Honeywell

Onondaga Lake

Remediation Operations Community Health and Safety Plan

May 2012

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List of Acronyms

Acronym	Definition
µg/m^3	micrograms per cubic meter
AED	automated external defibrillator
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CHASP	Community Health and Safety Plan
CIHs	Certified Industrial Hygienists
CPP	Citizen Participation Plan
CPWG	Community Participation Working Group
CSPs	Certified Safety Professionals
dBA	A-weighted decibel
DOT	US Department of Transportation
ERG 2008	Emergency Response Guide Book
ERT	Emergency Response Team
FAQ	frequently asked questions
GBAC	Greater Baldwinsville Ambulance Corps
HazMat	Hazardous Material
HAZOP	Hazard and Operability
HDPE	high-density polyethylene
HHRA	Human Health Risk Assessment
IC	Incident Commander
ICS	Incident Command System
NFPA	National Fire Protection Association
NIMS	National Incident Management System
NRF	National Response Framework
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
OPA	Oil Pollution Act
OSHA	Occupational Safety and Health Administration
POL	petroleum, oil, and lubricants
ppb	Parts per billion
ppm	Parts per million
QAPP	quality assurance project plan
SCA	Sediment Consolidation Area
SCT	Secretariat of Communications and Transportation of Mexico
SPA	Sediment Processing Area
USCG	U. S. Coast Guard
USEPA	U.S. Environmental Protection Agency
VOCs	volatile organic compounds
WAVES	Western Area Volunteer Emergency Services
WTP	water treatment plant

EXECUTIVE SUMMARY

Ensuring public health and safety is a primary focus throughout the Onondaga Lake remediation project. An experienced team of safety and engineering professionals identified and assessed foreseeable risks in a four-step process that included:

1. Remedy selection and design to reduce or eliminate hazards (i.e., closed system, double containment, geotextile tubes, etc.)
2. Evaluate hazard scenarios with experienced team of health and safety and engineering professionals
3. Modify design to further reduce risks
4. Develop mitigation measures and response actions in the unlikely event an incident occurs

The Onondaga Lake remediation is being implemented under the oversight of the New York State Department of Environmental Conservation (NYSDEC), the U.S. Environmental Protection Agency (USEPA), and the New York State Department of Health (NYSDOH). It is Honeywell's continued commitment to meet or exceed the health and safety requirements put forth by these agencies for the activities described in this plan.

The work addressed in this Community Health and Safety Plan (CHASP) includes dredging the lake bottom; installing a sediment cap; habitat re-establishment; and the transport, treatment, and secure containment of dredged materials. Both dredging activities and cap construction will be conducted from barges on the lake. Dredged materials will be pumped via a double-walled pipeline through non-residential areas to a lined Sediment Processing Area (SPA) for removal of oversized material and initial dewatering. The sediment will then be pumped through pipes to the adjacent, lined Sediment Consolidation Area (SCA) for containment and dewatering. Sediments will be pumped into geotextile tubes for dewatering where they will be contained and isolated long-term within the lined containment area.

Water removed from the dredged sediment will be pumped through pipes to the adjacent water treatment plant (WTP), where it will be treated to levels established by NYSDEC and Onondaga County. The treated water will then be pumped to Onondaga County's Metropolitan Syracuse Wastewater Treatment Plant, where it will go through an additional treatment step prior to discharge back into Onondaga Lake.

In the unlikely event that an incident occurs, emergency response procedures would be implemented in accordance with the National Incident Management System (NIMS) and the nationally recognized Incident Command System (ICS) to efficiently transfer information and commands between the project's Emergency Response Team (ERT) and the off-site local emergency responders. The ERT has been established to support emergency response and comprises personnel who are, or will be, engaged in implementing remedial efforts in the

project areas. ERT members have received specialized training in emergency response techniques and would decrease the initial response time for medical emergencies, spills, or water rescues. Dedicated emergency equipment will be provided for ERT use in the unlikely event an incident occurs.

In 2010, the USEPA conducted a Human Health Risk Assessment (HHRA), to look at potential risks posed by the management and dewatering of lake sediment that will take place at the SCA. The results of the risk assessment concluded that, “All resulting risk estimates and target organ-specific hazard indices were within levels identified by EPA as acceptable.” As part of this assessment, two exposure scenarios were evaluated: 1) exposure to contaminants by air as a result of chemicals volatilizing from the dredged sediment; and 2) a hypothetical significant failure of the SCA. The second scenario included a hypothetical situation, where individuals received daily exposure to contaminated sediments through skin contact and ingestion (eating) during a 45-day period. The HHRA acknowledged that this scenario represents an extremely unlikely situation, but was included at the request of local community members.

This CHASP builds upon the results of the HHRA to ensure the community’s health and safety are protected throughout the completion of the project. This includes a comprehensive air protection and monitoring program that will be implemented at the SCA and lakeshore. The sediment management process is a controlled system, so sediments will never be exposed to the atmosphere during dredging, transport, or dewatering. This process will reduce the potential for the generation of emissions or odors. A comprehensive air monitoring program developed in coordination with NYSDEC, USEPA, and NYSDOH will be implemented to ensure the emissions control methods are effective and that protective air quality criteria are not exceeded.

Spill prevention measures have also been incorporated into all aspects of the project to eliminate or minimize the risk of spillage of dredged sediments, fuel, and other operational fluids such as oil. For example, the pipeline consists of two high-density polyethylene (HDPE) pipes, one inside the other, which are constructed for outdoor exposure and durability. The system has been designed such that leakage would be detected by the pressure sensor system within the pipeline as well as by the leak detection monitors between the inner and outer pipes. In addition, a lined containment area has been constructed for each of the three on-land pipeline booster stations, and any potential spills would be contained within these lined containment areas.

In addition to air quality protection and spill prevention, other aspects of the remedy implementation have also been examined from a community health and safety perspective. The project has been designed to minimize impacts to air and water quality, noise levels, local traffic (including boating in the areas where barges are operating), work areas, and site security. This plan includes detailed descriptions of the elements of work that will be conducted, the potential hazard analyses conducted, and methods to ensure protection of community health and safety throughout completion of the lake remedy.

This CHASP provides clear, comprehensive, and easily accessible community safety information for the public. Additional public information materials will be provided throughout completion of the remedy. Information will be distributed electronically, and posted on Honeywell's website (www.lakecleanup.com). NYSDEC also has a project website (http://www.dec.ny.gov/chemical/37558.hmtl) to keep the public informed on project-related information. NYSDEC also established a project information number. Interested members of the public who would like more information from NYSDEC or have any questions can call 315-426-7403. Interested members of the public who would like more information or have questions can call Honeywell at 315-552-9784.

Section 1
Introduction

This CHASP has been developed to address potential health and safety issues related to the implementation of Onondaga Lake remediation activities. The planning and design effort for the Onondaga Lake remedy involved extensive coordination with federal, state and local agencies, resulting in a project with the health and safety of project employees and members of the public as its primary goal. Honeywell, its contractors, and regulatory agencies, including the NYSDEC, the NYSDOH, and the USEPA are all committed to protecting human health and the environment during the remediation and habitat re-establishment of Onondaga Lake.

1.1 Purpose of the Community Health and Safety Plan (CHASP)

This CHASP communicates the planned activities for the Onondaga Lake remedy and the measures that will be taken to ensure protection of the local community and environment during implementation of the remedy. Community health and safety measures implemented for construction of support facilities required to implement the remedy were provided in two preceding plans, the *Water Treatment Plant Preloading and Sediment Consolidation Area 2010 Construction Community Health and Safety Plan* (Parsons 2010), and the *Onondaga Lake 2011-12 Construction Community Health and Safety Plan* (Parsons 2011).

This plan includes detailed descriptions of the elements of work that will be conducted, the potential hazard analyses completed, and the methods to ensure protection of community health and safety throughout completion of the lake remedy. The Onondaga Lake remedy involves many components, including dredging, pumping of the dredge material slurry from the lake to the SCA, managing debris, treating water, and placing a cap to protect and rebuild the lake bottom and shoreline in and around dredged areas. As these remedial steps are being completed, air and water quality, noise, and traffic will be monitored to ensure the project meets design criteria and human health and environmental protection objectives.

1.2 CHASP Development

Community and environmental protection during implementation has been incorporated into the program throughout the design process. Specific examples of protective components incorporated into the design include containment of dredged sediments at the SCA using geotextile tubes and locating the SCA in a location that maximizes the buffer between the SCA and local residents. In addition, most components of the design for sediment removal, transport, processing, dewatering, and long-term management have been developed as a closed system so that contaminated sediments are never directly

exposed to the atmosphere. Specific remedy elements and the preventative measures that will be taken to reduce any potential risks to public safety are described in detail in subsequent sections of this plan.

Foreseeable risks that were identified associated with the remediation and habitat re-establishment activities were assessed during the design process by an experienced team of safety and engineering professionals. As a result of the high level of safety and protection incorporated into the design, expected risks to the community during remedy implementation are low. To ensure that design and execution planning incorporates comprehensive protective measures, a skilled team of risk assessors, Certified Safety Professionals (CSPs), Certified Industrial Hygienists (CIHs), and professional engineers contributed to the development of this CHASP. The planning effort also involved extensive coordination with federal, state and local agencies, and local emergency responders.

An important part of the development of this CHASP was completion of a Hazard and Operability (HAZOP) study, a systematic examination of potential equipment failures or human errors that could result in risks to the community. The HAZOP process is based on the principle that a team approach to hazard analysis will identify more potential problems than when individuals working separately combine their individual assessments. Specifically, the HAZOP process conducted for the Onondaga Lake remedy included:

- Identifying potential hazards in every element of the work
- Designing mitigation measures to reduce or eliminate identified hazards
- Developing response actions to be taken in the unlikely event that an incident occurs, including coordinated emergency response procedures that include local emergency responders

The HAZOP evaluation, feedback from local emergency response organizations and CHASP development efforts have resulted in the following:

- Incorporation of safety controls in the design and operations of all remedial processes to minimize the potential for incidents that could impact the community
- Development of site emergency response capabilities to respond to incidents
- Establishment of notification and coordination procedures with local emergency response organizations

1.3 Team Commitment to Health and Safety

Honeywell and its contractors have completed several remediation projects in the Syracuse area without injury to site personnel or impacts to the local community. The Honeywell-Syracuse Health and Safety Program was designed to achieve and maintain superior safety

performance. Honeywell's fundamental beliefs that underlie this program are:

- Health and safety excellence is a core value and top priority
- Every incident is preventable
- All project workers have a right to a safe workplace
- Each person has a responsibility to work safely

A significant reason for the success of Honeywell's health and safety program is the policy of only hiring experienced companies with excellent safety records that are committed to safely performing their work and share Honeywell's safety culture. During the Onondaga Lake contractor selection process, contractor safety performance metrics were evaluated. Specific criteria evaluated included the qualifications and certification of their safety personnel; their safety program and safety statistics; their preventable and unpreventable vehicle accident record; results of recent inspections by the federal Occupational Safety and Health Administration (OSHA); their history of safety violations, if any; their history of worker compensation claims; and, for trucking companies, their commercial driver logs and practices.

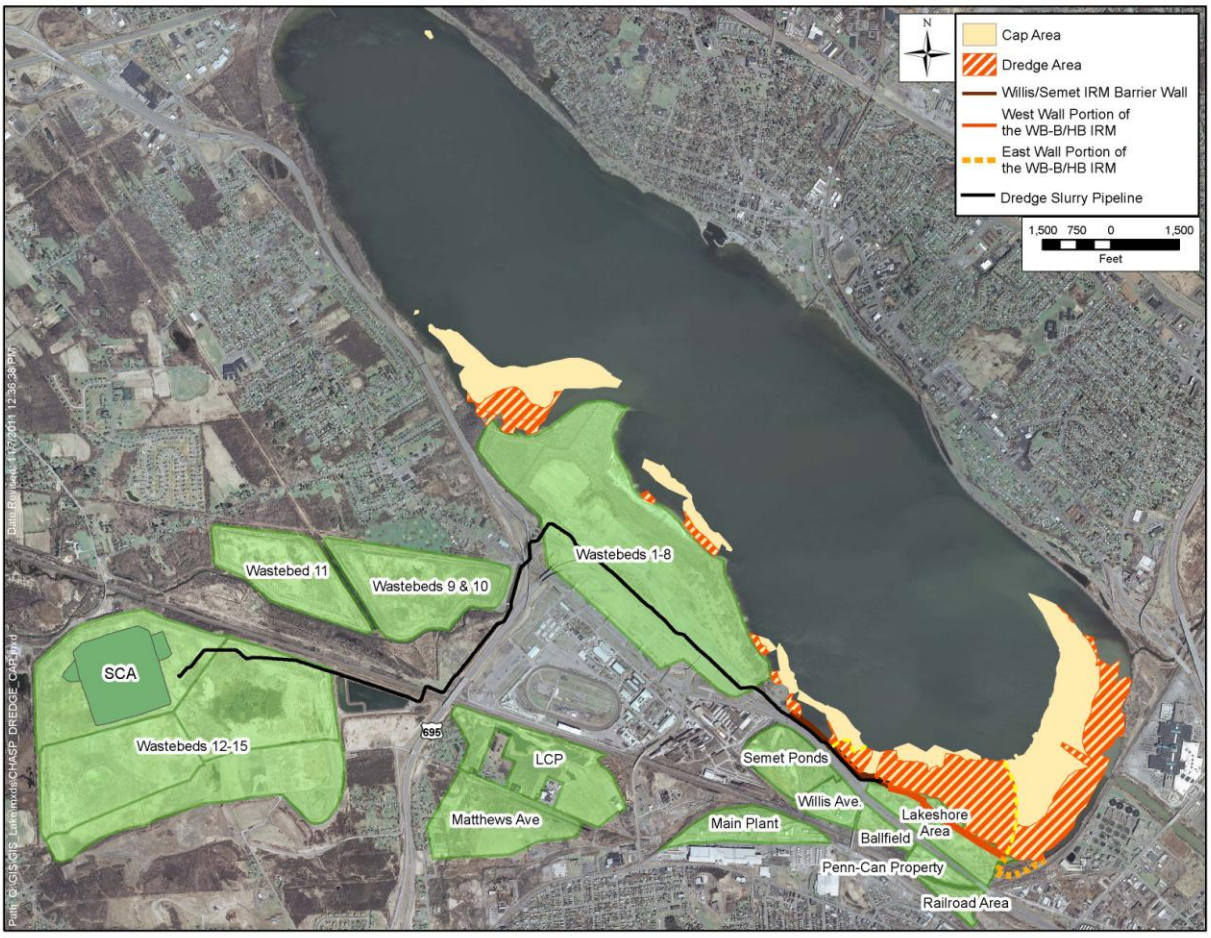
Section 2
Project Summary

This section describes the physical location and setting of the remedy areas and summarizes each of the major remedial elements involved, including dredging, capping, habitat re-establishment, slurry transportation, sediment processing and dewatering, and treatment of water generated by the project. This summary is based on the more comprehensive details of the project that are provided in the design documents posted on the project website (www.lakecleanup.com).

Onondaga Lake is a 4.6-square-mile (3,000-acre) lake located immediately northwest of the City of Syracuse. The lake is approximately 4.5 miles long and 1 mile wide, with an average water depth of 36 ft. The NYSDEC and USEPA selected a combination of dredging and capping for lake remediation, which are standard environmental cleanup methods used to address contamination in water and lake sediment. Specifically, the remediation activities will include:

- Hydraulic dredging of approximately 2 million cubic yards of sediment
- Capping of approximately 400 acres of lake bottom
- Hydraulic transport of the dredged sediment to a secure facility designed expressly for long-term management of the sediment (the SCA)

Areas to be capped and dredged and the locations of the sediment transport pipeline and SCA are depicted in the figure below, which is followed by a description of each of these components.



Onondaga Lake Project Areas

2.1 Sediment Dredging and Debris Removal

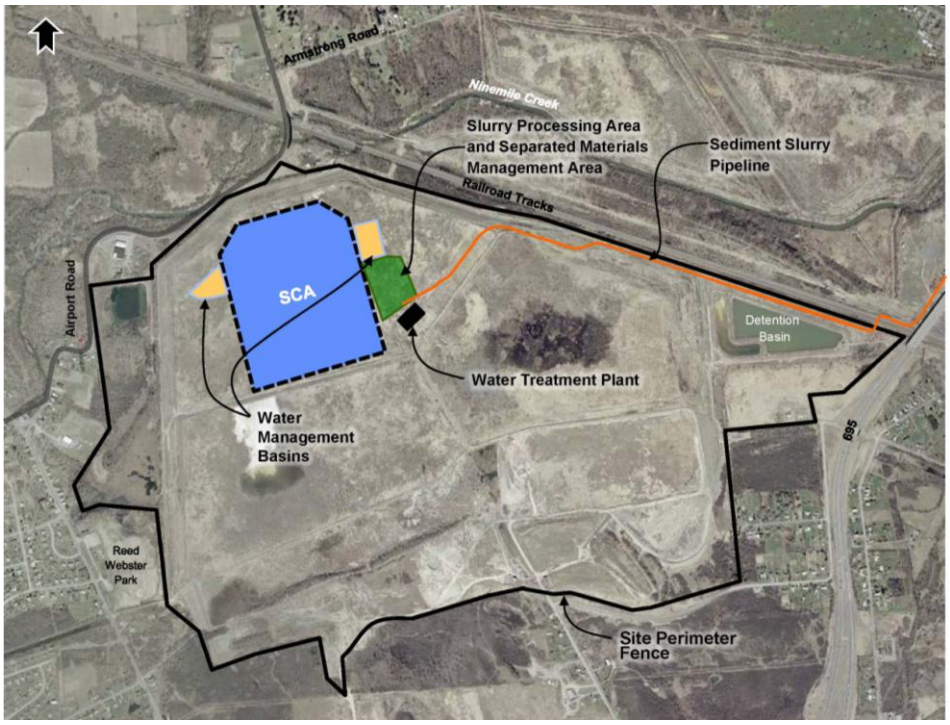
Both dredging and debris removal operations will take place within a silt curtain system to mitigate the spread of sediment suspended by the dredging and debris removal operations. Sediment will be removed using a hydraulic dredge, equipped with a large rotating cutterhead to loosen the sediments and a large pump to draw a mixture of loose sediment and water into a pipeline. This form of dredging minimizes lake-bottom disturbance and impacts to the lake water. One or more of three dredges of varying sizes will be operating at any given time, sometimes in more than one area of the lake.

Hydraulic dredges similar to the dredges to be used at Onondaga Lake.

In some areas of the lake, it will be necessary to remove debris (metal, wood/timber) from the lake bottom prior to dredging. Debris will be removed[1], placed on a transport barge, and brought to an off-loading dock located on Honeywell lakeshore property. From there, the debris will be loaded into sealed and/or lined trucks and transported to the SCA. Once at the SCA, it will be placed in a dedicated portion of the SCA, and capped. Debris will be managed to minimize potential odors and emissions, including rinsing sediments from the debris as it is removed from the lake, minimizing stockpiling at the lakeshore, and covering debris piles as necessary.

2.2 Sediment Transport, Processing and Dewatering

The dredged sediment will be pumped approximately 4 miles through a double-walled pipeline from the shoreline to the SCA, a processing and long-term management facility that has been constructed on Honeywell property, as shown in the figure below.



SCA, SPA, and WTP Site Plan on Honeywell property

As a safety measure to protect against potential leaks, the pipeline will consist of two HDPE pipes, one inside the other, constructed for outdoor exposure and durability. The material will travel through a 16-inch diameter inner pipe surrounded by a 22-inch diameter outer pipe that will serve as a secondary containment. The pipeline is equipped with sensors to determine if there are any leaks or loss in pressure. The pipeline route largely follows the I-690 corridor and a portion of Ninemile

[1] Where debris cannot be accessed from the shoreline, the excavator will work from a barge of sufficient size to operate safely.

Creek, and ending at the SCA on Honeywell property located off Gerelock Road in Camillus, New York. The pipeline route will not pass through residential neighborhoods. Traffic barriers, including guard rails, have been installed where the pipeline is near roadways. Four booster stations will convey the slurry to the SCA.

The following processes will take place after the dredged sediment slurry arrives at the SCA:

- The sediment slurry will be screened within an enclosure to remove large rocks and pieces of debris. Removed materials will be stockpiled and later placed within the SCA. Debris stockpiles will be covered as needed to minimize potential odors and emissions.
- Since the remaining sediment slurry will consist mainly of water, a polymer will be added to the screened sediment that will help to condition the sediment to facilitate dewatering.
- The sediment slurry will then be pumped into geotextile tubes located within the SCA, through which water will drain via gravity, leaving the sediment solids within the tubes. These geotextile tubes are constructed of a high-strength woven plastic and have been used successfully for over 40 years in a variety of dewatering operations, including numerous sediment remediation and dewatering projects.
- The water draining from the geotextile tubes will be collected and treated at the dedicated WTP that has been constructed next to the SCA. The majority of contaminants will remain trapped within the sediments in the geotextile tubes; however, some contaminants will be contained in the draining water. The water will be treated to remove contaminants to levels established by NYSDEC and Onondaga County. The treated water will then be pumped to County's Metropolitan Sewage Treatment Plant, where it will go through additional treatment to remove ammonia prior to discharge back to Onondaga Lake.
- Pumping the dredged sediments into the geotextile tubes will serve to minimize the amount of contaminants that are exposed to the atmosphere by eliminating the direct exposure of the sediments themselves. However, there may be volatilization of contaminants from the water draining from the geotextile tubes prior to the water entering the WTP. This volatilization of contaminants was addressed in USEPA's HHRA, and will be monitored as discussed later in this document.
- As the geotextile tubes dewater, they will be refilled with sediment slurry until full of dewatered sediments. After a tube has dewatered for several weeks, it will be ready to support another filled tube placed on top of it. The SCA is designed for up to five layers of tubes to accommodate all of the sediments anticipated to be dredged from Onondaga Lake.

Geotextile tube dewatering operation

The SCA is bermed to contain water and constructed with a liner system composed of a geomembrane liner underlain by a clay barrier layer. A layer of drainage gravel will cover the liner system and is designed to convey the water that drains from the geotextile tubes to sumps from

which the water will be pumped to the WTP. The SCA composite liner is an engineered barrier system that has been used effectively at landfills for over 35 years and has a service life on the order of 1000 years as reported by the NYSDEC.

After dredging is completed and all of the sediments have been dewatered within the geotextile tubes, a lined cap will be placed over the SCA to permanently isolate the sediments and keep contaminants in the sediments from re-entering the environment. Honeywell will maintain and monitor the site as long as NYSDEC and USEPA determine it to be necessary.

2.3 Sediment Capping and Habitat Re-Establishment

The cap will be placed in multiple layers consisting primarily of various types of earthen material (sand, gravel and larger stone). The sand layer is designed to chemically isolate sediments that are not removed by dredging. Sand will be delivered from local quarries and borrow sources to a temporary (5-year duration) support area that will be constructed on Honeywell-owned lakeshore property, where it will be mixed into a slurry. The slurry will then be pumped to a barge located in the designated capping area, from which the sand will be placed in layers, gradually building up to the required thickness. Other types of cap material, such as gravel and larger stone, will be placed over the sand layer in some locations to serve as protection from ice and erosion and to meet habitat requirements. The gravel and larger stone will be mechanically placed in the capping area by an excavator positioned on a barge.

Following capping, a variety of habitats will be established in capped areas to diversify and enhance the lake system. Habitat re-establishment is designed to benefit many indigenous plant and animal species including fish, aquatic plants, insects, mammals, birds and reptiles and amphibians. Details of the habitat design are contained in the Lakewide Habitat Plan which was reviewed by the public.

2.4 SCHEDULE AND DURATION

Remediation activities are scheduled to begin in 2012 and continue through approximately mid-November each year, operating 24 hours a day, six days a week, with Sundays used as make-up and/or maintenance days as needed. It is anticipated that the dredging portion of the project will be completed within four years, and the capping, habitat re-establishment, and SCA closure portions of the project will be completed within five years of the start of dredging (that is, 2017).

Section 3
Air Quality Protection and Monitoring

A comprehensive air monitoring program was developed in a coordinated effort with NYSDEC, USEPA, and NYSDOH to monitor construction activities since 2010, ensuring the protection of residents in the surrounding communities. This existing program will be expanded to address new activities such as sediment dredging and subsequent management of the dredged material.

The air monitoring program takes into consideration the USEPA HHRA conducted in 2010 that provided a detailed analysis of potential risks posed to the local communities by the lake remediation project. The results of the HHRA indicate that SCA operations will not result in unacceptable risk to the surrounding community. Nevertheless, the SCA and the adjacent sediment processing area will be closely monitored to ensure that air quality is maintained. Air quality criteria required by state and federal regulators are being employed. In addition, the expanded air monitoring program includes intermediate criteria to help ensure the remedial activities are completed in a manner that is safe and protective of the community.

3.1 Preventive Measures to Protect Air Quality

The remedial design includes numerous measures to protect air quality at each step of the sediment management process, including dredging, transport and dewatering. The following list summarizes the specific measures designed to minimize potential emissions.

- The sediment management process is a closed system so that sediments are never exposed to the atmosphere during dredging, transport and dewatering. Specific components of this closed system include:
    - Sediments will be dredged hydraulically and moved hydraulically through piping to the SCA without exposure of the sediments to the environment.
    - Screening to remove oversized material from the sediment prior to dewatering will be conducted inside an enclosure where off-gases will be captured and treated.
    - A closed mechanical gravity dewatering system will remove a significant portion of the water from the sediments prior to their placement into geotextile tubes. This water will be piped directly to the WTP, thereby reducing water management activities and corresponding emissions potential.

- The preventative measures and response actions detailed in Section 6 and Appendix A will be implemented to minimize the potential for and the extent of unintended sediment releases. Mitigation measures include use of double-walled piping, leak detection throughout the sediment slurry transport system, measures to minimize the potential for damage of the pipeline, booster pumps and sediment processing equipment from vehicle accidents, vandalism and other mechanisms, and rapid response in the unlikely event of a sediment release.

- Best management practices will be used to minimize potential emissions from the water discharged from the geotextile tubes, including minimizing areas of standing water and quickly piping collected water to the WTP.
- All WTP vessels will be covered, and off-gases will be collected and treated.
- Debris removed from the lake to facilitate dredging and capping will be removed and managed to minimize emission potential.
- Should sheens form on the water surface during dredging, they will be contained and quickly removed using floating oil booms.

In the unlikely event that the engineering controls and procedures described above are not sufficient to maintain emissions below health-based criteria (see Section 3.2), or to control nuisance odors, mitigative measures will be implemented as appropriate. Specific actions will be determined on a case-by-case basis depending on the determined cause of the emissions. Mitigative measures may include:

- Reduction or temporary suspension of dredging and sediment processing operations
- Modification of geotextile tube layout and filling sequencing and/or procedures
- Use of temporary covers over the geotextile tubes or early deployment of overlying geotextile tubes
- Modification of water management practices within the SCA to minimize pooling water and turbulent water flow
- Modification of dredging procedures, sequencing, or schedule
- Reducing debris stockpile sizes and/or modifying their location and/or management and covering approach

3.2 Air Quality Criteria Development

In developing enhancements to the existing air monitoring program, air quality criteria were developed through (1) identifying compounds with the potential to volatilize during the dredging and dewatering processes,

and (2) establishing a monitoring program to ensure short-term and long-term protectiveness to the public.

Pre-design investigations were conducted to determine which compounds should be addressed in the air monitoring program. Each investigation had a work plan and results report that were reviewed and approved by the NYSDEC. A majority of the compounds are classified as volatile organic compounds (VOCs), along with other compounds such as mercury, sulfides, and dust.

USEPA, NYSDEC, and NYSDOH have established the short-term and long-term air quality criteria for this project. These values were used to establish the protective concentrations at the perimeter of the work areas for various compounds found in the lake sediment that could potentially volatilize or otherwise enter the atmosphere during the dredging and dewatering processes. The long-term criteria, provided in Appendix B, were demonstrated in a project-specific analysis to be protective of the public.

Air monitoring will be conducted to protect the community from short-term (hourly average) air emissions as well as long-term (12-month average) emissions. All real-time monitoring will be conducted to address short-term emissions. Speciated VOC sampling will be conducted to address long-term emissions.

Monitoring parameter results that are monitored using real-time analyzers will be compared to short-term air quality criteria. To assist in the control of emissions and prevention of criteria exceedance, lower levels have been established (investigate and control levels). These are summarized in the following table.

Monitored Parameter	Short-Term Air Quality Criteria[a,b,c]		
	Investigate Level	**Control Level**	**Work Perimeter Limit**
Total VOC	2 parts per million (ppm)	3 ppm	5 ppm
Mercury	0.3 micrograms per cubic meter ($\mu g/m^3$)	0.4 $\mu g/m^3$	0.6 $\mu g/m^3$
Sulfides	6 parts per billion (ppb)	8 ppb	10 ppb
Dust (as PM_{10})	100 $\mu g/m^3$	125 $\mu g/m^3$	150 $\mu g/m^3$

a - Criteria represent 1-hour averages.

Investigate Level – Evaluate reading with background, identify source
Control Level – Apply controls/countermeasures
Work Perimeter Limit – Restrict/stop the source's operations and reassess work

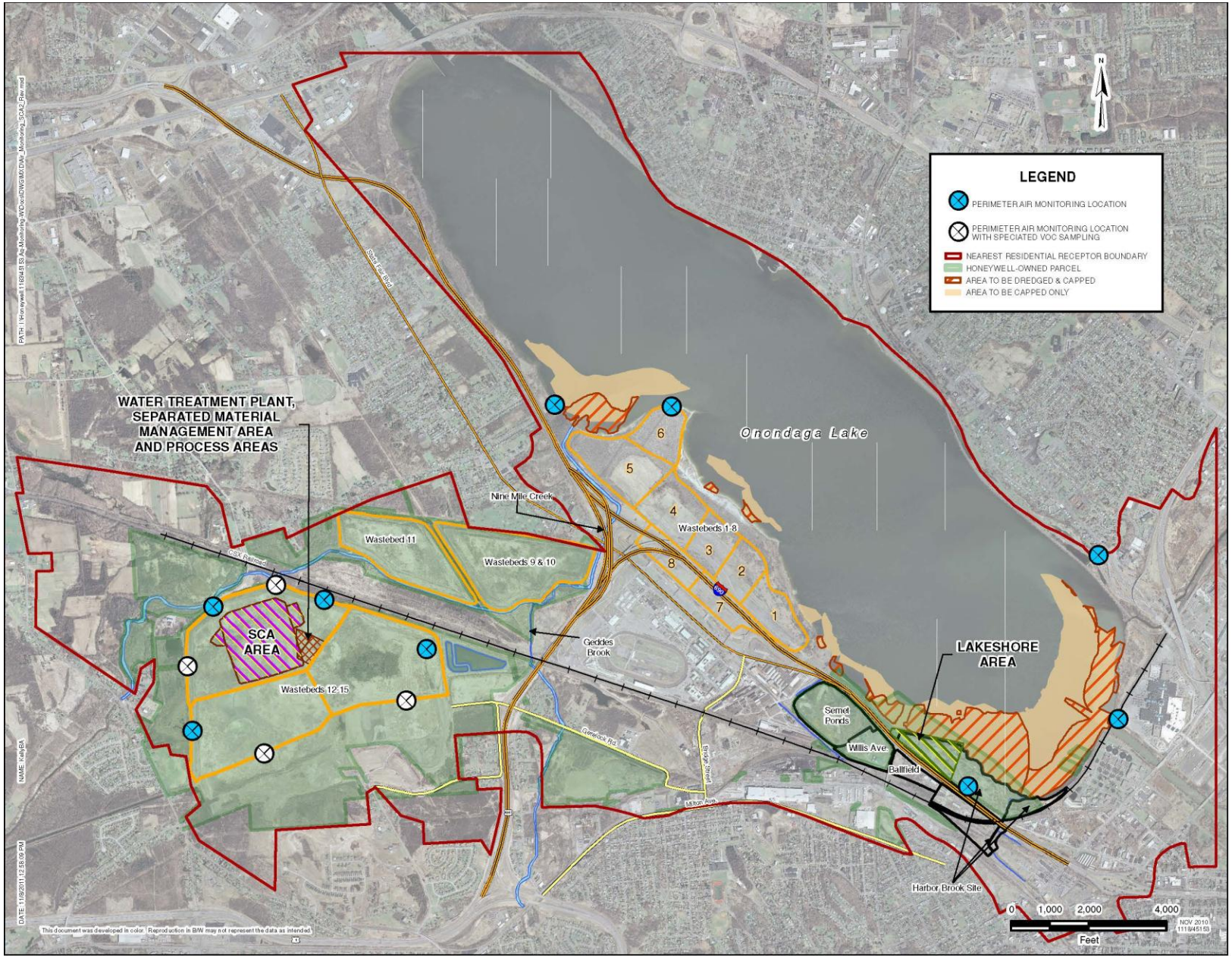
b - There are no standards for odors. The source of odors contributing to a nuisance condition will be investigated and mitigated, as appropriate.

c - When the total downwind measurement exceeds the perimeter limits and the background-corrected (project-related) concentration is between the Investigate Level and the Control Level, actions will be taken commensurate with an excursion of the Control Level. Such a situation will not be reported as an excursion of action levels or perimeter limits, but corrective action will be noted on specified forms, reports, and the website graphs. If an upwind (offsite) source is found impacting air quality conditions, NYSDEC will assess the source to determine if actions are feasible and necessary.

If an Investigate Level is reached, the readings will be evaluated with respect to background, the emissions source(s) identified, and the perimeter concentrations closely watched for potential increases. If a Control Level is reached, mitigative measures as described above will be implemented. If the Work Perimeter Limit is reached, work will stop or be restricted until the emission source is identified and controlled. Once the perimeter concentrations decrease below the Work Perimeter Limit, the emission source will be reassessed before restarting or removing restrictions. As part of the reassessment, further modifications to the equipment or activity will be considered to prevent reoccurrence.

3.3 Air Quality Monitoring Summary

Air quality monitoring will be conducted at the work perimeters of the SCA and lake shoreline to ensure community protection. The following figure and supporting table describes monitoring locations and activities.


LEGEND
PERIMETER AIR MONITORING LOCATION
PERIMETER AIR MONITORING LOCATION WITH SPECIATED VOC SAMPLING
NEAREST RESIDENTIAL RECEPTOR BOUNDARY
HONEYWELL-OWNED PARCEL
AREA TO BE DREDGED & CAPPED
AREA TO BE CAPPED ONLY
WATER TREATMENT PLANT, SEPARATED MATERIAL MANAGEMENT AREA AND PROCESS AREAS
Onondaga Lake
Nine Mile Creek
Wastebed 11
Wastebeds 9 & 10
Wastebeds 1-8
Wastebeds 12-15
SCA AREA
Geddes Brook
LAKESHORE AREA
Semet Ponds
Willis Ave.
Ballfield
Harbor Brook Site
Solvay Pond
Milton Ave.
Genesee Rd.
CSX Railroad
1
2
3
4
5
6
7
8
N
0
1,000
2,000
4,000
Feet
NOV 2010
111845153

Air Monitoring Summary Table

Monitored Parameter / Compound	Monitoring Locations[a]	Monitoring Frequency[a]	Monitoring Duration[a]
Total VOCs	Eight fixed stations at the SCA perimeter and two to three fixed stations at the shoreline perimeter	Real-time, continuous	During dredging and/or SCA operations[a]
Dust (PM_{10})	Eight fixed stations at the SCA perimeter	Real-time, continuous	During dredging and/or SCA operations[a]
Mercury	Downwind fixed stations at the SCA and shoreline perimeters	Real-time, survey[b]	During dredging and/or SCA operations[a]
Sulfides	Downwind fixed stations at the SCA and shoreline perimeters	Real-time, survey	During dredging and/or SCA operations[a]
Odors	Downwind fixed stations at the SCA and shoreline perimeters	Real-time, every six hours and if there are complaints	During dredging and/or SCA operations[a]

[a] Monitoring location, frequency and or duration (including operation of the SCA/SPA/WTP during extended periods of no dredging [e.g., winter]) of selected compounds may be reduced or eliminated pending NYSDEC approval if emissions are demonstrated to be under control and perimeter concentrations are consistently well below criteria.

[b] Survey refers to intermittent measurements made at regular intervals throughout a monitoring day.

Consistent with the *Onondaga Lake 2011-12 Construction CHASP* (Parsons 2011), there are currently eight monitoring stations along the SCA perimeter. In addition, air monitoring will be conducted at three stations at the southeast end of the lake when dredging is to be conducted in that vicinity, and at two stations on the central west side of the lake when dredging moves to that portion of the lake. This will allow shoreline monitoring to be conducted at two to three locations at the lakeshore at any given time, depending on the dredging location. The monitoring station locations were selected to represent air quality upwind and downwind of the dredging areas. They are also located between the dredging areas and the nearest residential areas or public roadways.

Total VOCs will be continuously monitored at the work perimeters of both the SCA and lake dredging activities. Monitoring will utilize real-time analyzers that provide real-time results, which will be compared to the short-term air quality criteria discussed in Section 3.2.

Concentrations of individual VOC species (i.e., speciated VOCs) will be measured at four monitoring stations around the SCA. Samples will be collected over 24-hour periods once every six days. The samples will be sent to a laboratory for analysis, and the results will be compared, on an

Air quality monitoring station being used for the Onondaga Lake project

annual basis, to the long-term air quality criteria discussed in Section 3.2.

Although the SCA operations are primarily wet and have minimal dry material handling, there is some potential for dust emissions. Therefore, dust will be monitored continuously at the SCA perimeter during dredging and sediment processing operations. Since the potential for dust emissions from lake and lake shore operations are limited, dust will not be monitored at the shoreline perimeter. However, the project team will proactively maintain dust control in appropriate areas, including roads used for lakeshore construction/operation support and hauling of capping and habitat material.

The monitoring system for total VOC and dust continuously streams data to a central computer that is monitored by a dedicated operator. Alarms for the levels and limits described in Section 3.2 alert the operator at the computer as well to his/her cell phone. This allows for immediate attention to alarms and initiation of corrective actions.

Odors will be primarily monitored using olfactory observations by air monitoring technicians at a minimum of once every six hours of dredging operations. Odor monitoring will also be conducted if odor complaints are received. Depending on the nature of the complaint, odor monitoring will occur at and possibly beyond the work perimeters.

Although emissions of mercury and sulfides are expected to be well below criteria protective of human health and the environment, these compounds will also be measured at least initially for confirmation purposes. Results of these measurements will be compared to the short-term air quality criteria described above.

Continuously measured air quality data for total VOCs and dust will be provided in graphical format on a web site for public access. Speciated VOCs data will be provided in tabular format on the same website on a periodic basis. Consistent with the air monitoring program initiated in 2010 to support the SCA construction, a detailed quality assurance project plan (QAPP) will be developed and approved by NYSDEC prior to the start of the new monitoring program. The QAPP will detail the sampling and analytical methods, sampling equipment, calibration and maintenance procedures, quality control and assurance requirements, data validation, and reporting to be implemented.

Section 4
Project Safety Management and Monitoring

The remediation of Onondaga Lake will involve work activities at several different project sites in the vicinity of the lake. Some of these project sites are adjacent to publically accessible areas, and travel to and between these sites will require use of public roadways. Several aspects of project safety management, including site security at the established work areas, management of project-related noise levels, and road and waterway traffic protection have been carefully evaluated and planned to make certain that appropriate measures and monitoring programs are in place during remediation activities. These measures and monitoring programs are described in this Section.

4.1 Site Security

A majority of work activities will take place on Honeywell property. Public access to these areas will be restricted for the safety of both the public and site workers. With large equipment in constant operation, these type of construction sites have inherent risks. Work activities are carefully planned, and site workers are required to go through extensive site- and activity-specific training to minimize potential risks associated with the work they will be completing. Properly planned site security is vital for the protection of the public, who may be unaware of site conditions or may not understand the risks associated with project operations.

Work areas are being established to support the project and include lake areas where dredging and capping will take place, shoreline support, slurry pump stations, the SPA, SCA, and the WTP. Access to these areas will be restricted. Site workers will also provide security surveillance. Dredging and related activities are anticipated to continue 24 hours a day, 7 days a week; therefore, the times when workers are not present on site will be rare. General security measures at all work areas will include clearly identifying each area as needed (e.g., with flagging tape, construction fencing, etc) and restricting access where work is taking place. Additional measures may be taken to secure equipment left unattended. For example, portable equipment will be secured in designated areas, heavy equipment will be relocated to a safe location, and work areas will be properly barricaded.

Fencing exists around most areas to enhance security, as discussed under individual work areas below. Secondary fencing will be installed around transformers and electrical equipment with signs warning of electrical dangers. Temporary fencing will be installed as required in places where temporary activities may be taking place, and permanent fencing is not installed. Additional security measures for specific work areas are discussed below.

4.1.1 Sediment Consolidation Area, Sediment Processing Area, and Water Treatment Plant

The SCA, SPA, and WTP are located on Honeywell property in Camillus, New York. A perimeter fence restricts access. Security personnel will be stationed at site entrances or the gate will be locked during the construction season to restrict unauthorized access. During the construction season, this facility will be manned around the clock, which will deter trespassers.

4.1.2 In-Lake Activities and Lakeshore Support Area

The lakeshore area southeast of the New York State Department of Transportation (NYSDOT) property will be the primary construction support area for capping and dredging activities. This lakeshore support area is located primarily on Honeywell property. Entry to this area will be restricted to prevent unauthorized access throughout remedy construction and will be lighted as necessary during non-work hours.

Prior to disembarking a project vessel for a shutdown period, workers will ensure vessel enclosures have been locked, and equipment, fuel tanks and supplies have been secured. When not in use, vessels will dock at or be anchored near the project docking facilities which are on Honeywell property and fenced as described above. Project vessels and docking facilities will be illuminated during night hours as necessary during off-work hours.

An operational support area is being constructed on the NYSDOT property adjacent to I-690 Exit 7. This facility will be an administrative facility, and not an active work area. The project team will minimize disruption of accessibility of this area to the general public. If activities require that access to this area be restricted or closed. Highly visible barriers and signs will inform the public of the restrictions, provide a schedule for when the area will be fully accessible to the public, and suggest alternative lake access points.

4.1.3 Slurry Pump Stations

The two slurry pipeline and booster pump stations not on Honeywell property will be routinely patrolled by project personnel. Security fences with locked gates will be installed around each of the booster stations, which will also be illuminated during night hours.

4.2 Traffic Management

Truck traffic represents the single most frequent point of interaction between the Onondaga Lake project and members of the local community and is therefore one of the most critical elements of community health and safety planning. A driver safety program was established as part of the planning for the 2010-2011 construction projects, and this program will be extended to the lake remediation activities. The program serves to communicate project requirements to

truck drivers and monitor compliance with project traffic rules. Truck drivers are required to participate in four training sessions each year, where project requirements such as truck speed, observation of right-of-way rules, back up alarms, and clean truck exterior are discussed. This program also prescribes measures for addressing out-of-compliance drivers, up to recommending removal of non-compliant drivers from the project.

In addition to these measures to ensure compliance with traffic laws, several steps have been taken during the construction of the SCA to maintain the condition of the public roadways that project trucks use. These measures have included installation of tire washing stations, periodic street washing, and paving of portions of site entrance roads.

Planning for the 2010-2011 construction activities also included a detailed evaluation of potential traffic routes to and from the project sites. Traffic to and from the project sites will continue for the duration of the Onondaga Lake remediation project including regular material deliveries to the SCA (such as geotextile tubes, dry polymer, water treatment plant chemicals) and to the lakeshore (cap material). Debris removed from the lake will also be trucked to the SCA for final management.

4.2.1 Shoreline Support Area Traffic Route

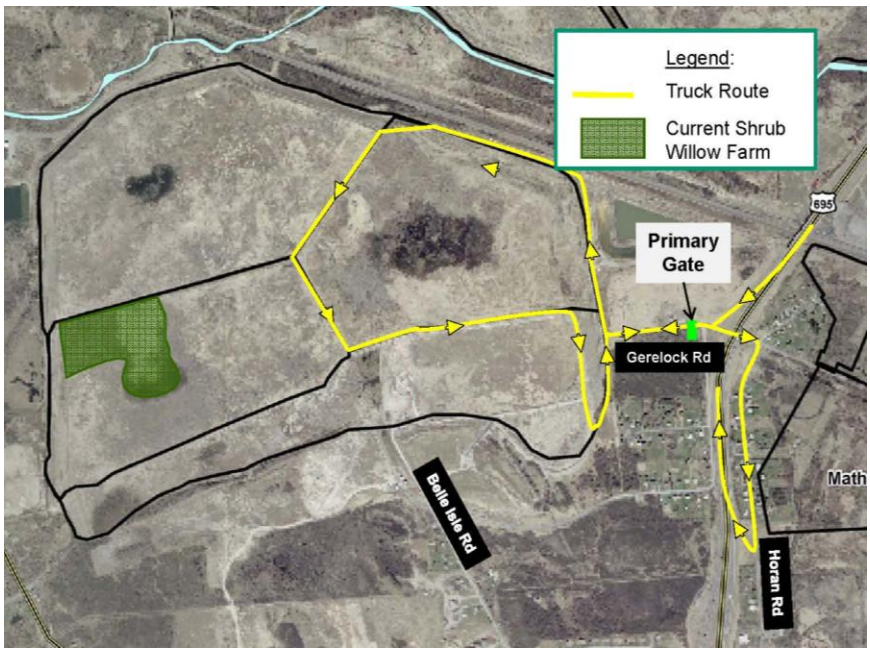
Traffic routes that have been established as part of previous construction projects in the lakeshore area will continue to be used for the Onondaga Lake remediation project. These routes maximize the use of major highways and do not include residential areas. As depicted below, incoming traffic will generally access the site State Fair Boulevard on the west side of I-690 (near the onramp for I-690E), and outbound traffic will generally exit the site near the ramp for Exit 7 off I-690W. Based on normal traffic in this area from the New York State Fair and nearby businesses, traffic associated with the lake cleanup is expected to have minimal impact on the surrounding community. During the annual New York State Fair, project vehicle activity will be adjusted to minimize impacts on fairgoers.

Traffic associated with pipeline and booster station operations will be minor and will neither result in significant traffic impacts nor affect surrounding residential areas.

4.2.2 SCA/SPA/WTP Access

The truck routes to the SCA will remain the same as the routes used during the 2010-11 construction. Traffic to and from the project sites will continue for the duration of the project including the regular material deliveries to the SCA described above.

As shown below, the main entrance to the site will be through the Honeywell gate at Gerelock Road. Signs posted at other site entrances l



will direct deliveries to the main entrance. The general route to be followed is illustrated with traffic flow directions.

As part of the ongoing 2010-2011 construction, the project team has been working in coordination with the Town of Camillus to enforce speed limits on local roads. Radar speed signs have been purchased for use by the Camillus police department for monitoring traffic speed on Horan Road while remedial activities are taking place. For project traffic potentially affecting residential areas (e.g., Horan Road), a project vehicle speed limit has been established that is lower than the legal limit on these roads. Project vehicles and trucks are required to comply with this lower speed limit.

4.3 Project Noise

Onland activities have been carefully evaluated for potential noise impacts to the community resulting from these activities. NYSDEC's "Assessing and Mitigating Noise Impacts" guidance values for ambient noise levels (www.dec.ny.gov/permits/6224.html) have been adopted for the project. Most of the areas in proximity of the project are zoned commercial or industrial. The NYSDEC guidance states that ambient noise in these areas can typically range from 65-79 dBA. The guidance document also states that the addition of any noise source in a non-industrial setting should not raise the ambient noise level above a maximum of 65 dBA (equivalent to the sound of a hair dryer). This project will strive to maintain noise levels below 65 dBA at all monitoring points.

4.3.1 Noise Modeling and Compliance

A noise evaluation model was completed to help determine appropriate equipment that could meet the goals of the remedy while not exceeding noise levels. If action levels are exceeded, increased monitoring will identify and confirm that the cause of the noise is project-related. Assuming the noise exceedance is project-related, changes will be made (to existing equipment or operations) to reduce the noise to within acceptable limits and follow-up monitoring will be conducted to ensure compliance.

4.3.2 Noise Monitoring at the SCA/SPA/WTP Area

Noise monitoring will be conducted during operating hours at the SCA/SPA/WTP Area to demonstrate that the noise levels produced by associated activities do not negatively impact the surrounding community. Sound-level meters will be used at the eight air monitoring locations along the work zone perimeter will measure the noise generated by work activities. Measurements will be taken twice a day to demonstrate compliance with the project noise criteria. The frequency of measurements may be reduced or curtailed if continuous monitoring demonstrates that noise criteria are not being reached and the NYSDEC approves of such a change.

4.4 Navigation Protection

Navigation protection measures include vessel coordination, lights, marker buoys, and use of a silt curtain designed to contain suspended solids during dredging. Procedures will also be in place for issuing project-related Notice to Mariners and complying with appropriate federal and state navigation laws.

4.4.1 Navigational Preventive Management Practices

Measures will be implemented to minimize potential risks to recreational boaters during on-water remediation activities. All appropriate federal and state navigation laws will be complied with, including U. S. Coast Guard (USCG) rules for navigation. During nighttime operations, all vessels and on-water equipment will be well-lit to improve visibility. All project vessels and equipment will be equipped with USCG navigational lighting and will be checked regularly. All project vessels (including tugs, monitoring and personnel transport craft and agency oversight vessels) will travel at a slow and safe speed. Community education and notification procedures described in Section 7 will be implemented to promote public and boater awareness of on-water activities.

Silt curtain being deployed on Onondaga Lake.

The dredging contractor will deploy a silt curtain containment system during dredging and debris removal activities. The curtain is designed to contain turbidity caused by dredging and to resist wind, rain, lake current, and other foreseeable environmental forces. The floating silt curtain will be marked as required by USCG regulations. USCG approved lights will be provided for all floating pipelines, equipment, and markers. A continuous demarcation system will be installed around significant work activities that are conducted outside a silt curtain (such as may occur for some of the cap placement). The silt curtain and demarcation systems will include lighted buoys at night for visibility in accordance with USCG regulations.

Three recreational shoreline access points and access channels into Onondaga Lake may be restricted during portions of the lake remediation process:

- Onondaga Creek inlet
- Ninemile Creek inlet
- The NYSDOT-owned area off I-690W Exit 7 which is informally used for fishing access

The slurry transport pipeline may cross these lake access channels and access points when work is proceeding in other areas of the lake. Whenever necessary, the pipeline will be demarcated, weighted down, and routed to the bottom of the lake to allow recreation vessels to pass.

Some dredging and capping activities will take place off the area of the NYSDOT property adjacent to I-690W Exit 7. The project team will minimize disruption of accessibility of this area to the general public. If activities require that access to this area be restricted or closed, highly

visible barriers and signs will inform the public of the restrictions and suggest alternative lake access points.

4.4.2 Navigational Response

Air horns or other appropriate means will warn non-project vessels approaching an active work area to keep away. If a non-project vessel continues to approach a dredge area, project personnel will contact the appropriate authorities for assistance. Emergency response actions associated with on-water activities are discussed in Section 6.

Section 5
Operational Hazards Analysis And Response Actions

In April 2010, NYSDEC prepared a document addressing frequently asked questions (FAQs) for the dredging of lake sediments, piping to Wastebed 13, and storage at the SCA. This document is posted on NYSDEC's website (http://www.dec.ny.gov/docs/regions_pdf/scafaq.pdf) and includes responses to over 50 questions. Some questions are relevant to the potential hazards addressed in this section, and the NYSDEC document describes many preventive measures that are included in the project design. Section 3 of this document describes how the SCA operations will result in acceptable air quality as documented in the HHRA. In addition to acceptable air quality (inhalation), the HHRA concluded that all resulting estimated risks (dermal/ingestion) were within levels identified as acceptable by USEPA.

During the design process, this evaluation was taken a step further by conducting a thorough review of all the planned remedial activities to identify potential risks to the public. This evaluation was completed by a multi-discipline team including engineers, risk assessors, safety specialists, and remedial contractors with extensive experience with the types of remedial activities planned for this project. The potential hazards identified and mitigated during this evaluation are listed below.

- Collisions between public and project boats
- Damage to slurry pipeline or booster stations from vehicular traffic
- Injury to trespassers and/or damage to equipment or materials from vandalism
- Spills or release of contaminated sediment from the pipeline
- Water breach or overflow of SPA or SCA berm
- Operational fluid spills
- Spillage of lake capping or restoration materials on public roadway
- Damage to existing water structures by project vessels or activities
- Fires and/or explosions
- Movement of pipeline
- Spills of contaminated sediment to Onondaga Lake
- Spills or release of contaminated sediment or untreated water at the SCA, SPA, and WTP
- Damage to SCA liner
- Spillage of debris removed from the lake onto public roadway
- Pressurized fuel release
- Shoreline instability due to dredging and cap material storage

For each of the potential hazards identified above, a series of steps were taken to evaluate how extensively the design had addressed each potential risk and whether there were additional design or operational measures that could be included to further minimize potential risks. In some cases, re-evaluating the design resulted in some enhancements to further reduce risk. In other cases, it was determined that changes to the design would not reduce the hazard potential any further. The final step to this evaluation was to pre-plan response actions should a hazard occur despite preventive measures.

As an example of the evaluation process, one of the risks identified was a spill or release of contaminated sediment from the pipeline. The pipeline design minimizes the potential for leaks with interior and exterior pipes and a leak detection system throughout. The evaluation of this risk included a thorough re-examination of the pipeline system design, first to determine how a sediment release could occur (e.g., leak through a pipe weld or connection, pipeline being struck by equipment/vehicles, excessive wearing of the pipe). Once these mechanisms were identified, the pipeline design and the maintenance requirements were re-evaluated to assess how they address the risks. For example, to address sediment leaks through a pipe weld or connection, a testing step has been incorporated into pipeline construction. The pipeline system is pressurized with clean water to verify that the pipeline has been welded properly and connections to the booster pumps and other pipeline features were designed and constructed properly. When dredging is taking place, the exterior of the pipeline will be visually inspected on a daily basis. In addition, the interior of the pipeline will be inspected routinely to monitor for erosion within the pipeline.

Slurry pipeline pressure testing apparatus

In the final step, response actions were developed to prepare workers to respond quickly to minimize the impact of a sediment spill. Response actions for a sediment spill are detailed in Section 6.

The process described above relates to one possible risk. The full results of the operations hazard analysis are provided as Appendix A.

Section 6
Spill Response and Emergency Response Planning

Although every aspect of this project has been developed to minimize the potential for spills or emergencies, equipment, procedures and personnel training are in place to respond in the unlikely event of a spill or emergency. These response features are detailed below.

6.1 Potential Risks Presented by the Sediments

Sediments that will be dredged contain several contaminants that exceed threshold levels based on the lake ecological community and people who might consume fish caught from the lake. However, the risks associated with sediment management are, according to EPA, minimal.

In 2010, the EPA conducted an HHRA to look at potential risks posed by the management and dewatering of lake sediment at the SCA. The HHRA is available on the EPA website (http://www.epa.gov/region02/superfund/npl/onondagalake/docs.html). As part of this assessment, two exposure scenarios were evaluated: 1) exposure to contaminants by air as a result of chemicals volatilizing from the dredged sediment; and 2) a hypothetical significant failure of the SCA. The second scenario included a release of sediment, with daily exposure to contaminated sediments through ingestion (eating) and skin contact with the sediment by individuals during a 45-day period. The HHRA acknowledged that the second exposure scenario is extremely unlikely, but was included by request of local community members. The risk assessment concluded that:

> *"All resulting risk estimates and target organ-specific hazard indices were within levels identified by EPA as acceptable. The finding of acceptable risk estimates through application of these health protective assumptions indicates that the SCA will not result in unacceptable risks for the surrounding community. Nevertheless, the SCA will be closely monitored to ensure that sediments are managed with care and secured appropriately and that offsite migration of chemicals in air is limited or prevented."*

These results indicate there are minimal potential risks to the surrounding community in the unlikely event of a sediment spill. Even so, the design and planning for this project incorporate system modifications and standard operating procedures that minimize the potential for sediment spill. Further, spill response measures have been

developed that will be followed in the unlikely event of a spill, as discussed below.

6.2 Sediment Spill Prevention and Response Measures

The following sediment spill prevention measures have been incorporated into the sediment transport, processing, and long-term management system design:

- The size, thickness, and double-walled construction of the sediment pipeline from the lakeshore to the SCA will minimize the potential for leaks from the pipeline.
- A lined containment area has been constructed for each of the three on-land booster stations. Any leaks in the pumps will be contained within the lined area, which has been sized to contain a significant slurry release.
- Pressure sensors along the pipeline will alert workers of potential leaks, thereby minimizing the volume of a spill. As an additional early warning system, leak detection monitors are also being installed between the inner and outer pipes.
- The entire SPA is lined with either a low permeable geomembrane or asphalt, and it is surrounded by perimeter berms that would contain any sediment released during sediment processing.
- The SCA is bermed and has a composite liner system consisting of a compacted clay layer overlain by a geomembrane and a drainage layer. Any releases from geotubes and distribution piping would be contained within the SCA.
- The piping between the SPA and the SCA and that carrying water from the SCA to the WTP are also double walled. Therefore, the potential for sediment or untreated water release outside of the SPA and SCA containment systems is minimal.
- The SCA and SPA are located on the former Honeywell wastebeds. The large perimeter buffer area designed into the SPA/SCA and the distance between the property and the nearest community significantly reduces any potential risk of impacts to the public.
- A comprehensive quality control program has been implemented for the construction of the SCA liner. Materials are checked prior to installation, and installation work is checked to ensure it is constructed properly.
- A long-term monitoring program for the area immediately surrounding the SCA will monitor for potential leaks during and after sediment dewatering activities occur at the SCA.
- Preventive measures to minimize potential risks due to damage resulting from vandalism, vehicular accidents, and

pipe movement have also been developed, as summarized in Section 5 and detailed in Appendix A.

In the unlikely event of a significant spill or release of dredged sediment, the following steps will be taken:

- The activity or process experiencing the release will be shut down.
- The notification chain-of-command will be initiated, so that appropriate members of the project team can respond.
- The extent and severity of the spill will quickly be assessed for any potential impacts to public safety or project workers.
- For situations which have the potential to impact public safety, emergency responders will immediately be notified, and any isolation controls (e.g., area/road closures) will be implemented to secure the area.
- If the extent of the spill warrants public notification, the notified emergency responders will issue a public notification using their established protocols (e.g., reverse 911 calling).
- Air monitoring will be implemented to determine whether an exclusion zone needs to be established in the vicinity of the spill to prevent potential human exposure to VOCs. The exclusion zone will be based on an air concentration of 5 ppm total VOCs.
- On-site workers will take steps to contain and control the spill. If the spill is greater than 500 gallons or is otherwise too large for on-site crews to contain, Honeywell's spill response contractor will be brought on-site.
- As warranted, and following an initial assessment of the spill, the pre-established chain-of-command will be used to communicate the event to outside agencies (e.g., emergency responders, NYSDEC, NYSDOT).
- Once the situation is controlled (that is, the spill is contained and there is no immediate threat to public safety), plans will be quickly developed and implemented to address the spilled sediment, restore the area to pre-spill conditions, and remove any isolation controls that may have been put in place.

Fuel tankers will safely transport fuels and oils to the site. This is typical for most construction projects.

6.3 Operational Fluid Spill Prevention and Response Measures

Large construction projects using heavy equipment typically require quantities of fuel, oil, and other fluids for operations. Comprehensive measures will be implemented to minimize the potential for spills associated with these fluids. A fuel truck will deliver fuels, which will be stored on-site in storage tanks surrounded by secondary containment

that complies with the National Fire Protection Association (NFPA) 30 “Flammable and Combustible Liquids Code” and OSHA 1910.106. A specially-designed fueling barge that complies with USCG regulations and has secondary fuel containment will be used to fuel the dredges. Biodegradable vegetable oil will be used as hydraulic fluid for on-water equipment.

In addition to these types of controls, site workers will be instructed in practices to prevent spills of operating fluids during daily activities. These practices include proper handling procedures, routine inspections, and response actions to manage spills of petroleum, oil, and lubricants (POL). Fueling tanks will have secondary containment and safe fueling procedures will be followed to fuel stationary and mobile equipment. Spill kits will be available for fueling operations as necessary.

Operational fluid spill response measures will be consistent with subpart q “Emergency Response” of OSHA 1910.120 “Hazardous Waste and Emergency Operations.” Initial planning has been developed using emergency response guides from the Emergency Response Guide Book (ERG2008), which was developed jointly by the US Department of Transportation (DOT), Transport Canada, and the Secretariat of Communications and Transportation of Mexico (SCT). These procedures have been developed and reviewed by emergency response professionals with input from county and local responders. Ongoing drills and exercises test the plans and provide input for updating the procedures where necessary.

6.4 Post-Spill Response

A detailed root-cause analysis will be conducted by the project team to review the details of significant sediment or operational fluid spills, leaks, or release events, should one occur. The purpose of this evaluation will be to identify the cause of the event and to modify equipment, standard operating procedures, maintenance practices, and/or response actions to minimize the possibility of reoccurrence. As warranted, a report of this review and its findings/recommendations will be shared with regulatory agencies.

6.5 Spill Reporting

Any spill or release resulting from project activities (whether on the lake, the shoreline support area, along the slurry line, or at the SCA) will be reported in accordance with federal and state requirements. For purposes of this project, a “spill” includes activities related to handling of fuel or petroleum products, chemicals used for water treatment (e.g., polymers), and sediment spills resulting from dredging and handling of dredged materials.

USEPA has developed a list of hazardous substances under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) that must be reported if such a hazardous substance is released to the environment in an amount greater than a defined reportable quantity. EPA has developed a similar list of reportable

quantities that must be reported in the event of a release to navigable waters. In addition, the Oil Pollution Act (OPA) requires notification if an oil sheen is visible on the water.

NYSDEC Law requires that if the project stores more than 1,100 gallons of any liquid (including petroleum), any release of the liquid to land or waters be reported to the NYSDEC hotline (1-800-457-7362) within two hours of discovery. New York's Navigation Law requires that if the project discharges petroleum to land or water, NYSDEC must be notified within two hours after the discharge, unless all of the following criteria are met: (1) the spill is less than five gallons; (2) the spill is contained and under the control of the spiller; (3) the spill has not and will not reach the State's water or any land; and (4) the spill is cleaned up within two hours of discovery.

6.6 Emergency Response Planning

Emergency response procedures have been developed to minimize potential risks to site personnel, the public, and the environment during emergencies that may arise when implementing the remediation. This includes development of emergency response protocols, procedures for coordination with local emergency response organizations, required notifications, and available emergency equipment. It also includes development of a program ERT. The ERT is a specialized team trained in advanced first aid, spill response, and water rescue, and is certified in confined space rescue.

Risk assessors, CSPs, CIHs, and professional engineers contributed to the development of project emergency response procedures. Communication and collaboration with the external agencies prior to an incident is critical to ensuring effective emergency response. Therefore, there has been significant outreach, coordination, and validation with state and local agencies who may be involved in emergency responses. These agencies include:

- Onondaga County Department of Emergency Management
- Onondaga County Disaster Preparedness Committee
- Representatives from fire departments in Camillus, Fairmont, Solvay, Lakeside, Liverpool, and Syracuse
- Police departments in Camillus, Geddes, and Syracuse
- Onondaga County Sheriff Department
- New York State Police
- Emergency medical services such as Western Area Volunteer Emergency Services (WAVES), Greater Baldwinsville Ambulance Corps (GBAC) and Rural Metro Rescue Squads

Off-site emergency responders will be called to address any emergencies involving:

- Any injury to the public, injury to site personnel requiring transportation to the hospital by ambulance, or fatality

- Any fire beyond what can be handled by an individual with a fire extinguisher
- Spill or release of contaminated sediment greater than 500 gallons
- Spill or release of operational fluids (e.g., diesel fuel, oil, hydraulic fluid, antifreeze) greater than 110 gallons
- Person in a confined space who loses consciousness or is otherwise unable to self-rescue
- Violence or threat of violence with physical injury involving a trespasser or anybody else on-site
- Spill of materials from trucks that blocks a public road

6.6.1 Incident Command System (ICS)

Emergency response procedures will be implemented in accordance with nationally recognized ICS procedures to provide for efficient and controlled emergence response management and transfer of command and information from the ERT to off-site emergency responders. The NIMS has standardized incident management processes, protocols, and procedures for use by all responders and mandates the use of an ICS. Similarly, the National Response Framework (NRF) establishes federal coordination structures/mechanisms, direction for incorporating existing plans, and a consistent approach to managing incidents. The NIMS ICS is a standardized, on-scene, all-hazard incident management concept that allows its users to adopt an integrated organizational structure without being hindered by jurisdictional boundaries. The NIMS ICS is followed by emergency response services and public agencies throughout the United States. In order to be best positioned to integrate on-scene information with off-site responders, project personnel and the ERT will adopt the NIMS ICS.

6.6.2 Incident Priorities

Incident priorities establish the foundation upon which the Incident Commander (IC) will make decisions during an emergency response. The following are the incident priorities in the order of importance:

1. Life safety (public, responders, and project personnel)
2. Incident stabilization
3. Environmental protection
4. Building protection
5. Restoration of operations

6.6.3 Emergency Response Team (ERT)

The ERT has been established to support emergency response associated with Syracuse remedial activities. The ERT will decrease the initial response time for medical emergencies, spills, water rescues, and other emergencies and provide confined space rescue operational capability, which is not available from local off-site public responders.

Emergencies outside the capability of project personnel or the ERT will be addressed by off-site responders.

The team consists of personnel who are or will be engaged in implementing remedial efforts in the project areas. Recommended training for ERT members includes:

1. *Advanced First Aid (including AED)* - to increase the speed of life saving treatment to individuals injured on-site at a level beyond the required basic first aid capabilities of contractors. Refresher training is provided as required every two to three years (depending on the certifying agency).
2. *Sixteen-hour Confined Space Rescue* – Annual training required by the OSHA confined space regulation to provide required rescue capabilities during permit-required confined space entry. Annual eight-hour refresher training is provided as required.
3. *Eight-Hour Hazardous Material (HazMat) Technician Training* - to provide a level of emergency spill response beyond the basic capabilities of contractors to minimize the need for off-site response or better contain a spill until offsite responders arrive. ERT members assigned to lakeshore activities with the potential of spills directly into Onondaga Lake will receive supplemental training consistent with OSHA publication 3152, "*Training Marine Oil Response Workers Under OSHA's Hazardous Waste and Emergency Response Standard.*" Annual refresher training is provided as required to maintain HazMat certification.
4. *Water Rescue* - to provide a rapid response to water emergencies to minimize the need for off-site response or increase the speed of response while waiting for offsite responders.
5. *ICS Basics* – ICS 100, 200 & 700: Basic incident command training to understand how the ICS works and to be able to function as an IC for Response Level 2 emergencies. Based on program evaluation needs, annual refresher training will be provided as required.

In addition to the ERT member training listed above, the ERT Leader and Deputy ERT Leader(s) will receive additional training pertaining to ICS management and implementation.

6.6.4 Emergency Response Equipment

Dedicated emergency equipment will be provided for ERT use during emergency incidents. The following equipment will be available:

- Personal protective equipment
- Communication equipment
- Traffic control equipment
- Medical emergency equipment
- Fire extinguishing equipment
- Confined space rescue equipment

- Water emergency equipment
- Chemical detection and response equipment

Program emergency response equipment will be stored at various locations within the work areas. Emergency equipment inventories will be available at the storage sites. Emergency equipment supplies will be replenished following emergency incidents.

6.6.5 Emergency Response Drills/Exercises

At least one drill/exercise will be held annually for the Remedial Operations. The purpose of drills/exercises is to test the effectiveness of emergency response procedures, training, and equipment. This will include coordination with and involvement of off-site emergency responders. Additional drills/exercises will be performed as necessary to ensure the effectiveness of ERT.

Section 7
Community Education and Notification

Providing clear, comprehensive, and easily accessible community safety information for the public is a goal of this CHASP. Safety begins with remedy selection, advances during the design process, and continues during all phases of the remedy. Since 2004, Honeywell and the NYSDEC have engaged the public in the cleanup of Onondaga Lake through public meetings, presentations, fact sheets, tours, e-newsletters, websites, postcards, and annual progress reports. This CHASP builds on this commitment and outlines how information will be distributed to the public during lake cleanup operations.

7.1 Citizen Participation Plan

In addition to Honeywell's efforts to make information available to the public, NYSDEC finalized the *Citizen Participation Plan for the Onondaga Lake Bottom Subsite Remedial Design Program* (CPP) (2009). The CPP is a formal plan for communication with the public during the lake's restoration. It ensures the public has access to information and can comment and offer input throughout the project and is a supplemental source of project-related information available to the public. The NYSDEC CPP includes public participation activities during design and prior to construction of key infrastructure, and prior to key activities related to the remedial action (i.e., dredging, capping and habitat), and provides baseline activities and periodic fact sheets and public availability sessions on key project milestones.

A key component of the CPP is the creation of a lead Community Participation Working Group (CPWG). The CPWG promotes community involvement in the cleanup of Onondaga Lake throughout all phases of the multi-year remedial design and construction process so that the public is informed and has opportunities to contribute information, opinions, perspectives and recommendations about the program. The CPWG is assisted, as needed, by technical experts from NYSDEC and Honeywell.

For more information on the CPWG and upcoming meetings go to (www.lakecleanup.com).

7.2 Public Information Materials

Project updates on the cleanup of Onondaga Lake will be issued during dredging and capping activities. Project updates will be developed in a format that is easy for the public to understand. They will be distributed electronically, and posted on Honeywell's website.

7.2.1 Website

Information about the status of the project will be available via the Internet on Honeywell's website (www.onondaga-lake-initiatives.com) and will provide access to key technical documents, projects updates, photos, and project schedules and provide references to additional sources of specific project information. The website also allows interested community members to submit a question or complaint related to the remediation project. Users can also sign up for a newsletter, access air monitoring data, and review transportation routes for trucks entering and leaving the site.

NYSDEC has a project website (http://www.dec.ny.gov/chemical/37558.hmtl) providing the public with another place to access project-related information.

7.2.2 Notice to Mariners

Public awareness of the activities in the lake will promote public safety and ensure that project activities proceed efficiently and without interruption. Notices will be provided to Onondaga Lake Park, nearby marinas, and the Onondaga Lake Yacht Club. Additional notices will be provided to Lock 24 on the Seneca River.

Notices will alert boaters of construction activities, and advise them to maintain a safe distance and a no-wake zone in the areas of construction. An anticipated schedule of upcoming work activities will be provided before project activities begin and during the in-lake work. Honeywell will work with NYSDEC and Onondaga County Parks and others in advising boaters of project activities. Honeywell will encourage NYSDEC and County Parks to post any Notices to Mariners about project activities that Honeywell issues and Honeywell will post any Notices on the project website.

7.2.3 Listserv/Mailing List

Honeywell and NYSDEC will continue to update and use its current listserv for this project. Selected communications will be mailed to interested members of the public who do not use the Internet. Honeywell and NYSDEC will never distribute or sell the names and addresses on the project listserv nor will it disseminate non-project information through the listserv.

7.2.4 Citizen Inquiries/Reports/Requests Documentation and Procedures

Calls/emails/mail will be documented in a log noting the time received, subject, the name of the individual, and any follow-up required.

7.3 Community Inquiries

7.3.1 Hotline

A hotline has been established to enable the public to ask questions or register complaints. The hotline will be staffed during all work activities. The hotline number is 315.313.8068. It will be listed in all project announcements and clearly presented on the Honeywell website. Any message received after normal working hours will be responded to promptly. Staffers will attempt to address questions during the initial communication, and will follow up with additional information in a timely manner if necessary.

NYSDEC also established a project information number. Interested members of the public who would like more information from NYSDEC or have any questions can call 315.426.7403.

7.3.2 Designated Community Liaison

Honeywell has a community liaison who has been assisting the public in receiving project information. This community liaison is available during work activities to answer questions or address concerns. The community liaison will continue to coordinate public outreach activities with NYSDEC's and USEPA's community involvement coordinator and also will continue to attend project-related meetings to keep the public informed of project activities. Interested members of the public who would like more information or have questions can call 315.552.9784.

7.3.3 Emergencies

If the public observes a project-related event that requires an emergency response, they are encouraged to call 911. Local emergency responders will be dispatched to handle the situation. Honeywell will work with the emergency responders as described in Section 6.

7.4 Coordination with Onondaga County

Honeywell has and will continue to meet regularly with Onondaga County Parks and with the Department of Water Environment Protection to explain project activities and provide a schedule for anticipated work activities in the vicinity of that location.

Appendix A

Operational Hazards Analysis and Response Actions

APPENDIX A

OPERATIONAL HAZARDS ANALYSIS AND RESPONSE ACTIONS

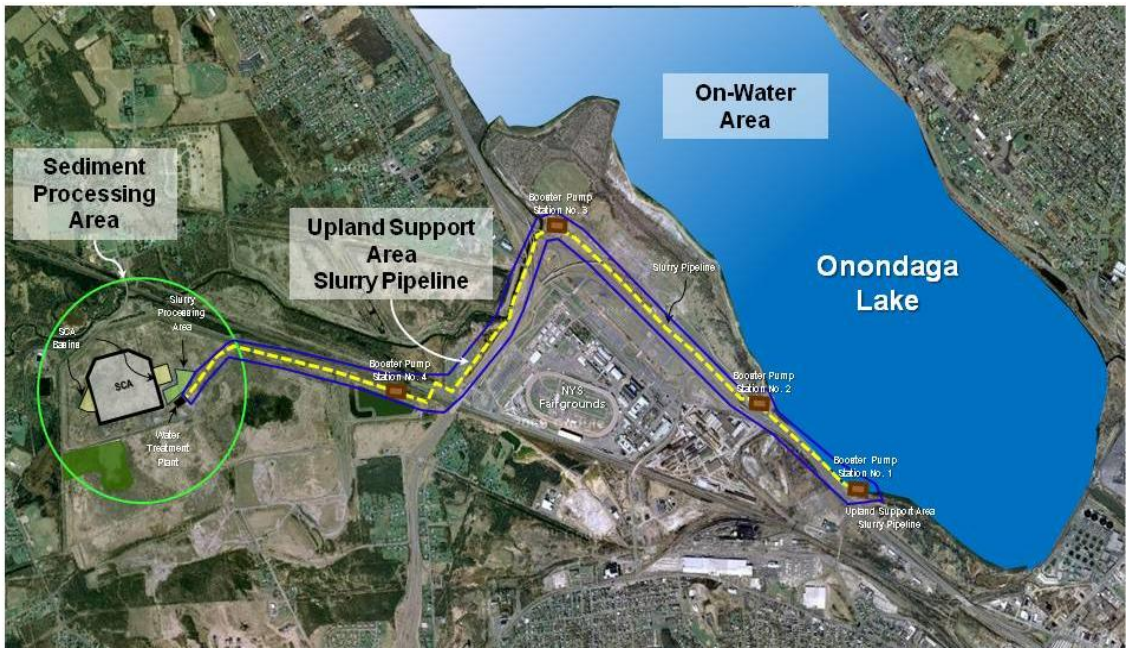
In April 2010, NYSDEC prepared a document addressing frequently asked questions (FAQs) for the dredging of lake sediments, piping to Wastebed 13, and storage at the SCA. This information is posted on NYSDEC's website: http://www.dec.ny.gov/docs/regions_pdf/scafaq.pdf and includes responses to over 50 questions. Some questions are relevant to the potential hazards discussed in this section, and NYSDEC's document describes many preventive measures that are included in the project design, such as the use of double-walled piping to minimize the potential for leaks from the sediment pipeline. Section 3 of this document describes how the operations of the SCA will result in acceptable air quality as documented in the human health risk assessment (HHRA) and the monitoring that will be completed to verify compliance. In addition to acceptable air quality (inhalation), the HHRA concluded that all resulting estimated risks (dermal/ingestion) were within levels identified by EPA as acceptable.

This appendix takes these NYSDEC's FAQs and the results of USEPA's HHRA a step further by reviewing the operations by area and presenting a description of the potential hazards, the preventive measures that have been incorporated into the project design to minimize potential hazards, and the responses to be implemented if such a hazard occurs despite the preventive measures.

A.1 EVALUATION OF POTENTIAL HAZARDS

To determine and evaluate project hazards, an experienced team of safety and engineering professionals performed a Hazard and Operability (HAZOP) study which is a systematic examination of potential equipment failures and human errors that could result in risks to human health or the environment. The HAZOP process is based on the principle that a team approach to hazard analysis will identify more potential problems than when individuals working separately combine their individual assessments. The Onondaga Lake Remediation HAZOP team was made up of over 20 individuals with varying backgrounds and expertise relevant to this type of work, including design engineers, experienced construction contractors and safety professionals. The expertise was brought together during HAZOP sessions, and through a collective brainstorming effort that stimulated creativity and new ideas, a thorough review of remediation processes was completed.

The identified potential hazards considered on-water, shoreline support area and slurry pipeline, and sediment processing area equipment and processes, as depicted below.



1. On Water Area: Work that occurs on the lake during the dredging capping, and habitat restoration phases of the project.
2. Upland Support Area / Slurry Pipeline: Work that supports the handling of dredged materials. Activities include operation of the slurry pipeline and other upland support functions.
3. SPA: Work that occurs at the final destination of the dredged materials. Activities include operation of the SCA and associated water treatment facility.

Potential hazards considered in this study included boating accidents, spills and releases of fuel or other materials into the lake, fires, sediment spills, damage to known or undetected underwater structures, and safety risk to trespassers on unattended project vessels or work areas. Results of the hazard analysis are detailed below, including mitigation measures and response actions. In the event of an incident or accident a "root cause analysis" will be performed to determine the cause of accident. Additional preventive measures may be warranted based on results of the analysis to prevent similar incidents in the future.

A.2 COLLISIONS BETWEEN PUBLIC BOATS AND PROJECT VESSELS OR INFRASTRUCTURE

The proximity of recreational and commercial boats to the dredging infrastructure, and the lack of a speed limit on Onondaga Lake present a risk of collision with project and non-project vessels. Recreational boaters may get distracted by project activities or may try to get a close look at the work activities. Additionally, collisions may occur as a result of fatigue or operator distraction.

Preventive Measures:

- All appropriate federal and state navigation laws will be complied with, including USCG rules for navigation.
- All project vessels (tugs, monitoring and personnel transport craft and agency oversight vessels) will travel at a slow and safe speed.
- An established shift schedule will ensure that vessel operators receive adequate work breaks on the shift, and time off between shifts. The use of cell phones by vessel operators will be limited to job-related calls.
- A silt curtain[1] will be installed around the dredge areas, and debris removal areas, which will act as a physical barrier to this equipment and non-project vessels. If there are significant work activities that are not within a silt curtain, such as may occur for some of the cap placement, a continuous demarcation system will be installed around the work area. The silt curtain and demarcation systems will include lighted buoys for visibility of the area at night, in accordance with US Coast Guard (USCG) regulations.
- Community education and notification procedures described in Section 7 will be implemented to promote public and boater awareness of on-water activities.
- Air horns or other appropriate means will warn non-project vessels approaching an active work area to keep away. If a non-project vessel continues to approach a work area, project personnel will contact the appropriate authorities for assistance.
- All boat operators will have successfully completed the USCG Boating Safety Course or an alternative approved boating safety course. Only experienced vessel operators will be selected and will receive project-specific training.
- Boating safety will be discussed at daily tool-box meetings.
- During night time operations, all vessels and on-water equipment will be well-lit to improve visibility. All project vessels and on-water equipment will be equipped with USCG navigational lighting, and will be checked regularly.

Response Actions:

- A project vessel equipped with water rescue equipment will promptly respond as necessary to the location of any collision to provide assistance.
- Local emergency responder agencies (fire, rescue, etc.) may be notified depending on severity of the accident, and anyone requiring medical attention will receive it. Assistance will be provided in the event a vessel is unable to return to shore/dock under its own power.

[1] A silt curtain is a temporary barrier made of a geotextile material used to confine silt or sediment that may be disturbed during a dredging project.

- Emergency response and/or spill response measures detailed in Section 6 will be implemented if necessary.

A.3 FIRE OR EXPLOSION

Due to the location of all equipment and operations, a fire is unlikely to impact the public in the surrounding area. As typical of marine projects, various sources of combustibles will be used aboard the vessels. These combustibles may include fuels (i.e., gasoline, diesel), petroleum based lubricants, hydraulic equipment, and electrical systems. Although improbable, the potential for fire may exist in electrical insulation and equipment, including booster pumps. Potential sources of ignition may include equipment malfunction or vandalism. There is no explosion risk in the slurry pipeline because of non-combustible construction materials. Although improbable, the potential for fire or explosion may exist at the SCA or WTP because of the presence of flammable material such as electrical equipment, fuels (for heating purposes), and water treatment chemicals. Measures to minimize fire and explosion risks are described below.

Preventive Measures:

- Larger on-water vessels operate on diesel fuel, which is much less volatile than gasoline. Hydraulic fluid used on the large vessels will be a biodegradable vegetable based oil that is fire resistant.
- Fire prevention procedures require all work areas, including on-water vessels, be equipped with fire extinguishers, mandates fire extinguisher training for certain workers and operators, outline smoking restrictions, and require a hot work permit be obtained for any work involving welding, cutting (open flame) or other spark-emitting tools.
- National Fire Prevention Association (NFPA) standards will be followed when storing fuels and compounds that are flammable, ignitable, or reactive. Storage areas will be routinely inspected and maintained to ensure compliance.
- Material Safety Data Sheets (MSDSs), which describe the hazards, precautions, and safety procedures associated with the use of specific compounds will be available and followed for each compound present.
- Drills will be conducted with appropriate project personnel and external emergency responders to ensure fire prevention and fire response procedures are followed.
- The USCG will be invited to inspect all project vessels to help ensure compliance with safety regulations.
- The electric booster station pumps are less susceptible to fire or explosion than gas or diesel driven engines. The motors are designed for exterior operations and are equipped with thermal overload protection, which would shut the booster station pump in the event of overheating.

- Combustible vegetation and materials surrounding the booster pump stations and other equipment and work areas will be removed via routine housekeeping.
- Routine inspection of electrical equipment will include preventive maintenance of motors and controls with critical spare parts maintained on-site.
- Fire hydrants are installed around the WTP and SCA for fire-fighting purposes.
- Structures at the SPA were constructed in accordance with State Property Maintenance and Fire codes, as well as the Camillus municipal code. The WTP building construction is classified "non-combustible" and will have approved type portable fire extinguishers (i.e. Class A through C).
- Polymers, neutralizing chemicals, and coagulants for sediment dewatering and stabilization and water treatment are non-flammable under normal operating conditions and will be stored in appropriate containers.
- Chemicals used to operate the WTP will be stored in accordance with state and federal chemical bulk storage requirements.
- The propane tank used to provide heat to the WTP has been installed on a concrete pad with protective curbing. Safe and proper propane refueling procedures will be followed.

Response Actions:

- In the event of a fire, workers will assess the situation to determine if immediate evacuation is necessary and emergency responders will be notified, as required.
- In the event of a small fire, workers will extinguish the fire if it can be done safely with a fire extinguisher.
- Emergency response and/or spill response measures detailed in Section 6 will be implemented if the fire cannot be extinguished with fire extinguishers.

A.4 DAMAGE TO SLURRY PIPELINE OR BOOSTER STATIONS FROM VEHICULAR TRAFFIC

Most segments of the slurry pipeline are above ground and parallel to maintenance roads used by project vehicles, with a portion located within highway rights-of-way. This proximity to traffic has the potential for damage to either vehicles or the pipeline itself. The booster pump stations are generally located away from areas of public vehicular traffic; however Booster Stations #2 and #3 are located adjacent to I 690-W. Although unlikely, damage to these booster stations from vehicular traffic by motorists that have lost control of their vehicle was considered. Booster Station #3 is located in an area that might be accessible by vehicles only during the New York State Fair (10-day period each year in late summer).

Preventive Measures:

- Portions of the slurry line have been routed underneath active rail lines and interstate highway ramps. Most sections of the slurry line are installed in areas away from traffic so that damage by public vehicles will be extremely unlikely.
- Traffic barriers, including guide rails are installed where the pipeline is located close to roadways. Piping outside the booster containment areas is double-walled and the valves are located within containment areas, providing comprehensive containment throughout the pipeline.
- An additional guide rail has been installed at Booster Station #2 between the exit ramp and the booster station.
- The booster stations are surrounded by an 8-ft. tall perimeter fence and placed inside a 4-ft. tall, steel containment structure.
- During operations, use of heavy construction equipment adjacent to the slurry line will be minimized to the extent practical.
- The slurry line is constructed of HDPE, with a high pressure rating and heavy pipe thickness, and is double walled, which would minimize pipeline damage in the event of vehicle contact.

Response Action:

- Dredging operations will be stopped and the incident or accident will be assessed for extent of damage.
- Emergency responders will be notified, if appropriate. Anyone injured will receive appropriate medical attention. Once the accident is cleared, any damage to the pipeline or booster station will be assessed and repaired or replaced as needed.
- Any compromised section of pipe will be repaired or replaced and then tested prior to re-start of dredging.
- Should an accident occur with a vehicle and booster station, the electrical power to the booster station will be turned off. The electrical systems connections and insulation will be tested prior to restart of operations.
- Emergency response and/or spill response measures detailed in Section 6 will be implemented, if necessary.

A.5 MOVEMENT OF PIPELINE

The slurry pipeline will experience thermal expansion and contraction due to changing temperatures. The pipeline has been designed to accommodate the expected expansion and contraction and resulting moderate pipe movement without creating a risk to the operation or to the public. Minor movement of the pipeline may also result from settling of the underlying soil. Specific preventive measures and response actions are detailed below.

Preventive Measures:

- Anchors have been incorporated into the design for portions of the slurry pipeline adjacent to the roadway and on slopes. The slurry line is also designed to accommodate the movement anticipated due to thermal expansion/contraction and settlement.
- The pipe will be routinely inspected for evidence of movement or damage.
- The size, thickness, and double-walled construction of the pipe reduces the likelihood that the pipe would be damaged as a result of movement.
- The pipeline leak detection system will alert workers of potential damage due to pipe movement.

Response Actions:

- Should movement of the pipeline occur beyond design limits, nearby structures will be investigated to assess any potential damage. The cause of the pipeline movement will be determined (and steps taken to minimize further movement, if appropriate) and any damage will be repaired.
- Additional anchors or guides will be installed, as necessary.

A.6 INJURY TO TRESPASSERS AND/OR DAMAGE TO EQUIPMENT OR MATERIALS FROM VANDALISM

Dredging and capping operations will have regularly scheduled down days, and will also shut down during certain weather events. Equipment and unknown surfaces on dredges or vessels may present safety hazards to trespassers, including drowning. The booster stations and pipeline will include equipment, valves, and controls that may be susceptible to trespassing or damage by vandals. The property where the SCA and processing area are located is fenced private property, but has experienced trespassing before. This area will have equipment and materials on-site that may pose a risk to trespassers via electrocution, chemical exposure, slips/trips/falls, or confined space hazards.

Preventive Measures:

- Docks, vessel support areas, and stationary project vessels and equipment and work areas will be clearly delineated, illuminated, posted with signage, and patrolled by security, as required. Fencing will be used in certain areas to further restrict access.
- Physical restrictions installed to control turbidity (e.g., silt curtains) and on-water work area demarcation systems will help deter trespassers from accessing work vessels.
- Cabins on on-water vessels will be locked, and equipment, materials, and fuel tanks will be secured to the extent practical before disembarking.
- Honeywell will conduct routine inspections of the slurry pipeline and booster stations.

- The pipeline leak detection system will alert workers of potential damage from vandalism.
- Sections of the pipeline are on Honeywell property within a chain link fence. The other sections not on Honeywell property are routed to minimize contact with the public, in particular foot traffic, in order to deter vandalism.
- The size, thickness, and double-walled construction of pipe reduces the ability of a vandal to damage the pipeline.
- Pipeline booster stations have lighting and are surrounded by an 8-ft. tall perimeter fence. Containment around the booster pumps will collect any leakage potential resulting from damage.
- Exposure of sediment slurry pipeline fittings are minimized by locating drain valves in vaults within the perimeter fence.
- Fencing is installed around Honeywell property where the SCA, SPA, and WTP are located. Active areas are further secured with locked gates and a security post that is manned during working hours.
- In addition to security, workers will provide surveillance against trespassing.
- Access to WTP building will be via a card key system.
- Secondary fence will be installed around transformers and electrical equipment with signs warning of electrical dangers.
- Lighting will be provided around the SPA, SCA, WTP, booster stations, and shoreline work areas.

Response Actions:

- Site security and authorities will be alerted to prevent trespassing and apprehend trespassers. If the trespasser has been injured they will receive appropriate medical attention.
- All equipment potentially damaged by vandalism will be inspected, and any damage will be repaired or replaced.
- Emergency response and/or spill response measures detailed in Section 6 will be implemented, if necessary.

A.7 SPILLS OF CONTAMINATED SEDIMENT TO ONONDAGA LAKE

Sediments may be resuspended into the water column during removal of debris prior to dredging and during dredging and related activities. Preventative measures to minimize sediment resuspension and a water quality monitoring program to verify compliance with water quality criteria are being developed with the approval of NYSDEC in the Water Quality Maintenance and Monitoring Plan. Protective measures and response actions associated with unanticipated

releases resulting from a break in the floating slurry piping from routine wear, wave action, boat strikes, or from vandalism are provided below.

Preventive Measures

- Operations may be suspended during severe weather periods.
- Pressure sensors within the line will be monitored for evidence of a leak.
- QA/QC procedures have been established for the initial installation of the pipeline, which includes hydrostatic testing[2] with clean water prior to operation.
- The exterior of the pipe will be frequently inspected and the interior inspected periodically for excessive wear. Repairs will be made as required.
- In the areas where the slurry transport pipeline crosses lake access points, such as the mouth of Onondaga Creek, the pipeline will be weighted down as needed to allow recreation vessels to pass freely through access areas.
- In areas where the pipeline is at the water surface outside the silt curtain, it will be marked with buoys and lighted to improve visibility. This will typically be in relatively shallow nearshore areas where boat traffic will be minimal.
- Backflow prevention measures in the sediment transport system will minimize return of sediment slurry flow back into the lake.

Response Actions:

- Pipeline leaks outside of the silt curtain, or inside of the silt curtain that result in water quality criteria exceedances at the compliance monitoring point, will result in shutdown of the dredging operations.
- If a sheen occurs from a sediment spill outside the silt curtain, spill kit materials will be deployed and the remedial contractor will be required to have response capabilities to address the spill. Operations will be shut down and the extent of the spill will be assessed.
- If a spill of sediment occurs outside the silt curtain, the NYSDEC will be notified to determine appropriate actions.
- The pipeline will be repaired or replaced as appropriate.
- Additional spill response actions are detailed in Section 6.

A.8 SPILLS OR RELEASE OF CONTAMINATED SEDIMENT FROM THE PIPELINE

Sediment transport via slurry pipelines has the potential for leakage via compromised piping, fittings or connections at the booster pump stations, or along the slurry pipeline. Potential

[2] Hydrostatic testing is used to find leaks in a pipe by placing water in the pipe at a set pressure to ensure that it will not leak or be damaged.

causes of leakage may include vandalism, vehicular accidents, pipe movement, routine wear, loose fittings, or impact by heavy equipment.

Preventive Measures:

- Preventive measures to minimize potential risks due to vandalism, vehicular accidents, and pipe movement are addressed in prior sections.
- The size, thickness, and double-walled construction of the pipe minimize the potential for leakage from the pipeline.
- The pipe route reduces, if not eliminates, the potential for contact with heavy equipment.
- The rock box cage at the dredge cutterhead will minimize the chance of oversize material entering the system and damaging the slurry line system, including the booster pump stations and fittings.
- Pressure sensors along the pipeline will alert workers of potential leakage. The volume of a spill will be minimized due to identification of potential leakage by the pressure sensor system as well as by the leak detection monitors between the inner and outer pipes.
- Honeywell will conduct routine inspections of the slurry pipeline and booster stations.
- Booster stations also have secondary containment. High pressure flexible couplings are used at pipe intakes/discharges (high vibration points), which reduces potential for leaks at these points.
- The exterior of the pipe will be frequently inspected and the interior inspected periodically for excessive wear. Repairs will be made as required.

Response Action:

- A major leak will result in shut-down of the dredge and booster station(s). Leakage may be detected automatically via the leak detection system, or manually based on any observations of the workers.
- Any compromised sections of pipe identified by periodic inspection will be repaired or replaced and then tested prior to re-start of dredging.
- The surrounding area of any compromised pipe sections will be inspected and sampled if necessary to determine if any environmental impact has occurred. Any unacceptable impact to the surrounding soils will be cleaned up.
- Spill response actions are detailed in Section 6.

A.9 SPILLS OR RELEASE OF CONTAMINATED SEDIMENT OR UNTREATED WATER AT THE SCA, SPA, AND WTP

Sediment dredged out of the lake will be screened and gravity dewatered in the SPA, and dewatered within the SCA using geotextile tubes. Water generated by the process is pumped to the water treatment plant, where it will be treated and conveyed to Metro. The handling of contaminated sediment and water carries a risk of spillage within the SPA area, SCA (ruptured geotextile tubes or leaking connections), or the WTP.

Preventive Measures:

- The sediment slurry will be contained in double-walled piping up to the point it enters the SPA, as is the piping between the SPA and the SCA. The piping that carries water from the SCA to the WTP is also double-walled. Therefore, the potential for sediment or untreated water release from the pipelines is minimal.
- The entire SPA is lined, with either a low permeable geomembrane or asphalt, and surrounded by perimeter berms, which would contain any sediment releases during sediment processing.
- The water treatment plant will be housed in a building on concrete, and is surrounded by perimeter berms, which would contain any water releases during water treatment.
- The SCA is bermed and has a composite liner system consisting of (from the bottom up) a compacted clay layer, a geomembrane, and a drainage layer. Any releases from geotubes and distribution piping will be contained within the SCA.
- The location of the SPA on the former Honeywell wastebeds significantly reduces risk of impacts to the public due to its distant location and large perimeter buffer area away from the community. Wastebed 13 is also bermed, which provides another layer of containment in the unlikely event of a release.
- The fill height of each on-line tube will be monitored to prevent rupture caused by over filling.
- Appropriate procedure will be implemented for tube deployment, filling, and stacking to prevent roll:
  - The tubes' seam alignment will be monitored for any irregularities as the tubes are initially filled. Any movement or roll will be corrected to the extent practical.
  - In latter stages of filling the geotextile tubes will be monitored for bulges, unevenness, and movement.

Response Actions:

- In the event of a rupture of a geotextile tube in the SCA, flow will be redirected to another tube and the situation will be assessed. If warranted, a controlled shutdown of dredging will occur. The ruptured tube will be isolated, and if possible, repaired or bypassed in the field.

- Slurry flow will be stopped to any tubes that show signs of possible shifting or movement and the slurry will be temporarily redirected to other tubes.
- In the event of a leak or break in any component(s) of the geotextile tube header and fill manifolds, the first response will be isolation of the impacted segment of the system and the dredge slurry redirected to other geotextile tubes within the SCA.
- Spills in the processing areas and WTP will be transferred to the SCA.
- Spill response actions are detailed in Section 6.

A.10 WATER BREACH OR OVERFLOW OF SPA OR SCA BERM

The SCA design includes safety measures to protect against a breach in the berm that will contain water generated by the dredging and sediment dewatering processes, as well as containment of precipitation falling within the SCA. The berm heights are designed to provide storage resulting from heavy precipitation events.

Preventive Measures:

- The SCA and SPA are designed to store the water volume from a major storm event, minimizing the potential for overflow or breach.
- Dredge operations will typically cease during major precipitation events, minimizing water inflow from dredging and dewatering operations. Therefore, water within the SCA and SPA will contain relatively dilute contaminant concentrations during precipitation events.
- Routine inspections of the SCA berm will include check for cracks, signs of settlement, areas of fatigue or excessive vegetation. Any areas requiring maintenance or repair will be promptly addressed.
- The SCA and SPA are being constructed on Wastebed 13, which has a perimeter berm that would contain any released water in the unlikely event of a breach or overflow of the SCA or SPA berms.

Response Actions:

- Dredge operations will cease if inspections indicate problems with the berms or in the event of a berm overflow or failure and the NYSDEC notified.
- Impounded water remaining in the SCA or SPA will be pumped down and directed to the WTP.
- Emergency response and/or spill response measures detailed in Section 6 will be implemented if necessary.

A.11 DAMAGE TO SCA LINER

The SCA is being constructed with a liner system to ensure contaminants do not reenter the environment. The SCA has been designed so that the placement of sediments within the SCA does not damage the liner system via strains caused by uneven settlement of the underlying fill material beneath the liner system.

Preventive Measures:

- The SCA liner is being installed by a certified installer and will be overseen by an independent professional quality assurance engineer and NYSDEC.
- The liner system materials have been tested to confirm it is chemically compatible with the materials that will be placed within the SCA.
- The composite liner system includes both a clay layer and an impermeable membrane, is recognized by the NYSDEC as the best available single liner technology to contain waste material and has a service life reported by the NYSDEC to be on the order of 1,000 years.
- The SCA liner system installation will be under NYSDEC oversight in accordance with NYSDEC-approved design and Construction Quality Assurance Plan. In addition to what NYSDEC typically requires for verification of no leaks in liner systems, an electrical leak location survey will also be performed, and leaks identified through this testing will be repaired. The leak location survey is performed after a 2-ft. thick layer of gravel is in place, but before SCA operations starts.
- Vehicular traffic will be prohibited on areas where the liner is exposed. A minimum of 2 ft. of gravel on top of the geomembrane is required to allow for trafficking of rubber-tired vehicles to prevent damage.
- The SCA liner will be routinely inspected during construction, where exposed, and repaired as necessary.
- Once the SCA is filled and the final cover system is installed, infiltration into the SCA will be essentially cut off, thereby further eliminating a primary source of water within the SCA.

Response Actions:

- NYSDEC will be notified of any liner failure.
- Operations in the area of liner failure will be discontinued.
- Necessary repairs will be made as possible and the liner will be tested prior to restarting operations.

A.12 OPERATIONAL FLUID SPILLS

Large marine equipment (such as dredges and tugs) used to support the remedy require regular refueling from fuel barges. Spills or releases of diesel fuel, hydraulic oils, or antifreeze could occur. Stationary equipment used to convey the sediment to the upland areas require maintenance fluids such as hydraulic oils to properly operate. Operational fluids will be transported to and used at the booster stations. They will be properly stored, handled, and contained, but still have potential for an environmental release. The equipment in the SPA and at the WTP will utilize hydraulic fluids and petroleum lubricants to maintain operability. These fluids will be transported to, and used within these areas during the course of the project. Processes at the WTP will require acid, caustic, polymer, and coagulants for the treatment of water generated by the dredging project. These chemicals will be periodically trucked to the site.

Preventive Measures:

- Vegetable-based hydraulic oils and biodegradable antifreeze will be used to the extent practical, especially in on-water equipment, because they are less harmful to the environment.
- All refueling activities will comply with USCG regulations for on-water fuel distribution and storage. A specially-designed fueling barge equipped with secondary fuel containment, spill prevention devices and safety features such as automatic nozzles and shut-off valves will travel to the dredge and will be used at or near the location where the dredges are operating.
- Smaller project vessels (crew boats, center consoles, etc) will dock at a dedicated location, which will have a fuel station, a tank with secondary containment, and double-walled marine fuel line.
- Small quantities of operational fluids (e.g., grease, hydraulic oils) will be stored in secure locations to maintain operability.
- The secondary containment structures at the booster pump locations would contain spills at the booster stations. Additionally, spill kits will be maintained at each pump station.
- Specific procedures will be implemented for safe transportation, delivery, storage and use of operational fluids, including equipment refueling procedures and procedures associated with WTP chemicals, to minimize the risk of spillage.
- Only certified chemical suppliers will deliver chemicals to the WTP. Spill kits will be available onsite.

Response Actions

- If the spill is relatively minor, it may be contained with spill kit materials located on all appropriate project vessels and at all operating locations. Spill kit materials will be replenished as required. Used spill kit materials will be handled and disposed of appropriately.
- If the spill on the water cannot be contained by the vessel spill kit, the marine spill response contractor will be notified.
- A spill of operational fluids may require shutdown of the specific equipment if required to prevent additional spillage or to facilitate cleanup.
- Should a spill occur on a public roadway, the driver will assess the size of the spill and may deploy spill kit materials in order to contain the spill. If the spill cannot be contained by the spill kit, the state or local DOT will be notified.
- NYSDEC notification may be required if the release is above a defined reportable quantity (RQ) for the compound.
- Spill response actions are detailed in Section 6.

A.13 SPILLAGE OF DEBRIS REMOVED FROM LAKE ONTO PUBLIC ROADWAY

Debris will be removed from the lake bottom as necessary to allow the dredge to operate efficiently, and will transported to the lakeshore support area by barge, where it will be off loaded into trucks. Use of small sections of public roads will be required in order to transport the debris to the SCA for disposal.

Preventive Measures:

- Traffic management procedures described in Section 4 have been prepared to mitigate traffic related risks. Non-compliant truck drivers will be replaced.
- Debris will be reduced in size to ensure proper loading into trucks or roll off containers.
- All trucks will be securely tarped and inspected prior to release from lakeshore loading area. Tarps will be routinely checked for rips and tears and replaced as necessary.

Response Actions:

- In the event of a spill, the local police will be notified for traffic control. Honeywell will coordinate with NYSDOT and response contractors for cleanup of materials.

A.14 SPILLAGE OF LAKE CAPPING OR RESTORATION MATERIALS ON PUBLIC ROADWAY BEING DELIVERED TO SITE

Clean materials used to cap and/or restore the lake bottom after dredging, including sand, gravel, cobbles, carbon and siderite (a natural iron mineral), will be brought on-site from several clean borrow sources. Habitat structure and activated carbon will be delivered from nurseries and manufacturing or warehouse facilities, respectively. These materials may be brought on-site by trucking. An increase in truck traffic will result due to the transport of clean materials to the project site.

Preventive Measures:

- The traffic management procedures detailed in Section 4 will ensure safe routing of truck traffic and minimize the potential for accidents which could result in material spillage. All applicable DOT requirements will be followed to ensure there is no loss of materials from the trucks during transport.

Response Measures

- If clean materials are released in a public roadway, local police will be notified if necessary for traffic control. Honeywell will coordinate as necessary with NYSDOT for cleanup of materials.

A.15 PRESSURIZED FUEL RELEASE

Pressurized fuel is not required to operate heavy equipment. Small gas cylinders in either stationary or mobile equipment will be used for maintenance. Use and transport of pressurized fuel have potential to impact the public through environmental release.

Preventive Measures:

- For maintenance welding along the slurry pipeline, only small, NYSDOT certified portable cylinders will be used. A hot work permit will be issued prior to any maintenance welding.
- Cylinders will be stored in accordance with NYSDOT and NFPA standards.
- The booster stations are electrically operated and do not store fuel.
- Most areas requiring maintenance are remote and not accessible to public.

Response Actions:

- Emergency response and/or spill response measures detailed in Section 6 will be implemented if necessary.

A.16 DAMAGE TO EXISTING WATER STRUCTURES BY PROJECT VESSELS OR ACTIVITIES

The design considers that dredging activities in the near vicinity of infrastructure and in-lake utilities may present a risk of damage such as via contact while dredging. These structures include utilities such as storm water discharges and Metro's outfalls.

Preventive Measures:

- In coordination with NYSDEC, known physical structures in and near project work areas have been identified during the design stage. Dredging off-sets[3] have been established where necessary.
- Locations of identified physical structures will be demarcated with floating buoys and assigned survey coordinates as necessary so that they can be avoided during construction.
- Water depths and the locations of physical structures were considered in the selection of project vessels and barges.

Response Actions:

- Any damage will be reported to the owner of the utility, and the damaged structure will be repaired or replaced as necessary.

A.17 SHORELINE INSTABILITY DUE TO DREDGING AND CAP MATERIAL STORAGE

Dredging and placement of cap materials is a necessary part of the remedy design. Dredging near the shoreline and upland support operations (e.g., cap material stockpiling) may have potential to affect shoreline stability.

Preventive Measures:

- Dredging and capping near the shoreline have been designed in consultation with NYSDEC to provide for the stability of the shoreline during and after dredging and capping activities. Specifically, adequate factors of safety and relatively flat grades have been incorporated into the design.
- Precise measuring instruments (inclinometers) have been attached to, and behind, the sheet pile barrier walls installed by Honeywell. Walls directly adjacent to dredging activities will be routinely monitored for movement during dredging and capping activities.
- Regular inspections will be performed along the shoreline for signs of soil movement and/or settling.

[3] An off-set is an area near or around a structure where dredging will not take place for structural safety and protection.

Response Action:

- If shoreline stability appears to be significantly impacted, particularly if shoreline infrastructure such as utilities or barrier walls are threatened, dredging and/or capping operations be in the vicinity of the impacted area will be stopped and Honeywell will coordinate with NYSDEC to assess shoreline conditions for nature and degree of instability.
- Based on the results of the assessment, the dredging and capping designs and/or upland support operations may need to be modified (e.g., establish shoreline offsets, modify dredging/capping sequencing, or adjust shoreline slopes).

Appendix B

Long-Term Air Monitoring Criteria

APPENDIX B

LONG-TERM AIR MONITORING CRITERIA

VOC Species	Work Perimeter Limit[a] ($\mu g/m^3$)
Acetone	28,000
Benzene	1.9
2-Butanone	5,000
Carbon Tetrachloride	0.97
Chlorobenzene	110
Chloroform	0.64
1,2-Dichlorobenzene	360
1,4-Dichlorobenzene	1.3
1,1-Dichloroethane	9.1
1,2-Dichloroethane	0.56
1,1-Dichloroethene	70
t-1,2-Dichloroethene	63
Ethyl benzene	25
Methyl t-Butyl Ether	56
Methylene Chloride	31
Naphthalene	2
Tetrachloroethene	3
Toluene	5,000
1,2,4-Trichlorobenzene	9
Trichloroethene	7.3
1,1,1-Trichloroethane	1,000
1,2,4-Trimethylbenzene	31
1,3,5-Trimethylbenzene	290
Vinyl Chloride	3.3
Xylenes	100

[a] Criteria represent 12-month averages above background levels

$\mu g/m^3$ = micrograms per cubic meter

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