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Joe Martens
Commissioner

May 3, 2013

Peter Sanderson, Project Director
The New NY Bridge Project
NYS Thruway Authority
303 South Broadway, Suite 413
Tarrytown, NY 10591

Re: The New NY Bridge
DEC Permit 3-9903-00043/00012
Water Quality Monitoring Plan (Revision 02 April 30, 2013)

Dear Mr. Sanderson:

In accordance with condition 59 of the subject permit the Department hereby approves the subject Water Quality Monitoring Plan submitted via a May 1, 2013 email to me from Kristine Edwards of your office.

As permit condition 76 makes clear, with the Department's approval, the plan and its terms, conditions, schedule and other requirements become an enforceable condition of the permit.

If you have any questions please feel free to contact me.

Respectfully,

John J. Ferguson
Chief Permit Administrator

ecc: K. Woodfield, NYSDEC
D. English, NYSDEC
W. Rudge, NYSDEC
K. Edwards, NYSDOT

Water Quality Monitoring Plan

for the

Tappan Zee Hudson River Crossing

Revision 02
April 30, 2013

Prepared by

Tappan Zee Constructors, LLC
555 White Plains Rd., Suite 400
Tarrytown, NY 10591

Document History			
Issue Date	**Description**	**By**	**Revision**
3/06/13	Submitted for NYSTA review	SZ/VW	0
4/11/13	Revised per NYSTA comments	SZ/WV	1
4/30/13	Revised per NYSDEC comments.	VW	2

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1.0 Introduction

The March 25, 2013 New York State Department of Environmental Conservation Permit DEC ID 3-9903-00043/00012 (NYSDEC Permit) for the Tappan Zee Hudson River Crossing Project (Project) sets forth the requirements for Water Quality Monitoring during construction. In addition the plan meets the environmental protection criteria (EPC) developed for the project. The Water Quality Monitoring Plan is described in the sections below and was developed based on the following NYSDEC Permit conditions.

59. At least 45 days before starting dredging activities; decanting activities; removal of large debris fields; pile driving in zone C; channel armoring; cofferdam construction; removal of the existing bridge; or any activity that may cause resuspension of bottom sediments, Permittee must submit a water quality monitoring plan to the Department. If activities occur concurrently in multiple locations, each activity that may cause resuspension of bottom sediments must be monitored separately. The Plan must be in effect at all times during these activities. The above activities may start when the Department has given written approval of the plan.

60. The plan shall include monitoring for total suspended solids (TSS), turbidity (visual monitoring) and the following contaminants: total mercury, dissolved nickel, copper, lead, zinc, PCB and naphthalene and benzo(a)pyrene. The plan must: (i) describe procedures for background sampling, and sampling at the edge of a 500-foot mixing zone around the activities identified in condition 59, above (ii) include daily sampling during each tidal cycle; (iii) use an Acoustic Doppler Current Profiiler to locate the plume; (iii) require whole water samples in the vertical water column (from at least 3 depths) along a transect within the plume; and (iv) include upstream transect. When silt curtains are deployed, monitoring should take place immediately outside the confines of the silt curtain.

61. The following Water Quality Standards must be achieved immediately outside of the silt curtain or at the edge of the 500-foot mixing zone around the activities identified in condition 59, above, subject to the monitoring requirements of condition 64 below. When a Detection Limit listed below is greater than the listed Water Quality Standard, the Water Quality Standard will be presumed to be met when analytical results demonstrate compliance with the Detection Limit.

    Where background concentrations exceed the Water Quality Standard, the limit at the edge of the mixing zone is 30% over background, with the exception of TSS which shall be 100 ppm above ambient.

Contaminant	Water Quality Standard (ppb)	Detection Limit (ppb)
Total Mercury	0.0007- H(FC)	0.050
Dissolved nickel	8.2- A(C)	
Dissolved copper	3.4 - A(C)	
Dissolved lead	8.0 - A(C)	
Dissolved zinc	66-A(C)	
PCB	1.0 x10-6	
Aroclor 1242		0.2
Aroclor 1248		0.2
Aroclor 1254		0.2

Contaminant	Water Quality Standard (ppb)	Detection Limit (ppb)
Aroclor 1260		0.2
Naphthalene	16	
Benzo(a)pyrene	0.0006	0.1
TSS	None from sewage, industrial waste or other wastes that will cause deposition or impair the waters for their best usages.	100 ppm above ambient

*Using EPA analytical method with the lowest possible detection limit as promulgated under 40CFR Part 136.

62. All analytical results must be sent to DEC by fax or email within 48 hours of receipt of data results, followed by a mailed hard copy. Exceedances should be highlighted.

63. In the event of exceedance of a water quality standard, the Department will be notified and the Permittee and the Department will determine if there is a need for procedural changes.

64. Water quality monitoring must be conducted daily at the start of each activity identified in condition 59, above. If there are no water quality exceedances during the first two weeks of an in-river Authorized Activity water quality monitoring for contaminants for that activity may be reduced. Daily TSS and turbidity monitoring must continue through the duration of the in-river operation. If during the reduced sampling, there is an exceedance of 100 ppm above ambient TSS value, monitoring shall return to daily for all parameters until such time as TSS concentrations are less than 100 ppm above ambient values.

65. Three copies of a monitoring report, summarizing the results of the monitoring and analyses, shall be submitted to the Department within 30 days of completion of the in-river Authorized Activity in any calendar year.

66. All laboratory analyses required by this permit must be conducted by a laboratory certified by the New York State Department of Health.

67. Nothing contained in this Permit shall be construed as authorizing a violation of Water Quality Standards.

Additionally, the following permit conditions apply to dewatering, armoring, decanting, and demolition.

16. Water from pile and cofferdam dewatering installations may cause no increase in turbidity that results in a substantial visible contrast to the Hudson River outside the piling or cofferdam. As described in the July 2012 Tappan Zee Hudson River Crossing Project Final Environmental Impact Statement the discharge must be treated if necessary to prevent such substantial visible contrast.

27. If decanting of barges is necessary, a detailed plan must be submitted to the Department for review and approval before decanting may start.

The following will apply if dewatering is approved by the Department:

A. The overlying water in the barge may be pumped to the water column after 24 hours of settling.
B. Decanting of the barge shall be conducted in a manner that precludes adding substantial suspended solids, turbidity or sheens to the receiving water body. During pumping of the decant water, great care shall be taken to avoid re-suspending or pumping previously settled sediment.
C. A flocculent may be added to enhance settling. If a flocculent is proposed to be used, the form "Water Treatment Chemical Usage Notification Requirements for SPDES Permittee" must be submitted and approved by DEC prior to its use.
D. Decanting activities may not cause turbidity that results in a substantial visible contrast to the Hudson River outside of the 500 foot mixing zone as set forth in the Water Quality Monitoring section below. In the event that this requirement is exceeded, the Department will be notified and an evaluation of the adequacy of the holding time and/or the need to add a flocculant to aid in settling shall be undertaken by the Permittee

37. Armoring material must be placed using methods designed to minimize resuspension of newly-exposed sediment (as described in the FEIS). Armoring activities may cause no turbidity that results in a substantial visible contrast to the Hudson River outside of the 500 foot mixing zone as set forth in the Water Quality Monitoring section below.

49. A floating containment booms and/or silt curtains must be deployed around all active substructure demolition areas to control and/ contain debris and discharges to meet water quality standards.

72. Discharge of decant water into the silt curtain containment area shall not cause turbidity that results in a substantial visible contrast to the Hudson River as set forth in the Water Quality Monitoring section above. In the event this requirement is exceeded, the Department will be notified and an evaluation of the adequacy of the holding time and/or the need to add a flocculent to aid in settling of solids in the scow shall be undertaken by the Permittee. Addition of a flocculent requires Department approval and the completion of the form "Water Treatment Chemical (WTC) Usage Notification Requirements for SPDES Permittee".

2.0 Monitoring Objectives

The overall objective of this program will be to monitor TSS, turbidity and contaminants via the collection and analysis of whole water samples and/or by visual inspection by the dredge and pile driving engineers on board observer (Observer) or surveys vessels during the following construction activities:

Construction Activity	Water Quality Monitoring
Pile Driving	
Pile Driving Operations in Zone C (piers 28-35)	Analysis of whole water samples for TSS, turbidity and contaminants for compliance with WQ Standard criteria in Permit Condition 61 at the edge of the 500-foot mixing zone criterion; background sampling.
Pile Driving Operations outside of Zone C	Observer will conduct visual inspection of surface water. Water from pile dewatering installation may cause no increase to turbidity that results in substantial visible contrast to Hudson River outside of the piling or silt curtain, should one be used.
Cofferdam Construction	Observer will conduct visual inspections of surface water. Water from cofferdam dewatering installation may cause no increase to turbidity that results in substantial visible contrast to Hudson River outside of the cofferdam or silt curtain,

Construction Activity	Water Quality Monitoring
	should one be used.
Dredging	
Dredging Operations	Collection of whole water samples for TSS, turbidity and contaminants for compliance with WQ Standard Permit Condition 61 at the edge of the 500-foot mixing zone; background sampling; turbidity will be monitored visually.
Decanting	Observer will collect whole water samples for TSS and Contaminants for compliance with WQ Standard criteria listed Permit Condition 61 at the edge of the 500-foot mixing zone; background sampling; turbidity will be monitored visually.
Dredged Area Armoring	Collection of whole water samples for TSS and Contaminants for compliance with WQ Standard criteria listed Permit Condition 61 at the edge of the 500-foot mixing zone; background sampling; turbidity will be monitored visually.
Bridge Demolition	
Bridge Demolition (subsurface infrastructure)	Collection of whole water samples for TSS, turbidity and Contaminants for compliance with WQ Standard criteria listed Permit Condition 61 at the edge of the 500-foot mixing zone or immediately outside of the silt curtain, should one be used; background sampling; turbidity will be visually monitored.

3.0 Methods

Water Quality/TSS (WQ/TSS) survey methods will vary based on in-water activity (i.e. visual observations or vessel based). Based on the width of the Hudson River and hydrodynamics in the area, multiple activities can be monitored each day with one survey crew. If all activities can not be monitored by a single crew, additional crews will be used as necessary.

The sections below describe the methods for the WQTSS monitoring plan.

3.1 Visual Observations

A visual inspection of activities will be conducted by the dredge and pile driving observer or engineer or contractor (see Dredging and Pile Driving Plan) during pile driving outside Zone C, cofferdam construction, and decanting. The observer will conduct visual inspections of surface water to comply with water quality standard of “no substantial visible contrast to natural conditions” for turbidity. If a “substantial visible contrast to natural conditions” is observed, then whole water samples for TSS and contaminants identified in permit condition 61 will be collected. Three water samples (surface, mid and bottom) will be collected at one location. The observer will report any “substantial visible contrast to natural conditions” to the Environmental Compliance Manager or designee to determine the best course of action. The substantial visible contrast and subsequent corrective actions will also be reported to the Oversight Environmental Compliance Monitor (OECM) to report to the NYSDEC.

3.2 Vessel Based Field Surveys

Vessel based WQ monitoring will be conducted for dredging, pile driving in Zone C and bridge demolition during subsurface infrastructure. TSS and contaminant whole water samples will be collected during each tide cycle (one ebb tide, and one flood tide per day, during daylight hours) occurring within each scheduled monitoring day. Water quality monitoring will be conducted daily at the start of each activity identified in Permit Condition 59. If there are no water quality exceedances for an activity during the first two weeks, then monitoring for that activity will be reduced to daily monitoring for TSS and turbidity, and weekly monitoring for contaminants through the duration of the activity. If there is an exceedance of 100 ppm above ambient TSS value, then monitoring for all contaminants willl return to daily until TSS concentrations are less than 100 ppm above ambient values. The OECM will notify NYSDEC prior to any reduction in monitoring.

3.2.1 In Plume (Downstream)

In order to define the plume, mobile transects will be conducted using a vessel mounted Acoustic Doppler Current Profile (ADCP) unit. A circular transect will be conducted around the source to assess the location and acoustic signal of the plume. Once the plume is located, a transect will be conducted perpendicular to the source approximately 500 feet down current of the dredge platform. Distance from the dredge platform will be measured in the field using a laser range finder. In addition, field crews will coordinate with dredge contractor to get GPS data from the platform which will be used in WQ monitoring reports. The ADCP will be used to identify the whole water sample locations for TSS, turbidity and contaminants. Up to four stations will be sampled per tide cycle.

An Optical Backscatter Sensor (OBS) configured to record turbidity (NTU), depth (meters), temperature (°C) and salinity (ppt) will be mounted to a submersible pump and used to collect vertical profiles at water sample station locations. A vertical OBS profile of turbidity, depth, temperature and salinity will be collected at the location of the highest acoustic backscatter as seen in the ADCP backscatter. Simultaneously, the pump will be used to collect discrete whole water samples at three separate depths (near-surface, mid-depth and near bottom) for laboratory analysis of TSS, turbidity and contaminants. The water samples will be preserved at 4° C and sent to the laboratory for analysis under full Chain-of-Custody protocols.

3.2.2 Background (Upstream)

In addition to in plume surveys, ambient surveys will be conducted using the same methods and procedures described above. Ambient surveys will be conducted along a transect up current of the source to provide data for comparison with the in plume surveys. This transect will be conducted at a location up current of the source where the water quality effects of the project are no longer discernible, as determined by the circular transect used to assess the extent of the plume.,

3.2.3 Contaminant Analyses

To obtain measurements of water quality within the water column, whole water samples will be collected daily during each survey at the upcurrent and downcurrent transect for dredging, pile load testing in Zone C, pile driving in Zone C and bridge demolition during subsurface infrastructure. These samples will be collected using the pump sampler at three discrete depths (near-surface, mid-depth and near-bottom), and will be analyzed for the parameters listed in Permit Condition 61. In the event background concentrations exceed the water quality standard or detection limits in Permit Condition 61, the limit at the edge of the mixing zone (500-ft down-current) is 30% over background.

The samples to be analyzed for dissolved nickel, copper, lead and zinc will be filtered in the field. All samples will be prepared , preserved as required, maintained at 4°C and shipped to a NYSDOH ELAP certified lab under full Chain-of-Custody protocols.

If no water quality exceedances occur during the first two weeks of operations covered by Permit Condition 59, water quality monitoring for contaminants will be reduced to once a week. Daily TSS monitoring will continue throughout the duration of the dredging. If an exceedence of 100 ppm above background TSS is recorded, monitoring will return to daily for all parameters of concern until TSS concentrations are reported at less than 100 ppm above background.

4.0 Reporting

4.1 Analytical Results

All analytical results (i.e. TSS , turbidity and contaminants) of water samples collected in Section 3.1. will be provided to the OECM. The OECM will transmit the analytical results to the NYSDEC by fax or email within 48 hours of receipt of the data results from that laboratory. A mailed hardcopy will also be sent. Any exceedances will be highlighted. Exceedances will be based on differences in TSS and contaminant concentrations from analytical results of the water samples between the upcurrent and downcurrent stations, when the background concentration exceeds the water quality standards or detection limits in Permit Condition 61. Otherwise, exceedances will be based on the water quality standards or detection limits in Permit Condition 61.

4.2 Water Quality Standard Exceedances

In the event of an exceedance of a water quality standard for TSS, turbidity and contaminants based on the analytical results of the water samples or visual inspection the OECM and NYSDEC will be notified. Within 48 hours of determining that an exceedence of the water quality standards has occurred, a Corrective Action Plan in the form of email or technical memo will be developed and submitted to the OECM. Based on the plan, in consultation with OECM and NYSDEC, the in-water activities will be re-evaluated in consultation with NYSDEC to determine the need for procedural changes.

4.3 Reporting

Within 15 days of completion of the dredging operation in any calendar year, three (3) copies of the annual monitoring plan will be submitted to the New York State Thruway Authority (NYSTA) and Agencies. Within 30 days of completion of each annual dredging operation, three (3) copies of the annual monitoring report, summarizing the results of the monitoring program and analyses will be submitted to NYSDEC for review.