habitat assessment within the Project Area for state and federally listed species.

(6) Stream Crossings

The Preliminary Design Drawings (see Appendix 11-1) detail the temporary and permanent stream crossing methods and procedures. Culvert and bridge specifications, sizing, and flow calculations will be provided in the Final SWPPP. The culverts will be designed to accommodate the 100-year storm event. Refer to Section 23(c)(4) below for additional information on the Final SWPPP. The Final SWPPP will detail BMPs to be used for the stream crossings. Proposed erosion and sediment control measures to be utilized to prevent and reduce impacts to streams during stream crossing activities include temporary equipment bridges, damming and pumping stream crossings, open cutting stream crossings, flumed stream crossings, dewatering basins, sediment filter bags, stream bank matting, and trench plugs.

An open cut stream crossing is proposed for the installation of collection lines under stream S-WSH-1, the location of which can be found on Sheet C.327 of the Preliminary Design Drawings available in Appendix 11-1. As previously stated, the Final SWPPP will detail BMPs and erosion and sediment control measures to be utilized to reduce impacts to streams as a result of this crossing method.

It is expected that the trenchless excavation technique of horizontal directional drilling (HDD) will be used during construction to install collection lines under streams S-JBB-1 and S-AC-02; and wetlands W-NSD-4, W-FCA-11, and W-FCA-3. These locations can be found on the Preliminary Design Drawings available in Appendix 11-1. An Inadvertent Return Plan has been prepared to outline the procedures and responsibilities for the prevention, containment, and cleanup of an inadvertent release associated with the HDD process. The Inadvertent Return Plan is included in Appendix 21-2 of this Application.

The feasibility of using trenchless stream crossings will be assessed for all streams proposed to be crossed. BMPs will be utilized year-round for all stream crossings. Where impacts are deemed unavoidable, the mitigation measures discussed in Sections 23(b)(5) and 23(b)(6) above shall be used to reduce impacts to the maximum extent practicable.

(7) Potential Impacts of Blasting on Streams and Fish

As previously stated, blasting is not anticipated within the Project Area. Therefore, no impacts are anticipated to occur to streams and fish as a result. A Blasting Plan has been prepared in the event that blasting is determined to be required. The Blasting Plan is provided in Appendix 21-3.

23(d) Stormwater

(1) Preliminary SWPPP

The NYSDEC requires coverage under the NYSDEC State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001) for any “construction activities involving soil disturbances of one or more acres; including disturbances of less than one acre that are part of a larger common plan of development or sale that will ultimately disturb one or more acres of land; excluding routine maintenance activity that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility.” This authorization is within the purview of the NYSDEC but is coordinated with the Article 10 process. The Applicant will seek coverage under the NYSDEC SPDES General Permit for the construction phase of the Project. A waiver to disturb five acres or more of soil at any one time will be requested.

Prior to construction, the Applicant will be required to prepare a Final SWPPP, which will describe in specific terms the erosion and sediment control practices that will be implemented during construction activities, and the stormwater management practices that will be used to reduce the pollutants in stormwater discharges after Project construction has been completed. This SWPPP will be prepared as part of the requirements for coverage under GP-0-20-001. It is anticipated that a Notice of Intent (NOI) will be prepared and submitted to the NYSDEC Division of Water (with a copy filed with the Secretary), who will review and authorize a SPDES General Permit number along with the NYSDEC Letter of Acknowledgement certifying that the Project will be in compliance with the technical requirements of GP-0-20-001. Once the Project receives this required documentation, the Letter of Acknowledgement will be inserted within the SWPPP and kept on site, as required by GP-0-20-001. The NOI will be included in the Final SWPPP in Attachment A.

A Preliminary SWPPP has been designed in accordance with the guidelines set forth in GP-0-20-001 and is provided as Appendix 23-3. The Preliminary SWPPP includes a detailed description of preconstruction requirements. As part of these requirements, an EM is required to be on site

daily to inspect the Project's erosion and sediment control practices when soil-disturbing activities are being performed.

The Preliminary SWPPP provides information on stormwater management practices, including erosion and sediment control (vegetative and structural measures, temporary and permanent measures), construction phasing and disturbance limits, waste management and spill prevention, and site inspection and maintenance. Pre- and post-development hydrology, in addition to evaluation of runoff and drainage patterns, will be analyzed as part of stormwater design in accordance with final Project layout, and will be included in the Final SWPPP. The Applicant anticipates that submission of a Final SWPPP will be a condition of the Article 10 Certificate.

(2) SPDES Permit

As stated above, the Project is eligible for coverage under the SPDES General Permit. Therefore, an individual SPDES Permit for the collection and management of stormwater discharges from the Project will not be required.

(3) Post Construction Erosion and Sediment Practices

Increases in stormwater runoff will be minimal, as Project construction will result in limited addition of impervious surface. Therefore, no significant changes to the rate or volume of stormwater runoff are anticipated as a result of Project operations. However, precautionary and appropriate postconstruction BMPs will be installed and maintained according to the Project-specific SWPPP for the Project per applicable regulations. The Applicant is proposing the use of infiltration basins for pre-treatment in combination with other commonly used New York State Stormwater Management Design Manual (SMDM)-approved practices.

Existing drainage patterns will be maintained to the maximum extent practicable. Minimal grading and impervious surfaces are proposed as part of the Project. Therefore, negative impacts to water wells and surrounding agricultural land uses are not anticipated. Erosion and sediment controls will remain in place during site restoration until disturbed areas have been stabilized with vegetation.

(4) NYSDEC Memo and Maryland Stormwater Design Guidance

The Preliminary SWPPP provides basic guidance on the NYSDEC Solar Panel Construction Stormwater Permitting/SWPPP Guidance Memo dated April 5, 2018, as well as the Maryland

Department of the Environment (MDEP) “Stormwater Design Guidance – Solar Panel Installation. The NYSDEC memo provides guidance regarding stormwater design and SWPPP development for solar projects within New York State.

The Project is anticipated to be a Scenario 1 solar project, in which a vegetated open space is developed. The Project satisfies Items 1 through 4 of Scenario 1 in the NYSDEC memo through the use of elevated racking systems for the solar arrays and allowing for water to shed off the panels onto the vegetated ground below. The Project proposes the construction of impervious areas (Scenario 1, Item 5) including access roads, equipment pads, and the substation yard, which will require the inclusion of post-construction stormwater management controls in accordance with the NYSDEC requirements. The Project is not anticipated to alter the hydrology from the pre- to post-development condition (Scenario 1, Item 6). However, stormwater analysis and the sizing of stormwater management practices will not be completed until the Final SWPPP, which will be provided as part of the Board post-certification.

For development of the Final SWPPP, the Preliminary SWPPP will be amended to include post-construction stormwater management practices such as level spreaders, energy dissipaters, and infiltration basins. The Final SWPPP will detail the proposed post-construction stormwater practices that will be utilized to treat and control runoff from the Project per the requirements of the General Permit. The post-construction stormwater control practices, sized in accordance with Chapter 4 of the SMDM as applicable, will provide water quality volume treatment and runoff reduction, and will control the volume and rate of the stormwater runoff from the Project.

(5) Post-Construction Stormwater Practices and Chapter 4 of the NYS SMDM

If the evaluation included in the Final SWPPP regarding non-rooftop disconnection alternatives determines that the Project includes Scenario 2 as described above, the Final SWPPP will address post-construction stormwater practices designed in accordance with the sizing criteria in Chapter 4 of the NYS SMDM, dated January 2015. The proposed Project is not located within a Municipal Separate Storm Sewer System (MS4). Therefore, the Project is not subject to state or federal regulations regarding MS4s.

(6) Waiver to Disturb 5 or More Acres of Soil

The Applicant intends to disturb five or more acres of soil at any one time. Therefore, the Applicant intends to request written authorization from the NYSDEC to allow the disturbance of greater than

5 acres at one time. Accordingly, construction phase SWPPP inspections will be required at least twice per every 7 calendar days.

(7) Final SWPPP

The Final SWPPP will include an erosion and sediment control plan as required per GP-0-20-001 to limit the possibility of off-site impacts, and to minimize, to the maximum extent practicable, soil erosion and sedimentation within water resources throughout the Project Area and will be submitted to the Secretary once filed with NYSDEC.

(8) Post-Construction Runoff

The Preliminary SWPPP was developed in accordance with the most current version of the New York State Standards and Specification for Erosion and Sediment Controls (SSESC). The SWPPP identifies the post-construction erosion and sediment practices that will be used to manage stormwater runoff from the developed Project Area, and includes runoff reduction/green infrastructure practices, water quality treatment practices, and practices that control the volume and rate of runoff. Details are presented within the SWPPP (Appendix 23-3). As previously stated, pre- and post-development hydrology, in addition to evaluation of runoff and drainage patterns, will be analyzed as part of stormwater design in accordance with final Project layout, and will be included in the Final SWPPP.

23(e) Chemical and Petroleum Bulk Storage

(1) Spill Prevention and Control Measures

No on-site storage or disposal of large volumes of substances regulated under the chemical and petroleum bulk storage programs of New York State is proposed. The generator step-up (GSU) transformer proposed within the collection substation will contain mineral oil (such as ASTM D3487 Type II Inhibited Mineral Oil, or similar) for insulating purposes. Transformers are exempt from the petroleum bulk storage program as they are considered operational tank systems. Operational tank system means a tank system that is integral to, or connected to, equipment or machinery for which the petroleum in the system is used solely for operational purposes. Petroleum in an operational tank system is not consumed in any context (such as being combusted as fuel or used as a raw material in a manufacturing process).

The Project will adhere to a SPC Plan to minimize the potential impact to aquatic resources from minor leaks or mechanical failures of construction equipment/vehicles. The SPC Plan will be submitted to the Secretary prior to construction/operation of the Project.

This plan dictates that all contractors will be required to keep materials on hand to control and contain a petroleum spill. Any spills will be reported in accordance with State and/or Federal regulations. Contractors will be responsible for ensuring responsible action on the part of construction personnel.

The purpose of this SPC Plan is to:

- Provide guidance and information to the personnel that would be called upon to respond to sudden oil releases from oil-filled equipment and oil storage containers;
- Describe measures in place that would prevent released oil from reaching nearby navigable waters;
- Describe the inspection procedures; and,
- Discuss the discharge response actions and notifications to ensure employees are prepared to carry out their responsibilities during an oil spill incident.

This Plan has the full approval of Project management with authority to commit the necessary resources to fully implement the Plan, and expeditiously respond to releases of oil.

(2) Storage or Disposal of Regulated Substances

The on-site storage or disposal of large volumes of substances regulated under the chemical and petroleum bulk storage programs of New York State is not proposed. If construction operations require petroleum or other hazardous chemicals to be stored on-site, applicable State and Federal laws and guidelines will be followed.

(3) Storage of Hazardous Substances Compliance with Local Law Storage Regulations

As previously stated in Sections 23(e)(1)(2), the on-site storage or disposal of large volumes of substances regulated under the chemical and petroleum bulk storage programs of any local laws is not proposed. If construction operations require petroleum or other hazardous chemicals to be stored on-site, those substances will be stored in a manner such that the applicable, substantive provisions of local laws and guidelines will be followed.

23(f) Aquatic Species and Invasive Species

(1) Biologic Aquatic Resource Impacts

Exhibit 22 directly addresses impacts to wetlands and waterbodies, as applicable, within the Project Area. Secondary reference can also be made through review of Tables 23-2 and 23-3 encountered in this Exhibit. Additionally, Section 22(g) and Section 22(o)(2) discusses impacts to state and federally listed species within the Project Area, including the eastern sand darter. There are no anticipated impacts to or take of State-listed threatened and endangered species, species of special concern, or species of greatest conservation need in aquatic habitat in the Project Area.

It is assumed that any potential impacts to surface waters within the Project Area could, in turn, possibly impact ecologies, organisms, and ecosystems dependent upon these aquatic resources through the introduction of invasive species. Only a small portion of these biological complexes, however, could be impacted by the construction and operation of the Project due to its siting design.

TRC, on behalf of the Applicant, consulted local, statewide, and federal desktop databases and environmental agencies to determine common species documented to occur in the region of the Project Area. As previously noted, none of the invasive species listed within the Common Aquatic Invasive Species of New York (NYSDEC, n.d.) list were documented during on-site delineation work conducted by environmental field staff. Adverse impacts to aquatic biology as a result of the spread of invasive species as a direct result of the Project construction, therefore, are not anticipated.

(2) Protective Measures for Biological Aquatic Resources

Measures to avoid, minimize or mitigate impacts to surface waters during construction are addressed in Section 23(b)(5) above. In summation, the protection of biological aquatic resources will be a direct result of protecting the surface waters in which these biological resources are dependent on. Water quality will be protected by avoiding impacts to wetlands and waterbodies to the maximum extent practicable. The utilization of underground drilling to avoid some stream features will also reduce impact to documented surface waters. Surface water impacts are only proposed to occur as a direct result of construction of the Project. No impacts to surface waters are likely to occur during the operational phase of the Project. It should be noted that loss of habitat has been largely avoided through careful siting and design of the Project. As such, there are no impacts to larger streams and rivers which contain a clear majority of aquatic habitat which

exists in the region. Where permanent roads cross a stream, the culverts will be embedded 20% to allow for aquatic species to travel through impacted areas unrestricted as required by USACE regulatory requirements.

23(g) Cooling Water

This Project will not utilize cooling water during any phase of construction or operation and, therefore, cooling water withdrawals will not be addressed in the Application.

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