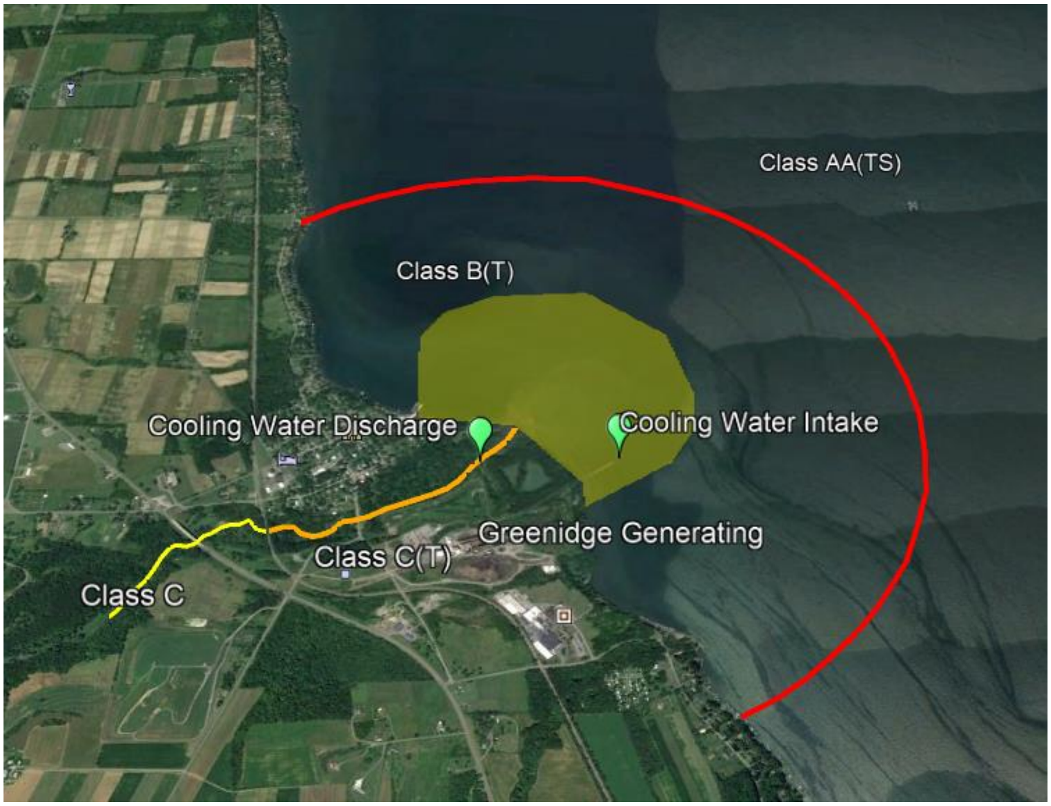
GREENIDGE GENERATING FACILITY
THERMAL DISCHARGE STUDY PLAN



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EXECUTIVE SUMMARY

As a condition of SPDES permit NY0001325, Greenidge Generating Facility (GGF) must provide a Thermal Discharge Study Plan to NYSDEC for approval, and then perform the study. The last prior thermal study at GGF occurred in 1976 when the facility operated on coal instead of natural gas, and four units were operating in comparison to the single unit today. That study demonstrated that the balanced indigenous community was being maintained even though some thermal criteria were not met. The study requested a designated mixing zone within the lowest 700 ft of Keuka Lake Outlet (KLO) and 230 acres within Seneca Lake.

This study plan proposes *in-situ* temperature monitoring in both the KLO from March to November, and in Seneca Lake during July to September. A tri-axial (latitude, longitude, depth) plume mapping effort is proposed to be conducted three times in Seneca Lake, coincident with the *in-situ* monitoring there.

Study Component	Task	Temporal	Intensity
In-situ Temperature Monitoring	Temperature monitoring in KLO	Mid-March to December	7 Stations at Bottom, 2-hr intervals
	Temperature monitoring in Seneca Lake	Mid-July to Mid-September – 3 events at 2-week interval	7 Stations at surface, mid-depth, and bottom, 15-min intervals
	Velocity and flow at KLO mouth	At deployment of KLO sensors in March, during 1 or more tri-axial survey, and at retrieval of KLO sensors	Each channel of KLO flow into Seneca Lake
Tri-axial Plume Mapping	Temperature measurements on transects	Mid-July to Mid-September – 3 events at 2-week interval	5 Transects with thermal profile at 1°F isotherms
	Lake Bathymetry	During 1 tri-axial event	Within the B(T) classified waters
	Lake Current monitoring	Continuous from start to end of plume mapping	Single location profile

The data collected in the study, along with other available data, will be analyzed to determine whether the thermal discharge is consistent with all relevant temperature criteria in 6 NYCRR § 704.2 and 704.3.

To assess consistency under conditions other than those observed during the monitoring, the data collected will be analyzed with a near-field plume mixing model (CORMIX) and a far-field hydrodynamic model (RMA-10). The modeling will examine both summer and winter conditions, and will explicitly analyze air temperature increases of +2, +4, and +6 °F during the summer.

The proposed schedule for the study includes submittal and approval of the study plan in 2020, conduct of the study in 2021, and reporting of all results in 2022.

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1. INTRODUCTION

The Greenidge Generating Facility (GGF) is located on the western shore of Seneca Lake in Dresden, New York (Yates County). The facility is a steam electric generating station consisting of one gas-fired boiler and one turbine generator, designated Unit 4, with a rated maximum generating capacity of 107 MW. The facility draws water for its once-through cooling system from Seneca Lake, and discharges to the Keuka Lake Outlet (KLO) 700 ft from Seneca Lake.

New York State Department of Environmental Conservation (NYSDEC) renewed the State Pollution Discharge Elimination System (SPDES) permit for the facility (NY-0001325) on October 1, 2017. Additional requirement 9 of the permit is that GGF submit an updated schedule for the Thermal Discharge Study Plan that was originally submitted on January 27, 2011 and was approved by NYSDEC. The same Study Plan, with a revised schedule, was resubmitted on December 27, 2017. Comments on that study plan were provided by NYSDEC in a letter (Peter Maier to Kenneth Scott) on October 12, 2018. This document is a revised Study Plan that responds to NYSDEC comments and provides another updated schedule and other revisions.

As per the SPDES permit, this Study Plan includes a brief description of the facility; a summary of past thermal studies; a proposed study protocol; and a schedule for conducting field studies, thermal modeling and submission of an approvable Thermal Criteria Study Report. The Study Plan also is (a) designed to describe all applicable criteria contained in 6 NYCRR 704.2 and evaluate consistency with those criteria, including a comparison of the permitted mixing zone and past thermal studies to those reflecting current conditions; (b) be conducted under critical ambient temperature when all units are operating during summer, winter or other critical climatological conditions; (c) include an analysis of past ambient data to determine any temperature trends in the receiving water; (d) perform three additional modeling projections in response to air temperature increases of 2, 4, and 6 °F above the baseline worst-case scenario. All of these projections shall reflect maximum thermal discharge loading.

In addition, the Study Report will include the technical material obtained in the study and provide all assumptions, calculations, and models used in deriving the Daily Maximum Discharge Temperature and sizing of the mixing zone.

2. GREENIDGE GENERATING FACILITY

The GGF previously had four generating units that came online between 1938 and 1953. The cooling systems for all four units withdrew water from Seneca Lake at a maximum rate of 131,500 gpm. The facility currently has only one generating unit (Unit 4) with a generating capacity of 107 MW and maximum cooling water withdrawal of 68,000 gpm.

The cooling water flow for Unit 4 is obtained from Seneca Lake through a 7-ft diameter intake pipe elevated on wood pilings that extends from the pumphouse to a point 650 ft offshore (Figure 2-1). At the end of the pipe, the lake is approximately 11 ft deep. The intake pipe opens facing downward and is surrounded by a 27 ft by 27 ft steel structure composed of 3/16- inch bars, 6 inches on center. The Unit 4 intake relies on suction to convey water from the lake, through the elevated intake pipe, and on to the circulating water pumps.

Unit 4 has three cooling water pumps with a combined capacity of 68,000 gpm. Two pumps are used throughout most of the year and the third pump is operated as needed during the summer months or used as back-up for the rest of the year. As required by the SPDES permit issued in 2017, variable-speed drive (VSD) units were installed on two of the three pumps in the summer of 2019. Service water for Unit 4 is drawn through the Unit 3 intake system but adds only minimally to the total flow (2%) and heat load.

The Unit 4 condenser, manufactured by the Westinghouse Electric Corporation, has 50,000 ft^2 of cooling surface made up of 9098 3/4" O.D. No. 18 BWG Admiralty metal tubes. The tubes have an effective length of 28 ft. The condenser has parallel upper and lower chambers that can be operated independently. Each tube bank is approximately circular in cross section, with the tubes arranged in radial lines, and is entirely surrounded by a zone of exhaust steam. The air off-take is located at the center of the condenser so that steam will flow radially inward from the exhaust steam zone to the central core which is connected to the air ejector. The circulating water inlet manifold is fitted with two motor operated backwash valves to permit the water flow through the tubes to be reversed as necessary to maintain efficient operation. At full generating load and flow, the design temperature rise across the condenser (ΔT) is approximately 14 °F.

After passing through the Unit 4 condenser, cooling water discharges into a common 54" diameter steel pipe which connects to a concrete tunnel 41" x 61" in cross-section which extends to the north wall of the turbine room basement. At this point the tunnel divides into two 42" diameter steel pipes connecting to the temperature activated circulating water backwash valves. Water then flows through a 7 x 10-ft tunnel to the discharge canal. The discharge canal, which is approximately 900 ft long, empties into the Keuka Outlet, a class C(T) designated water, about 700 ft upstream from Seneca Lake (Figure 2-2). Within a radius of one mile of the mouth of KLO, Seneca Lake is designated class B(T), and most of the lake more distant from the outlet is class AA(TS).

As defined by NYSDEC, the best usages of Class B waters are primary and secondary contact recreation and fishing. These waters shall be suitable for fish, shellfish, and wildlife propagation and survival. Similarly, NYSDEC defines the best usage of Class C waters as suitable for fishing and shall also be suitable for fish, shellfish and wildlife propagation and survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes. The symbol (T) means that the classified waters are trout waters. Any water quality standard, guidance value, or thermal criterion that specifically refers to trout or trout waters applies to these waters.

Figure 2-1 Unit 4 withdraws water from an elevated 7-ft diameter conduit that extends 650 from the west shore of Seneca Lake.

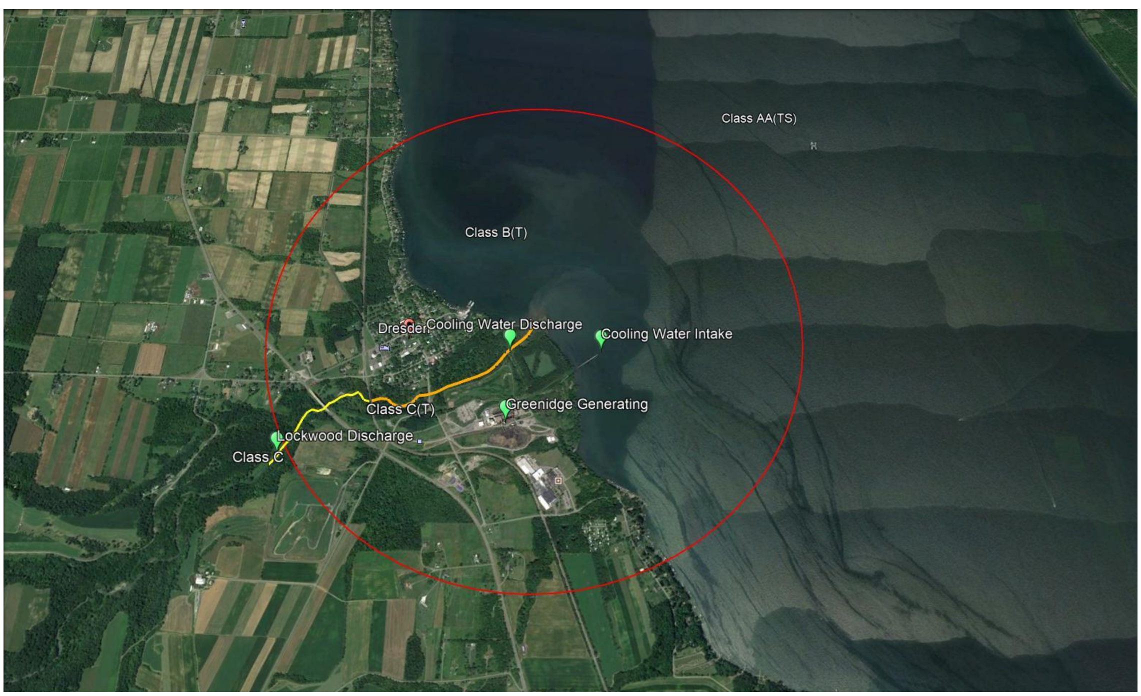

Figure 2-2 Location of Greenidge Generating Facility, its cooling water intake and discharge, water quality classification of surrounding waters.

3. SUMMARY OF PREVIOUS THERMAL STUDIES

The only known prior thermal studies of the GGF discharge were done in 1976 to support a CWA § 316(a) demonstration submitted in 1977 (NYSE&G 1977). The 316(a) demonstration included physical description of the thermal plume on six dates, and examination of the biotic categories of phytoplankton, zooplankton, macrobenthos, aquatic macrophytes, and fish through spring, summer, and fall seasons. During the years prior to and during the studies, all four generating units were operating, so that the heat load to the KLO and Seneca Lake was much higher than at present with only one unit operating (Figure 3-1). From 1966 through 1975 heat rejection to Seneca Lake approximately 6000 Billion BTU.

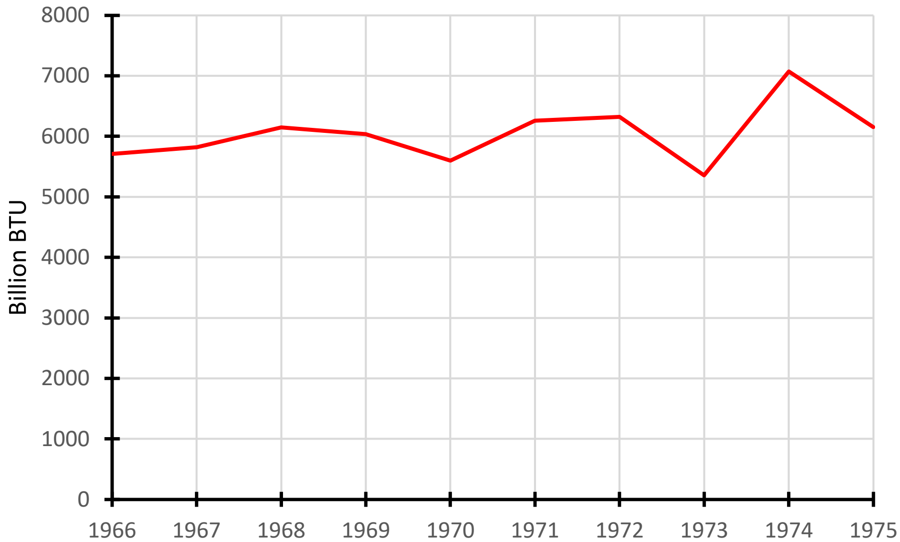

Figure 3-1 Temporal trend in annual heat rejection (Billion BTU) to Seneca Lake at the Greenidge Generating Facility from 1966-1975.

3.1 § 316(A) DEMONSTRATION

The three-dimensional structure of the thermal discharge plume was mapped on 6 dates from 19 March to 9 December 1976. The surveys demonstrated that a 3 °F temperature rise was exceeded in Seneca Lake, and that the area and volume of the thermal plume varied with KLO flow, wind speed and direction, and ΔT of the discharge (Table 3-1). The demonstration also showed that the temperature rise in the lower 700 ft of KLO would at times exceed 2 °F.

Biological data collected on the biotic categories of phytoplankton, zooplankton, macrobenthos, aquatic macrophytes, and fish over spring, summer, and fall seasons showed no appreciable harm as a result of the criteria being exceeded.

3.2 REGULATORY ACTION

The thermal study component of the § 316(a) demonstration (NYSE&G 1977) showed exceedences of thermal criteria for more than a 2 °F rise in temperature of a designated trout stream, and more than a 3 °F increase in the surface temperature of Seneca Lake. However, because no harm to the balanced indigenous communities or biotic categories was observed, NYSE&G requested, and NYSDEC approved, a variance from the criteria and a defined mixing zone consisting of the entire width of the KLO downstream of the confluence with the discharge canal, and an area of 230 acres of Seneca Lake around the mouth of Keuka Lake Outlet.

Table 3-1 Physical and plant operational characteristics, and thermal plume dimensions during thermal surveys conducted at Greenidge Generating Facility in 1976.

Date	Flow (cfs)		ΔT °C	Billion BTU/hr	Average Wind		Plume Characteristics (ft or acres)			
	Station Discharge	Keuka Lake Outlet			mph	Direction	Centerline Distance	Max Width	Surface Area	Max Cross-section
19-Mar	162	572	5.1	0.39	3.9	244	520	180	1.5	0.02
6-May	293	316	8.1	0.78	3.5	360	1100	1250	22.4	0.09
1-Jul	249	104	8.2	0.75	4.2	215	1450	436	9.2	0.04
5-Aug	293	52	7.4	0.96	3.8	203	2050	1746	40.8	0.03
2-Sep	205	43	7.2	0.61	10.9	45	5820	798	71.5	0.07
9-Dec	249	84	10.3	0.60	4.4	61	4400	450	40.6	0.05

4. THERMAL DISCHARGE STUDY

The goal of the thermal discharge study is to determine whether the GGF thermal discharge meets the criteria in 6 NYCRR Part 704.1 and Part 704.2, and if not to establish a mixing zone consistent with Part 704.3. To support this goal, a thermal monitoring program is proposed to map the temperature conditions around GGF's cooling water discharge in Keuka Lake Outlet and Seneca Lake during various lake and meteorological conditions. In addition, a hydrothermal model will be used to analyze the potential thermal effects of the GGF discharge at critical lake and discharge conditions, and to develop projections at increased ambient air temperatures.

4.1 EXISTING DATA COMPILATION AND REVIEW

The existing data and information concerning operations of the Greenidge Station and Seneca Lake information will be compiled and reviewed as part of the lake temperature study and also to guide the modeling approach (i.e., extent of the modeling domain, computational grid resolution, selection of critical conditions for model projection scenarios, and development of model inputs). The following data will be reviewed:

- Plant discharge/intake structure design
- Current plant generating loads, intake/discharge flows, and temperature
- Lake water level from the USGS gage on Seneca Lake at Watkins Glen (#04232400)
- Keuka Lake Outlet discharge data from USGS gage (#04232482)
- Lake bathymetry, ambient temperature and current data
- Previous thermal plume monitoring studies
- Meteorological data measured at the Northeast Regional Climate Center (Penn Yan, NY)
- Meteorological and lake temperature data at the Clarks Point buoy
- Lake temperature and water quality data collected during 2005-2006 studies

4.2 LAKE TEMPERATURE SURVEY

Temperatures will be assessed through both moored *in-situ* recording temperature sensors, and during three (3) tri-axial plume mapping surveys. This combination of temperature data will allow assessment of thermal criteria, and definition of any mixing zone that may be necessary.

4.2.1 Moored *in-situ* temperature monitoring

From late March through mid-November, seven (7) recording temperature sensors will be anchored near the bottom of the Keuka Lake Outlet and the GGF discharge canal (Figure 4-1). One sensor will be placed in KLO upstream of the discharge canal; two sensors will be placed just downstream of the confluence with the discharge canal, one on each side of the stream; and three sensors will be placed at the Outlet mouth, one in each of the three channels. One sensor will be placed in the discharge canal. These sensors will record temperature to the nearest 0.1 °C at 2-hr intervals. Indicated locations are approximate. At the time senors are deployed and retrieved, the velocity and flow at the Keuka Lake Outlet mouth will be measured in each of the channels.

During the approximately 1-month period for the tri-axial plume mapping (See 4.2.2 Tri-axial plume mapping), seven (7) sets of temperature sensors will be placed in Seneca Lake surrounding the Outlet mouth (Figure 4-1). At each location, sensors will be located at surface, mid-depth and bottom. These sensors will record temperature to the nearest 0.1 °C at 15-min intervals. Indicated locations are approximate.

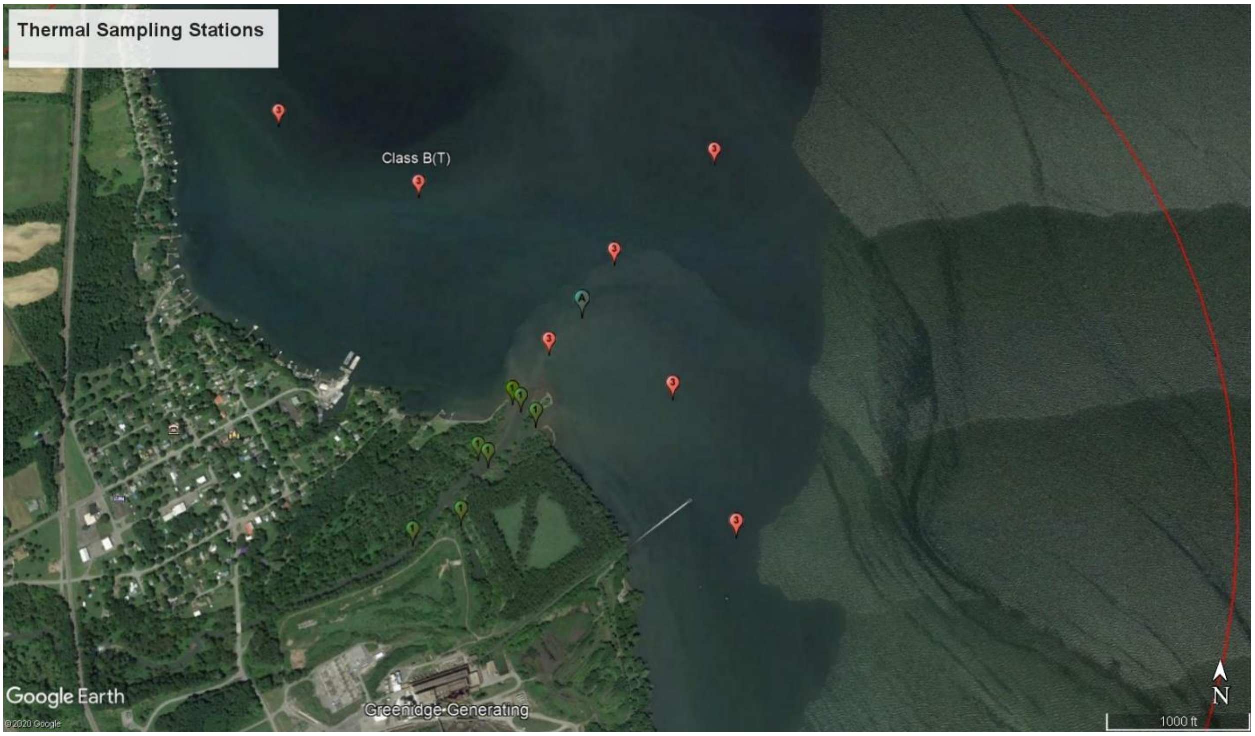

Figure 4-1 Locations for *in-situ* temperature monitors. Green markers denote locations within the GGS discharge canal and Keuka Lake Outlet where temperature will be monitored at a single depth. Red markers denote locations within Seneca Lake where temperature will be monitored at surface, mid-depth, and bottom. Blue marker indicates location of ADCP unit. Locations are approximate and may be adjusted.

4.2.2 Tri-axial plume mapping

A tri-axial plume mapping effort will be conducted three (3) times during an approximate 1-month period during peak summer temperatures in 2021, between mid-July and mid-September. The *in-situ* temperature sensors will be placed in Seneca Lake prior to the first survey and removed after the last survey.

During each event, temperature will be measured along five (5) transects radiating from the KLO mouth (Figure 4-2). Temperatures will be measured by towing a fast-response recording sensor at the surface, coupled with GPS capability to record exact location of each measurement. At each 1 °F drop in excess temperature, a full vertical temperature profile will be recorded. Transects will extend from the hub to a point at which the temperature rise above ambient is less than 1 °F.

During one of the plume mapping events, velocity and flow will be measuerd at the KLO mouth, and a bathymetric survey of the area of Seneca Lake that is classified B(T).

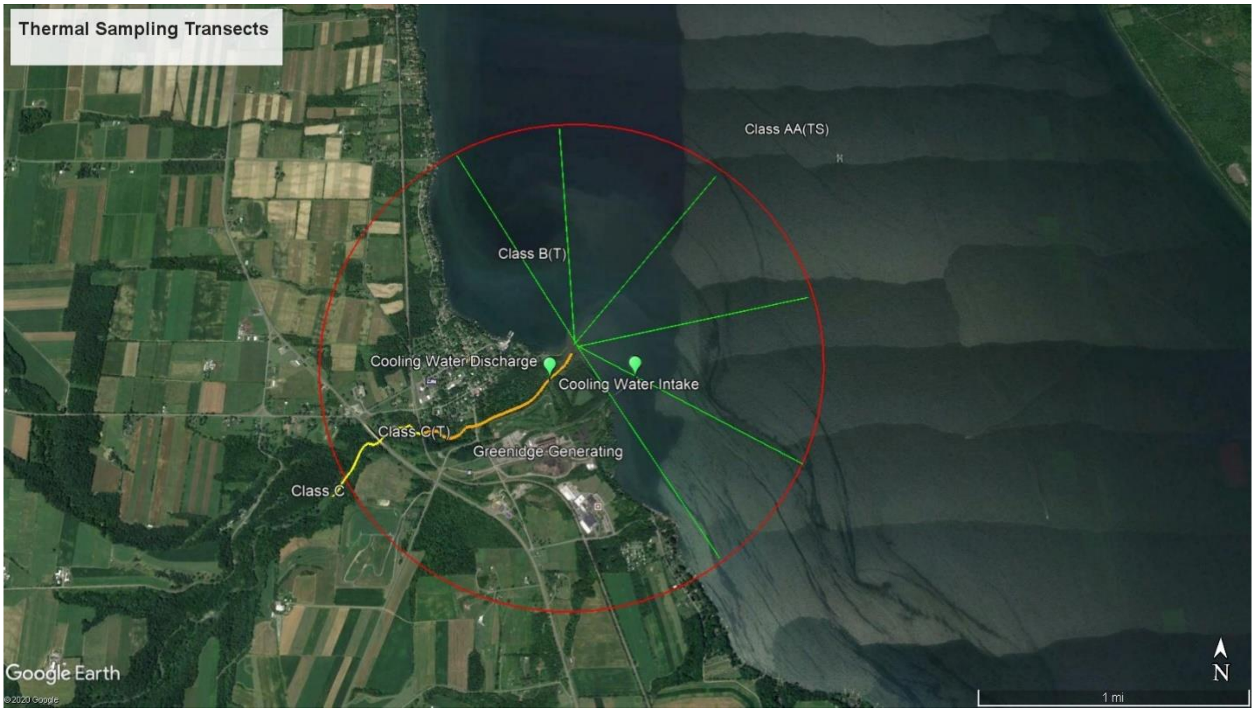

Figure 4-2 Transects to be used for the tri-axial plume mapping. Transects will be continued to the point at which the temperature rise is less than 1 °F. Locations of transects are approximate.

4.3 THERMAL PLUME MODEL

A hydrothermal model for the GGF discharge will be developed using existing information and data obtained from the Lake Temperature Survey. The analysis will include both near-field and far-field modeling.

The near-field is the region where mixing is caused by the momentum and buoyancy of the initial discharge, and by the interaction with the ambient current. Typically, the near-field extends a few tens of meters from an outfall.

In this case, the discharge outlet configuration consists of a tunnel which discharges into a 900-foot-long canal that empties into the KLO. When the thermal discharge exits the canal and passively drifts with the ambient current, it enters the far-field region (Seneca Lake). Here, it is diffused primarily by lake turbulence, and its transport is controlled by large-scale circulation patterns driven by wind forcing, atmospheric heating/cooling, and tributary inflows.

The CORMIX initial dilution model will be used to simulate the near-field mixing processes of the GGF thermal discharge. This model will quantify initial dilution processes, delineate the extent of the initial-mixing zone, and provide additional information to support analysis of biological effects.

Since the GGF discharge zone has a relatively simple configuration, and since the RMA-10 far-field model has a very flexible finite-element formulation, it may be applied in this case without coupling to a separate near-field model. The bathymetry of the confluence between KLO and Seneca Lake will be adapted into RMA-10's finite-element framework using very small grid elements to simulate small-scale velocity variations, and associated water temperature variability. The collected field data will provide boundary conditions for water temperature and flow at the KLO mouth.

The far-field model will be setup for the conditions observed during the field temperature surveys for model calibration. Both CORMIX and RMA-10 will be calibrated to the Seneca Lake conditions as measured during the field temperature surveys (i.e., model calibration period).

The CORMIX-RMA-10 modeling system will include the following key physical processes: GGF operating conditions (intake and discharge flows and associated thermal load); Seneca Lake water level and temperature dynamics; and atmospheric forcing mechanisms such as heating, cooling and wind stress.

4.3.1 Model Projection Scenarios

The thermal model will be calibrated to the empirical temperature data collected during the three tri-axial plume mapping events and used to describe the size and shape of the thermal discharge isotherms during the survey events. In addition, model projections will be produced for eight scenarios for variations in flow and ambient conditions (Table 4-1). KLO flow will be determined from available USGS gage data. Summer Seneca Lake temperature data will be taken from the Clark Point buoy, and winter temperatures from GGF historical operation data. Meteorological data will be based on the Clark Point buoy for summer projections, and the Penn Yan station for winter projections.

The calibrated models will be used to determine the size and shape of the thermal plume, and the area where, if applicable, $\Delta T \geq 3$°F for the Daily Maximum Discharge condition under both critical winter and summer ambient scenarios. The model projection scenarios will include the daily maximum thermal discharge conditions at critical receiving water conditions. For summer and winter critical conditions, historical plant intake temperatures and air temperature data measured near the GGF will be analyzed to develop 5th, 10^{th,} 90th, and 95th percentile temperatures. In addition, the projection conditions will be established based upon an analysis of historical meteorological data corresponding to the critical temperature percentiles.

The GGF SPDES discharge permit requires three projection scenarios with the critical conditions as described above and incremental 2°F increases in air temperature (i.e., +2, +4 and +6°F). The approach proposed for these additional evaluations is to establish the statistical relationship of Seneca Lake surface temperature with air temperature using the historical Clarks Point buoy data. An example of the analysis is provided in Figure 4-3 using only data from 2019, for which a 6°F increase in air temperature would result in approximately a 2 °F increase in lake surface temperature. The impact of the GGF discharge on the lake will then be determined based on the higher air/lake temperatures.

Table 4-1 Scenarios to be projected using the CORMIX-RMA-10 models for the Thermal Criteria Study[1].

Scenario	GGF Operation (MW – gpm)	Keuka Lake Outlet Flow Percentile	Seneca Lake Temperature Percentile	Meteorological Conditions
1 Summer 90th	107 - 68,000	July-Aug 10th	July-Aug 90th	Solar radiation, wind, humidity, elevation, air temperature during 90th
2 Summer 95th	107 - 68,000	July-Aug 5th	July-Aug 95th	Solar radiation, wind, humidity, elevation, air temperature during 95th
3 Seiche	107 - 68,000	All conditions selected based on actual seiche event		
4 Winter 10th	107 - 60,000	Jan-Feb 10th	Jan-Feb 10th	Solar radiation, wind, humidity, elevation, air temperature during 10th
5 Winter 5th	107 - 60,000	Jan-Feb 5th	Jan-Feb 5th	Solar radiation, wind, humidity, elevation, air temperature during 5th
6 Summer 90th + 2	107 - 68,000	July-Aug 10th	July-Aug 90th	Solar radiation, wind, humidity, elevation, air temperature during 90th +2 °F air temperature
7 Summer 90th + 4	107 - 68,000	July-Aug 10th	July-Aug 90th	Solar radiation, wind, humidity, elevation, air temperature during 90th +4 °F air temperature
8 Summer 90th + 6	107 - 68,000	July-Aug 10th	July-Aug 90th	Solar radiation, wind, humidity, elevation, air temperature during 90th +6 °F air temperature

[1] These are preliminary selections of flow and meteorological conditions. The specifics of these conditions may be modified as appropriate based on initial results and trends observed.

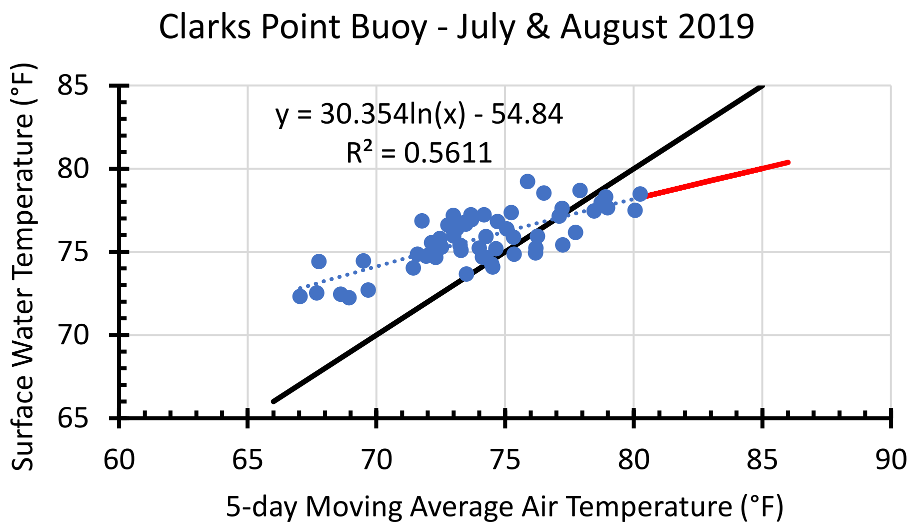

Figure 4-3 Relationship of surface layer (1 m depth) water temperature at Clarks Point buoy with mean air temperature over previous 5 days. Red line indicates predicted water temperature at mean 5-day air temperature up to 86 °F.

5. THERMAL CRITERIA STUDY REPORT

A final report will be developed that presents key assumptions and study findings:

- the results of the field temperature study;
- model development, calibration to observed data, and application to the projected conditions;
- verification of the GGF Daily Maximum Discharge Temperature and mixing zone under varying operating conditions; and
- all assumptions and calculations used in the analyses.

The report will include various tables and graphics for presentation of data, model output, lake and discharge conditions. The assessment methods to determine and document consistency with each of the relevant thermal criteria are summarized Table 5-1.

Table 5-1 Regulatory Assessment Method Summary.

NYSDEC Regulation	Narrative	Assessment Method
§704.1(a) Universal standard for all receiving water bodies	Thermal discharges shall assure the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife.	If all criteria in §704.2 are met, then §704.1(a) is presumed to be met.
§704.2(a)(1) General criterion	The natural seasonal temperature cycle shall be retained.	Compare Greenidge intake temperature data with concurrent water temperature from Clark Point buoy.
§704.2(a)(2) General criterion	Annual spring and fall temperature changes shall be gradual.	Compare Greenidge intake temperature data with concurrent water temperature from Clark Point buoy with focus on fall and spring periods and rate of temperature change.
§704.2(a)(3) General criterion	Large day-to-day temperature fluctuations shall be avoided.	Examine daily max and min temperature from sensor array. Compare sensor data with daily max and min of discharge temperatures.
§704.2(a)(4) General criterion	Development or growth of nuisance organisms shall not occur in contravention of water quality standards.	Discussion of potential occurrence in Greenidge vicinity.
§704.2(a)(6) General criterion	For the protection of the aquatic biota from severe temperature changes, routine shut down of an entire thermal discharge at any site shall not be scheduled during the period from December through March.	Examine scheduled shutdowns.

NYSDEC Regulation	Narrative	Assessment Method
§704.2(b)(2)(i) Special criterion for streams with T or TS classification	No discharge at a temperature over 70 °F	Examine temperature at point that discharge reaches KLO during monitoring.
§704.2(b)(2)(ii) Special criterion for streams with T or TS classification	From June through September no discharge shall be permitted that will raise the temperature of the stream more than 2°F over that which existed before the addition of heat of artificial origin.	Use thermal monitoring data within KLO from the study to assess criterion.
§704.2(b)(2)(iii) Special criterion for streams with T or TS classification	From October through May no discharge shall be permitted that will raise the temperature of the stream more than 5°F over that which existed before the addition of heat of artificial origin or to a maximum of 50°F whichever is less.	Assess through mass balance calculations, using GGF flows, KLO flows, and thermal monitoring data.
§704.2(b)(2)(iv) Special criterion for streams with T or TS classification	From June through September no discharge shall be permitted that will lower the temperature of the stream more than 2°F degrees from that which existed immediately prior to such lowering.	Assess through mass balance calculations, using GGF flows, KLO flows, and thermal monitoring data.
§704.2(b)(3)(i) Special criterion for lakes	Water temperature at the surface shall not be raised more than 3°F over the temperature that existed before the addition of heat of artificial origin.	Empirical sensor data will be used to determine whether criterion is met during the study period. Thermal modeling will determine possible spatial and temporal extent.
§704.2(b)(3)(ii) Special criterion for lakes	In lakes subject to stratification as defined in Part 652 of this Title, thermal discharges that will raise the temperature of the receiving waters shall be confined to the epilimnion.	Empirical demonstration during study. Confirm with thermal model.
§704.3(a) Mixing zone criterion	NYSDEC shall specify definable, numerical limits for all mixing zones.	Results of thermal modeling will determine spatial dimensions of mixing zone, if applicable.
§704.3(b) Mixing zone criterion	Conditions in the mixing zone shall not be lethal in contravention of water quality standards to aquatic biota.	If applicable, compare mixing zone conditions to lethal temperatures for key fish taxa.
§704.3(c) Mixing zone criterion	The location of mixing zones for thermal discharges shall not interfere with spawning areas, nursery areas and fish migration routes.	Assess temperatures in KLO and at mouth and compare with avoidance temperatures for key species.

6. SCHEDULE

The following schedule is proposed for completing the Thermal Discharge Study for the GGF cooling water discharge to Seneca Lake.

Milestone	Date
Submit Thermal Discharge Study Plan (this document)	September, 2020
NYSDEC approval of the Thermal Discharge Study Plan	November, 2020
Begin Keuka Lake Outlet *in-situ* temperature monitoring	mid-March, 2021
Conduct Tri-axial Plume Mapping	mid-July to mid-September, 2021
Conclude Keuka Lake Outlet *in-situ* temperature monitoring	December, 2021
Data analysis and modeling	September 2021 to January 2022
Final report to NYSDEC	March, 2022

REFERENCES

New York State Electric & Gas Corporation. 1977. 316(a) Demonstration Greenidge Station.