IYER ENVIRONMENTAL GROUP, PLLC
CONSULTING & ENGINEERING SERVICES

January 23, 2017 (Revised 4/13/17)

44 Rolling Hills Dr.
Orchard Park, NY 14127
iegpllc@aol.com |(716)445-9684

Mr. Brian Sadowski
NYSDEC, Region 9
270 Michigan Avenue
Buffalo, NY 14203-2999

RE: WHIRLPOOL BRIDGE SOILS (Site #V00655)
Periodic Review Report and IC/ECC Certification Submittal
Period January 1, 2014 through January 1, 2017

Dear Mr. Sadowski:

On behalf of the Niagara Falls Bridge Commission (NFBC), IEG submits for your review and approval this revised Periodic Review Report along with Certification Forms covering the period from January 1, 2014 through January 1, 2017. Response to NYSDEC's comments on the January 2017 submittal are incorporated herein.

Site work during this reporting period included routine groundwater/surface water monitoring, and soil erosion repair work undertaken in the vicinity of MW-1/SW-2. Metals continue to remain at trace levels and well below pre-remediation concentrations.

Soil erosion during heavy rainfall tend to spike the levels until the erosion is repaired. The June 2016 monitoring event following the erosion repair project confirms that removal of eroded soil and continued maintenance of the trail will be protective of groundwater and human health. Based on these results, it is requested that site monitoring be allowed to continue at an annual basis for the next two years, and at a reduced frequency of once every two or three years thereafter. Groundwater/surface water will also be monitored after a significant soil erosion event and any corrective action taken as a result of that event.

IEG will also undertake repair/replacement of the sumps at SW-1 and SW-3 prior to the next monitoring event (tentatively scheduled for June 2017).

Please email or call if you have any questions or need additional information.

Sincerely,
IYER **E**NVIRONMENTAL **G**ROUP, PLLC

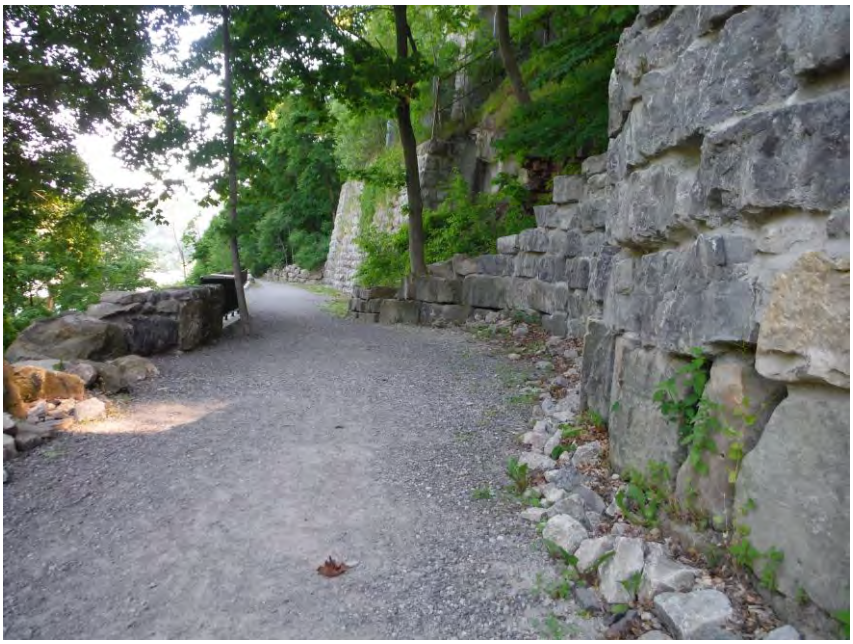
Dharmarajan R. Iyer, Ph.D., P.E.

cc: Mr. R. Koert (NFBC)

SITE MANAGEMENT
PERIODIC REVIEW REPORT (PRR)
WHILPOOL BRIDGE SOILS REMEDIATION

for

NIAGARA FALLS BRIDGE COMMISSION
NIAGARA FALLS, NY



Submitted to NYSDEC, Buffalo, NY

January 2017
(Revised April 2017)

by

Iyer Environmental Group, PLLC
Orchard Park, NY 14127

WHILPOOL BRIDGE SOILS REMEDIATION
PERIODIC REVIEW REPORT (PRR)
Period from January 1, 2014 through January 1, 2017

I. EXECUTIVE SUMMARY

A. Site History

Bridge painting operations at the Whirlpool Rapids Bridge before 1990 involved uncontrolled blast cleaning using coal slag as an expendable abrasive. Heavy metals contamination from spent abrasives and paint waste were found on the slopes of the Niagara Gorge below the Bridge. Lead concentrations in surficial soil were found to range from 16 to 11,640 mg/Kg across a 400-feet wide sampling area on either side of the Bridge, with heavy metals migrating through the bedrock aquifer (0.1 to 1.2 mg/L lead in groundwater) into the Niagara River.

The selected remedy had two primary objectives: limit exposure to visitors, and minimize contaminant loadings to the Niagara River. The remedy was implemented in 2004 with the removal of contaminated soils (1,037 tons) and rebuilding of the hiking trail under the bridge, while preserving the natural beauty of the area. As part of institutional control, the area will remain a tourist attraction, and the side slopes will not be accessible to visitors.

B. Effectiveness of Remedial Program

The objective of limiting exposure to visitors to the Niagara Gorge was met immediately with the implementation of the remedy - removal of contaminated soils on and around the trail, and the placement of large stone blocks along the trail to prevent visitors from accessing the side slopes. A drastic reduction in heavy metals was observed in the bedrock aquifer in the first monitoring event (May 2005) immediately following the remedial action. Lead dropped from a pre-remedy high of 1.2 mg/L (9/2003) to a post-remedy level of 0.04 mg/L (5/2005), and continues to remain at trace levels since then.

C. Compliance

There are no non-compliance issues with monitoring or institutional controls. The NFBC has followed the long-term monitoring plan with quarterly sampling of groundwater and surface water from 2005 through 2008, and semi-annual events from 2009 to 2012. Annual sampling has been done from 2013 to the present. The last sampling event was done in June 2016.

The trail leading to the Bridge is maintained by the NYS Office of Parks, Recreation and Historical Preservation (NYSOPRHP). The NFBC has continuously monitored the area for signs of contamination during the bridge painting project which was completed in 2010. There was no impact from this painting project based on groundwater and surface water monitoring results.

Side slope erosion from runoff during storm events had been significant in 2012 and 2013 in the area around MW-1/SW-2 (see Figure 3a). In addition, a sink hole formed above the Lower Retaining Wall (see Figure 3b). These erosions resulted in elevated levels of lead and other metals in surface and groundwater but still well below pre-remediation levels. The NYSDEC directed the NFBC to undertake erosion repair work and restore the trail.

The soil erosion repair work was undertaken by the NFBC as part of the Lower Retaining Wall Repair Project with Parsons Brinckerhoff as the consultant for the retaining wall, IEG as the subconsultant for the soil erosion, and BVR Construction Company, Inc. as the contractor for all work on this project. The work consisted of the removal of side slope

landslide depositions and the enlargement of the erosion control wall in the vicinity of MW-1 and SW-2 just south of the Bridge footing (see photopages). The site work was performed from October 2014 to June 2015, and upon completion, IEG issued a letter report for the erosion repair work. Photos of the erosion repair work are included in the attached photopages. Also attached are photopages showing current (2016) conditions of the site compared to pre-remediation (2014) and pre-erosion repair (2014) conditions.

D. Recommendations

The site management program will continue to include periodic inspection and monitoring, and institutional controls limiting access to the side slopes and keeping the area as a tourist destination.

It is recommended that site monitoring be continued on an annual basis for the next two years, and reduced thereafter to once every two or three years depending on major storm events and associated landslides. Groundwater/surface water monitoring will also be performed after a significant soil erosion event and following any corrective action undertaken because of that erosion.

II. SITE OVERVIEW

A. Site Description

The Whirlpool Rapids Bridge (see location on Figure 1), constructed in 1897, is one of three bridges connecting the United States and Canada in the Niagara Falls area and operated by the Niagara Falls Bridge Commission (NFBC) since 1959. The lower deck is for automobile and pedestrian traffic, while the upper deck serves the railroad. Bridge painting operations before 1990 involved uncontrolled blast cleaning using coal slag as an expendable abrasive without containment of the spent abrasives and paint waste. The Bridge was abrasively blast cleaned and painted about five times (last time in 1986-87) in its 100+ years of existence which resulted in lead-paint contamination of the trail and side slopes. The trail is owned by New York Power Authority (NYPA) and operated by New York State Office of Parks, Recreation and Historical Preservation (NYOPRHP) under a lease agreement.

Spent abrasives and finely divided paint waste were found (Environmental Impact Assessment, May 2003) along the trail and side slopes of the Bridge in discrete sections as well as mixed with soils. Lead concentrations ranged from 16 ppm to 11,640 ppm across the entire width of the 400 foot sampling area on either side of the Bridge. In comparison, the background soil samples ranged from 46 to 437 mg/Kg lead. Lead concentrations were higher (68 to 11,640 ppm) within the first 275 feet from the bridge, and tapered off within the last 125 feet (16 to 2,220 ppm lead). The highest lead levels were found near the footings of both the Whirlpool Bridge and the adjacent Canadian National Bridge. Elevated polynuclear aromatic hydrocarbons (PAHs) were found in only one sample on the upper slope. The underlying bedrock aquifer feeding into the Niagara River had heavy metal contamination, with lead and zinc levels up to 1.2 mg/L.

The NFBC started the last bridge painting project in 2007 using state of the art techniques including a containment structure to capture, collect and dispose off-site spent abrasives and paint waste. The trail was visually inspected during the course of the painting project, and waste material was vacuumed periodically by the paint contractor. Finishing touches and removal of the containment structure were completed by the end of 2010.

B. Chronology of Site Remedy

An Environmental Impact Assessment was completed in May 2003, and included soil and groundwater sampling, VLF survey of the bedrock to locate monitoring wells, soil leachability testing, and an ecological evaluation. The remedial goals (see Remedial Action Work Plan, October 2003) for the site were as follows:

- Limit exposure to visitors to the Niagara Gorge underneath the Bridge
- Minimize contaminant loadings to the Niagara River, a Class A Special water body
- Preserve the natural beauty of the area and do not alter side slope stability
- Limit dangerous construction operations on the slope

The remedial action, undertaken from September through December 2004 (see RA Construction Report, February 2005), included:

- Excavation and disposal of 1,037 tons of contaminated soils
- Reconstruction of 500 feet of trail
- Drainage pipes (200 feet total) and three sumps for surface water sampling
- Road boxes with bolted covers around two bedrock monitoring wells
- Placement of large blocks of stone along reconstructed trail to provide an additional level of visitor safety and to minimize visitor access to the side slopes
- Restoration of the upper trail
- Implementation of a long term monitoring program for groundwater and surface water
- Institutional controls to maintain the area as a tourist attraction and limit visitor access to the side slopes

During the 2005 remediation project, the side slopes by the rebuilt trail on either side of the Whirlpool Bridge were stabilized by two to three layers of large stone blocks with sufficient empty space behind them to allow for accumulation of eroding soil. These were sufficient until 2012 when the area around SW-2 was severely impacted by large runoff and associated carryover of eroded soil and talus.

Major storms in 2012/2013 created landslides that impacted a 50’ long section of the Improved Trail in the vicinity of MW-1 and SW-2 (see Figure 3a). Around the same time a sink hole developed on the Rebuilt Trail in front of the upper retaining wall which opened up on the lower retaining wall (see Figure 3b).

The soil erosion repair work was undertaken by the NFBC as part of the Lower Retaining Wall Repair Project with Parsons Brinckerhoff as the consultant for the retaining wall, IEG as the subconsultant for the soil erosion, and BVR Construction Company, Inc. as the contractor for all work on this project.

The site work was initiated in October 2014 with the removal of eroded soil and repair of the lower retaining wall. The work was completed in June 2015 with the repair of the trail following removal of all construction equipment. Upon completion, IEG issued a letter report for the erosion repair work. Photos of the erosion repair work are included in the attached photopages. Also attached are photopages showing current (2016) conditions of the site compared to pre-remediation (2014) and pre-erosion repair (2014) conditions.

The NFBC erosion repair work performed in 2014/2015 included the following:

- All contaminated soil that had eroded from the side slope on to the rebuilt trail was removed and disposed as solid waste at Modern Landfill. Eroded soil was also removed from behind the stone wall.

- The two sections of stone wall (north and south of SW-2) were bridged and then heightened. Up to four new layers of boulders were placed above the existing stone wall, thereby increasing its height to retain future soil erosion behind it. Pilasters were added to resist down slope pressure on the wall and thick pieces of rope were added in the grouted spaces to provide additional drainage.
- The surface water sump SW-2 was rebuilt. A collector pipe was installed behind the stone block wall and routed underneath the trail to the downslope side near where the existing SW-2 sump pipe discharges.
- Portions of the rebuilt trail that were damaged by the soil erosion and/or repair work were rebuilt to the previously remediated condition that included a geotextile membrane, crushed stone and bentonite.

III. REMEDY PERFORMANCE, EFFECTIVENESS AND PROTECTIVENESS

The attached before/after photo pages and site drawing show features of the implemented remedy. The objective of limiting exposure to visitors to the Niagara Gorge was met immediately after implementation of the 2005 remedy - removal of contaminated soils on and around the trail; rebuilding of the trail with geotextile membrane, crushed stone and bentonite; and the placement of large stone blocks along the trail to prevent visitors from accessing the side slopes. Signs posted along the trail also warn visitors to keep away from the side slopes. The rebuilt trail under the Bridge has remained in good condition over the years. Eroded slopes on each end of the Upper Retaining Wall are repaired by the NFBC and NYSOPRHP as they occur. The remedy thus continues to be protective of human health and the environment.

Table 1 lists heavy metals (As, Cd, Cr, Pb and Zn) concentrations in groundwater and surface water before and after remediation, while Figure 2 illustrates the trend in lead concentrations over time. The results of the monitoring program demonstrate the effectiveness of the remedial action. The effectiveness of the remedy was evident from the results of groundwater/surface water monitoring events immediately after remedial action. Lead in particular dropped from a pre-remedy high of 1.2 mg/L (9/2003) in groundwater to a post-remedy level of 0.04 mg/L (5/2005). Lead continues to remain at trace levels in groundwater in the years following the Bridge painting project, and following the erosion repair work.

The Niagara Gorge Trailway is enhanced as a result of this project. Hazardous materials were removed, the visitor's trail surface reconstructed in the vicinity of the Whirlpool Bridge, and new native species of plants were introduced. Areas outside of the pathway were restored with the placement of large stone blocks (sandstones and limestone) and talus rock groundcover. As the NYSOPRHP continues trail improvements, the area beneath the Whirlpool Bridge crossing is open to even greater numbers of trail users. This project, with its clarified pathway and trail edge landscaping, subtly directs trail users along a quick, defined and limited route of passage under the bridge.

IV. IC/EC PLAN COMPLIANCE

A. IC/EC Requirements and Compliance

The site remains in compliance with the IC/EC requirements. A Declaration of Covenants and Restrictions was developed and filed with the Niagara County Clerk. It is as follows:

Maintain area as a tourist attraction: No residential, commercial or industrial use is contemplated for this area, and it will continue to remain a tourist attraction. Posted

warning signs and security cameras keep visitors away from the side slopes, thereby preventing exposure to residual contamination there.

Limiting visitor access to side slopes: Site management has included routine inspection of the trail under the Bridge and vacuuming of any spent abrasives released during blasting and painting. The NFBC and NYSOPRHP have maintained the trail in good condition, repairing side slopes after soil erosion and rock slides. Continuing improvements to the Trailway will increase the number of visitors but their movement will be subtly restricted to the Trailway.

B. IC/EC Certification

The IC/EC certification by the NFBC and IEG is attached.

V. MONITORING PLAN COMPLIANCE

A. Components

Long-term monitoring includes the following elements:

- Routine (monthly during bridge painting) inspections of the site with checks on visitor access and potential signs of erosion along the side slopes.
- Removal of contaminated soils that may erode/slide off the side slopes during extreme weather conditions and pile up on to the visitors' path.
- Routine groundwater sampling at bedrock wells (MW-1 and MW-2) and surface water in the three collection sumps (quarterly for the first two years, semi-annually through 2012 and annually thereafter) to monitor the effectiveness of the remedy.

The long-term groundwater and surface water monitoring was anticipated to be performed at least until just after completion of the Bridge painting project. It was however extended on a reduced frequency based on previous analytical data. The monitoring continued after significant soil erosion events in 2012 and 2013 from the side slopes around MW-1.

B. Summary of Monitoring Completed

Iyer Environmental Group PLLC (IEG) has been performing the environmental monitoring at the site since the completion of remedial action. Groundwater and surface water samples were collected during the monitoring events for heavy metals (As, Cd, Cr, Pb and Zn) analysis.

Monitoring completed to-date includes eight quarterly events from 2005 to 2008 (May 2005, September 2005, December 2005, April 2006, August 2006, November 2006, April 2007 and November 2007). In addition, the soil along the improved trail and the buffer zone was sampled in October 2006 after spent abrasives were found beneath the bridge. Another round of soil sampling was done in April/May 2011 after completion of the bridge painting operation.

The long-term groundwater and surface water monitoring was anticipated to be performed at least until just after completion of the Bridge painting project. It was however extended on a reduced frequency based on previous analytical data. The monitoring continued after significant soil erosion events in 2012 and 2013 from the side slopes around MW-1. There were nine semi-annual events since 2007 (June 2008, November 2008, June 2009, November 2009, June 2010, May 2011, December 2011, June 2012 and December 2012), and four annual events since then (August 2013, August 2014, October 2015 and

June 2016). Separate reports were submitted to the NYSDEC for each monitoring event. Field inspection reports and laboratory reports for monitoring events during this PRR reporting period are attached.

Heavy metals remain at trace levels in groundwater and surface water, which is at least two orders of magnitude below pre-remediation levels. Groundwater and surface water has been monitored annually since 2013. The spikes in metals concentrations (see Table 1 and Figure 2) are only observed following significant soil erosion from the side slopes, most notably the 2012/2013 storm events that created a landslide around MW-1/SW-2. The levels dropped following the 2015 soil erosion repair work.

C. Comparison with Remedial Objectives

The remedial objective is to limit contaminant loadings to the Niagara River, a Class A water body. This objective was met with the removal of over 1000 tons of contaminated soil from the trail beneath the Whirlpool Bridge, and easily accessible areas of the side slopes. The trend in heavy metals concentrations (see Figure 2 and Table 1) demonstrate that the remedy has been effective in significantly reducing heavy metals migration from the site. The metals are now at trace levels, with lead at 0.071 and 0.013 mg/L in the two bedrock wells (MW-1 and MW-2 respectively) in the last round (June 2016) of sampling.

Heavy metals continue to remain at trace levels and well below pre-remediation concentrations in groundwater and surface water. Soil erosion from the side walls during heavy rainfall (2012/2013 being the most significant) tend to spike the levels until the erosion is repaired. The June 2016 monitoring event following the erosion repair project confirms that removal of eroded soil and continued maintenance of the trail will be protective of groundwater and human health.

D. Monitoring Deficiencies

There are no monitoring deficiencies. All monitoring events have been performed in accordance with NYSDEC requirements and consistent with the long-term monitoring plan.

E. Conclusions and Recommendations for Changes

The remedy implemented in 2004 has been effective in meeting the remediation goals for the site. The blasting and paint work during the three years of 2007 to 2010 were performed by the NFBC's paint contractor with a state of the art containment system that had little noticeable effect on the environment.

Soil erosion repair work was performed in 2014/2015 to address landslides created by major storms along a 50' long section of the Improved Trail in the vicinity of MW-1 and SW-2. The erosion repair included removal and offsite disposal of contaminated soil, increase in the height of the existing stone wall to accommodate future erosion, and rebuilding damaged sections of the trail. Subsequent monitoring has shown that removal of eroded soil and continued maintenance of the trail will be protective of groundwater and human health.

It is recommended that site monitoring events be continued once every year for the next two years, and reduced to once every two or three years thereafter depending on major storm events and associated landslides. Groundwater/surface water monitoring will also be performed after a significant soil erosion event and following any corrective action undertaken because of that erosion.

VI. O&M PLAN COMPLIANCE

A. Compliance Monitoring

There is no specific O&M associated with the environmental remedy for this site. Trail repair work as needed due to erosion is being done by the NFBC and NYSOPRHP.

B. Compliance Remedy

During October 2014 the erosion repair work in the Remediation Zone was begun. Contaminated soil that had eroded from the side slope on to the Rebuilt Trail was excavated along with material from behind the existing stone block wall. This material was hauled to Modern Landfill. A collector pipe was installed behind the stone block wall and routed underneath the trail to the downslope side near where the existing SW-2 sump pipe discharges. The two sections of stone wall (north and south of SW-2) were bridged and then heightened by up to four layers of additional stones. Pilaster stones were added to resist down slope pressure on the wall and thick pieces of rope were added in the grouted spaces to provide additional drainage.

During the work on the Erosion Wall and the Lower Retaining Wall Repair which occurred concurrently from October to December 2014, the Improved Trail received some damage from heavy equipment. During the spring of 2015 BVR Construction repaired the Improved Trail to original conditions using geotextile membrane, crushed stone and bentonite.

VII. OVERALL PRR CONCLUSIONS AND RECOMMENDATIONS

A. Compliance with SMP

Monitoring: All monitoring requirements have been met with quarterly (2005 – 2007), semi-annual (2008 – 2012) and annual (2013 – 2016) sampling of groundwater and surface water.

IC/EC: All IC/EC requirements are met through restricting visitors to the trail and away from the side slopes, and repair of side slopes affected by soil erosion or rock slides. A containment system and vacuuming of the trail during the last bridge painting project kept spent abrasives and paint from entering the Niagara River. Recently erosion repair work was completed to remove contaminated landslide soil and accommodate future erosion.

B. Performance and Effectiveness of Remedy

The remedy has been effective in meeting its objectives. Exposure to residual contamination is prevented by limiting visitors to the trail and away from the side slopes. Contaminant migration has been significantly reduced with the removal of a significant amount of the source of contamination, and maintenance of the trail and side slopes.

C. Future PRR Submittals

The next PRR, due in 2020, will document ongoing monitoring efforts and maintenance/repair work on the trail and side slopes. The scope of future site management will be evaluated as more monitoring data becomes available. Institutional controls will remain in place to limit visitor access to the side slopes.

Enclosure 2
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No. V00655

Site Name Whirlpool Rapids Bridge

Site Address: East of Whirlpool Street Zip Code: 14301
City/Town: Niagara Falls
County: Niagara
Site Acreage:

Reporting Period: January 01, 2014 to January 01, 2017

	YES	NO
1. Is the information above correct?	☑	☐
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	☑
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	☑
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	☑
If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.		
5. Is the site currently undergoing development?	☐	☑

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? Industrial	☑	☐
7. Are all ICs/ECs in place and functioning as designed?	☑	☐

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

_____ _____
Signature of Owner, Remedial Party or Designated Representative Date

SITE NO. V00655 **Box 3**

Description of Institutional

Parcel	Owner	Institutional Control
144.09-2-2.01	Niagara Falls Bridge Commission	O&M Plan Ground Water Use Restriction Land use Restriction

April 6, 2006 a DECLARATION OF COVENANTS AND RESTRICTIONS was filed with the Niagara County Clerk in Book 1380 of Deeds at Page 37. Covenant restricts site use to current passive recreational for the hiking trail area and restricted commercial for the remainder of the site. Requires the owner to maintain the remedy, including proper operation. Monitoring and maintenance of the remedy in accordance with the Long-Term Monitoring and Maintenance plan revised April 18, 2005.

Box 4

Description of Engineering Controls

None Required

Not Applicable/No EC's

Box 5

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

YES	NO
☑	☐

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

   (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

   (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

   (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

   (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

   (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
☑	☐

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues

_____ _____

Signature of Owner, Remedial Party or Designated Representative Date

IC CERTIFICATIONS
SITE NO. V00655

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1,2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Robert Koert (print name) at 5365 Military Road, Lewiston, NY 14092 (print business address),

am certifying as Niagara Falls Bridge Commission (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

Signature of Owner, Remedial Party, or Designated Representative Rendering Certification — Date: 1/23/2017

IC/EC CERTIFICATIONS
SITE NO. V00655

Box 7

QUALIFIED ENVIRONMENTAL PROFESSIONAL (QEP) SIGNATURE

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

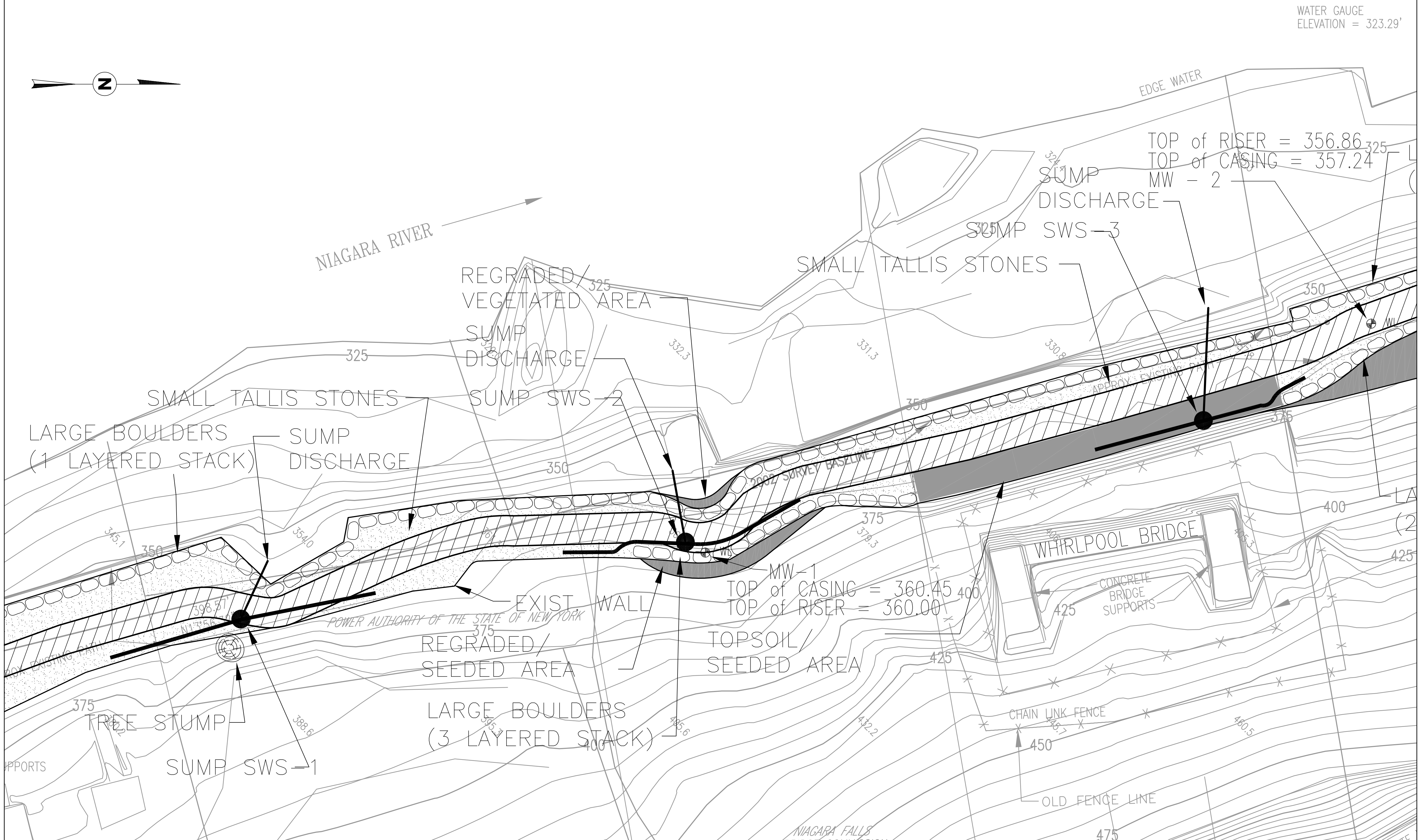
I Dharmarajan Iyer, Ph.D., PE (print name) at Iyer Environmental Group PLLC,

44 Rolling Hills Dr., Orchard Park, NY14127 (print business address), am certifying as a Qualified Environmental Professional

for the Niagara Falls Bridge Commission, Niagara Falls, NY (Owner or Remedial Party) for the Site named in the Site Details Section of this form.

Signature of Qualified Environmental Professional, for — Stamp (if Required) — Date: 1/20/2017

DRAWING 1



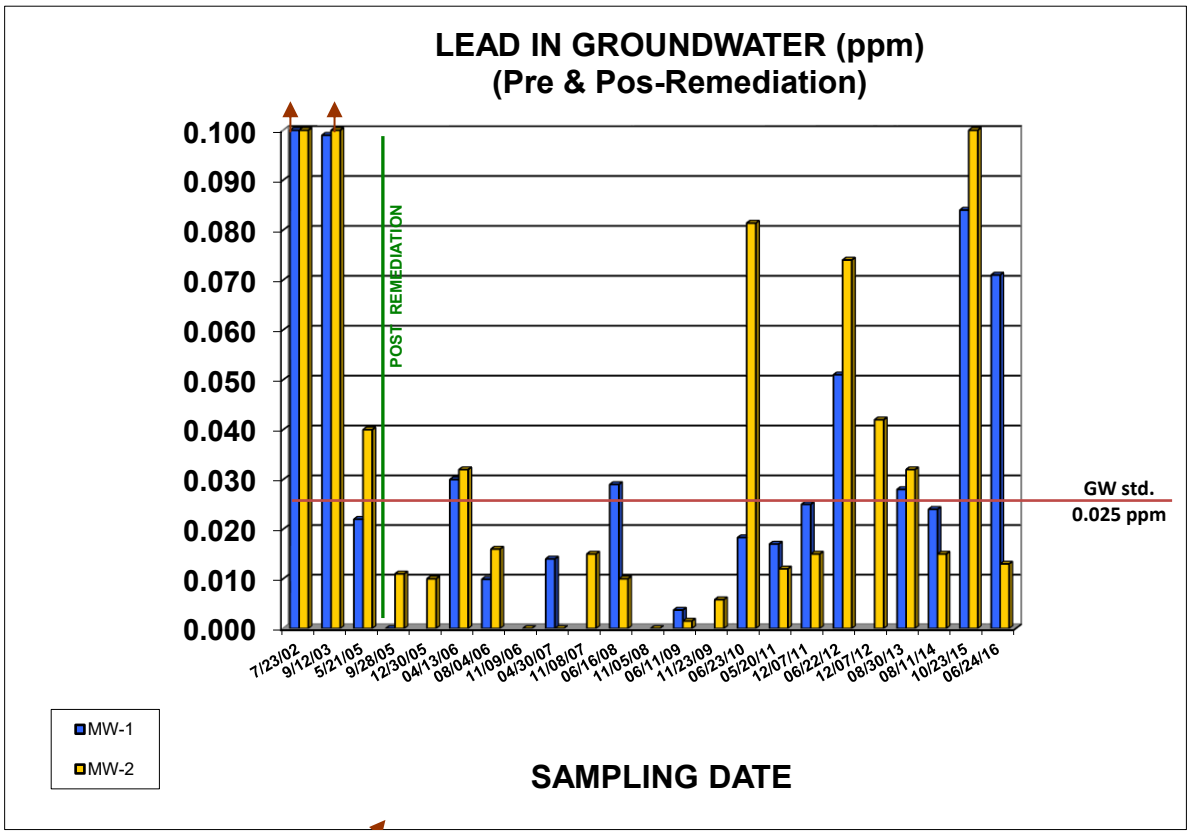
WATER GAUGE
ELEVATION = 323.29'
N
NIAGARA RIVER
EDGE WATER
TOP of RISER = 356.86
TOP of CASING = 357.24
MW - 2
SUMP
DISCHARGE
SUMP SWS-3
SMALL TALLIS STONES
REGRADED/
VEGETATED AREA
SUMP
DISCHARGE
SMALL TALLIS STONES
SUMP SWS-2
LARGE BOULDERS
(1 LAYERED STACK)
SUMP
DISCHARGE
2002 SURVEY BASELINE
APPROX. EXISTING PATH
WHIRLPOOL BRIDGE
CONCRETE
BRIDGE
SUPPORTS
MW-1
TOP of CASING = 360.45
TOP of RISER = 360.00
EXIST WALL
POWER AUTHORITY OF THE STATE OF NEW YORK
REGRADED/
SEEDED AREA
TOPSOIL/
SEEDED AREA
TREE STUMP
LARGE BOULDERS
(3 LAYERED STACK)
SUMP SWS-1
CHAIN LINK FENCE
OLD FENCE LINE
NIAGARA FALLS
BRIDGE COMMISSION

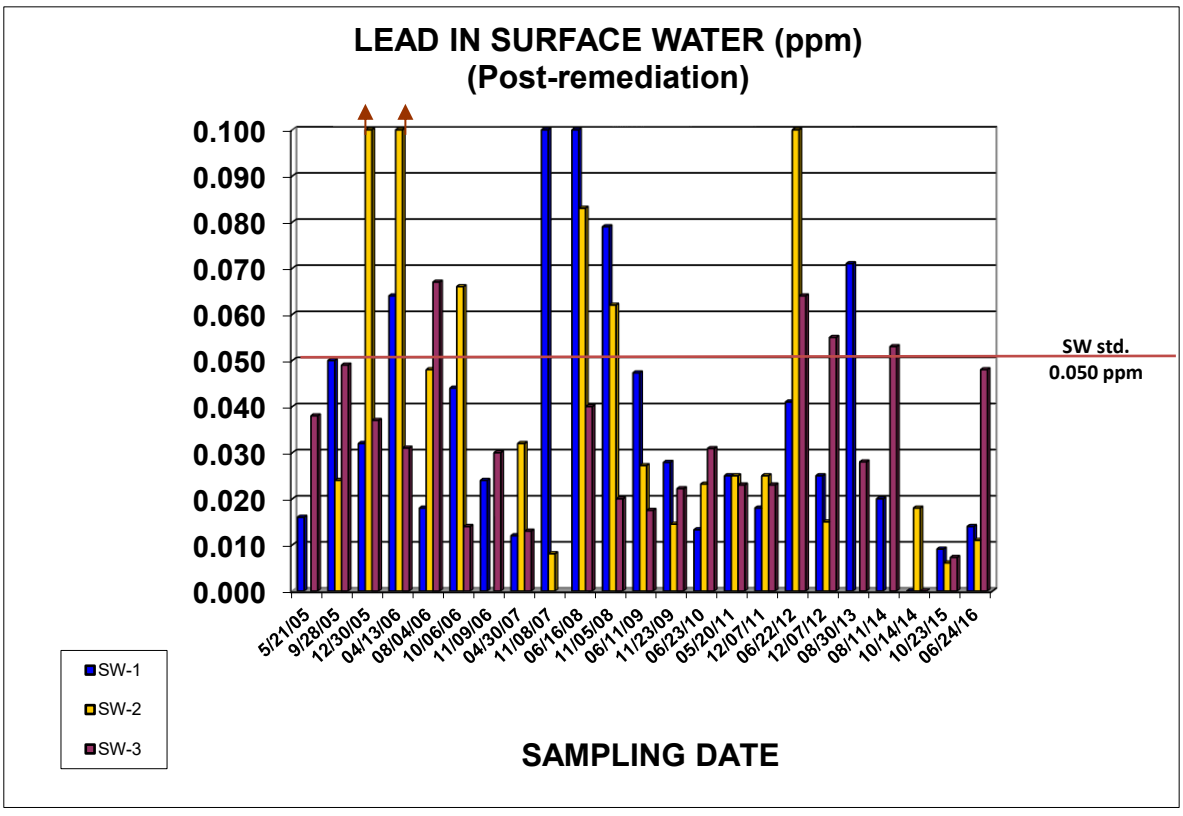
WHIRLPOOL BRIDGE SOILS REMEDIATION
LOCATION MAP/AERIAL PHOTO

FIGURE 1

IEG

FIGURE 2
WHIRLPOOL BRIDGE SOILS
LEAD IN GROUNDWATER AND SURFACE WATER





Ruts are forming across the Improved Trail as storm water and landslide debris flows across it near SW-2.

SW-2 and the improved trail are repeatedly covered with landslide debris after storm events. Landslide material easily washes over the existing stone block wall.

Overview showing the block wall to the north and south of the landslide area near SW-2. MW-1 is located a few yards north of SW-2 and has the same type of stone block wall protecting it. Movement of the slope is slowly pushing the adjacent stone over the monitoring well.

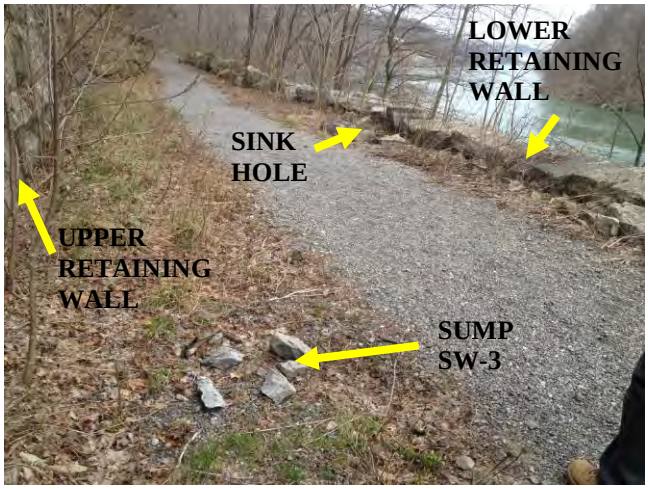
(Note: All photos are from 2012)

WHIRLPOOL BRIDGE LTM
SOIL EROSION AT MW-1/SW-2

FIGURE 3A

IEG

Sink hole by lower retaining wall; upper retaining wall is to the left (not visible)



Relative locations of sink hole and SW-3 sump

The upper trail remains in excellent condition

Temporary safety fence at sink hole

(Note: All photos are from April 2013)

WHIRLPOOL BRIDGE LTM SINK HOLE ON UPPER TRAIL	FIGURE 3B IEG

TABLE 1
WHIRLPOOL BRIDGE SOILS REMEDIATION
POST-REMEDIATION MONITORING
GROUNDWATER/SURFACE WATER ANALYSIS

ID	DATE	Arsenic	Cadmium	Chromium	Lead	Zinc	PAHs
MONITORING WELLS (in mg/L)							
MW-1	7/23/02	0.006	0.002	0.108	0.240	0.335	ND
	9/12/03	0.046	ND	0.059	0.099	0.234	ND
	5/21/05	ND	ND	0.010	0.022	0.076	--
	9/28/05	ND	ND	ND	ND	0.036	--
	12/30/05	*NO SAMPLE; WELL DRY*					
	04/13/06	0.011	ND	0.015	0.030	0.130	--
	08/04/06	ND	ND	0.006	0.010	0.056	--
	11/09/06	*NO SAMPLE; WELL DRY*					
	04/30/07	ND	0.001	0.006	0.014	0.094	--
	11/08/07	*NO SAMPLE; WELL DRY*					
	06/16/08	ND	ND	0.009	0.029	0.070	--
	11/05/08	*NO SAMPLE; WELL DRY*					
	06/11/09	ND	ND	0.001	0.004	0.041	--
	11/23/09	*NO SAMPLE; WELL DRY*					
	06/23/10	ND	ND	0.003	0.018	0.037	--
	05/20/11	ND	0.0004	0.006	0.017	0.040	
	12/07/11	ND	0.0005	0.006	0.025	0.140	--
	06/22/12	0.015	ND	0.018	0.051	0.140	--
	12/07/12	*NO SAMPLE; WELL DRY*					
	08/30/13	0.012	ND	0.012	0.028	0.110	--
	08/11/14	ND	0.0028	0.008	0.024	0.550	--
	10/23/15	0.022	0.00056	0.023	0.084	0.200	--
	06/24/16	ND	ND	ND	0.071	0.024	--
MW-2	7/23/02	0.670	0.009	0.340	1.110	1.460	ND
	9/12/03	0.428	0.006	0.234	1.240	1.240	ND
	5/21/05	0.014	ND	0.009	0.040	0.051	--
	9/28/05	ND	ND	ND	0.011	ND	--
	12/30/05	ND	ND	ND	0.010	ND	--
	04/13/06	0.017	ND	0.013	0.032	0.057	--
	08/04/06	ND	ND	0.008	0.016	0.064	--
	11/09/06	ND	ND	ND	ND	0.043	--
	04/30/07	ND	ND	ND	ND	0.026	--
	11/08/07	ND	ND	0.009	0.015	0.050	--
	06/16/08	ND	ND	ND	0.010	0.012	--
	11/05/08	ND	ND	ND	ND	0.017	--
	06/11/09	0.009	ND	ND	0.002	0.006	--
	11/23/09	0.010	ND	ND	0.006	0.016	--
	06/23/10	0.065	ND	0.044	0.081	0.029	--
	05/20/11	ND	0.0005	0.003	0.012	0.015	--
	12/07/11	ND	ND	0.001	0.015	0.027	--
	06/22/12	0.054	0.0008	0.032	0.074	0.140	--
	12/07/12	0.048	ND	0.035	0.042	0.140	--
	08/30/13	0.010	ND	0.004	0.032	0.019	--
	08/11/14	0.016	0.0057	0.027	0.015	0.620	--
	10/23/15	0.084	0.00086	0.054	0.120	1.700	--
	06/24/16	0.021	0.00061	0.009	0.013	0.081	--

ND = non-detect

TABLE 1
WHIRLPOOL BRIDGE SOILS REMEDIATION
POST-REMEDIATION MONITORING
GROUNDWATER/SURFACE WATER ANALYSIS

ID	DATE	Arsenic	Cadmium	Chromium	Lead	Zinc	PAHs
SURFACE WATER SUMPS (in mg/L)							
SW-1	5/21/05	ND	ND	ND	0.016	ND	--
	9/28/05	ND	ND	ND	0.050	0.055	--
	12/30/05	ND	ND	ND	0.032	0.029	--
	04/13/06	ND	ND	ND	0.064	0.034	--
	08/04/06	ND	ND	ND	0.018	0.026	--
	10/06/06	ND	ND	ND	0.044	--	--
	11/09/06	ND	ND	ND	0.024	0.020	--
	04/30/07	ND	ND	ND	0.012	0.025	--
	11/08/07	ND	ND	ND	0.120	0.059	--
	06/16/08	ND	ND	ND	0.120	0.075	--
	11/05/08	ND	ND	ND	0.079	0.030	--
	06/11/09	ND	ND	0.000	0.047	0.078	--
	11/23/09	ND	ND	ND	0.028	0.039	--
	06/23/10	ND	ND	ND	0.013	0.014	--
	05/20/11	ND	ND	ND	0.025	0.040	--
	12/07/11	ND	ND	ND	0.018	0.026	--
	06/22/12	ND	ND	0.0015	0.041	0.065	--
	12/07/12	ND	ND	ND	0.025	0.020	--
	08/30/13	ND	ND	ND	0.071	0.035	--
	08/11/14	ND	ND	ND	0.020	0.015	--
	10/14/14	--	--	--	--	--	--
	10/23/15	ND	ND	ND	0.0091	0.0086	--
	06/24/16	ND	ND	ND	0.0140	0.0120	--
SW-2	5/21/05	*NO SAMPLE; SUMP DRY*					
	9/28/05	ND	ND	ND	0.024	0.036	--
	12/30/05	ND	ND	ND	0.290	0.180	--
	04/13/06	ND	ND	ND	0.120	0.082	--
	08/04/06	ND	ND	ND	0.048	0.045	--
	10/06/06	ND	ND	ND	0.066	--	--
	11/09/06	*NO SAMPLE; SUMP DRY*					
	04/30/07	ND	ND	ND	0.032	0.055	--
	11/08/07	ND	ND	ND	0.008	0.032	--
	06/16/08	ND	ND	0.006	0.083	0.120	--
	11/05/08	ND	ND	ND	0.062	0.074	--
	06/11/09	ND	ND	0.002	0.027	0.055	--
	11/23/09	ND	ND	ND	0.015	0.041	--
	06/23/10	ND	ND	0.001	0.023	0.055	--
	05/20/11	ND	ND	0.004	0.025	0.041	--
	12/07/11	ND	ND	0.016	0.025	0.038	--
	06/22/12	0.0076	0.0007	0.0071	0.260	0.230	--
	12/07/12	ND	ND	0.0056	0.015	0.030	--
	08/30/13	*NO SAMPLE; BURIED BY LANDSLIDE*					
	08/11/14	*NO SAMPLE; SUMP BOX FILLED WITH SOIL*					
	10/14/14	ND	ND	ND	0.018	0.024	--
	10/23/15	ND	ND	0.0026	0.0061	0.024	--
	06/24/16	ND	ND	0.0048	0.0110	0.024	--
SW-3	5/21/05	ND	ND	ND	0.038	0.084	--
	9/28/05	ND	ND	0.004	0.049	0.056	--
	12/30/05	ND	ND	0.004	0.037	0.170	--
	04/13/06	ND	ND	ND	0.031	0.110	--
	08/04/06	ND	ND	ND	0.067	0.120	--
	10/06/06	ND	ND	ND	0.014	--	--
	11/09/06	ND	ND	ND	0.030	0.060	--
	04/30/07	ND	ND	ND	0.013	0.390	--
	11/08/07	*NO SAMPLE; COULD NOT LOCATE SUMP*					
	06/16/08	ND	ND	ND	0.040	0.110	--
	11/05/08	ND	ND	ND	0.020	0.061	--
	06/11/09	0.003	ND	0.001	0.018	0.125	--
	11/23/09	ND	ND	0.001	0.022	0.384	--
	06/23/10	ND	ND	0.002	0.031	0.285	--
	05/20/11	ND	0.0004	0.003	0.023	0.160	--
	12/07/11	ND	ND	ND	0.023	0.110	--
	06/22/12	ND	ND	0.0012	0.064	0.110	--
	12/07/12	ND	ND	0.0016	0.055	0.360	--
	08/30/13	ND	ND	ND	0.028	0.100	--
	08/11/14	ND	ND	ND	0.053	0.110	--
	10/14/14	--	--	--	--	--	--
	10/23/15	ND	ND	ND	0.0073	0.130	--
	06/24/16	ND	ND	ND	0.0480	0.072	--

ND = non-detect

WHIRLPOOL BRIDGE - SOIL REMEDIATION
PHOTOS – BEFORE (2004) AND AFTER (2016)

Before – North end of Trail in Excavation Zone

After – North end of Trail in Excavation Zone

Before – Looking North at Upper Retaining Wall

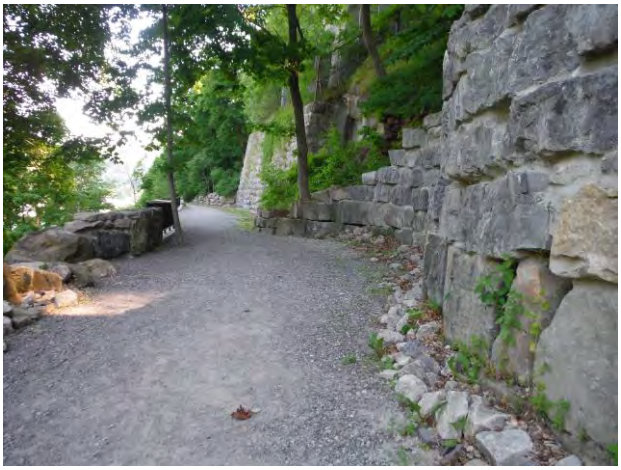
After – Looking North at Upper Retaining Wall

Before – South end of Excavation Zone near Old Bridge Supports

After – South end of Excavation Zone near Old Bridge Supports

WHIRLPOOL BRIDGE - SOIL EROSION
PHOTOS – BEFORE (2014) AND AFTER (2016)

Before – Ruts are forming in the Improved Trail caused by storm water runoff near SW-2



After – Improved Trail is level and smooth

Before – Landslide debris washes over existing stone walls onto Improved Trail near SW-2

After – The larger Erosion Control Wall prevents landslide debris from reaching the Improved Trail

Before – Sink hole above the Lower Retaining Wall adjacent to the Improved Trail

After – The sink hole is filled and a metal railing has been added above the Lower Retaining Wall

WHIRLPOOL BRIDGE SOIIS – EROSION REPAIR PROJECT
PHOTOS OF SITE WORK – OCT '14 – JUN '15

A Landslide material on the trail is excavated and disposed

A truck is used to haul the soil bags up the trail to the Upper Staging Area

Grout is added to both the front and back of the wall after stones are placed

Pilasters are incorporated into the wall to add stability

The Erosion Control drain pipe and SW-2 drain pipe run parallel under the Improved Trail

Crushed stone is brought in to protect the Improved Trail

WHIRLPOOL BRIDGE SOIIS – EROSION REPAIR PROJECT
PHOTOS OF SITE WORK – OCT '14 – JUN '15

Looking north - view of the repaired Lower Retaining Wall and new handrail

Looking north along the trail - a Final Inspection view of the south end of the Erosion Control Wall

Looking south along the trail - a Final Inspection view of the front face of the Erosion Control Wall

Looking north along the trail - a Final Inspection view of the front face of the Erosion Control Wall

Looking south - a Final Inspection view of the back side of the Erosion Control Wall

Looking north - a Final Inspection view of the back side of the Erosion Control Wall

FIELD INSPECTION REPORT

TO: Mike Hinton (NYSDEC) / Rob Koert (NFBC)

FROM: Dharma Iyer

DATE: August 11, 2014

RE: **Whirlpool Bridge – Post–remediation Inspection/Monitoring**

DATE ON SITE	August 11, 2014
ACTIVITIES	Inspection; Groundwater, surface water and analysis
FIELD MEASUREMENTS	Water levels and field parameters (pH, TDS, turbidity, ORP, temp.)
UPPER TRAIL & STAGING AREAS	Observations: • Upper Staging Area – Vigorous non-woody plant colonization. No woody plant regeneration observed. • Talus under the cliff has been cleared to the sides of the trail after recent heavy rain storms. • Upper Trail – Mostly in very good condition; small ruts at the steep south end of the Trail are larger after recent severe storms. • Two landslides near the middle of the trail appear to have been recently cleared. • Lower Staging Area – A CONSTRUCTION AHEAD Sign is present. A metal railing has been added to the concrete footer which was built alongside the old retaining wall. Surface material which includes gravel fines has been added to much of the area. • Fair non-woody plant growth in the Lower Staging Area
REMEDIATION ZONE	Observations: • Rebuilt trail in very good condition except for small rut near SW-2 • Non-woody and a smaller number of woody plants are growing on remediated slopes. Plant growth is negatively impacted by reoccurring landslides. • The landslide above SW-2 has extended to MW-1. • Surface rust has formed on the Monitoring Wells. • The base stone of the rock wall adjacent to MW-1 is being pushed over the edge of the well by the pressure of the slope behind it. • Access to the Remediation Zone is being restricted by a stone wall and fence on the north end. Near the south end there is a gate that is now open. • Metal WARNING signs are generally in good condition. • Cottonwood saplings growing under the Upper Retaining Wall should be cut down. This species favors wet conditions and the roots could be a problem to the collection pipes for SW-3.
PLANNED ACTIVITIES	• Make-up sampling at SW-2 in Oct.' 14 during erosion repair project • Routine semi-annual sampling for 2015 (post-remediation/post-bridge re-painting)

FIELD INSPECTION REPORT

TO: Mike Hinton (NYSDEC) / Rob Koert (NFBC)

FROM: Dharma Iyer

DATE: November 2015

RE: **Whirlpool Bridge – Post–remediation Inspection/Monitoring**

DATE ON SITE	October 23, 2015
ACTIVITIES	Inspection; Groundwater, surface water and analysis
FIELD MEASUREMENTS	Water levels and field parameters (pH, TDS, turbidity, ORP, temp.)
UPPER TRAIL & STAGING AREAS	Observations: • Upper Staging Area – Vigorous non-woody plant colonization. No woody plant regeneration observed. • Talus under the cliff has been cleared to the sides of the trail. • Upper Trail – Mostly in very good condition; small ruts at the steep south end of the Trail and some near the middle. • Material from two landslides near the middle of the trail appears to be kept clear. • Lower Staging Area – A metal railing has been added to the concrete footer which was built alongside the old retaining wall. Surface material which includes gravel fines has been added to much of the area. • Little understory non-woody plant growth in the Lower Staging Area.
REMEDIATION ZONE	Observations: • Rebuilt trail in very good condition. • Non-woody and a smaller number of woody plants are growing on remediated slopes. Plant growth is negatively impacted by reoccurring landslides. • The landslide above MW-1 and SW-2 has been contained by the Erosion Control Wall. • Surface rust has formed on the Monitoring Wells. • The base stone of the rock wall adjacent to MW-1 was cut away from the inner ring during the Erosion Control Wall installation. • Access to the Remediation Zone is being restricted by a stone wall and fence on the north end. Near the south end there is a gate that is now open. • The Metal WARNING sign on the south end of the Upper Retaining Wall is very dirty and should be cleaned. • The Cottonwood saplings that were growing under the Upper Retaining Wall have been cut down as requested. • The SW-1 and SW-3 sump boxes have been compressed and damaged (probably by heavy equipment). These units should be replaced.
PLANNED ACTIVITIES	• Routine annual sampling for 2016 (post-remediation/post-bridge re-painting)

FIELD INSPECTION REPORT

TO: Mike Hinton (NYSDEC) / Rob Koert (NFBC)

FROM: Dharma Iyer

DATE: August 2016

RE: **Whirlpool Bridge – Post–remediation Inspection/Monitoring**

DATE ON SITE	June 24, 2016
ACTIVITIES	Inspection; Groundwater, surface water and analysis
FIELD MEASUREMENTS	Water levels and field parameters (pH, TDS, turbidity, ORP, temp.)
UPPER TRAIL & STAGING AREAS	Observations: • Upper Staging Area – Vigorous non-woody plant colonization. No woody plant regeneration observed. • Talus under the cliff has been cleared to the sides of the trail. • Upper Trail – Mostly in very good condition; small ruts at the steep south end of the Trail and some near the middle. • Material from two landslides near the middle of the trail appears to be kept clear. • Lower Staging Area – A metal railing has been added to the concrete footer which was built alongside the old retaining wall. Surface material which includes gravel fines has been added to much of the area. • Little understory non-woody plant growth in the Lower Staging Area.
REMEDIATION ZONE	Observations: • Rebuilt trail in very good condition. • Non-woody and a smaller number of woody plants are growing on remediated slopes. Plant growth is negatively impacted by reoccurring landslides. • The landslide above MW-1 and SW-2 has been contained by the Erosion Control Wall. • Surface rust has formed on the Monitoring Wells. • The base stone of the rock wall adjacent to MW-1 was cut away from the inner ring during the Erosion Control Wall installation. • Access to the Remediation Zone is being restricted by a stone wall and fence on the north end. Near the south end there is a gate that is now open. • The Metal WARNING sign on the south end of the Upper Retaining Wall is very dirty and should be cleaned and waxed to resist mold growth. • Some large stones remain missing on the north section and a few others had graffiti painted on them. • The SW-1 and SW-3 sump boxes have been compressed and damaged (probably by heavy equipment). These units should be replaced.
PLANNED ACTIVITIES	• Routine annual sampling for 2017 (post-remediation/post-bridge re-painting)

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-65304-1
Client Project/Site: Whirlpool Bridge

For:
Iyer Environmental Group, LLC
44 Rolling Hills Drive
Orchard Park, New York 14127

Attn: Dr. Dharmarajan R Iyer

Melissa Deyo

Authorized for release by:
8/15/2014 1:19:52 PM

Melissa Deyo, Project Manager I
(716)504-9874
melissa.deyo@testamericainc.com

Table of Contents

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-65304-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-65304-1

Job ID: 480-65304-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-65304-1

Receipt
The samples were received on 8/11/2014 3:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 19.0º C.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-65304-1

Client Sample ID: MW-1 — Lab Sample ID: 480-65304-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cadmium	0.0028	J	0.0050	0.0020	mg/L	1		6010C	Total Recoverable
Chromium	0.0081	J	0.010	0.0020	mg/L	1		6010C	Total Recoverable
Lead	0.024		0.010	0.0034	mg/L	1		6010C	Total Recoverable
Zinc	0.55		0.020	0.0063	mg/L	1		6010C	Total Recoverable

Client Sample ID: MW-2 — Lab Sample ID: 480-65304-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.016	J	0.020	0.010	mg/L	1		6010C	Total Recoverable
Cadmium	0.0057		0.0050	0.0020	mg/L	1		6010C	Total Recoverable
Chromium	0.027		0.010	0.0020	mg/L	1		6010C	Total Recoverable
Lead	0.015		0.010	0.0034	mg/L	1		6010C	Total Recoverable
Zinc	0.62		0.020	0.0063	mg/L	1		6010C	Total Recoverable

Client Sample ID: SW-1 — Lab Sample ID: 480-65304-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	0.020		0.010	0.0034	mg/L	1		6010C	Total Recoverable
Zinc	0.015	J	0.020	0.0063	mg/L	1		6010C	Total Recoverable

Client Sample ID: SW-3 — Lab Sample ID: 480-65304-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	0.053		0.010	0.0034	mg/L	1		6010C	Total Recoverable
Zinc	0.11		0.020	0.0063	mg/L	1		6010C	Total Recoverable

This Detection Summary does not include radiochemical test results.

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-65304-1

Client Sample ID: MW-1

Lab Sample ID: 480-65304-1

Date Collected: 08/11/14 10:00

Matrix: Water

Date Received: 08/11/14 15:15

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.020	0.010	mg/L		08/14/14 08:04	08/15/14 10:39	1
Cadmium	**0.0028**	**J**	0.0050	0.0020	mg/L		08/14/14 08:04	08/15/14 10:39	1
Chromium	**0.0081**	**J**	0.010	0.0020	mg/L		08/14/14 08:04	08/15/14 10:39	1
Lead	**0.024**		0.010	0.0034	mg/L		08/14/14 08:04	08/15/14 10:39	1
Zinc	**0.55**		0.020	0.0063	mg/L		08/14/14 08:04	08/15/14 10:39	1

Client Sample ID: MW-2

Lab Sample ID: 480-65304-2

Date Collected: 08/11/14 11:00

Matrix: Water

Date Received: 08/11/14 15:15

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.016**	**J**	0.020	0.010	mg/L		08/14/14 08:04	08/15/14 10:44	1
Cadmium	**0.0057**		0.0050	0.0020	mg/L		08/14/14 08:04	08/15/14 10:44	1
Chromium	**0.027**		0.010	0.0020	mg/L		08/14/14 08:04	08/15/14 10:44	1
Lead	**0.015**		0.010	0.0034	mg/L		08/14/14 08:04	08/15/14 10:44	1
Zinc	**0.62**		0.020	0.0063	mg/L		08/14/14 08:04	08/15/14 10:44	1

Client Sample ID: SW-1

Lab Sample ID: 480-65304-3

Date Collected: 08/11/14 12:30

Matrix: Water

Date Received: 08/11/14 15:15

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.020	0.010	mg/L		08/14/14 08:04	08/14/14 20:43	1
Cadmium	ND		0.0050	0.0020	mg/L		08/14/14 08:04	08/14/14 20:43	1
Chromium	ND		0.010	0.0020	mg/L		08/14/14 08:04	08/14/14 20:43	1
Lead	**0.020**		0.010	0.0034	mg/L		08/14/14 08:04	08/14/14 20:43	1
Zinc	**0.015**	**J**	0.020	0.0063	mg/L		08/14/14 08:04	08/14/14 20:43	1

Client Sample ID: SW-3

Lab Sample ID: 480-65304-4

Date Collected: 08/11/14 13:00

Matrix: Water

Date Received: 08/11/14 15:15

Method: 6010C - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.020	0.010	mg/L		08/14/14 08:04	08/14/14 20:47	1
Cadmium	ND		0.0050	0.0020	mg/L		08/14/14 08:04	08/14/14 20:47	1
Chromium	ND		0.010	0.0020	mg/L		08/14/14 08:04	08/14/14 20:47	1
Lead	**0.053**		0.010	0.0034	mg/L		08/14/14 08:04	08/14/14 20:47	1
Zinc	**0.11**		0.020	0.0063	mg/L		08/14/14 08:04	08/14/14 20:47	1

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-65304-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 680-343999/1-A
Matrix: Water
Analysis Batch: 344342

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 343999

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.020	0.010	mg/L		08/14/14 08:04	08/15/14 09:17	1
Cadmium	ND		0.0050	0.0020	mg/L		08/14/14 08:04	08/15/14 09:17	1
Chromium	ND		0.010	0.0020	mg/L		08/14/14 08:04	08/15/14 09:17	1
Lead	ND		0.010	0.0034	mg/L		08/14/14 08:04	08/15/14 09:17	1
Zinc	ND		0.020	0.0063	mg/L		08/14/14 08:04	08/15/14 09:17	1

Lab Sample ID: LCS 680-343999/2-A
Matrix: Water
Analysis Batch: 344342

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 343999

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.100	0.105		mg/L		105	75 - 125
Cadmium	0.0500	0.0514		mg/L		103	75 - 125
Chromium	0.100	0.100		mg/L		100	75 - 125
Lead	0.0500	0.0521		mg/L		104	75 - 125
Zinc	0.100	0.104		mg/L		104	75 - 125

QC Association Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-65304-1

Metals

Prep Batch: 343999

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-65304-1	MW-1	Total Recoverable	Water	3005A	
480-65304-2	MW-2	Total Recoverable	Water	3005A	
480-65304-3	SW-1	Total Recoverable	Water	3005A	
480-65304-4	SW-3	Total Recoverable	Water	3005A	
LCS 680-343999/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
MB 680-343999/1-A	Method Blank	Total Recoverable	Water	3005A	

Analysis Batch: 344342

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-65304-1	MW-1	Total Recoverable	Water	6010C	343999
480-65304-2	MW-2	Total Recoverable	Water	6010C	343999
480-65304-3	SW-1	Total Recoverable	Water	6010C	343999
480-65304-4	SW-3	Total Recoverable	Water	6010C	343999
LCS 680-343999/2-A	Lab Control Sample	Total Recoverable	Water	6010C	343999
MB 680-343999/1-A	Method Blank	Total Recoverable	Water	6010C	343999

Lab Chronicle

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-65304-1

Client Sample ID: MW-1

Lab Sample ID: 480-65304-1

Date Collected: 08/11/14 10:00

Matrix: Water

Date Received: 08/11/14 15:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			343999	08/14/14 08:04	SP	TAL SAV
Total Recoverable	Analysis	6010C		1	344342	08/15/14 10:39	BCB	TAL SAV

Client Sample ID: MW-2

Lab Sample ID: 480-65304-2

Date Collected: 08/11/14 11:00

Matrix: Water

Date Received: 08/11/14 15:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			343999	08/14/14 08:04	SP	TAL SAV
Total Recoverable	Analysis	6010C		1	344342	08/15/14 10:44	BCB	TAL SAV

Client Sample ID: SW-1

Lab Sample ID: 480-65304-3

Date Collected: 08/11/14 12:30

Matrix: Water

Date Received: 08/11/14 15:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			343999	08/14/14 08:04	SP	TAL SAV
Total Recoverable	Analysis	6010C		1	344342	08/14/14 20:43	BCB	TAL SAV

Client Sample ID: SW-3

Lab Sample ID: 480-65304-4

Date Collected: 08/11/14 13:00

Matrix: Water

Date Received: 08/11/14 15:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			343999	08/14/14 08:04	SP	TAL SAV
Total Recoverable	Analysis	6010C		1	344342	08/14/14 20:47	BCB	TAL SAV

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Certification Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-65304-1

Laboratory: TestAmerica Buffalo

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	10026	03-31-15

Laboratory: TestAmerica Savannah

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
	AFCEE		SAVLAB	
A2LA	DoD ELAP		399.01	02-28-15
A2LA	ISO/IEC 17025		399.01	02-28-15
Alabama	State Program	4	41450	06-30-15
Arkansas DEQ	State Program	6	88-0692	01-31-15
California	NELAP	9	3217CA	07-31-14 *
Colorado	State Program	8	N/A	12-31-14
Connecticut	State Program	1	PH-0161	03-31-15
Florida	NELAP	4	E87052	06-30-15
GA Dept. of Agriculture	State Program	4	N/A	06-12-17
Georgia	State Program	4	N/A	06-30-15
Georgia	State Program	4	803	06-30-15
Guam	State Program	9	09-005r	04-16-15
Hawaii	State Program	9	N/A	06-30-15
Illinois	NELAP	5	200022	11-30-14
Indiana	State Program	5	N/A	06-30-15
Iowa	State Program	7	353	07-01-15
Kentucky (DW)	State Program	4	90084	12-31-14
Kentucky (UST)	State Program	4	18	06-30-15
Louisiana	NELAP	6	30690	06-30-14 *
Louisiana (DW)	NELAP	6	LA140023	12-31-14
Maine	State Program	1	GA00006	08-16-14 *
Maryland	State Program	3	250	12-31-14
Massachusetts	State Program	1	M-GA006	06-30-15
Michigan	State Program	5	9925	06-30-15
Mississippi	State Program	4	N/A	06-30-14 *
Montana	State Program	8	CERT0081	01-01-15
Nebraska	State Program	7	TestAmerica-Savannah	06-30-15
New Jersey	NELAP	2	GA769	06-30-15
New Mexico	State Program	6	N/A	06-30-15
New York	NELAP	2	10842	03-31-15
North Carolina (DW)	State Program	4	13701	07-31-15
North Carolina (WW/SW)	State Program	4	269	12-31-14
Oklahoma	State Program	6	9984	08-31-14 *
Pennsylvania	NELAP	3	68-00474	06-30-15
Puerto Rico	State Program	2	GA00006	12-31-14
South Carolina	State Program	4	98001	06-30-14 *
Tennessee	State Program	4	TN02961	06-30-15
Texas	NELAP	6	T104704185-08-TX	11-30-14
USDA	Federal		SAV 3-04	06-11-17
Virginia	NELAP	3	460161	06-14-15
Washington	State Program	10	C805	06-10-15
West Virginia (DW)	State Program	3	9950C	12-31-14
West Virginia DEP	State Program	3	94	06-30-15

* Certification renewal pending - certification considered valid.

Certification Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-65304-1

Laboratory: TestAmerica Savannah (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Wisconsin	State Program	5	999819810	08-31-14 *
Wyoming	State Program	8	8TMS-L	06-30-14 *

* Certification renewal pending - certification considered valid.

Method Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-65304-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL SAV

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Sample Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-65304-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-65304-1	MW-1	Water	08/11/14 10:00	08/11/14 15:15
480-65304-2	MW-2	Water	08/11/14 11:00	08/11/14 15:15
480-65304-3	SW-1	Water	08/11/14 12:30	08/11/14 15:15
480-65304-4	SW-3	Water	08/11/14 13:00	08/11/14 15:15

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☒

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
Iyer Environmental Group	Dharma Iyer	Aug 11, 2014	264400
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 1 of 1
44 Rolling Hills Dr	(716) 662-4157 / (716) 662-2118		
City	**State**	**Zip Code**	**Site Contact**	**Lab Contact**
Orchard Park	NY	14127	R. Allen	M. Deyo
Project Name and Location (State)	**Carrier/Waybill Number**
Whirlpool Bridge LTM (NY	
Contract/Purchase Order/Quote No.	

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: 5 Metals	Special Instructions/ Conditions of Receipt
MW-1	8/11/14	10:00 A		✓					1				✓	5 Metals (As, Cd, Cr Pb, Zn)
MW-2	8/11/14	11:00 A		✓					1				✓	
SW-1	8/11/14	12:30 P		✓					1				✓	
SW-3	8/11/14	1:00 P		✓					1				✓	

480-65304 Chain of Custody

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☒ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: Richard C Allen Jr	8/11/14	1515	1. Received By:	8/11/14	1515
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

19.0 #1

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Login Sample Receipt Checklist

Client: Iyer Environmental Group, LLC

Job Number: 480-65304-1

Login Number: 65304

List Source: TestAmerica Buffalo

List Number: 1

Creator: Kolb, Chris M

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	No: Thermal preservation not required
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	iyer env.
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: Iyer Environmental Group, LLC

Job Number: 480-65304-1

Login Number: 65304
List Number: 2
Creator: West, Lauren H

List Source: TestAmerica Savannah
List Creation: 08/13/14 08:38 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-69675-1
Client Project/Site: Whirlpool Bridge

For:
Iyer Environmental Group, LLC
44 Rolling Hills Drive
Orchard Park, New York 14127

Attn: Dr. Dharmarajan R Iyer

Authorized for release by:
10/30/2014 9:29:48 AM
Rebecca Jones, Project Management Assistant I
rebecca.jones@testamericainc.com

Designee for

Melissa Deyo, Project Manager I
(716)504-9874
melissa.deyo@testamericainc.com

Table of Contents

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-69675-1

Qualifiers

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-69675-1

Job ID: 480-69675-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-69675-1

Receipt
The sample was received on 10/20/2014 4:20 PM; the sample arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 3.0º C.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-69675-1

Client Sample ID: SW-2

Lab Sample ID: 480-69675-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	0.018		0.010	0.0030	mg/L	1		6010C	Total/NA
Zinc	0.024	B	0.010	0.0015	mg/L	1		6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-69675-1

Client Sample ID: SW-2
Date Collected: 10/20/14 11:30
Date Received: 10/20/14 16:20

Lab Sample ID: 480-69675-1
Matrix: Water

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		10/21/14 14:16	10/23/14 17:26	1
Cadmium	ND		0.0020	0.00050	mg/L		10/21/14 14:16	10/23/14 17:26	1
Chromium	ND		0.0040	0.0010	mg/L		10/21/14 14:16	10/23/14 17:26	1
Lead	**0.018**		0.010	0.0030	mg/L		10/21/14 14:16	10/23/14 17:26	1
Zinc	**0.024**	**B**	0.010	0.0015	mg/L		10/21/14 14:16	10/25/14 09:20	1

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-69675-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-209049/1-A
Matrix: Water
Analysis Batch: 209749

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 209049

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		10/21/14 14:16	10/23/14 16:09	1
Cadmium	ND		0.0020	0.00050	mg/L		10/21/14 14:16	10/23/14 16:09	1
Chromium	ND		0.0040	0.0010	mg/L		10/21/14 14:16	10/23/14 16:09	1
Lead	ND		0.010	0.0030	mg/L		10/21/14 14:16	10/23/14 16:09	1
Zinc	0.00310	J	0.010	0.0015	mg/L		10/21/14 14:16	10/23/14 16:09	1

Lab Sample ID: LCS 480-209049/2-A
Matrix: Water
Analysis Batch: 209749

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 209049

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.201	0.192		mg/L		96	80 - 120
Cadmium	0.201	0.196		mg/L		98	80 - 120
Chromium	0.201	0.195		mg/L		97	80 - 120
Lead	0.201	0.195		mg/L		97	80 - 120
Zinc	0.201	0.196		mg/L		98	80 - 120

QC Association Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-69675-1

Metals

Prep Batch: 209049

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-69675-1	SW-2	Total/NA	Water	3005A	
LCS 480-209049/2-A	Lab Control Sample	Total/NA	Water	3005A	
MB 480-209049/1-A	Method Blank	Total/NA	Water	3005A	

Analysis Batch: 209749

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-69675-1	SW-2	Total/NA	Water	6010C	209049
LCS 480-209049/2-A	Lab Control Sample	Total/NA	Water	6010C	209049
MB 480-209049/1-A	Method Blank	Total/NA	Water	6010C	209049

Analysis Batch: 210173

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-69675-1	SW-2	Total/NA	Water	6010C	209049

Lab Chronicle

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-69675-1

Client Sample ID: SW-2
Date Collected: 10/20/14 11:30
Date Received: 10/20/14 16:20

Lab Sample ID: 480-69675-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			209049	10/21/14 14:16	TRP	TAL BUF
Total/NA	Analysis	6010C		1	209749	10/23/14 17:26	AMH	TAL BUF
Total/NA	Prep	3005A			209049	10/21/14 14:16	TRP	TAL BUF
Total/NA	Analysis	6010C		1	210173	10/25/14 09:20	LMH	TAL BUF

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Certification Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-69675-1

Laboratory: TestAmerica Buffalo

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	10026	03-31-15

Method Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-69675-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL BUF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-69675-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-69675-1	SW-2	Water	10/20/14 11:30	10/20/14 16:20

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☒

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
Iyer Environmental Group	Dharma Iyer	oct 20, 2014	264412
Address 44 Rolling Hills Dr	**Telephone Number (Area Code)/Fax Number** (716) 662-4157 / (716) 662-2118	**Lab Number**	**Page** 1 of 1
City Orchard Park / **State** NY / **Zip Code** 14127	**Site Contact** R. Allen	**Lab Contact** M. Deyo	
Project Name and Location (State) Whirlpool Bridge LTM (NY)	**Carrier/Waybill Number**		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: 5 Metals As, Cd, Cr Pb, Zn	Special Instructions/ Conditions of Receipt
SW-2	10/20/14	1130 a		✓					1				✓	

480-69675 Chain of Custody

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☒ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

		Date	Time
1. Relinquished By	Richard C Allen Jr	oct 20, 2014	1620
2. Relinquished By			
3. Relinquished By			

		Date	Time
1. Received By		10/20/14	1620
2. Received By			
3. Received By			

Comments

3.0 H

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Login Sample Receipt Checklist

Client: Iyer Environmental Group, LLC

Job Number: 480-69675-1

Login Number: 69675

List Source: TestAmerica Buffalo

List Number: 1

Creator: Kolb, Chris M

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	iyer env
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-89775-1
Client Project/Site: Whirlpool Bridge

For:
Iyer Environmental Group, LLC
44 Rolling Hills Drive
Orchard Park, New York 14127

Attn: Dr. Dharmarajan R Iyer

Authorized for release by:
10/30/2015 1:30:54 PM
Rebecca Jones, Project Management Assistant I
rebecca.jones@testamericainc.com

Designee for

Melissa Deyo, Project Manager I
(716)504-9874
melissa.deyo@testamericainc.com

Table of Contents

Definitions/Glossary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-89775-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-89775-1

Job ID: 480-89775-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-89775-1

Receipt
The samples were received on 10/23/2015 3:26 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 17.0º C.

Receipt Exceptions

No times of collection were provided. Time of 00:00 was sued for sample login.

Metals
Method(s) 6010C: The low level continuing calibration verification (CCVL 480-271264/45) for analytical batch 480-271264 contained Total Zinc above the upper quality control limit. All reported samples associated with this CCVL were either below the laboratory's standard reporting limit for this analyte or contained this analyte at a concentration greater than 10X the value found in the CCVL; therefore, re-analysis of samples MW-1 (480-89775-1), MW-2 (480-89775-2) and SW-1 (480-89775-3) was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-89775-1

Client Sample ID: MW-1 — Lab Sample ID: 480-89775-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.022		0.015	0.0056	mg/L	1		6010C	Total/NA
Cadmium	0.00056	J	0.0020	0.00050	mg/L	1		6010C	Total/NA
Chromium	0.023		0.0040	0.0010	mg/L	1		6010C	Total/NA
Lead	0.084		0.010	0.0030	mg/L	1		6010C	Total/NA
Zinc	0.20	^	0.010	0.0015	mg/L	1		6010C	Total/NA

Client Sample ID: MW-2 — Lab Sample ID: 480-89775-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.084		0.015	0.0056	mg/L	1		6010C	Total/NA
Cadmium	0.00086	J	0.0020	0.00050	mg/L	1		6010C	Total/NA
Chromium	0.054		0.0040	0.0010	mg/L	1		6010C	Total/NA
Lead	0.12		0.010	0.0030	mg/L	1		6010C	Total/NA
Zinc	1.7	^	0.010	0.0015	mg/L	1		6010C	Total/NA

Client Sample ID: SW-1 — Lab Sample ID: 480-89775-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	0.0091	J	0.010	0.0030	mg/L	1		6010C	Total/NA
Zinc	0.0086	J ^	0.010	0.0015	mg/L	1		6010C	Total/NA

Client Sample ID: SW-2 — Lab Sample ID: 480-89775-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.0026	J	0.0040	0.0010	mg/L	1		6010C	Total/NA
Lead	0.0061	J	0.010	0.0030	mg/L	1		6010C	Total/NA
Zinc	0.024		0.010	0.0015	mg/L	1		6010C	Total/NA

Client Sample ID: SW-3 — Lab Sample ID: 480-89775-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	0.0073	J	0.010	0.0030	mg/L	1		6010C	Total/NA
Zinc	0.13		0.010	0.0015	mg/L	1		6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-89775-1

Client Sample ID: MW-1
Lab Sample ID: 480-89775-1
Date Collected: 10/23/15 00:00
Matrix: Water
Date Received: 10/23/15 15:26

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.022		0.015	0.0056	mg/L		10/26/15 11:30	10/27/15 00:36	1
Cadmium	0.00056	J	0.0020	0.00050	mg/L		10/26/15 11:30	10/27/15 00:36	1
Chromium	0.023		0.0040	0.0010	mg/L		10/26/15 11:30	10/27/15 00:36	1
Lead	0.084		0.010	0.0030	mg/L		10/26/15 11:30	10/27/15 00:36	1
Zinc	0.20	^	0.010	0.0015	mg/L		10/26/15 11:30	10/27/15 00:36	1

Client Sample ID: MW-2
Lab Sample ID: 480-89775-2
Date Collected: 10/23/15 00:00
Matrix: Water
Date Received: 10/23/15 15:26

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.084		0.015	0.0056	mg/L		10/26/15 11:30	10/27/15 00:39	1
Cadmium	0.00086	J	0.0020	0.00050	mg/L		10/26/15 11:30	10/27/15 00:39	1
Chromium	0.054		0.0040	0.0010	mg/L		10/26/15 11:30	10/27/15 00:39	1
Lead	0.12		0.010	0.0030	mg/L		10/26/15 11:30	10/27/15 00:39	1
Zinc	1.7	^	0.010	0.0015	mg/L		10/26/15 11:30	10/27/15 00:39	1

Client Sample ID: SW-1
Lab Sample ID: 480-89775-3
Date Collected: 10/23/15 00:00
Matrix: Water
Date Received: 10/23/15 15:26

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		10/26/15 11:30	10/27/15 00:52	1
Cadmium	ND		0.0020	0.00050	mg/L		10/26/15 11:30	10/27/15 00:52	1
Chromium	ND		0.0040	0.0010	mg/L		10/26/15 11:30	10/27/15 00:52	1
Lead	0.0091	J	0.010	0.0030	mg/L		10/26/15 11:30	10/27/15 00:52	1
Zinc	0.0086	J ^	0.010	0.0015	mg/L		10/26/15 11:30	10/27/15 00:52	1

Client Sample ID: SW-2
Lab Sample ID: 480-89775-4
Date Collected: 10/23/15 00:00
Matrix: Water
Date Received: 10/23/15 15:26

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		10/26/15 11:30	10/27/15 00:55	1
Cadmium	ND		0.0020	0.00050	mg/L		10/26/15 11:30	10/27/15 00:55	1
Chromium	0.0026	J	0.0040	0.0010	mg/L		10/26/15 11:30	10/27/15 00:55	1
Lead	0.0061	J	0.010	0.0030	mg/L		10/26/15 11:30	10/27/15 00:55	1
Zinc	0.024		0.010	0.0015	mg/L		10/26/15 11:30	10/27/15 14:49	1

Client Sample ID: SW-3
Lab Sample ID: 480-89775-5
Date Collected: 10/23/15 00:00
Matrix: Water
Date Received: 10/23/15 15:26

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		10/26/15 11:30	10/27/15 00:58	1
Cadmium	ND		0.0020	0.00050	mg/L		10/26/15 11:30	10/27/15 00:58	1

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-89775-1

Client Sample ID: SW-3
Date Collected: 10/23/15 00:00
Date Received: 10/23/15 15:26

Lab Sample ID: 480-89775-5
Matrix: Water

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.0040	0.0010	mg/L		10/26/15 11:30	10/27/15 00:58	1
Lead	**0.0073**	**J**	0.010	0.0030	mg/L		10/26/15 11:30	10/27/15 00:58	1
Zinc	**0.13**		0.010	0.0015	mg/L		10/26/15 11:30	10/27/15 14:52	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-271066/1-A
Matrix: Water
Analysis Batch: 271264

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 271066

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		10/26/15 11:30	10/26/15 23:17	1
Cadmium	ND		0.0020	0.00050	mg/L		10/26/15 11:30	10/26/15 23:17	1
Chromium	ND		0.0040	0.0010	mg/L		10/26/15 11:30	10/26/15 23:17	1
Lead	ND		0.010	0.0030	mg/L		10/26/15 11:30	10/26/15 23:17	1
Zinc	ND		0.010	0.0015	mg/L		10/26/15 11:30	10/26/15 23:17	1

Lab Sample ID: LCS 480-271066/2-A
Matrix: Water
Analysis Batch: 271264

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 271066

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.200	0.198		mg/L		99	80 - 120
Cadmium	0.200	0.195		mg/L		97	80 - 120
Chromium	0.200	0.200		mg/L		100	80 - 120
Lead	0.200	0.199		mg/L		100	80 - 120
Zinc	0.200	0.192		mg/L		96	80 - 120

QC Association Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-89775-1

Metals

Prep Batch: 271066

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-89775-1	MW-1	Total/NA	Water	3005A	
480-89775-2	MW-2	Total/NA	Water	3005A	
480-89775-3	SW-1	Total/NA	Water	3005A	
480-89775-4	SW-2	Total/NA	Water	3005A	
480-89775-5	SW-3	Total/NA	Water	3005A	
LCS 480-271066/2-A	Lab Control Sample	Total/NA	Water	3005A	
MB 480-271066/1-A	Method Blank	Total/NA	Water	3005A	

Analysis Batch: 271264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-89775-1	MW-1	Total/NA	Water	6010C	271066
480-89775-2	MW-2	Total/NA	Water	6010C	271066
480-89775-3	SW-1	Total/NA	Water	6010C	271066
480-89775-4	SW-2	Total/NA	Water	6010C	271066
480-89775-5	SW-3	Total/NA	Water	6010C	271066
LCS 480-271066/2-A	Lab Control Sample	Total/NA	Water	6010C	271066
MB 480-271066/1-A	Method Blank	Total/NA	Water	6010C	271066

Analysis Batch: 271517

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-89775-4	SW-2	Total/NA	Water	6010C	271066
480-89775-5	SW-3	Total/NA	Water	6010C	271066

Lab Chronicle

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-89775-1

Client Sample ID: MW-1
Date Collected: 10/23/15 00:00
Date Received: 10/23/15 15:26

Lab Sample ID: 480-89775-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			271066	10/26/15 11:30	CNS	TAL BUF
Total/NA	Analysis	6010C		1	271264	10/27/15 00:36	AMH	TAL BUF

Client Sample ID: MW-2
Date Collected: 10/23/15 00:00
Date Received: 10/23/15 15:26

Lab Sample ID: 480-89775-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			271066	10/26/15 11:30	CNS	TAL BUF
Total/NA	Analysis	6010C		1	271264	10/27/15 00:39	AMH	TAL BUF

Client Sample ID: SW-1
Date Collected: 10/23/15 00:00
Date Received: 10/23/15 15:26

Lab Sample ID: 480-89775-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			271066	10/26/15 11:30	CNS	TAL BUF
Total/NA	Analysis	6010C		1	271264	10/27/15 00:52	AMH	TAL BUF

Client Sample ID: SW-2
Date Collected: 10/23/15 00:00
Date Received: 10/23/15 15:26

Lab Sample ID: 480-89775-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			271066	10/26/15 11:30	CNS	TAL BUF
Total/NA	Analysis	6010C		1	271264	10/27/15 00:55	AMH	TAL BUF
Total/NA	Prep	3005A			271066	10/26/15 11:30	CNS	TAL BUF
Total/NA	Analysis	6010C		1	271517	10/27/15 14:49	AMH	TAL BUF

Client Sample ID: SW-3
Date Collected: 10/23/15 00:00
Date Received: 10/23/15 15:26

Lab Sample ID: 480-89775-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			271066	10/26/15 11:30	CNS	TAL BUF
Total/NA	Analysis	6010C		1	271264	10/27/15 00:58	AMH	TAL BUF
Total/NA	Prep	3005A			271066	10/26/15 11:30	CNS	TAL BUF
Total/NA	Analysis	6010C		1	271517	10/27/15 14:52	AMH	TAL BUF

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Certification Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-89775-1

Laboratory: TestAmerica Buffalo

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	10026	03-31-16

Method Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-89775-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL BUF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-89775-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-89775-1	MW-1	Water	10/23/15 00:00	10/23/15 15:26
480-89775-2	MW-2	Water	10/23/15 00:00	10/23/15 15:26
480-89775-3	SW-1	Water	10/23/15 00:00	10/23/15 15:26
480-89775-4	SW-2	Water	10/23/15 00:00	10/23/15 15:26
480-89775-5	SW-3	Water	10/23/15 00:00	10/23/15 15:26

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☒

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
Iyer Environmental Group	Dharma Iyer	Oct 23, 2015	264484
Address 44 Rolling Hills Dr	**Telephone Number (Area Code)/Fax Number** (716) 662-4157	**Lab Number**	**Page** 1 of 1
City Orchard Park / **State** NY / **Zip Code** 14127	**Site Contact** R. Allen	**Lab Contact** M. Deyo	
Project Name and Location (State) Whirlpool Bridge LTM (NY)	**Carrier/Waybill Number**		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: 5 Metals As, Cd, Cr Pb, Zn	Special Instructions/ Conditions of Receipt
MW-1	10/23/15			✓					1				✓	
MW-2				✓					1				✓	
SW-1				✓					1				✓	
SW-2				✓					1				✓	
SW-3				✓					1				✓	

480-89775 Chain of Custody

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☒ 14 Days ☐ 21 Days ☐ Other_____

QC Requirements (Specify)

1. Relinquished By: Richard C Allen Jr	Date: 10/23/15	Time: 1526	1. Received By:	Date: 10/23/15	Time: 1526
2. Relinquished By:	Date:	Time:	2. Received By:	Date:	Time:
3. Relinquished By:	Date:	Time:	3. Received By:	Date:	Time:

Comments: 17.0 °C

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Login Sample Receipt Checklist

Client: Iyer Environmental Group, LLC

Job Number: 480-89775-1

Login Number: 89775
List Number: 1
Creator: Kolb, Chris M

List Source: TestAmerica Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	No: Thermal preservation not required
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	Refer to job narrative for details
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	False	Refer to job narrative for details
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	IYER ENV.
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-102240-1
Client Project/Site: Whirlpool Bridge

For:
Iyer Environmental Group, LLC
44 Rolling Hills Drive
Orchard Park, New York 14127

Attn: Dr. Dharmarajan R Iyer

Melissa Deyo

Authorized for release by:
6/29/2016 12:20:41 PM

Melissa Deyo, Project Manager I
(716)504-9874
melissa.deyo@testamericainc.com

Table of Contents

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-102240-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-102240-1

Job ID: 480-102240-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-102240-1

Receipt
The samples were received on 6/24/2016 3:22 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 16.4º C.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-102240-1

Client Sample ID: MW-1 — Lab Sample ID: 480-102240-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	0.0071	J	0.010	0.0030	mg/L	1		6010C	Total/NA
Zinc	0.024	B	0.010	0.0015	mg/L	1		6010C	Total/NA

Client Sample ID: MW-2 — Lab Sample ID: 480-102240-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.021		0.015	0.0056	mg/L	1		6010C	Total/NA
Cadmium	0.00061	J	0.0020	0.00050	mg/L	1		6010C	Total/NA
Chromium	0.0092		0.0040	0.0010	mg/L	1		6010C	Total/NA
Lead	0.013		0.010	0.0030	mg/L	1		6010C	Total/NA
Zinc	0.081	B	0.010	0.0015	mg/L	1		6010C	Total/NA

Client Sample ID: SW-1 — Lab Sample ID: 480-102240-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	0.014		0.010	0.0030	mg/L	1		6010C	Total/NA
Zinc	0.012	B	0.010	0.0015	mg/L	1		6010C	Total/NA

Client Sample ID: SW-2 — Lab Sample ID: 480-102240-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.0048		0.0040	0.0010	mg/L	1		6010C	Total/NA
Lead	0.011		0.010	0.0030	mg/L	1		6010C	Total/NA
Zinc	0.024	B	0.010	0.0015	mg/L	1		6010C	Total/NA

Client Sample ID: SW-3 — Lab Sample ID: 480-102240-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	0.048		0.010	0.0030	mg/L	1		6010C	Total/NA
Zinc	0.072	B	0.010	0.0015	mg/L	1		6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-102240-1

Client Sample ID: MW-1

Lab Sample ID: 480-102240-1

Date Collected: 06/24/16 10:00
Matrix: Water
Date Received: 06/24/16 15:22

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		06/27/16 08:10	06/27/16 19:49	1
Cadmium	ND		0.0020	0.00050	mg/L		06/27/16 08:10	06/27/16 19:49	1
Chromium	ND		0.0040	0.0010	mg/L		06/27/16 08:10	06/27/16 19:49	1
Lead	**0.0071**	**J**	0.010	0.0030	mg/L		06/27/16 08:10	06/27/16 19:49	1
Zinc	**0.024**	**B**	0.010	0.0015	mg/L		06/27/16 08:10	06/27/16 19:49	1

Client Sample ID: MW-2

Lab Sample ID: 480-102240-2

Date Collected: 06/24/16 10:30
Matrix: Water
Date Received: 06/24/16 15:22

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.021**		0.015	0.0056	mg/L		06/27/16 08:10	06/27/16 19:52	1
Cadmium	**0.00061**	**J**	0.0020	0.00050	mg/L		06/27/16 08:10	06/27/16 19:52	1
Chromium	**0.0092**		0.0040	0.0010	mg/L		06/27/16 08:10	06/27/16 19:52	1
Lead	**0.013**		0.010	0.0030	mg/L		06/27/16 08:10	06/27/16 19:52	1
Zinc	**0.081**	**B**	0.010	0.0015	mg/L		06/27/16 08:10	06/27/16 19:52	1

Client Sample ID: SW-1

Lab Sample ID: 480-102240-3

Date Collected: 06/24/16 11:00
Matrix: Water
Date Received: 06/24/16 15:22

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		06/27/16 08:10	06/27/16 19:55	1
Cadmium	ND		0.0020	0.00050	mg/L		06/27/16 08:10	06/27/16 19:55	1
Chromium	ND		0.0040	0.0010	mg/L		06/27/16 08:10	06/27/16 19:55	1
Lead	**0.014**		0.010	0.0030	mg/L		06/27/16 08:10	06/27/16 19:55	1
Zinc	**0.012**	**B**	0.010	0.0015	mg/L		06/27/16 08:10	06/27/16 19:55	1

Client Sample ID: SW-2

Lab Sample ID: 480-102240-4

Date Collected: 06/24/16 11:30
Matrix: Water
Date Received: 06/24/16 15:22

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		06/27/16 08:10	06/27/16 19:59	1
Cadmium	ND		0.0020	0.00050	mg/L		06/27/16 08:10	06/27/16 19:59	1
Chromium	**0.0048**		0.0040	0.0010	mg/L		06/27/16 08:10	06/27/16 19:59	1
Lead	**0.011**		0.010	0.0030	mg/L		06/27/16 08:10	06/27/16 19:59	1
Zinc	**0.024**	**B**	0.010	0.0015	mg/L		06/27/16 08:10	06/27/16 19:59	1

Client Sample ID: SW-3

Lab Sample ID: 480-102240-5

Date Collected: 06/24/16 12:00
Matrix: Water
Date Received: 06/24/16 15:22

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		06/27/16 08:10	06/27/16 20:02	1
Cadmium	ND		0.0020	0.00050	mg/L		06/27/16 08:10	06/27/16 20:02	1

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-102240-1

Client Sample ID: SW-3
Date Collected: 06/24/16 12:00
Date Received: 06/24/16 15:22

Lab Sample ID: 480-102240-5
Matrix: Water

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.0040	0.0010	mg/L		06/27/16 08:10	06/27/16 20:02	1
Lead	**0.048**		0.010	0.0030	mg/L		06/27/16 08:10	06/27/16 20:02	1
Zinc	**0.072**	**B**	0.010	0.0015	mg/L		06/27/16 08:10	06/27/16 20:02	1

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-102240-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-308571/1-A
Matrix: Water
Analysis Batch: 308842

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 308571

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.015	0.0056	mg/L		06/27/16 08:10	06/27/16 18:23	1
Cadmium	ND		0.0020	0.00050	mg/L		06/27/16 08:10	06/27/16 18:23	1
Chromium	ND		0.0040	0.0010	mg/L		06/27/16 08:10	06/27/16 18:23	1
Lead	ND		0.010	0.0030	mg/L		06/27/16 08:10	06/27/16 18:23	1
Zinc	0.00216	J	0.010	0.0015	mg/L		06/27/16 08:10	06/27/16 18:23	1

Lab Sample ID: LCS 480-308571/2-A
Matrix: Water
Analysis Batch: 308842

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 308571

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.200	0.202		mg/L		101	80 - 120
Cadmium	0.200	0.205		mg/L		102	80 - 120
Chromium	0.200	0.200		mg/L		100	80 - 120
Lead	0.200	0.193		mg/L		96	80 - 120
Zinc	0.200	0.191		mg/L		95	80 - 120

QC Association Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-102240-1

Metals

Prep Batch: 308571

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-102240-1	MW-1	Total/NA	Water	3005A	
480-102240-2	MW-2	Total/NA	Water	3005A	
480-102240-3	SW-1	Total/NA	Water	3005A	
480-102240-4	SW-2	Total/NA	Water	3005A	
480-102240-5	SW-3	Total/NA	Water	3005A	
LCS 480-308571/2-A	Lab Control Sample	Total/NA	Water	3005A	
MB 480-308571/1-A	Method Blank	Total/NA	Water	3005A	

Analysis Batch: 308842

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-102240-1	MW-1	Total/NA	Water	6010C	308571
480-102240-2	MW-2	Total/NA	Water	6010C	308571
480-102240-3	SW-1	Total/NA	Water	6010C	308571
480-102240-4	SW-2	Total/NA	Water	6010C	308571
480-102240-5	SW-3	Total/NA	Water	6010C	308571
LCS 480-308571/2-A	Lab Control Sample	Total/NA	Water	6010C	308571
MB 480-308571/1-A	Method Blank	Total/NA	Water	6010C	308571

Lab Chronicle

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-102240-1

Client Sample ID: MW-1

Lab Sample ID: 480-102240-1

Date Collected: 06/24/16 10:00

Matrix: Water

Date Received: 06/24/16 15:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			308571	06/27/16 08:10	CMM	TAL BUF
Total/NA	Analysis	6010C		1	308842	06/27/16 19:49	AMH	TAL BUF

Client Sample ID: MW-2

Lab Sample ID: 480-102240-2

Date Collected: 06/24/16 10:30

Matrix: Water

Date Received: 06/24/16 15:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			308571	06/27/16 08:10	CMM	TAL BUF
Total/NA	Analysis	6010C		1	308842	06/27/16 19:52	AMH	TAL BUF

Client Sample ID: SW-1

Lab Sample ID: 480-102240-3

Date Collected: 06/24/16 11:00

Matrix: Water

Date Received: 06/24/16 15:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			308571	06/27/16 08:10	CMM	TAL BUF
Total/NA	Analysis	6010C		1	308842	06/27/16 19:55	AMH	TAL BUF

Client Sample ID: SW-2

Lab Sample ID: 480-102240-4

Date Collected: 06/24/16 11:30

Matrix: Water

Date Received: 06/24/16 15:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			308571	06/27/16 08:10	CMM	TAL BUF
Total/NA	Analysis	6010C		1	308842	06/27/16 19:59	AMH	TAL BUF

Client Sample ID: SW-3

Lab Sample ID: 480-102240-5

Date Collected: 06/24/16 12:00

Matrix: Water

Date Received: 06/24/16 15:22

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3005A			308571	06/27/16 08:10	CMM	TAL BUF
Total/NA	Analysis	6010C		1	308842	06/27/16 20:02	AMH	TAL BUF

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Certification Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-102240-1

Laboratory: TestAmerica Buffalo

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	10026	03-31-17

Method Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-102240-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL BUF

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: Iyer Environmental Group, LLC
Project/Site: Whirlpool Bridge

TestAmerica Job ID: 480-102240-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-102240-1	MW-1	Water	06/24/16 10:00	06/24/16 15:22
480-102240-2	MW-2	Water	06/24/16 10:30	06/24/16 15:22
480-102240-3	SW-1	Water	06/24/16 11:00	06/24/16 15:22
480-102240-4	SW-2	Water	06/24/16 11:30	06/24/16 15:22
480-102240-5	SW-3	Water	06/24/16 12:00	06/24/16 15:22

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes ☐ No ☒

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
Iyer Environmental Group	Dharma Iyer	Jun 24, 2016	264483
Address 44 Rolling Hills Dr	**Telephone Number (Area Code)/Fax Number** (716) 662-4157	**Lab Number**	**Page** 1 of 1
City Orchard Park / **State** NY / **Zip Code** 14127	**Site Contact** R. Allen	**Lab Contact** M. Deyo	
Project Name and Location (State) Whirlpool Bridge LTM (NY)	**Carrier/Waybill Number**		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	Analysis: 5 Metals As, Cd, Cr Pb, Zn
MW-1	6/24/16	10:00A		✓					1				✓
MW-2		10:30A		✓					1				✓
SW-1		11:00A		✓					1				✓
SW-2		11:30A		✓					1				✓
SW-3		12:00P		✓					1				✓

Special Instructions/ Conditions of Receipt

480-102240 Chain of Custody

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☒ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: Richard C Allen Jr	6/24/16	1522	1. Received By: TA	6/24/16	1522
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments: Temp 16.4 No ICE #1

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Login Sample Receipt Checklist

Client: Iyer Environmental Group, LLC

Job Number: 480-102240-1

Login Number: 102240

List Source: TestAmerica Buffalo

List Number: 1

Creator: Kolb, Chris M

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	No: Thermal preservation not required
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	IYER ENV.
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	