Initial Proposed Testing & Monitoring Protocols to Prepare for Cable Installation in the Hudson River near Drinking Water Intakes

In 2013, Transmission Developers Inc. (TDI) received permits for its Champlain Hudson Power Express (CHPE) project. The project would include using a "jet plow" to install the electric transmission cable in the bed of the Hudson River in the stretch of the Hudson River that includes drinking water intakes that serve over 100,000 people. Consultation with the communities and their water operators during permitting was limited to identifying the location of intakes, and pre-dated the formation of the Hudson River Drinking Water Intermunicipal Council (Hudson 7 or Council). The Council is dedicated to protecting the Hudson River as the source of drinking water for the City and Town of Poughkeepsie, the Village and Town of Rhinebeck, and the Towns of Esopus, Hyde Park, and Lloyd. These municipalities rely on five drinking water treatment plants and six intakes. Water is also distributed to residential and commercial properties in the Town of East Fishkill via the Central Dutchess Water Transmission Line.

The Council and its member communities have expressed significant concerns about the project and its permits due to the potential for contamination of drinking water supplies during the construction of the CHPE project. The permit requires TDI to develop an Environmental Management and Control Plan (EM&CP) and to conduct pilot testing of the jet plow that would be used to install the cable.

The Hudson 7 and TDI have been engaged in discussions over how to best implement this analysis given operational and safety concerns. This document outlines the pilot testing and sediment sampling protocols agreed upon by the Council and TDI. It relates to the following set of actions:

1. Sediment sampling to assess whether there are hotspots of pollution in the sediments in CHPE's route near the drinking water intakes.
2. Pilot testing with a full-scale jet plow in the vicinity of a simulated intake, with testing for an array of contaminants.

The Council and TDI agree that this data will be used to develop the EM&CP for our area. Items to be addressed in the EM&CP include robust real-time testing and requirements to halt operations if contamination occurs as well as an emergency response plan.

Sediment Sampling

Prior to the development of the EM&CP, TDI will take five sediment cores along its route in the vicinity of the intakes. Samples will be collected at the location of the closest point of the proposed cables to the intake, 1/8 of a mile upstream and downstream from this point, and ¼ of a mile upstream and downstream from this point. The distribution and density of sediment cores has been determined through consultation with Dr. Bob Chant, a consultant with expertise in pollution dispersion modeling on retainer with the Poughkeepsie Joint Water Board. The core shall be nine feet deep to obtain sediment for the entire depth of the trench plus two feet. A composite sample will be collected and processed for the upper four (4) feet of the core and a second composite sample will be collected and processed from the remaining portion of the core.

The cores should be tested for the following contaminants, which are drawn from 6 CRR-NY 361-3.9:

Parameter	Analysis Method
Dioxins	EPA 8290
Petroleum Compounds	EPA 8270
Polycyclic Aromatic Hydrocarbons (PAHs) • Benz(a)anthracene • Pyrene • Phenanthrene • Naphthalene	
Pesticides (4,4 DDE)	EPA 8081
Polychlorinated Biphenyls	NOAA 22 Congeners EPA Method 8270D/NOAA (8270D-SIM/680(M))
Heavy Metals • Arsenic • Cadmium • Mercury • Copper • Lead	EPA 200.7/EPA 200.8

These pollutants are known to exist in the bottom sediments of the Hudson, with unknown "Hot Spots," so samples must be taken near all intakes and at a sufficient distribution and density along the proposed route of the cable to account for the potential for contaminants mobilized by jet plowing to reach one or more intake. TDI will develop a report that will consider the values in light of the findings of the pilot testing. TDI shall present the results of the analyses in a report to the Hudson 7, Department of Public Service (DPS), Department of Environmental Conservation (DEC) Department of Health (DOH), Dutchess County Department of Behavioral & Community Health (DCDBCH), and Ulster County Health Department of Health Environmental Services (UCDOH).

Pilot Testing

Pilot testing of the jet plow shall be conducted at least 6 months before the start of the preparation of the EM&CP, and results shall be presented to Hudson 7, DPS, DEC, DOH, DCDBCH, and UCDOH prior to the submission of the EM&CP. The Hudson 7 and TDI have agreed that pump will be used to simulate the operation of a public water system intake during the jet plow operation. This approach provides a safe, reliable method for understanding the potential impacts of the jet plow without posing any risk to or inconveniencing the operation of a public water system. The site for the test is in the town of Chelsea, south of Poughkeepsie. A review of available sediment and contaminant data indicates that the chosen site for the simulated intake is representative of conditions at the Hudson 7 water treatment plants.

<u>Study Preparation</u>

TDI will contact the DPS, DEC, DOH, DCDBCH and UCDOH to inform them that this study is being completed. If permit is required, TDI will obtain this permit.

At least two weeks before the pilot testing, TDI will notify Hudson 7 and will provide drawings of the proposed simulated intake site.

At least one week prior to the pre-installation trial, TDI will contact the Chelsea Police Department to inform them that the study is proceeding at the Site and provide a contact number in the event there are inquiries from the public.

Site Preparation

At least one day prior to the in-water pre-installation trials, TDI's consultants will arrive at the Site to test the system and sampling procedures. The Pump system will be run for a period of no less than two hours. TDI's consultants will also demonstrate that suitable water samples can be obtained.

The hose to be employed in the study will be inspected for damage or holes. Any defects will be field-repaired.

In-Water Testing Protocols

The jet plow will start one-quarter mile upstream of the simulated intake and end one-quarter mile downstream of the simulated intake. The installation speed will be at least 300 ft /hour for first and last eighth (1/8) of a mile and speed of 600 ft /hour for middle quarter (1/4) of a mile, noting that plow speeds may fluctuate due to riverbed conditions.

Grab samples for the baseline values will be taken prior to installation. Grab water samples shall be taken 500 ft upstream and downstream of the jet plow and no more than three feet above the river bottom and analyzed for total suspended solids (TSS). Grab water samples will be taken at the following locations:

- One-quarter mile upstream of the intake before the jet plow starts for the baseline values
- One-eighth mile upstream of the intake
- At the closest point to the intake
- One-eighth mile downstream of the intake
- One-quarter mile downstream of the intake

Samples will be analyzed for the parameters provided in Appendix 1, which are drawn from Table 1 of the 5-1.52 Tables of Subpart 5-1 of the NYCRR as well as operator knowledge. It is understood that the methodologies employed will not be the same as those for drinking water testing due to fact that the water is unfinished.

In addition to the grab samples, re-suspended sediment (i.e., the sediment plume) associated with the trials will be monitored using the ADCP and OBS. The ADCP is mounted in a fix pole off the side of the vessel and samples the water column via acoustic pings from transducers so it's remotely sampling the entire water column, except for zones near the instrument and near the bottom. This instrument will run continuously. The OBS is integrated into a handheld profiler that is lowered from the vessel to specific depths

(approximately near-surface, mid-depth, and near bottom).

A log book will be kept during these sampling events which records the time that each sample was obtained and records its identification number.

Simulated Intake Testing Protocols

On the day of the trial, TDI's consultants will access the Site to prepare for the simulation exercise. The intake hose will be attached to the Pump and located approximately 160 feet from the jet plow operation.

No less than one hour prior to the initiation of the jet plow operation, TDI's consultants will activate the Pump. The flow rate will be measured and is expected to be at least 1.0 million gallons per day. The Pump will be operated for at least two hours after the TSS Trial is complete.

During operation there will be two types of sampling:

Field Sampling

Water will be field tested for pH and turbidity with a probe provided by Poughkeepsie Water Treatment Plant or TDI's consultants. Water samples will be obtained every 15 minutes and will be taken for at one hour before the jet plow operations begins and at least two hours after the jet plow operation has ceased.

Laboratory Sampling

Water samples will be obtained approximately every 30 minutes and prepared for laboratory analysis. It is expected that at least three sample will be collected for each 1/8-mile increment (3 for first 1/8 mile before simulated intake, 3 for second 1/8 mile before simulated intake, 3 for first 1/8 mile after simulated intake, 3 for second 1/8 mile after simulated intake) Samples will also be collected for at least one hour before the jet plow begins operation and at least two hours after the jet plow operation has ceased.

A log book will be kept during the two types of sampling events which records the time that each sample was obtained and records its identification number.

Reporting

TDI will present the results of the analyses, a description of pilot testing, and recommendations for the EM&CP to DPS, DEC, DOH, Hudson 7, DCDBCH, and UCDOH for their comments prior to the submission of the EM&CP. The report will compare baseline data to the results from field and laboratory sampling collected during the pre-installation trials. Based on the Hudson 7's recommendations, the report will particularly focus on situations where:

- Turbidity was greater than 50 NTU above baseline
- TOC was greater than 1.5 mg/L above the baseline
- pH changes by more than one unit from the baseline
- A parameter listed on Table 1 is greater than 1.5 times the baseline value

The report will draw upon other information as appropriate, including river flow data,

tidal information, and data collected as part of the pilot testing of the jet plow. The results will be compared to applicable standards, including drinking water standards.

Appendix 1

Select Parameters For Testing, including Table 1 of the 5-1.52 Tables of Subpart 5-1 of the NYCRR

Table 1	Other
Antimony	Volatile Organic Compounds – EPA 8260
Arsenic	Semi-volatile Compounds – EPA 8270
Barium	Total Organic Carbon – equivalent of SM5310 or EPA9060A
Beryllium	Pesticide – EPA 8081
Cadmium	PCBs Congeners – NOAA 22 Congeners EPA Method 8270D/NOAA (8270D-SIM/680(M))
Chromium	Total Suspended Solids
Mercury	
Selenium	
Silver	
Thallium	
Fluoride	
Chloride	
Iron	
Manganese	
Sodium	
Sulfate	
Zinc	