# Mohawk Solar

## Case No. 17-F-0182

# 1001.23 Exhibit 23

# Water Resources and Aquatic Ecology

# REDACTED

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# EXHIBIT 23 WATER RESOURCES AND AQUATIC ECOLOGY

This Exhibit includes a review of the groundwater, surface water, and aquatic ecology impacts of the Facility and consisted of identifying and mapping existing conditions, conducting an impact analysis, and describing proposed impact avoidance and mitigation measures.

(a) Groundwater

(1) Hydrologic Information

According to a review of the USDA Web Soil Survey, depth to groundwater ranges from the ground surface to greater than 78 inches below ground surface (bgs) throughout the Facility Area, with high water tables most common in low-lying areas in and adjacent to wetlands. The Web Soil Survey also indicates the depth to bedrock ranges from 24 inches to greater than 78 inches bgs, with the large majority of the Facility Site having a depth to bedrock greater than 78 inches bgs (Soil Survey Staff, 2018). As part of a larger geotechnical investigation, the Applicant retained Terracon Consultants-NY, Inc (Terracon) to develop a Report of Expected Geotechnical Conditions (see Exhibit 21 and Appendix 21-A). The Report included a summary of preliminary soil borings throughout the Facility Site. The results of this Report confirmed the ranges of depth to bedrock in the area. The Report did not identify any karst features within the Facility Site. Maps showing depth to bedrock and depth to water table throughout the Facility Site, based on the Soil Survey of Montgomery County, New York, are provided in Figure 23-1 (USDA, 1978).

Construction dewatering may be required for surface water control and for excavations that encounter perched groundwater conditions, groundwater or seepage. The likelihood of encountering perched groundwater increases during spring and fall, when the water table is at its highest level. The final method for dewatering the Facility Site during construction will be determined by the contractor prior to commencing construction. Based on the relatively low permeability of the soils anticipated, the open sump pumping method—which is a common and economical method of dewatering—may be used at the Facility Site. All proposed methods of dewatering will address concerns and requirements related to runoff and sediment transport as well as any other applicable requirements of the New York State Department of Environmental Conservation's (NYSDEC) State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity, Permit No. GP-0-15-002. Additional information pertaining to dewatering is presented in Section 23(a)(3)(ii) below. In addition, consistent with Permit No. GP-0-15-002, a preliminary Stormwater Pollution Prevention Plan (SWPPP) has been prepared to address construction-related best management practices (BMPs), including those relating to site dewatering. The SWPPP is included in Appendix 21-B and described below in Section 23(c).

(2) Groundwater Aquifers and Recharge Areas

The Facility Site does not border or contain any part of a primary aquifer, a designation applied by US Geological Survey (USGS) and New York State Department of Environmental Conservation (NYSDEC) to aquifers that are highly productive and utilized by major municipal water supply systems (NYSDEC, 2011). The nearest primary aquifer is the Schenectady Aquifer, approximately 25 miles east of the Facility.

The Facility Site overlays parts of three unconsolidated aquifers mapped by NYSDEC Division of Water, Bureau of Water Resources Management (NYSDEC, 2008). Two aquifers are low-yield aquifers capable of yielding less than 10 gallons per minute. The third aquifer is a mid-yield aquifer capable of yielding 10 to 100 gallons per minute.

The US Environmental Protection Agency (USEPA) maintains data on sole source aquifers, which are those that supply at least 50% of the drinking water in a given area. The Schenectady-Niskayuna Sole Source Aquifer is the nearest sole-source aquifer, located over 25 miles east of the Facility Area (USEPA, 2016). Therefore, it is not anticipated that the Facility will result in impacts to sole-source aquifers either during construction or operation.

To identify existing water wells in the area, a Freedom of Information Law request letter was sent to the NYSDEC, Montgomery County, and to the New York State Department of Health (NYSDOH) on March 5, 2018. These letters requested information pertaining to groundwater wells (including location, construction logs, depths, and descriptions of encountered bedrock) within the Facility Area. The NYSDEC informed the Applicant that 15 water wells were located within or in the immediate vicinity of the Facility Area. The NYSDEC provided the locations and description of these public wells on April 11, 2018. The depths of the wells ranged from 80 to 400 feet and have groundwater yields ranging from 0.75 to 41 gallons per minute. All of these wells are used for domestic purposes. The NYSDOH indicated that there are three water wells within one mile of the Facility Area. No information on water wells was received from Montgomery County. Table 23-1 summarizes public and private water well locations, well design, and production information, to the extent such data was provided or is publicly available. The locations of private and public water sources are depicted on Figure 23-2.

Private wells were identified by sending a well survey to all residences/businesses located within a 2,000-foot radius of the proposed Facility Area. The Applicant's consultant, Environmental Design & Research, Landscape Architecture, Engineering, & Environmental Services, D.P.C. (EDR), sent letters on March 27, 2018 which included a brief summary of the Project and the Article 10 process, contact information for the Applicant, a description of where the well owner can get more information about the Project, and a questionnaire to the owners of 329 tax parcels located within a 2,000-foot radius of the proposed Facility Area. The questionnaire included

questions such as: whether the parcel had well(s); the size and yield of the well, the well's depth to groundwater, sampling and testing history of the well; and location in relation to buildings on the parcel. Included with the questionnaire was an EDR-addressed envelope to facilitate the return of the surveys.

EDR received responses to the surveys identifying a total of 101 private wells within 2,000 feet of the Facility Site (Figure 23-2). Based on the private well survey responses, the depths of the private wells range from 10 feet to 490 feet below grade with an average depth of approximately 110 feet below grade (the depths of 13 wells were unknown or not available). Private wells reported were installed in bedrock, clay, overburden/sand-gravel, and shale, and are primarily used for residences. Groundwater yields reported in this survey range from 0.05 gallons per minute (gpm) to 46 gpm with averages yields of approximately 11 gpm. Table 23-1 includes private water well locations, well design, and production information, to the extent such data was provided in response to private well surveys. The survey responses are included in Appendix 23-A, which will be filed confidentially.

**Table 23-1. Summary of Available Public and Private Well Locations and Characteristics [REDACTED]**

(3) Groundwater Impacts

Despite proximity to mapped aquifers, the Facility is not anticipated to result in any significant impacts to groundwater quality or quantity, drinking water supplies, aquifer protection zones, or groundwater aquifers in the Facility Area. The likelihood of encountering ground water does increase in the spring and fall, when a seasonally high water table is present. Excavations for the substation foundation, roadways, and underground collection lines are expected to be relatively shallow and are not anticipated to intercept groundwater within the surrounding aquifers. If shallow or perched groundwater is encountered during the construction of these foundations, common engineering practices, such as dewatering, will be employed. The Facility will add only small areas of impervious surface, which will be dispersed throughout the Facility site, and will have a negligible effect on groundwater recharge.

Residence and community groundwater wells are generally assumed to be set deeper than the proposed substation foundations, roadways, and underground collection lines within fractured bedrock or granular soil. Based on the data reviewed and the planned setback distances, it is unlikely construction of the proposed PV panels will have an impact on shallow aquifer or residential water well groundwater quality or quantity.

The Facility will add only small areas of impervious surface, which will be dispersed throughout the Facility Site, and will have a negligible effect on groundwater recharge. However, construction of the proposed Facility could result in certain localized impacts to groundwater, and the use of that water by adjacent landowners. These impacts could include:

- Minor localized disruption of groundwater flows;
- Minor modification to surface runoff or stream-flow, thereby affecting groundwater recharge characteristics;
- Minor degradation of groundwater quality from accidental spills;
- Impacts to groundwater recharge areas (wetlands); and
- Groundwater migration along collection line trenches.

A potential impact to groundwater is the introduction of pollutants from the accidental discharge of petroleum or other chemicals used during construction, operation, or maintenance. Such discharges could occur in the form of minor leaks, as well as more substantial spills that could occur during refueling and other accidents. However, these impacts are not anticipated to be of concern because the Applicant has developed avoidance, minimization, and mitigation measures that are outlined in the Facility's Preliminary Spill Prevention, Control and Countermeasures (SPCC) Plan. See Section (b)(5) and (d) for a discussion of the SPCC Plan and other mitigation measures.

Construction activities have the potential to impact localized groundwater flow paths in areas where excavation occurs below the water table. In these instances, water is anticipated to flow around the disturbance and resume its original flow direction downgradient of the disturbance. Groundwater that infiltrates into the excavation may require removal by pumping, which could have a minimal, short-term effect on the elevation of the water table. However, this water will be pumped to the surface, discharged in vegetated uplands through a velocity dissipating device, and allowed to infiltrate back into the water table with negligible loss of volume due to evaporation. In addition, excavation is not anticipated to occur below the water table for the Facility. Therefore, any effect will be very localized and temporary.

The greatest potential for impacts to groundwater from the Facility is the installation of substation foundations. Depth to bedrock within the Facility Site ranges from 24 inches to more than 78 inchesbgs. The bedrock is anticipated to be encountered at a depth of less than 8 feet under the substation. Mechanical excavation (e.g., pneumatic hammer, larger ripper) will be used for excavation. Blasting will not be required. Impacts associated with conventional excavation methods will be managed by utilizing BMPs contained in the Facility's SWPPP.

As previously noted, preliminary soil borings have been conducted to determine groundwater levels at 25 locations in the Facility Site (see Report of Expected Geotechnical Conditions attached as Appendix 21-A). The preliminary subsurface investigations by Terracon included subsurface soil and bedrock sampling and limited geotechnical laboratory testing at 25 locations located in proximity to the Facility components. The borings were completed between June 1 and June 15, 2018, and were drilled to depths ranging from 8.5 to 15.4 feet. The preliminary geotechnical investigation included borings to test for subsurface soil, bedrock, and groundwater properties. Groundwater was not encountered in any of the 25 borings. However, groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors. Therefore, groundwater levels during construction may be higher or lower than the levels indicated on the boring logs. Should shallow/perched groundwater be encountered, any construction impacts will be addressed through relatively common engineering measures and construction techniques, including dewatering, which will avoid and minimize the potential for groundwater to cause erosion and sedimentation.

In addition to impacts to groundwater due to substation foundation installation, minor impacts could result from the installation of buried collection lines, which may facilitate groundwater migration along trench backfill in areas of shallow groundwater. Due to the decompaction of soils within the trench of the buried collection lines, water could collect in the trench and migrate through the trench to areas of lower elevation where it will naturally infiltrate back into the water table with negligible loss of volume.

During construction, groundwater may be encountered in shallow excavations in areas of poorly drained soils and/or shallow bedrock. Additionally, ponding of surface water and/or precipitation may occur in open excavations and in low-lying areas. It is anticipated that groundwater and/or surface water that accumulates in shallow excavations of the upland areas can generally be controlled using conventional sump and pump methods. During these construction-related dewatering activities, sediment laden water will be sufficiently filtered in upland locations and not discharged into wetlands or streams. Water velocity dissipation will be provided at all discharge points. Dewatering activities will not cause erosion in receiving channels or adversely impact water resources. However, because final engineering will not be completed until the Facility has been certified, exact areas of dewatering cannot be known at the time of this Application.

The determination of long-term dewatering (if necessary) will be addressed during final geotechnical investigations to be conducted following Certification. See Section (b)(5) below for additional information on dewatering methods.

In is anticipated that water trucks will represent the main source of water utilized for construction uses (e.g., for concrete mixing, fire control, and invasive species wash stations) include water trucks. Details associated with the design and layout of facilities for withdrawal and transport of source water will be provided post-Certification once the Applicant engages a contractor.

As discussed in Exhibit 12, a Complaint Resolution Plan (Appendix 12-C) has been developed for the Facility. The Complaint Resolution Plan details pre-construction outreach activities to landowners, neighbors, Town officials, and Highway Superintendents to discuss details of the construction plans as it applies to the affected parties. The Applicant will have an open house to provide information to the community regarding the start of construction and the timing of various phases. The manner in which the public can voice complaints and the process for addressing them will be reviewed at the open house and in detail in the complaint resolution process.

(b) Surface Waters

(1) Surface Waters Map

A map showing locations of all surface waters, including intermittent and ephemeral streams (to the extent such streams and wetlands are identified in publicly available data), within and adjacent to the Facility Site, is provided in Figure 23-3. Data sources used to generate this map include publicly available data from Montgomery County, NYSDEC, the Environmental Systems Research Institute (ESRI), the USGS, and National Wetlands Inventory

(NWI), along with stream data collected during on-site wetland and stream delineations. Stream mapping outside these areas was based on NYSDEC mapping and stream classifications and other mapping sources as applicable. Wetland and stream delineations identified all surface waters (ponds; ephemeral, intermittent, and perennial streams; and wetlands) within a 500-foot wide radius of proposed construction work areas. A table summarizing these data is included below at Table 23-2. Shapefiles identifying the data will be submitted to NYSDEC and DPS staff under separate cover.

(2) Description of Surface Waters

The Facility Area is located in the Mohawk River basin (USGS Hydrologic Unit 02020004), a sub basin of the Hudson River. The Mohawk River Basin is the largest tributary to the Hudson River and drains approximately 3,460 square miles of New York State, which is 25% of the Hudson River Basin. The Mohawk River Basin drains Oneida, Herkimer, Hamilton, Fulton, Montgomery counties, and a small portion of Saratoga County.

Under Article 15 of the Environmental Conservation Law (Protection of Waters), the New York State Department of Environmental Conservation (NYSDEC) has regulatory jurisdiction over any activity that disturbs the bed or banks of protected streams. Any stream, or particular portion of a stream, that has been assigned by the NYSDEC any of the following classifications or standards is considered a protected stream: AA, AA(t), A, A(t), B, B(t) or C(t) (6 NYCRR Part 701). Non-navigable Class C streams are not considered state-protected streams under Article 15. A classification of AA or A indicates that the best use of the stream is as a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The best usages of Class B waters are primary and secondary contact recreation and fishing. The best usage of Class C waters is fishing and non-contact activities, and Class D waters represent the lowest classification standard. Streams designated (t) indicate that they support trout, and also include those more specifically designated (ts) which support trout spawning.

A list of all NYSDEC-mapped streams that cross a portion of the Facility is provided in Table 23-2. All streams that cross the Facility Site are Class C streams. There are no mapped streams with a classification of AA, AA(t), A, A(t), B, B(t) or C(t) within the Facility Site.

**Table 23-2. NYSDEC Mapped Streams that Cross the Facility Site**

| Stream Name[1] | NYSDEC Classification | NYSDEC Standard | Part Item Number | Water Index Number[2] |
|---|---|---|---|---|
| Minor Tributaries to Mohawk River | C | C | 876-276 | H-240-90 through 126 |
| Tributaries to Canajoharie Creek | C | C | 876-263 | H-240-112 |
| Tributaries to Otsquago Creek | C | C | 876-282 | H-240-119-5 |

[1] Based on streams from the Water Quality Classifications – NYS GIS layer (downloaded from https://gis.ny.gov/gisdata/inventories/details.cfm?DSID=1118) that intersected the Facility Site).
[2] Based on streams from the Water Inventory/Priority Waterbodies List GIS layer (downloaded from `http://gis.ny.gov/gisdata/inventories/details.cfm?DSID=1117) that intersected the Facility Site.

Physical and biological features of the tributaries of the Mohawk River, Canajoharie Creek, and Otsquago Creek were obtained from the USGS National Waters Information System and NYSDEC Waterbody Inventory/Priority Waterbodies List (WI/PWL) Fact Sheets. These fact sheets represent the physical and biological conditions of the main stream feature but may reflect some conditions present in the associated tributaries. The NYSDEC WI/PWL Fact Sheet for the Mohawk/Canajoharie Creek Watershed (0202000409) contains results from Rotating Integrated Basin Studies (RIBS) (NYSDEC, n.d.). RIBS studies assess water quality using numerous monitoring methodology, including biological community assessments which focus on macroinvertebrate community analysis. Biological community assessments for Canajoharie Creek, Otsquago Creek, and Mohawk River focused on the abundance of macroinvertebrates at sampling sites (NYSDEC, n.d.).

Biological and physical characteristics of the specific tributaries crossing the Facility Site were not publicly available. The characteristics of the mainstem of the stream are presented herein, although they are unlikely to reflect the characteristics of the tributaries included in Table 23-2. Canajoharie Creek has an average temperature of 14.2°C and a flow rate of approximately 119 cubic feet per second (USGS, 2019). In Canajoharie Creek, macroinvertebrate abundance was observed at slightly lower levels than anticipated, however aquatic life support is fully supported by the stream (NYSDEC, n.d.). Otsquago Creek has an average temperature of 10.9°C and an average flow rate of 80 cubic feet per second (USGS, 2019). Biological sampling in Otsquago Creek showed minor impacts of water quality on macroinvertebrate communities. Sensitive species were not observed during sampling of Otsquago Creek, and macroinvertebrate abundance was lower than historical levels (NYSDEC, n.d.). The Mohawk River is a large waterbody with many tributaries, so the overall properties of the main river may not be representative of the conditions of its tributaries. The average temperature of the Mohawk River near Schenectady, approximately 30 miles southeast of the Facility, is 17.5°C (USGS, 2019). Near the Village of Little Falls, located approximately 12 miles northeast of the Facility, the average flow rate from 2000 to 2018 was 3,140 cubic feet per second (USGS, 2019). Macroinvertebrate sampling in the Mohawk River indicated that aquatic life is fully

supported within the waterbody, however the community composition was slightly altered when compared to historical trends indicating the presence of minor biological impacts in the Mohawk River (NYSDEC, n.d.).

Based on the Facility layout presented in this Application, a total of five crossings of NYSDEC-mapped streams are anticipated. See Section (b)(4) below for a detailed discussion of potential impacts to streams and Section (b)(5) for a discussion of avoidance and minimization measures.

On-site wetland/stream delineations were conducted in the fall of 2017 and the spring and summer of 2018, during which data were collected on streams that existed within a wetland/stream survey area (i.e., a 500-foot radius around areas of proposed disturbance). For a full description of stream and wetland delineation results and methods, see the Wetland Delineation Report included in Appendix 22-G. Included in the delineations are portions of some of the mapped streams listed above in Table 23-2 as well as unmapped streams, which are either intermittent or ephemeral tributaries of the mapped streams. Most streams were located in forests and hedgerows, and generally had gentle to moderate gradients. Streams within the Facility Site were less than 5 feet wide with shrub/scrub and pasture buffers. The delineated stream channels are generally characterized by rocky substrate abrupt well-defined steep banks, and flow during the wet season (winter to spring). Water depths within channels with stream flow averaged 2-5 inches.

Following a site visit conducted with NYSDEC staff to review delineated resources on November 6, 2019, the NYSDEC issued a Freshwater Wetlands Determination, which identifies NYSDEC jurisdiction of 11 wetlands (see Appendix 22-G). The NYSDEC jurisdictional wetlands are shown in Figure 22-2. In addition, on May 2, 2019, NYSDEC provided a letter stating that there are no delineated resources subject to Article 15 jurisdiction within the Study Area (see Appendix 22-H).

Publicly available data on fish communities in lakes and streams associated with the Facility Site is limited. The Mohawk watershed supports a number of fish species sought be anglers including brown trout (*Salmo trutta*), brook trout (*Salvelinus fontinalis*), smallmouth bass (*Micropterus dolomieu*), and largemouth bass (*Micropterus salmoides*). However, streams in the Facility Site are small intermitted and ephemeral streams unlikely to support any of these species. To conservatively represent all species that could possibly occur, fish species documented in the Mohawk River watershed are included in the Wildlife Species List (Appendix 22-B). A total of 52 unique fish were identified as potentially occurring at the Facility Site.

The NYSDEC maintains a list of the *Common Aquatic Invasive Species of New York,* which includes fish, clam, mussel, insect, plant, and algae species, known habitat distributions of these species and recommended boat-

clearing methods to prevent their spread (NYSDEC, 2018). Of the 22 invasive species included on the list, four could occur in the vicinity of the Facility Site based on known distributions and habitat requirements, including curly-leaf pond weed (*Potamogeton crispus*), brittle naiad (*Najas minor*), Eurasian milfoil (*Myriophyllum spicatum*), and water chestnut (*Trapa natans*). None of the species on the list were observed during wetland delineations or other field investigations, including a terrestrial plant invasive species survey; however, a comprehensive aquatic species inventory was not conducted. Most of the aquatic habitat within the Facility Site are headwater tributaries, where water bodies are of insufficient volume to support most of these species.

(3) Drinking Water Supply Intakes

A FOIL request on the location of downstream surface drinking water intake sites was submitted to NYSDOH, Montgomery County Department of Public Health, and NYSDEC on March 5, 2018. The inquiry requested data on public surface drinking water intake sites within 1 mile of the proposed Facility or, if there are no such intake sites, the nearest intakes downstream of the Facility.

A response letter from the NYSDOH was sent on April 6, 2018, which identified no water intake locations within one mile of the Facility Area. A response was received from the NYSDEC on March 27, 2018 with a map indicating the location of water withdrawals in the vicinity of the Facility. Based on the map provided by the NYSDEC, there are no water withdrawals within 1 mile of the Facility Area. However, there are two water withdrawals located along the Mohawk River, near the 1 mile buffer of the Facility Area. The Village of Fort Plain water withdrawal is a public water supply located 1.3 miles north of the Facility Site located at latitude 42.933785, longitude -74.624871.

To date, no response or acknowledgement of receipt of the FOIL request has been received by the Montgomery County Department of Public Health.

The Applicant will take all measures practicable to avoid, minimize, and mitigate impacts to surface waters, including surface drinking water supplies, due to construction and operation of the Facility as outlined in Section (b)(5) below.

(4) Impacts to Surface Waters

The Applicant has sited PV panels, the collection substation, and the temporary construction areas to avoid or minimize impacts to surface waters. The Applicant has also attempted to avoid impacts to surface waters associated with the Facility by locating access roads and collection lines to minimize the number of stream crossings. Where stream crossings cannot be avoided, the overall impacts will be minimized by using existing

crossings and narrow crossing locations to the extent practicable. Also, the Applicant will use the jack and bore drilling technique, where feasible, to further minimize crossing impacts. The Applicant has prepared a Draft Inadvertent Return Plan (Appendix 23-B) that outlines measures to monitor and minimize the potential for frac-outs associated with the jack and bore technique, a response plan should a frac-out occur, and direction for disposal of drilling fluids As described in Exhibit 22, the construction of the Facility will only have minimal impacts to surface waters and open water wetlands. In addition, impacts to streams due to construction of the Facility will be limited to 716 linear feet of temporary impacts and 282 linear feet of permanent impacts. The details of these impacts are described below.

During construction, potential direct or indirect impacts to surface waters may occur as a result of the installation of the access roads, buried collection lines, and the development and use of temporary workspaces around the substation. Direct impacts could include 1) an increase in water temperature and conversion of cover type due to clearing of vegetation, 2) siltation and sedimentation due to earthwork, such as excavating and grading activities, 3) disturbance of stream banks and/or substrates resulting from buried cable installation, and 4) the direct placement of fill in surface waters to accommodate road crossings. Indirect impacts to surface waters may result from sedimentation and erosion caused by construction activities (e.g., removal of vegetation and soil disturbance).

Clearing of trees and other woody vegetation around stream and riverbanks could increase the temperature of those waters. Water temperature governs most of the physical, chemical, and biological processes that occur in streams. Temperature determines the types of organisms that can live in streams and rivers. All aquatic organisms, including zooplankton, phytoplankton, fish, and insects have a range of temperatures that they can live within. Above or below that range, the organisms can become stressed and the number of individuals of the species will decrease (USGS, 2016). Temperature in streams also influences the water chemistry, including dissolved oxygen levels and chemical reactions. Vegetation clearing along streambanks will be minimized to the extent practicable to minimize changes in cover that could result in localized increases in stream temperature. Forest clearing along streams will be limited to short segments and will not occur along the length of the entire stream. Therefore, water temperature impacts are anticipated to be localized and minor.

An increase in turbidity in surface waters can affect organisms that are directly dependent on light, such as aquatic plants. This in turn can affect other organisms that depend on these plants for food and oxygen. Turbidity increases in surface waters in the Facility Site will be minimized by the implementation of the SWPPP, as discussed in Section (b)(5).

Potential temporary and permanent impacts to streams and open waters that could result from Facility construction and operation have been calculated based on the limits of disturbance as determined through preparation of the preliminary design drawings. The Facility is anticipated to result in up to approximately 716 linear feet of temporary disturbance to ephemeral and intermittent streams and up to approximately 282 linear feet of permanent disturbance to intermittent and ephemeral streams. As stated above, impacts have already been minimized substantially due to changes in the Facility layout. Table 23-3 provides a summary of the potential impacts to streams, including type of impact and measure that will be taken to avoid and minimize impact at each stream crossing.

**Table 23-3. Impacts to Streams**

| Stream Delineation ID | NYSDEC Classification (if applicable) | Temporary Stream Impact (sq ft) | Temporary Stream Impact (linear feet) | Permanent Stream Impact (sq ft) | Permanent Stream Impact (linear feet) | Type of Impact | Stream Crossing |
|---|---|---|---|---|---|---|---|
| AA | -- | 71 | 32 | -- | -- | Collection Line | No crossing required |
| AB | -- | 127 | 109 | -- | -- | Collection Line | No crossing required |
| 3C | -- | 130 | 48 | 139 | 47 | Access Road | -- |
| FF | C | 204 | 85 | -- | -- | Collection Line/ Access Road | No crossing required |
| 3K | C | -- | -- | -- | -- | Collection Line | Jack and Bore for Collection Line |
| 3M | -- | 23 | 6 | -- | -- | Collection Line | No crossing required |
| OO | -- | 1,461 | 195 | 1,082 | 75 | Collection Line/ Access Road | Jack and Bore for Collection Line |
| P | C | 927 | 58 | 1,155 | 63 | Collection Line/ Access Road | Jack and Bore for Collection Line |
| PP[1] | C | 595 | 183 | 359 | 97 | Collection Line/ Access Road | Jack and Bore for Collection Line |

[1] Indicates that stream is crossed in two separate locations

As indicated above in Table 23-3, it is anticipated there will be a total of nine stream crossings, five of which will cross NYSDEC Class C streams. Though these streams are classified as Class C by the NYSDEC, based on consultation with the NYSDEC, they are not jurisdictional under Article 15 of the New York Environmental Conservation Law. Of the nine total stream crossing, 1 is crossed solely by an access road, four are crossed by a collection line, and four are crossed by both a collection line and access road. Where possible, collection lines will cross streams using the jack and bore drilling technique. This method will occur at four of the nine delineated streams and is illustrated on Figure 22-3. Stream crossings will be conducted in accordance with all applicable laws and regulations. BMPs and other guidelines for stream crossings will be developed in consultation with the

NYSDEC and NYSDPS. See Section (b)(5) below for further discussion of avoidance, minimization, and mitigation of impacts to surface waters.

Construction of the Facility will result in no permanent loss to open water habitats and the wetlands that surround them.

Surface water sources most vulnerable to sedimentation are those with uplands adjacent to work areas. Due to the topography of the Facility Site, construction could result in some siltation and sedimentation in surface water sources. However, these impacts are anticipated to be minor due to the gentle sloping nature of surrounding topography within the Facility Site. Regardless, the Applicant will take measures to avoid and minimize siltation (see Section (b)(5) below), including developing and implementing a SWPPP (see Section (c)(1) below).

In addition, the use of jack and bore techniques will minimize impacts to stream reaches, and typical BMPs will be implemented (e.g., appropriate setbacks from surface waters, use of erosion and sediment control measures, etc.). Final specifications associated with jack and bore activities will be prepared by the contractor in accordance with all relevant environmental permitting conditions. A map of anticipated locations of boring locations in relation to surface water resources is found in Figure 23-4.

Facility construction and operation is not anticipated to impact drinking water. The measures that the Applicant will take to avoid, minimize, and mitigate impacts to surface waters, described below in Section (b)(5), will ensure that drinking water sourced at surface intake sites will not be degraded by Facility construction or operation. As previously noted, the Applicant has also drafted a Preliminary SPCC Plan to minimize the potential for unintended releases of petroleum or other hazardous chemicals during Facility construction or operation (Appendix 23-C). Proposer implementation of the SPCC Plan will avoid, minimize, and mitigate the potential for contamination of both surface water and groundwater, thereby protecting drinking water supplies.

No dredging is proposed as part of this Facility. Therefore, this Application does not identify precautions taken to avoid or minimize the need for dredging.

(5) Measures to Avoid or Mitigate Surface Water Impacts

The Applicant has taken measures to avoid impacts to surface waters including the relocation of Facility components, routing Facility components along previous disturbance corridors, and designing access roads to work with the native topography and minimize the need for soil disturbance, which can also reduce the impact of

sedimentation on surrounding surface water. Exhibit 9(4)(ii) of this Application contains additional discussion on Facility siting alternatives with respect to wetland avoidance and minimization.

Direct impacts to surface waters have been minimized by designing the Facility layout to avoid surface water impacts where practicable, and utilizing existing or narrow crossing locations whenever possible. Upgrading existing crossings that are under-maintained/undersized will have a long-term beneficial effect on water quality, as it will help to keep farm equipment or other vehicles out of surface waters. Special crossing techniques, equipment restrictions, herbicide use restrictions, and erosion and sedimentation control measures will be utilized to reduce adverse impacts to water quality, surface water hydrology, and aquatic organisms. In addition, clearing of vegetation along stream banks will be kept to a minimum.

Where stream avoidance could not be accomplished, alternative methods will be employed in order to minimize impacts of Facility components on surface waters. For collection lines, stream crossings will be routed underground via trenchless jack and bore techniques in multiple locations. For access roads, stream crossings will be accomplished through the installation of culverts. Culverts will enable stream flow underneath the access roads, maintaining stream connectivity. During the installation phase, temporary inlet and outlet protection measures, in the form of stone checkdams, will be used to cease stream flow. These structures are temporary and will be removed once the culvert and access road are properly installed. Culvert sizing will be equal to the undisturbed cross-sectional area of the bank full condition of the stream and will be designed for a 100-year storm event. It is anticipated that culverts will fit in the stream channel without the use of excavation. If a stream is wider than 3 feet, multiple pipes may be used for the crossing in order to restore natural flow conditions. Specific dimensions of each crossing are provided in Appendix 11-E.

The Applicant will provide final engineering plans to the NYSDEC and NYSDPS regarding each proposed crossing prior to the Siting Board's determination of whether to issue an Article 10 Certificate to the Facility. Stream crossing methods will take into consideration and meet all NYSDEC stream crossing guidelines. Where crossings of surface waters are required, BMPs will be utilized, as required by the NYSDEC and the USACE, throughout the remainder of the year. Specific minimization and mitigation measures for protecting surface water resources will include the following:

- *No Equipment Access Areas:* Except where crossed by permitted access roads or through non-jurisdictional use of temporary matting, streams will be designated "No Equipment Access," thus prohibiting the use of motorized equipment in these areas.

- *Work Prohibition Dates:* The Applicant will establish work prohibition dates for in-stream work in consultation with the NYSDEC if it is determined that such prohibitions are needed.
- *Restricted Activities Area:* A buffer zone of 100 feet, referred to as "Restricted Activities Area", will be established where Facility construction traverses streams, wetlands and other bodies of water. Restrictions will include:
    - No deposition of slash within or adjacent to a waterbody;
    - No accumulation of construction debris within the area;
    - Herbicide restrictions within 100 feet of a stream or wetland (or as required per manufacturer's instructions);
    - No degradation of stream banks;
    - No equipment washing or refueling within the area;
    - No storage of any petroleum or chemical material; and
    - No disposal of excess concrete or concrete wash water.
- *Sediment and Siltation Control*: A soil erosion and sedimentation control plan will be developed and implemented as part of the SPDES General Permit for the Facility. Silt fences, hay bales, and temporary siltation basins will be installed and maintained throughout Facility construction. Exposed soil will be seeded and/or mulched to assure that erosion and siltation is kept to a minimum along wetland boundaries. Specific control measures will be identified in the Facility Stormwater Pollution Prevention Plan (SWPPP), and the location of these features will be indicated on construction drawings and reviewed by the contractor and other appropriate parties prior to construction. These features will be inspected on a regular basis to assure that they function properly throughout the period of construction, and until completion of all restoration work. See Section (c) below for a detailed discussion of stormwater issues.

Shallow groundwater will likely be encountered during construction activities such as foundation excavation. As a result, dewatering will likely occur. If dewatering is required, a temporary pit (or sediment trap) will be constructed in upland areas (i.e., not within streams or wetlands) to trap and filter water prior to discharging it to a stable discharge area. Dewatering will involve pumping accumulated water to a device (e.g., sediment filter bag, silt fence barrier), decreasing discharge velocity, and trapping suspended sediment prior to out-letting the water to undisturbed ground. The stable outlet must be capable of filtering further sediment and withstanding the velocity of the discharge water to prevent erosion.

(c) Stormwater

(1) Stormwater Pollution Prevention Plan

Prior to construction, the Applicant will seek coverage under the NYSDEC State Pollution Discharge Elimination System (SPDES) General Permit with a Notice of Intent for Stormwater Discharges from Construction Activity issued in January 2015 and effective on January 29, 2015 (modified July 15, 2015) (see http://www.dec.ny.gov/docs/water_pdf/gp015002.pdf). This authorization is subject to review by NYSDEC, and is independent of the Article 10 process. A Preliminary SWPPP, which has been prepared consistent with the SPDES General Permit, is attached as Appendix 21-B. The Preliminary SWPPP includes a discussion of pre-construction requirements, which include ensuring that there is at least one person on-site daily to inspect the site's erosion and sediment control practices when soil disturbing activities are being performed. Requirements during construction are also described in the Preliminary SWPPP, which addresses, among other things, the maximum allowable level of soil disturbance (5 acres unless permission from NYSDEC is otherwise obtained); the specific construction sequence that must be followed; specifications for construction site inspection; authorized and non-authorized non-stormwater discharges; measures for maintaining surface water quality; chemical and oil management; and post-construction maintenance requirements. The Preliminary SWPPP also discusses use of appropriate erosion and sediment controls and stabilization practices during construction, management of post-construction stormwater quality and quantity, and a description of conditions that will allow for the termination of permit coverage. 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 Control Practices

As described above, the Preliminary SWPPP and associated erosion and sedimentation control plan will address the anticipated stormwater management practices that will be used to reduce the rate and volume of stormwater runoff after Facility construction has been completed. Green infrastructure practices, such as dry swales and vegetative filters, as well as stormwater detention and culverts were proposed to provide both stormwater quality and quantity controls. Dry swales will treat stormwater for sections of the access roads that drain to swales/ditches along the road edge. These dry swales will discharge to level spreaders that will convey stormwater in a sheet flow fashion and will allow for a natural distribution of stormwater runoff. Most of the Facility will benefit from vegetative filters. Runoff from the access roads will sheet flow across these filters, reducing the volume of stormwater from the Facility Site. The Preliminary SWPPP was prepared in accordance with New York State Standards and Specifications for Erosion and Sediment Control (NYS Standards), and the New York State Stormwater Management Design Manual, and includes information on permanent, post-construction erosion and sediment control measures (vegetative and structural), along with the anticipated stormwater management

practices that will be used to reduce the rate and volume of stormwater runoff after construction has been completed.

Following Certification of the Facility, it is anticipated that hydrologic models (e.g., Hydraflow Hydrographs Extension for AutoCAD Civil 3D software) based upon measurable watershed characteristics will be utilized by professional engineers to calculate stormwater discharges. Stormwater runoff rates discharged from the site under existing conditions (pre-construction) will provide the basis for evaluation and comparison to proposed conditions (post-construction). Design points of interest will be established where stormwater runoff exits the site (e.g., where proposed Facility access roads intersect with existing public roads/roadside ditches). These design points will provide fixed locations at which existing and proposed stormwater quantities can be compared. The areas draining to these design points will be delineated using land survey information and proposed grading plans, and a hydrologic analysis of each of the drainage areas will be conducted to model their discharges (typically for the 1, 2, 10, 25, 50 and 100-year storm events). Because final engineering will not be completed until the Facility has been certified, and because the Applicant will ultimately seek coverage under the SPDES General Permit independent of the Article 10 process, a Final SWPPP is not included in the Article 10 Application. Following Certification of the Facility, the Applicant will conduct the detailed engineering necessary to prepare a Final SWPPP, in accordance with the SPDES General Permit.

(d) Chemical and Petroleum Bulk Storage

(1) Spill Prevention and Control Measures

To prevent unintended releases of petroleum and other hazardous chemicals, a Preliminary SPCC Plan has been prepared that outlines preventative measures and response procedures in the unlikely event of a release. Specifically, the Plan contains descriptions of on-site oil storage activities, procedures for handling oil, discharge or drainage controls, procedures in the event of a discharge discovery, a discharge response procedure, a list of spill response equipment to be maintained on-site, containment and diversionary structures, methods of disposal of contaminated materials in the event of a discharge, and spill reporting information.

Construction and operation of the Facility will not require the use, storage or disposal of large quantities of chemicals or hazardous substances other than petroleum. Chemicals potentially found on-site during construction and operation of the Facility will likely include antifreeze, paints/solvents, lubricants and other chemicals commonly associated with the maintenance of engines and equipment. These materials will be stored consistent with label instructions in small containers (typically less than 5 gallons). Any spills of these material will be reported internally,

and a decision will be made whether the incident must be reported to federal, state or local authorities consistent with legal and regulatory requirements.

(2) Compliance with New York State Chemical and Petroleum Bulk Storage Regulations

It is not anticipated that the Facility will require the on-site storage or disposal of large volumes of any substances subject to regulation under the State of New York's chemical and petroleum bulk storage programs (e.g., fuel oil, petroleum, etc.). If the Applicant elects to store petroleum or chemicals in tanks in quantities that exceed applicable regulatory thresholds, it will submit the necessary registration application(s) to NYSDEC and will comply with all applicable requirements set forth in the petroleum and chemical bulk storage regulations. See 6 NYCRR Part 613 (petroleum bulk storage) and 6 NYCRR Parts 596-599 (chemical bulk storage).

(3) Compliance with Local Laws for Storage of Chemicals or Petroleum

It is not anticipated that the Facility will require the on-site storage or disposal of large volumes of any substances subject to regulation under local laws. If the Applicant's plans change, it will comply with all applicable chemical and petroleum storage requirements.

(e) Aquatic Species and Invasive Species

(1) Impact to Biological Aquatic Resources

With respect to potential impacts to wetlands, see Exhibit 22. With respect to impacts to surface waters, see Tables 23-3 and 23-4, above. Generally speaking impacts to surface waters result in impacts to biological aquatic resources that require aquatic habitats. However, only a small fraction of the available aquatic habitat that exists within the Facility Site will be impacted by Facility construction or operation.

A list of threatened, endangered, and otherwise protected species that could occur within the Facility Site is provided in Exhibit 22(f)(6), which includes eight species that are listed as threatened/endangered in New York State.

None of the species included in the Common Aquatic Invasive Species of New York (NYSDEC, 2018) list were observed during on-site delineations or field investigations. However, a comprehensive inventory of aquatic invasive species was not conducted. Most of the aquatic habitat within the Facility Site is in the upper portion of the watershed and does not consist of water bodies large enough to support these species. Furthermore, most aquatic invasive species are introduced to lakes, then travel to streams and rivers. Aquatic invasive species are typically spread by ships, boats, barges, aquaculture, recreation, and connected waterways. These activities are

infrequent in small headwater streams, thereby limiting the potential for the introduction of aquatic invasive species to surface waters on the Facility Site. As a result, the construction and operation of the Facility is not anticipated to cause the spread of aquatic invasive species or have adverse impacts to native aquatic species. For additional information on aquatic invasive species see Section (b)(2) above and Exhibit 22. Since no aquatic invasive species were identified within the Facility, maps and shapefiles of the locations of aquatic invasive species are not included in this Application.

(2) Measures to Avoid or Mitigate Impacts to Aquatic Species

Avoidance measures implemented to minimize impacts to surface waters will also serve to avoid or mitigate impacts to aquatic resources. Please see Section 2.23(b)(5) above for additional information.

(f) Cooling Water

The proposed Facility does not involve the use of cooling water, and as such, the requirements of this section are not applicable to this Facility. Therefore, information related to cooling water systems, intake, and discharge are not included in the Article 10 Application.

## REFERENCES

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