DRAFT ONONDAGA LAKE DREDGING, SEDIMENT MANAGEMENT & WATER TREATMENT INITIAL DESIGN SUBMITTAL

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LIST OF ACRONYMS

ARAR	Applicable or relevant and appropriate requirement
BAF	Biological aerated filter
BMP	Best Management Practice
BOD_5	Biochemical oxygen demand
BSQV	Bioaccumulation-based sediment quality value
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CPOI	Chemical parameters of interest
C_w	Concentration by weight
CY	Cubic yards
CY/hr	Cubic yards per hour
DR	Dimension ratio
DSA	Dredge spoil area
EET	Effluent elutriate test
fps	Feet per second
FS	Feasibility Study
GAC	Granular activated carbon
gpm	Gallons per minute
GWTP	Ground water treatment plant
HDPE	High density polyethylene
hp	Horsepower
ID	Inside diameter
IDS	Initial Design Submittal
IDWP	Industrial Waste Discharge Permit
ILWD	In-lake waste deposit
IRM	Interim remedial measure
LCMM	Lake Champlain Maritime Museum
LCP	Linden Chemical and Plastics

LIST OF ACRONYMS (CONTINUED)

LEF	Lower East Flume
Metro	Onondaga County Metropolitan Wastewater Treatment Plant
mgd	Million gallons per day
MSL	Mean sea level
MNR	Monitored natural recovery
NAPL	Non-aqueous phase liquids
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
NYSDOT	New York State Department of Transportation
OD	Outside diameter
OM&M	Operation, maintenance, and monitoring
OU	Operable unit
PAF	Public Archeology Facility
PDI	Pre-design investigation
PRG	Preliminary remediation goal
PSA	Preliminary site assessment
psi	Pounds per square inch
RAO	Remedial action objectives
RD/RA	Remedial design/Remedial action
RDWP	Remedial Design Work Plan
RI	Remedial investigation
RI/FS	Remedial investigation/Feasibility study
ROD	Record of Decision
S.U.	Standard units
SCA	Sediment consolidation area
SEC	Sediment effects concentrations
SMU	Sediment management units
SOW	Statement of work
SVOC	Semi-volatile organic compound

LIST OF ACRONYMS (CONTINUED)

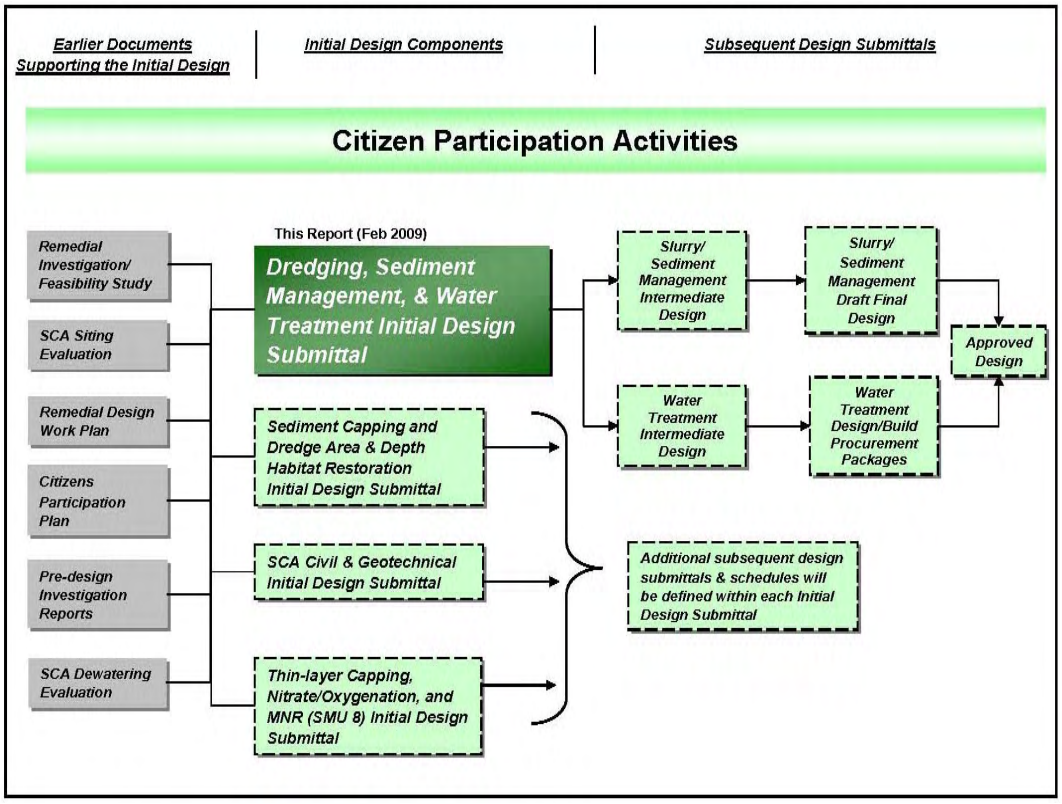
TKN	Total kjeldahl nitrogen
TMDL	Total maximum daily load
TSS	Total suspended solids
TTO	Total toxic organics
UEF	Upper East Flume
USEPA	United States Environmental Protection Agency
VOC	Volatile organic compound
WPR	Working pressure rating
WTP	Water treatment plant

EXECUTIVE SUMMARY

Honeywell continues its progress toward achieving the goals of the Record of Decision (ROD), and the community's vision for a restored Onondaga Lake, with the development of this draft Dredging, Sediment Management, & Water Treatment Initial Design Submittal (IDS). In collaboration with a design team consisting of nationally recognized experts from various universities, research institutions, specialty engineering firms, and with input from community stakeholders, Honeywell is developing a Remedial Design which will meet the objectives as outlined in the ROD, provide long-lasting protection to the local community and environment, and restore Onondaga Lake to the community.

Honeywell prepared this IDS in accordance with the Draft Remedial Design Work Plan for the Onondaga Lake Bottom Subsite (RDWP) (Parsons, 2008). As detailed in the RDWP, the remedial design will include the preparation of four IDSs, submitted separately, which will address various elements of the remedy. Separating the design into four submittals allows for a compressed schedule for design submittals associated with critical path activities (e.g., sediment consolidation area [SCA] and water treatment) to facilitate the aggressive timeline associated with initiating remedial construction activities in 2012, consistent with the Consent Decree. This IDS Report constitutes the *Dredging, Sediment Management, & Water Treatment IDS.* The other three IDS documents, including *Sediment Capping & Dredge Areas and Depths IDS, SCA Civil & Geotechnical IDS,* and the *Thin-Layer Capping, Nitrate Addition/Oxygenation, and MNR IDS,* are being prepared as separate design submittals.

The graphic below illustrates how these four IDS documents fit in with the overall Onondaga Lake design process. As illustrated below, several earlier supporting documents (e.g., remedial investigation/feasibility study reports, remedial design work plan, citizens participation plan, etc.) provide the basis for the preparation of the four IDS documents. Combined, these four IDS documents will provide initial design level details for all components of the Onondaga Lake remedy. Subsequent design submittals may split components previously combined, based on schedule needs. For example, as shown, the Water Treatment Intermediate Design may be prepared as a separate design submittal as the Slurry / Sediment Management Intermediate Design. This would allow for the faster advancement of the critical path activities associated with the design of the water treatment plant.



This IDS Report presents the conceptual design relating to the dredging, transport, and dewatering of sediments removed as part of the remedial activities, in addition to the treatment of water generated during pumping of dredged sediment. This report presents design and performance criteria, rationale for choosing the methods used, and basis of design of the selected remedy to meet the requirements set forth in the ROD and associated Consent Decree Scope of Work (SOW).

Public protection and feedback received through the community participation process remains a significant factor in the evaluation process for the Remedial Design. Community input has influenced design-level decisions in several areas of the remedial design, including the method selected for the dewatering of the sediments to be dredged from the lake bottom, the decision to utilize hydraulic dredging and transportation, and the design to control of volatile odors and emissions. Section 2 provides discussion on these, and other, design-level decisions which reflect incorporation of community input.

As Honeywell moves forward with the design elements for the restoration of Onondaga Lake, community input will remain a vital component for a successful program. Honeywell is committed to working with community leaders, interested stakeholders and citizens to include input, recommendations, comments and perspectives into the technical design teams. As part of the NYSDEC's Citizen Participation Plan (CPP), community members will have the opportunity to participate in the design, construction and post-construction periods. Further details on citizen participation activities are outlined in Section 2 and NYSDEC's Draft Citizens Participation Plan (December, 2008)

The engineering analysis and design included in this IDS Report is based on extensive design-related investigation activities, including:

- bench-scale tests;
- geophysical surveys;
- sediment sampling for chemical and geotechnical analyses;
- *in-situ* geotechnical testing of sediments;
- surface water and porewater sampling and analysis;
- seepage meter and Geoprobe™ measurements;
- sediment cores and borehole drilling to delineate contaminant extent; and
- installation and monitoring of two meteorological stations.

These activities have provided more than 400 sediment cores, 60 borings, 7,300 environmental samples, and 120,000 chemical and geotechnical analyses through 2007 to support design of the selected remedy. The results of these investigations have been presented in data summary reports which have been submitted to the regulatory agencies and are available in the public document repositories.

In this report, engineering design and analysis has been broken into eight design categories. For each design category, specific design and performance criteria and design details are discussed in the corresponding design section. The eight categories include

- Sediment Dredging;
- In-Lake Debris and Utility Management;
- Minimization of Ambient Water Quality Impacts;
- Slurry Transport and Operations;
- Dredged Sediment Dewatering;
- Water Treatment;
- Upland Facilities and Locations; and
- Emissions and Odor Control.

Sediment dredging will be conducted in a manner that minimizes impacts on the surrounding community and on the lake water quality. Based on a thorough review of available dredging methods, consultation with national dredging experts, and feedback from community members, Honeywell has concluded that sediments should be hydraulically dredged and transported (that is, through a pipeline) as a slurry from the lake to the dewatering area, known as the Sediment Consolidation Area (SCA). Advantages of hydraulic dredging include greatly reduced truck traffic and associated engine emissions and noise. The proposed route of the slurry pipeline is along the Ninemile Creek corridor to the SCA.

As part of a separate analysis, an extensive screening was conducted to determine the final SCA location. This screening process included the evaluation of sixteen separate locations and included assessments based on accessibility, estimated capacity, consistency with current use, the potential reuse of the area, geotechnical feasibility, and minimizing potential impacts to the community. After an extensive review, the New York State Department of Environmental Conservation (NYSDEC) determined Settling Basin 13 best met the criteria.

In the conceptual process described in this IDS, the dredged sediment will undergo a series of pre-processing steps once at the SCA. Larger particles will be screened out of the mixture, sand-sized particles will be removed, the slurry will undergo "gravity thickening" and have a polymer added to it for more efficient dewatering. Following applicable pre-processing steps, the sediment will be pumped into geotextile tubes for final dewatering. The use of geotextile tubes provides several advantages including improved odor control, a reduction in the size of the SCA, and elimination of hazards associated with an open settling basin. These tubes will be managed within the lined SCA, which will collect and manage water that will drain from them.

Once water generated by hydraulic dredging has passed through the geotextile tubes, it will flow into an underlying gravel drainage layer within the lined SCA. The SCA drainage layer will be sloped to direct water to collection points, where it will be routed to the equalization and storage basin. All construction-contact water, including effluent from the geotextile tube dewatering process, decontamination water, water collected from the management and/or cleaning of debris management, and water coming into contact with dredged material, will be treated by a large onsite water treatment facility. The final design will optimize these sediment and water management processes based on further analyses, bench-scale testing, and identification of optimal means and methods.

The Honeywell design team will interact with the personnel that will execute the operational phases of the remedial action to assure that the final design components are complete, implementable, and meet the project objectives, including ensuring protection to the nearby community and environment.

SECTION 1

SITE DESCRIPTION AND DESIGN PROCESS OVERVIEW

This Onondaga Lake Dredging, SCA, and Water Treatment IDS Report has been prepared on behalf of Honeywell International Inc. (Honeywell). The lake bottom is on the New York State Registry of Inactive Hazardous Waste Sites and is part of the Onondaga Lake National Priorities List (NPL) Site. Honeywell entered into a Consent Decree (United States District Court, Northern District of New York, 2007) (89-CV-815) with the NYSDEC to implement the selected remedy for Onondaga Lake as outlined in the ROD issued on July 1, 2005. The following documents are appended to the Consent Decree: ROD, Explanation of Significant Differences, SOW, and Environmental Easement.

The purpose of this IDS Report is to provide initial-design level evaluation of components of the Onondaga Lake Remediation pertaining to the dredging and management of sediments from the lake, and treatment of water generated from the process. Furthermore, this IDS Report is designed to obtain regulatory and public feedback and approval on the design progress to date, prior to further development and finalization of the Remedial Design.

This IDS Report was prepared in accordance with the RDWP for the Onondaga Lake Bottom Subsite (Parsons, 2008). This Report is based on extensive information and data gathered during four years of design-related investigations, as well as data collected as part of the Remedial Investigation (RI) (TAMS, 2002). In addition to the thousands of samples collected and analyzed, numerous bench studies executed, and many field evaluations and data collection activities completed, additional investigation activities are anticipated subsequent to the submittal of this IDS Report. Data gathered during these investigations will be incorporated into future design submittals.

1.1 ONONDAGA LAKE DESCRIPTION

Onondaga Lake is a 4.6 square mile (3,000 acre) lake located in Central New York State immediately northwest of the City of Syracuse (Figure 1.1). The lake is approximately 4.5 miles long and 1 mile wide, with an average water depth of 36 ft. The lake has two deep basins, a northern and southern, which have maximum water depths of approximately 61 and 65 ft, respectively (Figure 1.1). The basins are separated by a saddle region at a water depth of approximately 56 ft. Most of the lake has a broad nearshore shelf with water depths less than 12 ft. This nearshore shelf is bordered by a steep offshore slope in water depths of 12 to 24 ft (TAMS Consultants, 2002).

Ninemile Creek and Onondaga Creek are the two largest tributaries to Onondaga Lake. Other tributaries in a clockwise direction from the southeast section of the lake include Ley Creek, Harbor Brook, the East Flume, Tributary 5A, Sawmill Creek, and Bloody Brook (Figure 1.1). In addition to the tributary streams, the treated effluent from the Onondaga County

Metropolitan Wastewater Treatment Plant (Metro), located between Onondaga Creek and Harbor Brook, contributes a significant portion of the water entering the lake.

Central New York State experienced significant growth in the twentieth century. As a result, the area around Onondaga Lake is mostly urban. The City of Syracuse is located at the southern end of Onondaga Lake, and numerous towns, villages, and major roadways surround the lake (Figure 1.1).

For investigation and remediation purposes, the sediments in the lake are divided into two regions: the littoral zone (shallower area) and profundal zone (deeper area). The littoral zone includes sediments along the shoreline in less than 30 ft (9 m) of water that are in contact with the epilimnion – the uppermost warm-water layer. The profundal zone includes sediments in the deep basins in more than 30 ft (9 m) of water that are in contact with the hypolimnion – the deeper, colder, and denser water layer. As part of the remedial alternative development and evaluation process during the Feasibility Study (FS) (Parsons, 2004), the lake bottom was divided into eight Sediment Management Units (SMUs) based on water depth, source of water entering the lake, and physical, ecological, and chemical characteristics (NYSDEC and United States Environmental Protection Agency (USEPA), 2005). SMUs 1 through 7 are located in the littoral zone of the lake where most aquatic vegetation and aquatic life reside, while SMU 8 consists of sediment in the profundal zone (Figure 1.2).

1.2 REMEDIATION OBJECTIVES AND GOALS

The underlying objective of all remedial activities is to ensure protection of onsite workers, the surrounding community, and the environment from potential risks associated with the execution of the remedy. In addition to this underlying objective, as part of the Superfund process, and in accordance with USEPA guidance, remedial action objectives (RAOs) are established based on results obtained during the RI, including analysis of the nature and extent of contamination, transport and fate of contaminants, and the risk assessments. RAOs are identifiable goals of the selected remedy which are designed to ensure protection of human health and the environment. RAOs for Onondaga Lake, as per the ROD, are listed below.

- "RAO 1: To eliminate or reduce, to the extent practicable, methylation of mercury in the hypolimnion.
- "RAO 2: To eliminate or reduce, to the extent practicable, releases of contaminants from the in-lake waste deposit (ILWD) and other littoral areas around the lake.
- "RAO 3: To eliminate or reduce, to the extent practicable, releases of mercury from profundal (SMU 8) sediments.
- "RAO 4: To be protective of fish and wildlife by eliminating or reducing, to the extent practicable, existing and potential future adverse ecological effects on fish and wildlife resources, and to be protective of human health by eliminating or reducing, to the extent practicable, potential risks to humans.
- "RAO 5: To achieve surface water quality standards, to the extent practicable, associated with chemical parameters of interest (CPOIs)" (NYSDEC and USEPA, 2005, p. 35).

As part of the Feasibility Study process, USEPA guidance requires the establishment of preliminary remedial goals (PRGs) that can be used to select appropriate remediation technologies and to develop remedial alternatives within the FS. The PRGs represent the primary goals of the remedial efforts. To achieve the RAOs stated above, three PRGs were developed to address the three primary affected media within the lake: sediment, biological tissue, and surface water. PRGs for Onondaga Lake, as per the ROD, are listed below.

- "PRG 1: Achieve applicable and appropriate sediment effects concentrations (SECs) for CPOIs and the bioaccumulation-based sediment quality value (BSQV) of 0.8 mg/kg for mercury, to the extent practicable, by reducing, containing, or controlling CPOIs in profundal and littoral sediments.
- "PRG 2: Achieve CPOI concentrations in fish tissue that are protective of humans and wildlife that consume fish. This includes a mercury concentration of 0.2 mg/kg in fish tissue (fillets) for protection of human health based on the reasonable maximum exposure scenario and USEPA's methylmercury National Recommended Water Quality criterion for the protection of human health for the consumption of organisms of 0.3 mg/kg in fish tissue. This also includes a mercury concentration of 0.14 mg/kg in fish (whole body) for protection of ecological receptors. These values represent the range of fish tissue PRGs.
- "PRG 3: Achieve surface water quality standards, to the extent practicable, associated with CPOIs" (NYSDEC and USEPA, 2005, p. 35).

PRG 1 addresses RAOs 1 through 4. PRG 2 addresses RAO 4. PRG 3 addresses RAO 5.

1.3 REMEDY OF RECORD

To assess alternatives to addressing the RAOs and PRGs described above, seven remedial alternatives were developed and presented in the ROD. A comparative analysis was completed to identify which alternative would be selected for implementation. The comparative analysis includes comparison to "threshold" criteria (overall protection of human health and the environment, and compliance with Applicable or Relevant and Appropriate Requirements [ARARs]), "primary balancing" criteria (long-term effectiveness and permanence, reduction of toxicity, mobility or volume through treatment, short-term effectiveness, implementability, and cost), and "modifying" criteria (support Agency acceptance, and community acceptance). Through this comparative analysis, NYSDEC and USEPA selected the alternative that best satisfies CERCLA requirements, and provides the best balance of tradeoffs among the remedial alternatives considered with respect to CERCLA's nine evaluation criteria.

The ROD for the lake bottom presents the remedy selected by NYSDEC and USEPA for addressing the RAOs and PRGs presented in Section 1.2 above. The SOW, presented as Appendix C of the Consent Decree, further describes design-related elements for the implementation of the remedy, such as the development of dredging areas and volume; isolation cap areas, models and components; profundal zone (SMU 8); management of dredged sediments; water treatment system; and design and construction schedule.

Major components of the selected remedy relevant to the littoral zone (the relatively shallow portion of the lake from the shoreline to the 30-foot water depth), which is the focus of this IDS Report, are set forth in the ROD and SOW and are summarized as follows (United States District Court, 2007 – appendices to the Consent Decree):

- "Dredging of as much as an estimated 2,653,000 CY of contaminated sediment/waste from the littoral zone in Sediment Management Units (SMUs) 1 through 7 to a depth that will prevent the loss of lake surface area, ensure cap effectiveness, remove non-aqueous-phase liquids (NAPLs), reduce contaminant mass, allow for erosion protection, and re-establish the littoral zone habitat. Most of the dredging will be performed in the ILWD (which largely exists in SMU 1) and in SMU 2."
- "Dredging, as needed, of an additional 3.3 ft in the ILWD to remove materials within areas of hot spots (to improve cap effectiveness) and additional dredging, as needed, to ensure stability of the cap."
- "Placement of an isolation cap over an estimated 425 acres of SMUs 1 through 7."
- "Construction/operation of a hydraulic control system along the SMU 7 shoreline to maintain cap effectiveness. In addition, the remedy for SMUs 1 and 2 will rely upon the proper operation of the hydraulic control system, which is being designed under interim remedial measures (IRMs) presently underway at the Semet Residue Ponds, Willis Avenue, and Settling Basin B/Harbor Brook subsites to control migration of contamination to the lake via groundwater from the adjacent upland areas."
- The majority of the "dredged sediment will be placed in one or more SCAs, which will be constructed on one or more of Honeywell's Solvay Settling Basins that historically received process wastes from Honeywell's former operations. The containment area will include, at a minimum, the installation of a liner, a cap, and a leachate collection and treatment system."
- "Treatment of water generated by dredging and sediment handling processes to meet NYSDEC discharge limits."
- "Completion of a comprehensive lakewide habitat restoration plan."
- "Habitat reestablishment will be performed consistent with the lakewide habitat restoration plan in areas of dredging/capping."
- "Implementation of institutional controls including the notification of appropriate governmental agencies with authority for permitting potential future activities which could impact the implementation and effectiveness of the remedy."
- "Implementation of a long-term operation, maintenance, and monitoring (OM&M) program to monitor and maintain the effectiveness of the remedy".

Annually, it will be certified that the institutional controls are in place and that Honeywell is performing remedy-related OM&M.

The NYSDEC and USEPA issued an Explanation of Significant Differences as Appendix B of the Consent Decree to specify a modification to the selected remedy documented in the ROD.

Based on investigation data and a stability evaluation, there was significantly less NAPL-impacted material beneath the lake in SMU 2 than was assumed during the FS and ROD, and removing this material could result in instability of the adjacent shoreline. Therefore, the alignment of the Willis-Semet IRM Barrier Wall (Willis portion) was moved offshore immediately beyond the farthest extent of pooled NAPLs within the lake in lieu of dredging of this material. In addition, recovery wells will be installed landward of the new barrier wall, between the barrier wall and the causeway. Existing upland areas adjacent to Onondaga Lake will be converted to new aquatic habitat to mitigate the loss of habitat resulting from placement of the barrier wall offshore.

Honeywell evaluated potential locations for building and operating an SCA to contain sediment removed from Onondaga Lake during the remedial action, as documented in Onondaga Lake SCA Siting Evaluation (Parsons, 2006a). Each of Honeywell's Solvay Settling Basins were evaluated as a potential location for an SCA based on accessibility, estimated capacity, current and future site use, geotechnical considerations, and potential community impacts. Based on evaluation results, Settling Basin 13 was selected for building and operating an SCA (Figure 1.2). The SCA will be designed, constructed, operated and maintained in accordance with the substantive requirements of NYSDEC Regulations Part 360, Section 2.14(a) (industrial monofills). This design component will be as addressed in the SCA Civil and Geotechnical Initial Design Submittal, and submitted as a separate Design Document.

1.4 DESCRIPTION OF UPLAND SITES/SOURCES

Onondaga Lake and several areas upland that contribute or have contributed contamination to the lake system are part of USEPA's Onondaga Lake site. As described below and in subsequent sections of this IDS Report, interaction and coordination with remediation activities associated with these sites will play a significant role in the design and execution of the Onondaga Lake remediation.

The NYSDEC and USEPA have, to date, organized the work for the Onondaga Lake NPL site into eight NPL subsites, five of which are Honeywell's responsibility (see Figure 1.1). In accordance with various agreements, Honeywell has assumed responsibility for the following four NPL subsites in addition to the lake bottom:

- Linden Chemical and Plastics (LCP) Bridge Street Operable Unit (OU) No. 1 (remediated and now subject to closure),
- Semet Residue Ponds (subject to a remedial investigation/feasibility study [RI/FS] and remedial design/remedial action [RD/RA]),
- Willis Avenue (subject to an RI/FS), and
- Settling Basin B/Harbor Brook (subject to an RI/FS).

The Geddes Brook/Ninemile Creek site, which is an operable unit of the lake bottom subsite, is also being addressed by Honeywell and is subject to a RI/FS.

In addition to these sites, which have been identified as sources of contamination to Onondaga Lake, there are several state-lead sites within the vicinity of the lake for which Honeywell has assumed responsibility, which are listed below:

- Ballfield (subject to a RI/FS);
- LCP Bridge Street OU-2 (subject to a RI/FS);
- Mathews Avenue (subject to a PSA);
- Settling Basins 1 through 8 (subject to a RI/FS);
- Settling Basins 9 through 15 (subject to closure); and
- Dredge Spoils Area (subject to a PSA).

Not all of these sites have been identified as significant contaminant sources to the lake, but, portions of the lake remedy, such as staging and support area siting, may require interaction with these sites.

Honeywell recognizes the importance of controlling upland sources of contamination to the lake system, and has made significant progress with the remediation of upland sites. The ROD states "The remediation of the Onondaga Lake subsite will need to be coordinated with upland remedial activities. The control of contamination migrating to the lake from various upland sites (e.g., Willis Avenue, Semet Residue Ponds, Settling Basin B/Harbor Brook, LCP Bridge Street, and Geddes Brook/Ninemile Creek) is an integral part of the overall cleanup of Onondaga Lake. To prevent the recontamination of lake sediments, active sources of contamination to a given portion of the lake will need to be shut off prior to performing cleanup activities in that area of the lake." (NYSDEC and USEPA, 2005, p. 80).

Honeywell has made significant progress with the remediation of upland sites. Honeywell has already completed construction of the remedy at the LCP OU-1 site, a former Allied Chemical property that was one of the primary sources of mercury contamination to Onondaga Lake. Honeywell has also made significant progress with installing a hydraulic barrier wall and groundwater treatment plant, as part of the Willis/Semet Barrier IRM, to prevent contaminated groundwater from entering the lake. Approximately 1,200 ft of an underground barrier wall (the Semet portion), constructed of interlocking steel panels, was installed along the southwest shoreline of Onondaga Lake in 2006 as part of an IRM. Additionally, Honeywell completed construction of a groundwater treatment plant in 2006 to collect, process, and treat contaminated groundwater that will accumulate behind the underground barrier wall. Installation of an additional 1,600 ft of nearshore underground barrier wall (the Willis portion of the IRM) was substantially completed in 2008.

1.5 DESIGN PROCESS OVERVIEW

The primary elements of the selected remedy as documented in the ROD, and as described above, include:

- sediment removal (dredging) and transport to the SCA;

- SCA;
- sediment capping (isolation and thin-layer) including remedial area determination and definition of dredge areas, depths, and volumes;
- water treatment system;
- nitrate addition or oxygenation of the hypolimnion;
- monitored natural recovery (MNR);
- habitat restoration and enhancement;
- institutional controls; and
- long-term operation, maintenance, and monitoring.

For most of the remedial elements described above, design-related investigations, engineering assessments, and evaluation reports were completed in advance of the preparation of this IDS Report. These were completed to assess specific elements of the remedy, advance design decisions, and to obtain concurrence with NYSDEC and USEPA on critical path components (through a series of work group meetings and conference calls). A summary of the documents pertinent to this IDS Report, available in the document repositories, is included as Table 1.1. To date, several of these assessments have incorporated community concerns as one of the critical evaluation criteria. A summary of these design components, and decisions made to ensure protection of the community and environment are discussed in Section 2.

Due to interaction between the various remedial elements, and varying design durations associated with specific components, it was not feasible to assimilate initial design-level information pertaining to all of the remedial elements listed above, into one IDS Report. Therefore, as detailed in the RDWP, the remedial design will include the preparation of four IDS Reports, which will be submitted separately. Collectively, the four IDS Reports will address all of the remedial elements listed above.

Separating the design into four submittals allows for accelerated design submittals for critical path activities (e.g., SCA and water treatment), as well as compressed agency review, in order to facilitate the schedule for starting and completing the remedial action consistent with the Consent Decree. Specifically, the design for the SCA and water treatment system can be completed on an expedited schedule to allow construction to finish in advance of the dredging, scheduled to begin in the Spring of 2012. This submittal constitutes the Dredging, Sediment Management, and Water Treatment IDS.

The content of the four IDS Reports is as follows:

- This *Dredging, Sediment Management, and Water Treatment IDS* is intended to provide initial design-level information pertaining to operational components of the remedy including the dredging, transportation, and dewatering of impacted lake sediments, and treatment of construction water generated during the process.

- The *Sediment Cap and Dredge Volume Initial Design Submittal* will include the proposed, conceptual level, design detail for the sediment cap component of the remedy. This submittal will also include the design details pertaining to habitat restoration, and will provide dredging volumes and removal areas/depths.
- The *SCA Civil & Geotechnical Initial Design Submittal* will include the civil and geotechnical design elements (e.g., liner system) required for construction of the SCA.
- The *Thin-Layer Capping, Nitrate Addition/Oxygenation, and MNR (SMU 8) IDS* focuses on the deep water areas of the lake, and will provide initial design-level details pertaining to thin-layer capping (including locations, extent, materials, and sequencing), nitrate addition and/or oxygenation for the purposes of inhibiting the formation of methylmercury within the lake, and the approach to monitoring natural recovery in specific areas of the lake.

Future design submittals and their associated submittal schedules will be developed and presented in each of the IDS Reports. In some cases, future design submittals may include components covered in prior IDS Reports. The extent of this design component consolidation achievable will be influenced by several critical factors such as schedule constraints, component design progress, and contracting strategies. Figure 1.3 summarizes the Remedial Design Components for the Onondaga Lake project.

This IDS Report includes the conceptual design of remedial aspects relating to the dredging, transport, and dewatering of sediments removed as part of the remedial activities, in addition to the treatment of dredge water generated as part of this process. This is the first of the IDS Reports to be submitted; therefore, several critical details pertaining to topics covered under this IDS which are inherently associated with another IDS Report may not be fully developed. For example, establishment of the final dredging volumes, including areas and depths, will be developed as part of the Sediment Capping and Dredge Area & Depth IDS. For the purposes of this IDS Report, an assumed dredge volume will be used, as described in Section 4. Detailed dredge plans will be developed as part of the Final Design. Interactions between IDS components such as these, and how they will be addressed within the context of this IDS Report, will be identified in greater detail in subsequent sections of this IDS Report.

1.6 INITIAL DESIGN SUBMITTAL ORGANIZATION

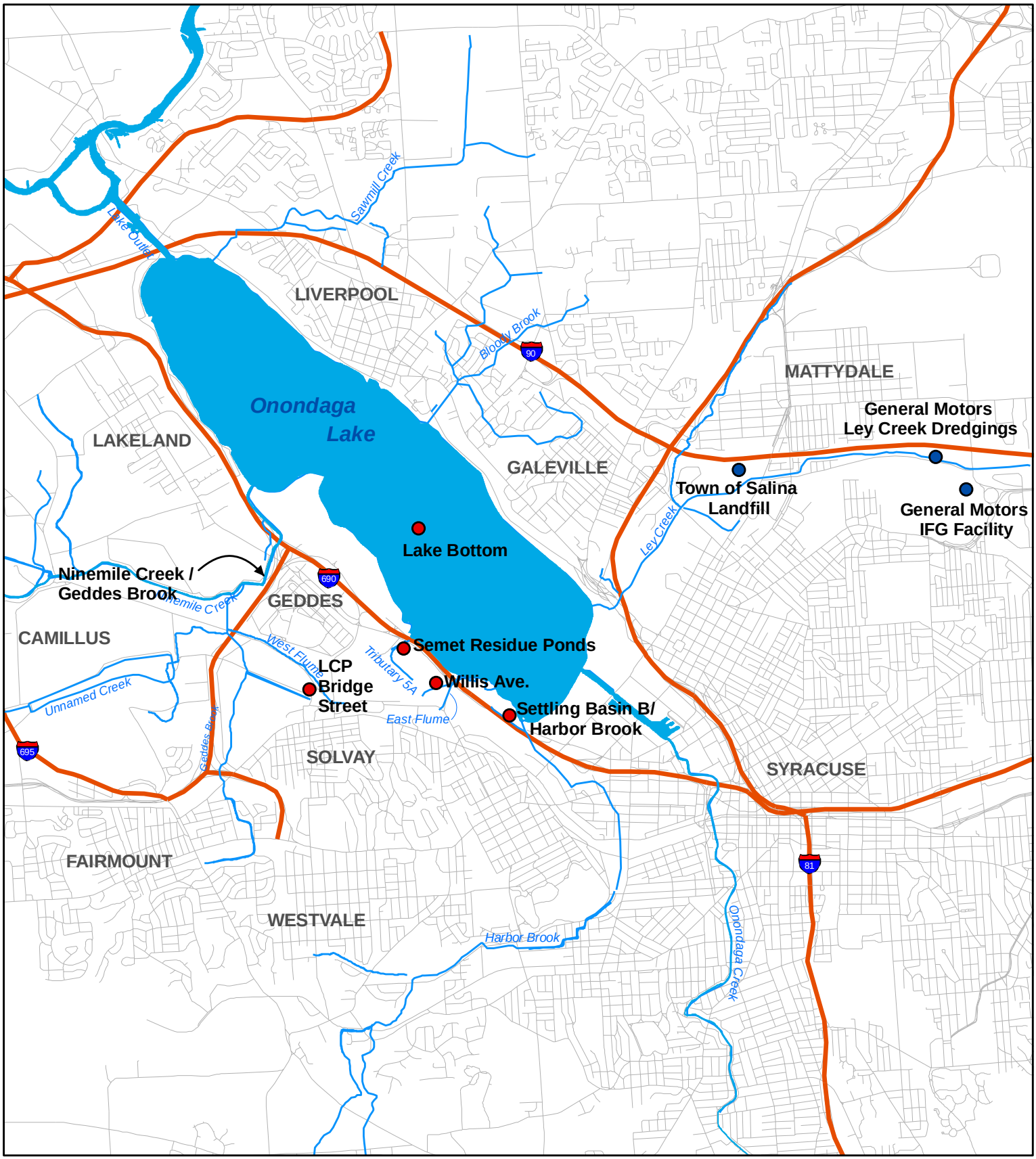
This Initial Design Submittal Report is organized into seven sections and nine appendices. A summary of each section is provided below.

- Section 1: Site Description and Design Process Overview – Presents background information, site description, remedial goals for the site, and a summary of the Remedial Action.
- Section 2: Community Protection and General Project Requirements – Highlights Honeywell's community participation efforts and presents general requirements applicable to many aspects of the project, including various Federal, State, and Local requirements, ordinances and regulations applicable to the design.

- Section 3: In-Lake Site Characterization – Presents and summarizes data collected as part of design-related and other investigations which describe the existing conditions within the lake, including properties of the material to be dredged.
- Section 4: Engineering Analysis & Design – Presents the technical evaluation and design for specific aspects of the remedy included in the Dredging, Sediment Management, and Water Treatment aspects of the project.
- Section 5: Subcontracting Strategy – Summarizes the anticipated work scope packaging, and anticipated subcontracting strategy for each work package.
- Section 6: Design Submittal and Construction Schedule – Presents the schedule for additional design submittals associated with the Dredging, Sediment Management, and Water Treatment, and presents the anticipated bidding, procurement, and construction schedule.
- Section 7: References – Lists the references used to prepare this IDS Report.

TABLE 1.1
ONONDAGA LAKE HISTORICAL DOCUMENTS

Date	Name of Document	Prepared for	Prepared by
2009, February	SCA Dewatering Evaluation Report	Honeywell	Parsons
2008, October	Draft Remedial Design Work Plan for the Onondaga Lake Bottom Subsite	Honeywell	Parsons
2008, October	Draft Citizen Participation Plan for the Onondaga Lake Bottom Subsite Remedial Design Program	Honeywell	NYSDEC, Region 7
2008, July	Onondaga Lake PDI: Phase IV Work Plan: Addendum 4: Mechanical Dewatering Evaluation	Honeywell	Parsons
2008, June	Onondaga Lake: Wind Tunnel Testing Report	Parsons	Service Engineering Group
2008, June	Onondaga Lake PDI: Phase IV Work Plan	Honeywell	Parsons
2008, June	Onondaga Lake PDI: Wastebed 13 Settlement Pilot Study Data Summary Report	Honeywell	Parsons, in association with Geosyntec
2008, May	Air Dispersion Modeling Protocol for Onondaga Lake	Honeywell	Parsons
2008, April	Onondaga Lake Phase II and III PDI: Odorant Characterization and Analysis Summary Rpt	Honeywell	Parsons
2008, March	Onondaga Lake Phase III PDI, Work Plan Addendum 7	Honeywell	Parsons
2008, January	Onondaga Lake Pre-Design Investigation: Meteorological Monitoring Program Manual	Honeywell	Parsons
2007, November	Onondaga Lake Phase 1 Pre-Design Investigation Geophysical Survey Report	Honeywell/Parsons	CR Environmental, Inc.
2007, October	Onondaga Lake Phase III Pre-Design Investigation Work Plan, Addendum 5	Honeywell	Parsons
2007, September	Cultural Resource Management Report Phase 1A CRA Onondaga Lake Project Oct. 29, 2004	Honeywell/Parsons	Christopher D. Hohman, RPA, Public Archaeology Facility, Binghamton University.
2007, August	Onondaga Lake Phase III Pre-Design Investigation Work Plan, Addendum 2	Honeywell	Parsons
2007, July	Onondaga Lake Phase III Pre-Design Investigation Work Plan, Addendum 1	Honeywell	Parsons
2007, May	Onondaga Lake Pre-Design Investigation: Phase I Data Summary Report	Honeywell	Parsons
2007, May	Onondaga Lake Phase III Pre-Design Investigation Work Plan	Honeywell	Parsons
2006, September	Onondaga Lake Pre-Design Investigation. Phase II Work Plan	Honeywell	Parsons
2006, August	Onondaga Lake : Technical Support Document for Explanation of Significant Differences	Honeywell	Parsons
2005, Aug, Sep & Nov	Onondaga Lake Pre-Design Investigation Work Plan (Phase I), Vol. 1-6	Honeywell	Parsons
2004, November	Onondaga Lake Feasibility Study Report. Draft Final	Honeywell	Parsons in association with Anchor Environmental and Exponent



Honeywell NPL Site

Non-Honeywell NPL Site

N W E S

0 0.25 0.5 1 1.5 2 2.5

Miles

FIGURE 1.1

Honeywell

Onondaga Lake
Syracuse, New York

Site Location

PARSONS

290 ELWOOD DAVIS RD, SUITE 312, LIVERPOOL, NY 13088 Phone:(315)451-9560

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