TRELINA SOLAR ENERGY CENTER

Case No. 19-F-0366

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 proposed Stipulation 23, dated June 19, 2020, and therefore, the requirements of 16 New York Codes, Rules and Regulations (NYCRR) § 1001.23.

23(a) Groundwater

(1) Hydrologic Character

The Project Area is underlain by one principal, unconsolidated aquifer. According to the Natural Resources Conservation Service (NRCS), the average representative depth to the water table within the Project Area is 27 inches. This data was obtained from the United States Department of Agriculture (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 1 to 20 feet below existing grades, where encountered. However, groundwater conditions vary by season and weather conditions. The Geotechnical Engineering Report is provided as Appendix 21-1. For purposes of the Application, this information is depicted visually in Figure 21-3 in Exhibit 21. High groundwater at the Project Area is expressed in some wetlands and ponds on-site as surface water features. Figure 21-3 also depicts the depth to high groundwater across the Project Area. These features will be largely avoided, except as noted in Exhibit 22. In no location is bedrock presumed to be exposed on the Project Area. In fact, in no instances was bedrock encountered in borings that progressed from 20 to 50 feet below surface.

The geotechnical investigations included 14 borings and six test pits. Borings were advanced with track mounted rotary drill rigs, using continuous flight, hollow stem augers utilizing 2-inch outside diameter split barrel sampling spoons. At each boring location, samples of the subsurface materials were taken at selected intervals by driving split spoon in general accordance with American Society for Testing and Materials (ASTM) Standards. Test pits were excavated using a tracked excavator. The associated Geotechnical Engineering Report (Terracon, 2019) is included as Appendix 21-1.

At the depths estimated by the 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 a depth of up to 12 feet. Based on the results from the geotechnical investigation, groundwater is in most places below construction depths, including the 9 to 12 feet envisioned for

solar panel post embedding. As necessary, temporary dewatering will be employed during construction if perched water, groundwater, or seepage becomes problematic.

Encountered subsurface site conditions 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	1 to 17	Surficial: topsoil containing significant organic matter	Significant Organic Matter
Stratum 2	3 to 22	Native Fine-Grained Soils: silts and clays	Soft to Very Stiff
Stratum 3	20	Native Coarse-Grained Soils: sand and silty sand	Very Loose to Dense Poorly-Graded

This same subsurface investigation encountered groundwater in all of the borings and test pits at the time of exploration at depths ranging from 1 to 20 feet below existing grades. These observations represent groundwater conditions at the time of the field exploration and may not be indicative of other times, or at other locations. Groundwater conditions can change spatially and with varying seasonal and weather conditions, as well as other factors.

A United States Geological Survey (USGS) study of the groundwater within central New York indicated that overall water quality was acceptable. This study was undertaken across an approximately 5,800 square mile study area, encompassing the central New York region, recording data at 29 wells (Reddy, 2012), none of which were in the immediate vicinity of the Project Area however. The nearest well in this study is located approximately 8 miles to the northwest, up-gradient from anticipated groundwater flow on-Site. In all of the sampled wells at least one constituent was detected at a level greater than Federal or New York State (NYS) standards. These exceedances included: color (n = 2), pH (n = 7), sodium (n = 9), chloride (n = 2), fluoride (n = 2), sulfate (n = 2), total dissolved solids (n = 8), aluminum (n = 4), arsenic (n = 1), iron (n = 9), manganese (n = 13), radon-222 (n = 13), and total coliform bacteria (n = 6).The following constituents had no detections above Federal and State standard levels within this

study: nitrate, nitrite, antimony, barium, beryllium, cadmium, chromium, copper, lead, mercury, selenium, silver, thallium, zinc, gross alpha radioactivity, uranium, fecal coliform, *Escherichia coli*, pesticides, and volatile organic compounds (VOCs) (Reddy, 2012).

The groundwater monitoring sites nearest the Project are Local Number Se-549, located approximately 10 miles northeast of the Project Area at Montezuma National Wildlife Refuge (USGS 425821076461301), and Local Number Ot-1133, located approximately 16 miles west of the Project Area (USGS 425803077151201) (USGS, 2020).

(2) Map of Groundwater Aquifers and Groundwater Recharge Areas

The USGS has completed hydrogeologic mapping projects in cooperation with NYS and local agencies to enhance and promote proper development, management, and protection of the unconsolidated aquifers of upstate New York. 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 New York State 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.). These 1:24,000 scale maps are not available for the Project Area.

The Project Area does not overlay any NYSDEC-listed primary aquifers, or United States Environmental Protection Agency (EPA)-listed sole source aquifers (SSA). The closest primary aquifer is the Baldwinsville Aquifer, with its watershed and closest point starting approximately 25 miles east of the Project Area's eastern limit (Pagano et al., 1986). While the closest SSA, the Cortland-Homer-Preble aquifer system, lies approximately 37 miles to the southeast (EPA, n.d.). 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 EPA defines an SSA as one where the aquifer supplies at least 50 percent of the drinking water for its service area, and there are no reasonably available alternative drinking water sources should the aquifer become contaminated (EPA, 2017).

The Project Area overlays one NYSDEC-listed principal aquifer. 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. As depicted in Figure 23-1, this NYSDEC-listed principal aquifer underlies the Project Area, and much of the Study Area. Yield from this aquifer is unknown in many areas but ranges from 3.5 to 27 gallons per minute according to results of an area survey (Appendix 23-2). Yields ranging from 5 to 500 gpm are reported by the NYSDEC. Groundwater flow on site follows the topography to the south and southeast, ultimately to the Seneca Lake and the Seneca River.

According to the *Principal Aquifers of the United States* (USGS, 2003), the Project Area overlays a USGS-listed principal aquifer: the New York and New England carbonate-rock aquifer. 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). Groundwater aquifers and groundwater wells are mapped in Figure 23-1. 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 below.

There is a USGS groundwater monitoring site (USGS 425821076461301 Local number, Se-549), at Montezuma National Wildlife Refuge, NY, approximately 10 miles west of the Project Area. According to data collected at this USGS groundwater site, the average annual depth to the present sand and gravel (glaciated region) aquifer's water level is approximately 2 feet below land surface, with seasonal variation of approximately 4 feet.

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 letter was sent to the NYSDOH on April 28, 2020 requesting data on wells within the Project Area. The NYSDOH responded on May 8, 2020 providing copies of records they maintained, with redactions to ensure no unwarranted invasion of personal privacy. There are two public groundwater wells within 2,000 feet of the Project Area boundaries. One of these is at the Big Oak Golf Course, serving approximately 100 people. This is located approximately 1,175 feet from the Project boundary in Ontario County. The other well is at the Waterloo Sportsmen's Club, serving approximately 50 people. This is located approximately 1,295 feet from the Project boundary in Seneca County. The NYSDEC's Water Well Program Information Search Wizard was also consulted. The records were compiled in a spreadsheet showing location coordinates, depth, and yield of the wells. Additionally, the Applicant mailed over 300 surveys to local stakeholders to identify the existence

and location of private groundwater wells within the Project Area (Section 23(a)(4) of this Exhibit). Both the search of the NYSDEC database and the stakeholder well survey are discussed below in Section 23(a)(4) of this Exhibit.

(3) Impacts on Groundwater Quality and Quantity

SSA are defined by the 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. The nearest SSA is in Onondaga County approximately 35 miles east of the Project Area. The NYSDEC primary-class aquifer described in 23(a)(2) is not listed as a "Sole Source" Aquifer.

No permanent impacts to aquifers (primary, principal, or sole source) or groundwater during either drought or normal conditions are anticipated to result from this Project. 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. However, impacts to groundwater will be avoided and/ or minimized through the use of best management practices including measures proposed in the Stormwater Pollution Prevention Plan (SWPPP) provided as Appendix 23-3 and the Project's Spill Prevention and Containment (SPC) Plan that will be completed upon receipt of the Certificate and submitted to the Secretary or as part of a Compliance Filing prior to construction/operation of the Project.

The Project will add only a small area of impervious surface to the landscape through the placement of equipment pads, access roads, and the collection substation, and related Point of Interconnection (POI) facilities. 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 NYS with methods approved by the NYSDEC.

Within the Project Area, depths to the seasonal high water table are approximated to range from the surface in isolated areas (generally wetlands to be avoided), to, in most areas, more than 78 inches below ground level. It is presumed that groundwater may be encountered in areas with a characteristic shallow water table, including poorly drained soils, 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.

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 any possible 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.

(4) Private Well Survey Results

To help collect information on private wells adjacent to the Project Area, well survey questionnaires were mailed to all landowners of tax parcels within a 500-foot radius of the Project Area, and 2,000-foot radius of proposed pile driving locations, totaling 321 surveys. Included in the survey were questions about the existence, size, yield, depth, and quality of water obtained from well(s) on the property, location in relation to any buildings on the property, etc. 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 back to TRC on behalf of the Applicant. TRC received 101 responses to the surveys. Forty-four sites were indicated to have wells on the property, ten of which had more than one well. Forty-nine sites were indicated to have no wells currently in use on the property. Eight surveys indicated the existence of wells was unknown. These wells were not mapped due to the lack of available location information.

The water well survey materials included a summary of the Project, contact information, and a description of where the well owner can get more information about the Project (i.e., project website, document repositories, etc.), as well as an invitation to join the stakeholder list. Survey respondents that indicated an active well on their property were added to the Master Stakeholder List if not already included.

The distance from well to a building on site was unknown for two sites. In one case, the owner indicated the property has hooked to municipal water, and so the well is no longer used for drinking and cooking. In the other case, the owner reported that the frequency of well use was “not applicable.” Based on the results and level of detail provided within each response, the depths of private wells ranged from approximately 8 feet to 200 feet below grade, with an average of around 85 feet; depths are unknown from several responses. Groundwater discharge from wells reported in this survey ranged from 3.5 gallons per minute (gpm) to 27 gpm, with averages around 13.5 gpm, the majority being unknown. Well water quality was in many instances’ poor; with treatment applied in 28 instances of the 44 sites with wells. Concerns ranged from high iron and hardness to odors, with one landowner reporting the well was, “awful in every way." A copy of the well questionnaire distributed by the Applicant is in Appendix 23-1. Copies of survey responses received are provided in Appendix 23-2; however, they are redacted and submitted confidentially to protect the privacy of respondents.

23(b) Surface Water

(1) Surface Water Map

The locations of surface waters are mapped in Figure 23-2. This map was generated from publicly available data from the NYSDEC, Environmental Systems Research Institute (Esri), USGS, National Wetland Inventory, and waterbody data collected during on-site waterbody and wetland delineations. On-site survey data for surface waters will also be 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.

(2) Surface Water Characteristics

The Study Area is located within the NYSDEC-defined Oswego River/Finger Lakes major drainage basin. This major drainage basin drains an area of 5,070 square miles entirely within NYS. The entirety of Seneca County is within this drainage basin. As one of New York’s Largest watersheds, drainages include those for the Oswego, Oneida, Seneca, and Clyde Rivers. In the Oswego River/Finger Lakes major drainage basin, 43 percent of rivers/waterbody miles and 97 percent of lake, pond, and reservoir acres have been assessed. Water quality measurements for assessed rivers are generally satisfactory to good and lakes are generally satisfactory. Major water quality concerns include past industrial activities such as municipal discharge, urban runoff, municipal wastewater, and sewer overflows (NYSDEC, 2007).

The Project lies within the USGS-defined Oswego River/Finger Lakes Drainage Basin. This watershed encompasses portions of 16 counties and comprises most of the New York Finger Lakes. Due to the basin's size and the diversity of both landscape (natural conditions) and land uses (human uses), for planning purposes, the watershed may be organized into three regions based on geographic areas within the watershed: Oswego River, Oneida River, and Seneca River. The Seneca River Region, where the Project Area resides, includes portions of Seneca, Cayuga, and Wayne Counties. Portions of this Region drain fertile and farmed agricultural land as well as other urban areas such as the city of Ithaca. Wetlands constitute 4.75 percent of the Oswego River/Finger Lakes Drainage Basin (USDA NRCS, 2011).

The Oswego River/Finger Lakes basin is comprised of three 8-digit Hydrologic Unit Code (HUC) subwatersheds (the Oswego River, Oneida River, and Seneca River), 27 10-digit subwatersheds, and numerous 12-digit HUC subwatersheds. The 12-digit HUC is the level at which watershed health is typically assessed and strategies and action plans for restoration or protection are implemented. The Project Area is located within the Silver Creek-Seneca River 12-Digit HUC 041402010905, and Castle Creek-Seneca Lake 12-digit HUC 041402010904.

The water quality exhibited by streams draining the many subwatersheds varies significantly. The Upper Seneca River has satisfactory water quality. The waterbody uses most impaired by water quality is waterbody aesthetics and aquatic life from unidentified pollutants.

In reference to Title 5 of Article 15 within the NYS Environmental Conservation Law (Protection of Waters), the NYSDEC has implemented regulations addressing state-listed protected waterbodies. 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 and the approval is instead issued by the Siting Board 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 also 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, or B, or with a classification of 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. Table 23-2 below lists all NYSDEC-mapped waterbodies within the Project Area, providing their state classifications. Figures 22-4 and 23-2 portray their locations relative to the Project Area. In addition to the four NYSDEC-mapped waterbodies, a number of small unnamed and unmapped (by NYSDEC) waterbodies and tributaries are present within the Project Area. All waterbodies within 100 feet of any Project Components have been mapped and identified on Figures 22-4 and 23-2.

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

NYSDEC Stream Name	NYS Major Drainage Basin	USGS HUC 8 Sub-basin and Name	NYSDEC Classification and Standard
Minor Tribs to Seneca Lake, Northwest 898-473	Seneca/Oneida/ Oswego River	4140201 (Seneca River sub-basin)	C/C
Gem Creek 898-391	Seneca/Oneida/ Oswego River	4140201 (Seneca River sub-basin)	C/C
Minor Tribs to Upper Seneca River 898-396	Seneca/Oneida/ Oswego River	4140201 (Seneca River sub-basin)	C/C
Gem Creek 898-390	Seneca/Oneida/ Oswego River	4140201 (Seneca River sub-basin)	C/C

Wetland and waterbody delineations occurred in the summer of 2019. 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 22-6. A total of seven stream features were identified on site during the delineation efforts.

All streams within the Project Area are intermittent in nature along gentle gradients (less than 2 percent). Intermittent streams flow only during certain times of the year from alternating springs, snow melts, or from runoff from seasonal precipitation events. Intermittent streams can flow above

or below the water table. Stream widths range from 3 to 6 feet. Stream substrates include silt and clay. Stream depths range from 0 to 5 inches.

Most streams were determined to be used only as drainage features and lacked characteristic stream features, such as undercut banks, plunge pools, or riffle-pool sequences. None of the streams within the Project Area were determined to contain significant aquatic habitat to establish and support fish populations. Only one of the four NYSDEC mapped streams listed in Table 23-2 was delineated as a stream, and that, only along portions of its reach. That feature, NYSDEC stream 898-396, corresponds with delineated feature S-JJB-2. The three other NYSDEC mapped streams lacked stream characteristics such as a defined bed, bank, and ordinary high-water mark, and were mapped as wetlands due to the presence of hydric soils and hydrophytic vegetation.

Wetlands within the Project Area include two NYSDEC-mapped wetlands. Though described more thoroughly in Exhibit 22, the very northern portion of the site includes portions of palustrine forested NYSDEC class 2 wetland GN-17. A bald eagle (*Haliaeetus leucocephalus*) nest is located within this wetland, from which proper setbacks shall be maintained as described within Exhibit 22. Portions of a smaller NYSDEC Class 1 lacustrine wetland (GN-26) may be found within the northeast corner of the Project Area. These wetlands and their 100-foot adjacent areas, which have been avoided in the design of the Project, are further described within Exhibit 22. Both wetlands are mentioned here, as GN-26 presumably provides a reasonably close source of food, in the form of fish, for the eagle associated with the aforementioned nest. Of course, there exists considerable other food sources in the vicinity, including Seneca Lake and the Seneca River to the south.

A vernal pool survey was conducted for the Project Area on March 31, 2020. Only one pool was present, which was immediately adjoining NYSDEC wetland GN-17 in an area of red maple and green ash overstory. Six wood frog egg masses were present at the time of the survey. No tadpoles, adults, or other amphibian species were located.

It is assumed, based on current distribution data within the NYSDEC's list of Common Aquatic Invasive Species of New York (n.d.), that several common invasive aquatic species might occur within the vicinity of the Project Area, and in particular within Seneca Lake. These species include brittle naiad (*Najas minor*), curly-leaf pondweed (*Potamogeton crispus*), European frogbit (*Hydrocharis morsus-ranae*), Eurasian watermilfoil (*Myriophyllum spicatum*), Asian clam (*Corbicula fluminea*), zebra mussel (*Dreissena polymorpha*), Quagga mussels (*Dreissana*

bugensis), fishhook waterflea (*Cercopagis pengoi*), spiny waterflea (*Bythotrephes longimanus*), bloody red shrimp (*Hemimysis anomala*), and alewife (*Alosa pseudoharengus*). Downstream of the Project Area, within the Seneca River, water chestnut (*Trapa natans*) is sporadically problematic. None of these species were observed within the Project Area during wetland and waterbody delineations performed during summer 2019. Due to the location of the Project Area in the watershed, the vast majority of the Project Area does not consist of waterbodies large enough (or with a sufficient water column) to support the prevalence of these aquatic invasive species.

(3) Downstream Drinking Water Supply Intakes

There are no permitted drinking water intakes within one mile of the Project. The nearest site to the Project Area is the Village of Waterloo Water Treatment plant, operated by the Village of Waterloo in the Town of Geneva, within Seneca County. This intake is located along Seneca Lake, approximately four miles south of the Project Area at a longitude and latitude of -76.943, 42.843. The Village of Waterloo provides drinking water to 15,000 Village residents. In addition, the plant provides water for the Waterloo Volunteer Fire Department. The source water to the plant is Seneca Lake. The treatment plant disinfects and filters the water. Organic contaminants are absorbed by the addition of activated carbon. In addition, chlorine dioxide is added to the water to oxidize contaminants and deter zebra mussels. A private lab does all required testing, and the plant meets or exceeds all NYS and EPA requirements. Finished water is re-disinfected before leaving the plant (The Village of Waterloo, 2019). At a distance of approximately four miles, there will be no impacts to this surface water drinking supply resulting from the Project development or operation.

(4) Surface Water Impacts

Project components have been sited to avoid temporary or permanent impacts to wetlands and waterbodies to the maximum practicable extent. Impacts to drinking water are not anticipated as there are no surface water intakes in or immediately proximal to the Project Area. Refer to Exhibit 22 for a more detailed discussion of wetlands and measures employed to avoid, minimize and mitigate such impacts. Certain construction activities have the potential to result in direct and/or indirect impacts to surface waters. These activities include the construction of permanent access roads, upgrading of existing farm lanes, installation of collection lines (aboveground and buried), and the development of temporary staging areas and workspaces around the solar arrays and substation. Impacts related to the construction of access road and collection line crossings will be

minimized to the maximum extent practicable by using existing crossings or siting crossings along narrow sections of non-State regulated wetlands. In addition, implementation of the best management practices (BMPs) in the SPC and SWPPP will avoid or minimize impacts to the maximum extent practicable. No dredging is scoped for the construction of this Project.

A response from the NYSDOH reported three public groundwater wells within two miles of the Project Area, discussed in 23(a)(2). The nearest of these wells is located approximately 1,174 feet to the west of the Project at Big Oak Golf Course, serving 100 people. The second of these is located approximately 1,294 feet to the northeast of the Project Area, serving 25 people. The most distant of these wells from the Project Area is located approximately 3,975 feet to the south of the Project, across the Seneca River at the Fayette Mennonite School, serving 50 people. As noted above, a minimum number of people are affected by these wells. For the first two of these, no impacts are anticipated due partially to their orientation up-gradient from the Project Area. The third is also unlikely to be impacted due to its distance from the Project and its separation from surface flow by the Seneca River. In additional to the lack of proximity, it is not expected that the Project construction activities will affect groundwater quality, due to low impact of solar panel installation and precaution and avoidance/minimization measures required by the SWPPP and SPC (appendix 23-3).

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 only 2.17 acre of temporary and 0.07 acre of permanent wetland impacts (of the 272.24 acres of wetlands delineated). The majority of wetland impacts are to wetland areas previously and regularly disturbed by agricultural practices. None are to State-regulated wetlands. A Nationwide Permit will be sought for the predicted wetland impacts from the United States Army Corps of Engineers (USACE).

No impacts are proposed to the seven intermittent streams found within the Project Area (Table 23-3).

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)
S-JJB-01	RIN	231.04	USACE	-	-	-
S-JJB-02	RIN	792.06	USACE	C	-	-
S-NWJ-01	RIN	161.91	USACE	-	-	-
S-NWJ-02	RIN	192.79	USACE	-	-	-
S-NWJ-03	RIN	51.05	USACE	-	-	-
S-NWJ-04	RIN	246.66	USACE	-	-	-
S-NWJ-05	RIN	321.07	USACE	-	-	-

To address potential impacts to non-State regulated wetlands containing open waters (PUB) as a result of Project-related construction and operation, any temporary or permanent impacts to delineated open water wetlands with open water features were documented. 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 temporary disturbance to open water resources. See Exhibit 22 for a discussion of wetland impacts. All Project activities will be set back outside any portion of the two State-regulated wetlands and their respective adjacent areas with the exception of a necessary horizontal directional drill (HDD) under a narrow portion of wetland GN-26, identified during TRC delineations as W-JJB-1.

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

Field ID	Type	Acres Within Project Area	Jurisdiction	Associated Buffer (Feet)	Temporary Impact (Acre)	Permanent Impact (Acre)
W-JJB-1	PUB	16.63	USACE NYSDEC-mapped	100	0 / 0.45*	0
W-JJB-12	PUB	1.39	USACE NYSDEC-mapped	100’	0	0
W-JJB-17	PUB	2.88	USACE	N/A	0	0
W-JJB-18	PUB	2.88	USACE	N/A	0	0

* - 0.45-acre temporary disturbance proposed within the 100-ft adjacency area. No proposed disturbance to the wetland-proper.

Construction of the Project could result in minor siltation and sedimentation in waterbodies that are adjacent to steep slopes. The Applicant will take measures to avoid and minimize siltation events pursuant to the SWPPP that is ultimately approved. A proposed SWPPP is contained in Appendix 23-3 of this Application.

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

(5) Ground Water Mitigation Methods

Site planning was performed 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 in small portions of the Project Area. Conventional sump and pump methods are anticipated to be sufficient approaches to control any accumulation of groundwater in shallow trenches or

ponded surface water in low-lying areas used during construction. The sediment laden water removed during these dewatering activities will be sufficiently filtered and discharged in upland locations avoiding waterbodies and wetlands. 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 placed in well-drained upland areas not directly adjacent to wetlands or waterbodies. 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 also trap any suspended sediment prior to discharging to well-drained undisturbed upland 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.

At the Project Area, in light of minimal subsurface work proposed, i groundwater would likely flow around the disturbance area and assume normal flow regimes almost immediately downslope. If groundwater infiltrates work areas that may 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 very minimal, localized, and of a temporary nature. 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 (but not in wetland areas, or upland buffer zones of NYSDEC-regulated wetlands), which will help increase the rate of infiltration and reduce net loss of water volumes to evaporation. Ultimately, construction of the Project will adhere to the SPC plan and SWPPP guidelines which are designed to 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 collection lines which may facilitate groundwater travel along the loosened soils surrounding the buried collection line. Water could conceivably collect in the trench and migrate along the trench route to areas

downslope. However, there likely 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, therefore, is not expected to have adverse impacts on public or private water wells. Any impacts to groundwater as a result of 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 (Appendix 12-3).

(6) Surface Water Mitigation Methods

To the maximum extent practicable, Project components have been sited to avoid or minimize both temporary and permanent impacts to surface waters as shown in the Preliminary Design Drawings (Appendix 11-1). The use of existing and narrow crossings of surface waters will help minimize direct impacts to these features. Furthermore, the number and overall impacts of access roads and collection lines crossing surface waters have been minimized by using existing crossings and narrow crossing locations wherever possible.

If 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, the Siting Board issued Article 10 certificates, and USACE. Proper briefing and signage will be presented to construction crews to dictate areas where equipment access is prohibited. Crossings will occur only along properly permitted access roads or through the use of temporary matting to traverse delineated waterbodies and wetlands. Also, other impactful activities will be restricted within a predetermined buffer zone around delineated waterbodies and wetlands. These buffer restrictions will include no use of herbicide, or any other disturbance within 100-feet of any state-mapped wetland, apart from HDD where deemed unavoidable. In addition, no equipment refueling or washing, storage of petroleum or chemical materials, concrete washwater disposal, or amassing or disposal of construction debris or slash materials will occur within 100 feet of any wetland or waterway shall occur. Likewise, no actions that may result in the degradation of waterbody banks or steep slopes above water resources shall be permitted.

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 until impact areas become stabilized and approved as determined by the Project

Environmental Monitor (EM). 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 and their locations and design will be shown on appropriate construction drawings.

As part of the SWPPP, an EM will be in place throughout the work period and during the restoration period in order to inspect and assess sedimentation risk and also 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 as a result of clearing vegetation is unlikely, as the nearest tree clearing adjacent to a stream proposed is approximately 25 feet. Changes to in-stream structure and morphology of the intermittent streams onsite 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 the following the SWPPP and other guidelines imposed by the regulatory agencies. 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 Sections 22(f)(9) and 22(p)(2) for further discussion on listed, threatened and endangered species.

(7) Stream Crossings

No stream crossings are proposed. If it is determined that a stream crossing is required, then temporary and permanent stream crossing methods and procedures will be added to the Project Design Drawings, and culvert specifications, sizing, and flow calculations will be provided in the Final SWPPP.

23(c) Stormwater

(1) Preliminary Stormwater Pollution Prevention Plan (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 subject to review by 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.

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. The Final 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, 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.

A Preliminary SWPPP has been designed in accordance with the guidelines set forth in GP-0-20-001 and the most current versions of the NYS Standards and Specifications for Erosion and Sediment Control (SSEC) and the NYS Stormwater Design Manual 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 on a daily basis 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. The following factors were considered when designing the Preliminary SWPPP:

i. The hydrogeology of the Project Area, and measures to prevent ecological impacts to the maximum extent practicable, will be considered as well as both pre- and post-development hydrologic modeling and water quality calculations;

ii. Potential impacts of stormwater runoff on agricultural uses and drainage patterns within and adjacent to the Project Area. In addition preliminary design of stormwater controls and drainage features to be used for Site restoration were addressed; and
iii. BMPs to be used.

The Applicant anticipates that submission and approval of a Final SWPPP will be a condition of the Article 10 Certificate.

(2) Post Construction Erosion and Sediment Practices

Increases in stormwater runoff will be minimal, as existing drainage patterns will be maintained to the maximum extent practicable and minimal grading and impervious surfaces are proposed as part of the Project. Therefore, no significant changes to the rate or volume of stormwater runoff are anticipated as a result of Project operations. However, precautionary and appropriate post-construction BMPs will be installed and maintained according to the Project-specific NYSDEC-approved SWPPP for the Project per applicable regulations. As explained above in Section 23(a)(5) of this Exhibit, adverse 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.

(3) Post Construction Erosion and Sediment Control

A Preliminary SWPPP has been designed in accordance with the guidelines set forth in GP-0-20-001 and the most current versions of the NYS SSEC and the NYS Stormwater Design Manual and is provided as Appendix 23-3. 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 post-construction BMPs will be installed and maintained according to the Project-specific NYSDEC-approved SWPPP for the Project per applicable regulations. Erosion and sediment controls will remain in place during site restoration until disturbed areas have been stabilized with vegetation.

(4) Stormwater Design

The Final SWPPP will include an Erosion and Sediment Control Plan (ESCP) as required per GP-0-20-001 to limit the possibility of offsite 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 for information purposes once accepted by NYSDEC.

The Maryland "Stormwater Design Guidance – Solar Panel Installations," was considered as part of the Preliminary SWPPP development. The two distinctions between the Maryland guidance and current NYS SWPPP requirements are as follows:

- The Maryland guidance recommends using a level spreader, energy dissipater, or berm for site slopes between 5 and 10%.
- The amount of grass between panel rows must be equal to or greater than the width of the panels.

The Project complies with both these criteria. Otherwise, the design aspects for solar panel installations are consistent with SWPPPs developed through adherence to NYS guidance. A discussion of the conformance with the Maryland guidelines is included in the SWPPP (Appendix 23-3).

(5) Post-Construction Runoff

The Project qualifies as a Scenario 2 (solar) project per the NYSDEC's Solar Panel Construction Stormwater Permitting/SWPPP Guidance (dated April 6, 2018; Appendix 23-4). While minimized to approximately 9 acres, the Project includes the construction of traditional impervious areas including gravel access roads, substation and inverter pads, parking areas, and a substation control building). The Final SWPPP will address post-construction stormwater management controls and practices designed in accordance with the sizing criteria in Chapter 4 of the NYS Stormwater Management Design Manual, dated January 2015, for these areas of the Project.

(6) Municipal Separate Stormwater System (MS4) Areas

The Project Area is not located within, or subject to, the requirements of a regulated, traditional land use control of a Municipal Separate Stormwater (MS4) area.

(7) ESCP

The Final SWPPP will include an ESCP, as required by the SPDES General Permit. The intent of this document is 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. This will be included as part of a Compliance Filing or filed with the Secretary.

(8) Agricultural Uses and Drainage Patterns

The Applicant is committed to minimizing impacts to agricultural operations and will work with participating landowners/farm operators to facilitate their agricultural operations. Existing drain tiles will be identified and located before construction as much as is reasonably possible based primarily on consultation with the landowner. During and after construction operations, any existing drain tiles within the area of disturbance will be checked for damage, and damaged drain tiles will be repaired or replaced as specified in landowner lease agreements. The Applicant will coordinate with the landowner, as necessary, to address any relevant post-construction repairs/replacements.

23(d) Chemical and Petroleum Bulk Storage

(1) Spill Prevention and Control Measures

The Applicant does not currently anticipate the on-site storage of substances regulated under the chemical and petroleum bulk storage programs of NYS. Construction operations are not anticipated to require petroleum or other hazardous chemicals to be stored on-Site, thus no description of spill prevention and control measures for chemical storage is provided. Quantities exceeding the threshold for registration are not envisioned. Disposal on site of regulated materials will not occur.

No on-site storage or disposal of large volumes of substances regulated under the chemical and petroleum bulk storage programs of NYS 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 completed prior to receipt of the Certificate and submitted to the Secretary or as part of a compliance filing 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 of Hazardous Substances Compliance with Local Law Storage Regulations

The Applicant does not anticipate the on-Site storage of ammonia, fuel oil, wastewater, other chemicals, petroleum or other hazardous substances, or solid waste. However, if construction requires the storage of any materials regulated under the State of New York chemical and petroleum bulk storage program, a demonstration of compliance with such regulation shall be provided by the Applicant.

(3) Storage or Disposal of Regulated Substances

The Applicant does not currently anticipate the on-Site storage or disposal of any substances in volumes regulated under the chemical and petroleum bulk storage programs of any federal, state, or local laws. Construction operations are not anticipated to require petroleum or other hazardous chemicals to be stored on-Site.

23(e) Aquatic Species and Invasive Species

(1) Biologic Aquatic Resource Impacts

Exhibit 22 directly addresses impacts to wetlands and waterbodies within the Project Area. Secondary reference can also be made through review of Tables 23-2 and 23-3 of this Exhibit.

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. None of the invasive species listed within the Common Aquatic Invasive Species of New York (NYSDEC, n.d.) list were observed during on-site survey work conducted by environmental scientists. Thus, the spread of aquatic invasive species as a direct result of the Project construction is not anticipated. Semi-aquatic species observed on site include isolated patches of reed canary grass (*Phalaris arundinacea*), common reed, (*Phragmites australis*), and purple loosestrife (*Lythrum salicaria*) (Figure 22-1).

The Project Area contains limited suitable habitat for the prevalence of aquatic invasive species and general aquatic communities and ecologies. The vast majority of the Project resides at higher elevations relative to the nearest receiving waters (Seneca River and Seneca Lake). Where documented waterbodies and wetlands act as headwaters, and to the limited depth and size of waterbodies within the Project Area. For these reasons, the biological diversity of aquatic life on site is relatively low. As such, it is unlikely for the Project to impact biological aquatic resources, including species listed as endangered, threatened, or species of special concern.

(2) Mitigation Measures for Biological Aquatic Resources

Measures to avoid and mitigate impacts to surface waters during construction are addressed in Section 23(b)(6). 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. Equipment will be cleaned as necessary to prevent transport of sediment and invasive species while on-Site. Use of sediment and erosion protection measures will be as directed by a stormwater pollution protection plan. Stream crossings for access roads are avoided, and the use of HDD methods to avoid impacts to wetland features will also reduce impact to documented surface waters. Buffers around waters and wetlands are imposed for activities as noted above that may present impact potential. With these precautions, no impacts to surface waters should

occur during operation and compliance with applicable water quality standards (6 NYCRR Part 703) shall be ensured.

Loss of habitat has been largely avoided through careful siting and design of the Project. The Project Area encompasses small headwater streams and wetlands, almost all of which are to be completely avoided. An USACE permit for any unavoidable impacts shall be obtained and adhered to. As such, there are no adverse, unmitigated impacts to waters or wetlands resulting from the Project.

23(f) Cooling Water

This Project will not require cooling water during any phase of construction or operation. Therefore, cooling water withdrawals are not addressed in this Application.

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