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# EXPLANATION OF SIGNIFICANT DIFFERENCES



## SEMET RESIDUE PONDS SUBSITE OF THE ONONDAGA LAKE SUPERFUND SITE Town of Geddes and Village of Solvay, Onondaga County, New York

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Onondaga County

Site No. 734008

July 2017

### 1.0 INTRODUCTION

If the need for a significant change to a component of an action is identified after the selection of a remedy in a Record of Decision (ROD), Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), and Section 300.435(c)(2)(i) of the National Oil and Hazardous Substances Pollution Contingency Plan require the publishing of an Explanation of Significant Differences (ESD) which sets forth the reasons such changes are necessary.

On March 28, 2002, the New York State Department of Environmental Conservation (NYSDEC) and U.S. Environmental Protection Agency (EPA), with concurrence from the New York State Department of Health (NYSDOH), issued a ROD that documented the selection of a remedy for the Semet Residue Ponds Subsite (Subsite) of the Onondaga Lake Superfund Site (NYSDEC and EPA, 2002). A key element of the selected remedy was the reuse of the Semet residue. Specifically, the Semet residue was to be excavated, dewatered and then thermally processed on-site to produce a soft tar product (RT-12) that would be further processed off-site to make a driveway sealer.

The selected remedy was based, largely, on data collected as part of the remedial investigation (RI) (O'Brien & Gere, 1992) for the Subsite. Subsequent to the issuance of the ROD, changes in market conditions made it no longer feasible to produce RT-12 from the Semet residue. In addition, supplemental investigations revealed that there was much less Semet residue present in the ponds than was previously assumed (O'Brien & Gere, 2009). Because of the changed market conditions and based on the new residue quantity estimates, studies to identify and evaluate alternative approaches were undertaken. A Focused Feasibility Study (FFS) (O'Brien & Gere, 2006) and an FFS amendment (O'Brien & Gere, 2017) were prepared to evaluate off-site thermal processing/reuse of the Semet residue. These documents demonstrated that off-site thermal processing for beneficial reuse is the best means to address the Semet residue.

This ESD provides the basis for the noted modifications to the remedy and will become part of the Administrative Record related to the above-noted ROD for this Subsite. The information here is a summary of what can be found in greater detail in the technical support documents and other documents that have been placed in the following repositories:

Onondaga County Public Library  
Syracuse Branch at the Galleries  
447 South Salina Street  
Syracuse, NY 13202  
Telephone: 315-435-1900

Atlantic States Legal Foundation  
658 West Onondaga Street  
Syracuse, NY 13204  
Telephone: 315-475-1170  
Please call for an appointment

NYSDEC, Syracuse Office  
615 Erie Boulevard West  
Syracuse, NY 13204  
Telephone: 315-426-7400  
Please call for an appointment

NYSDEC, Central Office  
625 Broadway  
Albany, NY 12233  
Telephone: 518-402-9676  
Please call for an appointment

Solvay Public Library  
615 Woods Road  
Solvay, NY 13209  
Telephone: 315-468-2441

Information related to the Site can also be viewed electronically on the NYSDEC web site at <http://www.dec.ny.gov/chemical/37558.html>.

NYSDEC and EPA, in consultation with the NYSDOH, have determined that these revisions do not constitute a fundamental change to the remedy selected in the 2002 ROD. The remedy, with these revisions, will be protective of human health and the environment and will comply with the federal and state requirements identified in the ROD.

## **2.0 SITE DESCRIPTION AND ORIGINAL REMEDY**

From 1917 to 1970, the Semet-Solvay Division of Allied Chemical & Dye Company (predecessor to Honeywell International, Inc.) operated the Semet residue ponds as depositories for a tar-like organic based residue generated by the acid washing of coke light oil during the production of benzene, toluene, naphthalene, xylene, and “motor benzol” at its BTX (Benzol) Plant. Prior to that time, the area was used as a settling basin for the disposal of Solvay waste, a grayish-white colored material consisting largely of calcium carbonate that was a waste by-product from the production of soda ash (Solvay waste is not a hazardous waste and was not addressed by the ROD).

The Subsite includes five irregularly-shaped man-made ponds used for the disposal of Semet residue. The Semet residue ponds cover approximately 11 acres, with depths ranging from approximately 1 to 12 feet (see attached figures), and are estimated to contain approximately 10 to 17 million gallons of waste material. The residues in the ponds consist of an organic (tar-like) and an acid phase with the organic phase containing benzene, toluene, xylene, and naphthalene at levels up to 10% and the acid phase having a pH between 1 and 2.6. There is a plume of contaminated groundwater that originates at the Subsite and migrates toward Onondaga Lake and Tributary 5A.

As an Interim Remedial Measure, a fly-ash/cement cover was applied to the Semet residue ponds to control odors and reduce air emissions. This cover was applied over Ponds 3 and 4 in 1995 and over the remaining ponds in mid-1997. Since that time, this cover material has been applied annually, at a minimum. While this cover has no significant strength or weight-bearing capacity, it has been effective in reducing odors.

A key component of the selected remedy in the 2002 ROD was the reuse of the Semet residue; after excavation and dewatering, on-site thermal processing of the Semet residue would result in the production of a soft tar product (RT-12) that would be further processed off-site to make a driveway sealer. The selected remedy also included construction and operation of a groundwater collection system and sheet pile barrier wall to prevent contaminated shallow and intermediate groundwater from discharging to Onondaga Lake and a liner and groundwater collection system to prevent contaminated shallow groundwater from discharging to Tributary 5A. The groundwater collection systems for the lakeshore and Tributary 5A were constructed in 2006-2007 and 2010-2013, respectively, and began operating following construction. Collected groundwater is being treated at a treatment facility located at the Willis Avenue Subsite prior to discharge to the Metropolitan Syracuse Wastewater Treatment Plant.

### **3.0 DESCRIPTION OF SIGNIFICANT DIFFERENCES AND THE BASIS FOR THOSE DIFFERENCES**

#### **3.1 Semet Residue - New Information**

Changes in market conditions make it no longer feasible to produce RT-12, a component of driveway sealer, from the Semet residue. In addition, supplemental investigations have estimated the volume of Semet residue to be approximately 10 to 17 million gallons, significantly less than the 80 million gallons that was previously assumed to be the volume during the RI and in the ROD. The lower volume makes off-site options potentially viable.

#### **3.2 Semet Residue – Remedy Modification and Comparison of Changes with the Original Remedy**

The ROD called for the excavation, on-site dewatering and on-site thermal processing of the Semet residue to produce RT-12 which would be further processed off-site to make a driveway sealer. As production of RT-12 has been determined to be infeasible due to changes in market conditions and reductions in volume estimates, as described above, other options were considered. These options include on-site distillation for beneficial reuse (*e.g.*, synthetic fuel recycling, on-site distillation via a rotary dryer), off-site thermal processing for beneficial reuse, on- and off-site incineration, and use as a fuel source in an on-site industrial boiler with heat recovery. While all of the options would attain the Semet residue-specific remedial action objectives set forth in the ROD (*i.e.*, prevent direct contact exposures [human and wildlife] with Semet residue and reduce volatile emissions from the Semet residue), off-site thermal processing for beneficial reuse was determined to be the most favorable for the following reasons.

The estimated implementation timeframe of off-site incineration would be much longer than off-site thermal processing due to the high BTU content of the Semet residue that restricts the volume of material that can be handled by an incinerator. On-site incineration or use as a fuel source in an on-site industrial boiler with heat recovery are not preferred due to the need for on-site or off-

site disposal of ash that would be generated and the relatively high costs compared to other alternatives.

Although on-site thermal distillation, such as synthetic fuel recycling and distillation via a rotary dryer, would limit transport of the Semet residue off-site, it would require design, construction, and operation of an on-site thermal distillation system to produce solvent and heel products and would take longer to complete and be less cost-effective than off-site thermal processing options. The implementability would depend on the availability of markets for the derived products, specifically since the demand for coal tar-based products has decreased, and market conditions are not currently favorable for reuse of the heel product, which would, therefore, require residuals management.

Off-site thermal processing for beneficial reuse would provide for reuse of the Semet residue in its original or dewatered form to fuel commercial cement kilns, reducing the need for use of fossil fuels. It would also limit on-site operations (*e.g.*, additional handling/processing of the Semet residue) and associated potential community and worker impacts (*e.g.*, air releases). Effectiveness and implementability have also been proven through demonstration projects conducted from 2014 to 2016 to provide information on material handling, thermal processing capacity, impacts of varying chemical characteristics, and efficacy of excavation and off-site blending of the Semet residue for cement kiln beneficial reuse (O'Brien & Gere, 2015 and 2016).

Under the modified remedy, the Semet residue will still be excavated, dewatered on-site, and thermally processed for reuse; the thermal processing will, however, be performed off-site instead of on-site, and RT-12 will not be produced. Many of the components of the ROD remedy and the modified remedy are similar as summarized in the FFS amendment (O'Brien & Gere, 2017). The major components of the modified remedy include:

- Excavation of Semet Residue
- On-site dewatering of Semet Residue as needed to remove free liquids for transport
- Transport of Semet Residue off-site to a Resource Conservation and Recovery Act-permitted thermal processing for beneficial reuse facility
- On-site management of process water generated from dewatering of the excavated Semet Residue
- Maintenance of temporary spray-on covers and other methods (*e.g.*, orchard fans, mist curtains, enclosures) as needed for odor and emission controls
- Community air monitoring to include an Odor Contingency Control Plan
- Fencing and site security monitoring.

#### **4.0 STATE ACCEPTANCE**

NYSDEC is the lead agency for this Subsite and has prepared this ESD. EPA has determined that this modified remedy meets the requirements for a remedial action as set forth in CERCLA Section 121, 42 U.S.C. § 9621. As such, NYSDEC, on behalf of New York State, supports this modification. The New York State Department of Health also concurs with this modification.

## **5.0 FIVE-YEAR REVIEWS**

Since hazardous substances, pollutants or contaminants remain at the Site which do not allow for unlimited use or unrestricted exposure, in accordance with 40 CFR 300.430(f)(4)(ii), the remedy for this Subsite, as modified, must be reviewed no less often than every five years. The first five-year review was conducted in September 2015. The next five-year review will be conducted on or before September 2020.

## **6.0 AFFIRMATION OF STATUTORY DETERMINATIONS**

Considering the new information that has been developed and the changes that have been made to the selected remedy, NYSDEC and EPA believe that the 2002 remedy, as revised, remains protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to this remedial action, and is cost effective. The modified remedy satisfies Section 121 of CERCLA.

## **7.0 PUBLIC PARTICIPATION ACTIVITIES**

NYSDEC and EPA are making this ESD and supporting information available to the public in the Administrative Record for the Semet Subsite. Should there be any questions regarding this ESD, please contact:

Tracy A. Smith, Project Manager  
New York State Department of Environmental Conservation  
625 Broadway, Albany, NY 12233-7013  
Phone: (518) 402-9676  
E-Mail: [tracy.smith@dec.ny.gov](mailto:tracy.smith@dec.ny.gov)

or

Robert Nunes, Remedial Project Manager  
United States Environmental Protection Agency, Region 2  
290 Broadway, New York, NY 10007-1866  
Phone: (212) 637-4254  
E-Mail: [nunes.robert@epa.gov](mailto:nunes.robert@epa.gov)

Project health-related questions should be directed to:

Mark S. Sergott, Project Manager  
New York State Department of Health  
Bureau of Environmental Exposure Investigation  
Empire State Plaza Corning Tower  
Room 1787  
Albany, NY 12237  
Phone: (518) 402-7860  
E-Mail: [beei@health.ny.gov](mailto:beei@health.ny.gov)

## 8.0 REFERENCES

NYSDEC. 2004. FS/RD/RA Order on Consent Case No. D7-0005-01-09 (Semet Residue Ponds). January 22, 2004.

NYSDEC and USEPA. 2002. *Record of Decision; Semet Residue Ponds Site; Sub-Site to the Onondaga Lake Site; Town of Geddes, Onondaga County; Site Number 7-34-008*. March 2002

O'Brien & Gere, 1992. *Remedial Investigation Report, Semet Residue Ponds*. October 1991, revised May 1992

O'Brien & Gere, 2006. *Focused Feasibility Study Revised Report; Semet Residue Ponds Site; Geddes, New York*. July 2006.

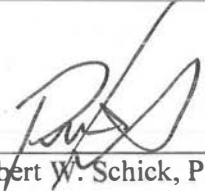
O'Brien & Gere. 2009. *Semet Residue Ponds Volume Verification Investigation, Geddes, New York*. July 2009.

O'Brien & Gere. 2015. *2014 Demonstration Program Report*. O'Brien & Gere. April 2015.


O'Brien & Gere. 2016. *2015 Demonstration Program Report*. O'Brien & Gere. October 2016.

O'Brien & Gere. 2017. *Focused Feasibility Study Amendment; Semet Residue Ponds Site; Geddes, New York*. February 2017.

July 17, 2017  
Date

  
Robert W. Schick, P.E., Director  
Division of Environmental Protection  
New York State Department of  
Environmental Conservation

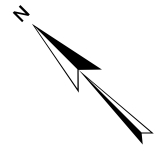
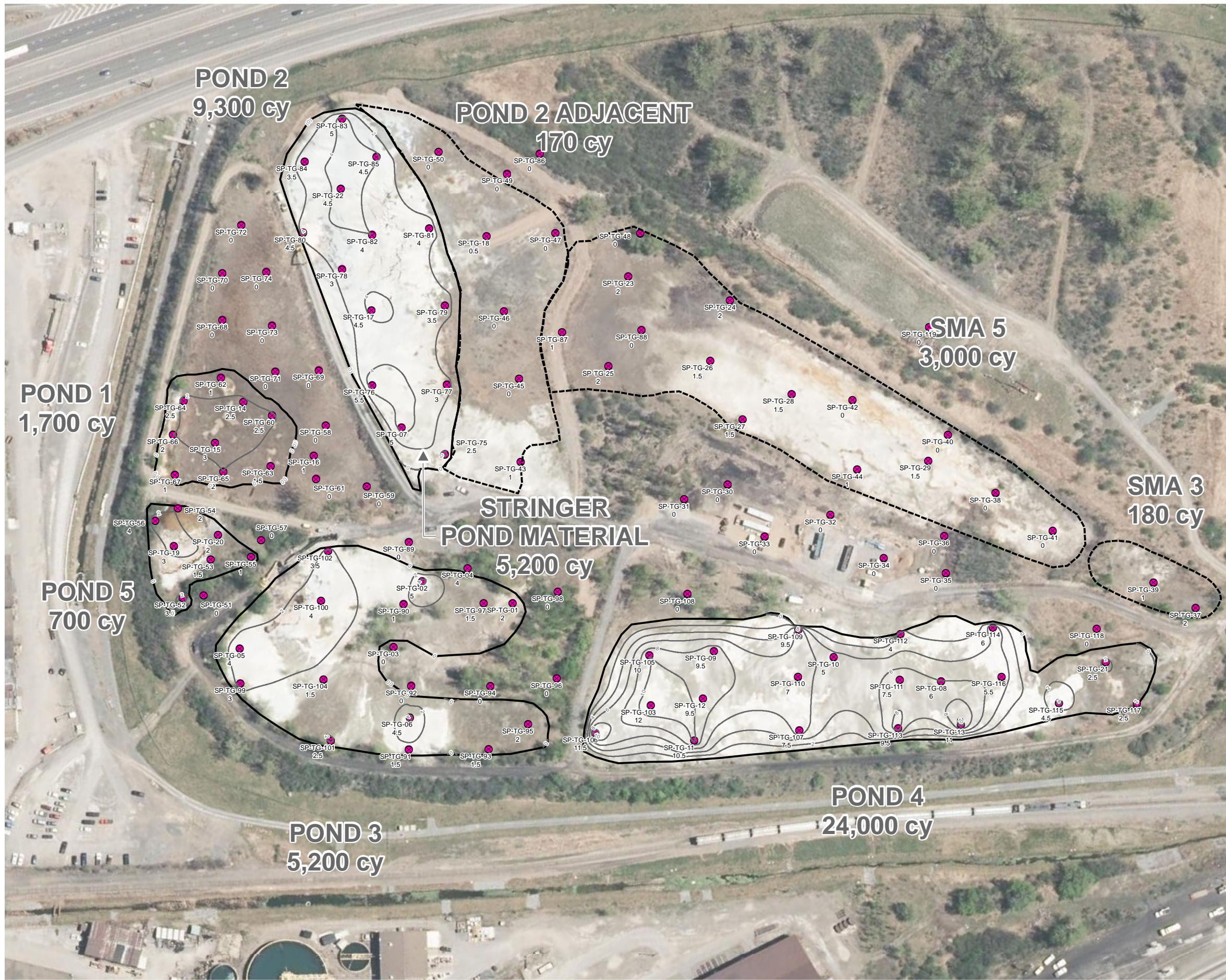
July 12, 2017  
Date

  
John Prince, Acting Director  
Emergency and Remedial Response Division  
U.S. Environmental Protection Agency



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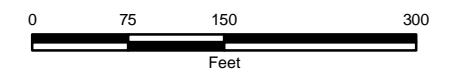
- TARGOST PROBE LOCATION
- SEMET RESIDUE 2-FT THICKNESS CONTOUR
- ▭ APPROXIMATE POND AREA CONTAINING SEMET RESIDUE (ASSUMED ZERO THICKNESS AT BOUNDARY)
- - - APPROXIMATE SMA OR ADJACENT AREA CONTAINING SEMET RESIDUE (ASSUMED ZERO THICKNESS AT BOUNDARY)

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OU1 VOLUME ESTIMATE  
BASED ON TARGOST PROBE  
DATA AND GIS MODELING.

HONEYWELL  
INTERNATIONAL INC.  
SEMETS RESIDUE PONDS SITE  
FOCUSED FEASIBILITY STUDY  
AMENDMENT  
GEDDES, NEW YORK

**SEMETS RESIDUE  
THICKNESS AND  
VOLUME ESTIMATES**



FEBRUARY 2017  
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