RESPONSIVENESS SUMMARY
FOR THE
RECORD OF DECISION
MERCURY REFINING SUPERFUND SITE
TOWNS OF COLONIE AND GUILDERLAND, ALBANY COUNTY, NEW YORK

INTRODUCTION

This Responsiveness Summary provides a summary of citizens' comments and concerns received during the public comment period related to the Mercury Refining Superfund Site ("Site") *Superfund Proposed Plan* and provides the responses of the U.S. Environmental Protection Agency ("EPA") to those comments and concerns. All comments summarized in this document have been considered in EPA's final decision in the selection of the remedy for the Site.

SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

The Remedial Investigation/Feasibility Study ("RI/FS") Report, March 2008, Proposed Plan and other documents in the Administrative Record were made available to the public in the information repositories maintained at the EPA Docket Room in the Region 2 offices at 290 Broadway in Manhattan and at the William K Sanford Town Library, 629 Albany Shaker Road, Albany, New York.

A notice of the commencement of the public comment period, the public meeting date, the preferred remedy, contact information, and the availability of the above-referenced documents was published in the *Albany Times Union* on March 30, 2008. In addition, notices were sent to the Site mailing list. The public comment period ran from March 30, 2008 to May 30, 2008. EPA held a public meeting on April 22, 2008 at 7:00 P.M. at the Fuller Road Firehouse, Colonie, New York, to present the findings of the RI/FS, the Proposed Plan, and to answer questions from the public about the Site and the remedial alternatives under consideration. Local residents, state and local government officials, and potentially responsible party (PRP) representatives attended the public meeting. In general, public comments related to EPA's choice of the remedy for the soil, groundwater and sediments given the risk at the Site, the effectiveness the chosen remedy, the sufficiency of EPA's data, and the impact of the remediation on local residents and businesses.

SUMMARY OF COMMENTS AND RESPONSES

Comments were received at the public meeting and in writing. Written comments were received from:

- David P Rosenblatt, Esq. on behalf of the Mereco Site Interim Action Working Group, May 30, 2008.

- Christopher J. Sutton, Esq. on behalf of Qwest Communications International, Inc., May 30, 2008
- Elizabeth Kerry, May 26, 2008, Private Citizen

The transcript from the public meeting can be found in Appendix V of the ROD.

Letters submitted during the public comment period can be found in Appendix V of the ROD.

A summary of the comments provided at the public meeting and in writing, as well as EPA's responses to them, are provided below. The comments and responses have been organized into the following topics:

- Ecological Assessment and the I-90 Pond
- Health and Safety
- Extent of Contamination
- The Preferred Remedy
- Operations and Maintenance

ECOLOGICAL ASSESSMENT AND THE I-90 POND

1. COMMENT: Are Inga's Pond and Rensselaer Lake contaminated with mercury? If so, did the contamination come from the Mercury Refining Site?

EPA RESPONSE: EPA does not believe that the low concentrations of mercury which were detected in the sediments of Patroon Creek, just downstream of Rensselaer Lake, and in the sediments of Inga's Pond came from the Site. The portions of Patroon Creek and Inga's Pond that were sampled are located approximately one mile upstream of the Site. The samples were collected in these locations to determine background concentrations for the Site. Metals, including mercury, occur naturally at varying concentrations in soils. In order to determine whether the mercury concentrations found at the Mercury Refining Site are naturally occurring or whether the concentrations are a result of releases from the Site, EPA must compare the levels found at the Site to background levels. The background samples showed mercury in the sediments of the Creek, but not at levels above the Site cleanup level for sediment of 1.3 parts per million (ppm). As explained in greater detail in the Feasibility Study and in the Proposed Plan, this concentration was used to identify sediments which contain enough mercury to cause harm to benthic aquatic life.

2. COMMENT: Has EPA tested any of the other animals in the area like muskrats?

EPA RESPONSE: Mercury is known to bioaccumulate in fish and animal tissue and, to a much lesser degree, in plants. The Baseline Ecological Risk Assessment (BERA) utilized biological samples from crayfish, frogs and amphipods to calculate ecological Site risks. Other organisms, which are higher on the food chain, such as the mink, the mallard and the Kingfisher were not sampled. The risks for these other

organisms were calculated using food chain modeling and were found to be acceptable for all organisms except the Kingfisher.

The BERA used a multiple-lines-of-evidence approach to evaluate ecological risk, including food chain modeling, site-specific toxicity testing and tissue analysis. Risks to fish, amphibians, birds (i.e., piscivorous, carnivorous, and insectivorous birds), and mammals (i.e., piscivorous and insectivorous mammals) were determined, as indicated above, through food chain modeling. Specific risks to the muskrat were not evaluated. Additionally, fish tissue concentrations were compared to effects-based fish tissue concentration values to indicate if mercury present in fish tissue is at concentrations which are associated with adverse effects. The food chain model used in the BERA is a widely accepted model for conducting ecological risk assessments. The approach and process of the food chain model can be found in a 1993 EPA document entitled Wildlife Exposure Factors Handbook, EPA/600/R-93/187.

3. COMMENT: EPA indicates that the upstream data bear no relation to the Site. What about the fish and wildlife that became contaminated downstream and traveled upstream? Is EPA taking into consideration the migration of wildlife?

EPA RESPONSE: The migration of wildlife is a complicating factor when performing an ecological risk assessment. EPA acknowledges that some wildlife may not stay in one location and may cover a much larger area. The home ranges of receptors were therefore taken into account in the food chain modeling performed as part of the BERA, to determine the potential adverse effects of contaminants at the Mercury Refining Site on migrating wildlife.

To protect biota from being contaminated downstream of the Site and traveling upstream, cleanup objectives have been developed for contaminated sediments which EPA believes could adversely affect the biota through direct contact or through the bioaccumulation of mercury through the food chain. EPA's BERA calculated risks for both types of exposures. The food chain model indicated an elevated risk at the Unnamed Tributary, specifically due to contaminated sediments at the Mereco stormwater outfall, for the Kingfisher. Significant risk was calculated for insects and benthic organisms through direct contact or consumption of contaminated sediments at the stormwater outfall. The outfall sediment is also a source of contamination to ecological receptors downstream. Therefore, the BERA concluded that significant risks are posed by the sediment at the Mercury Refining outfall, and they will be addressed by the remedy.

HEALTH AND SAFETY

4. COMMENT: Once the design is completed and the contractor begins work, what is the interaction between the contractor, EPA, and the local fire department or HAZMAT in case there is an incident?

EPA RESPONSE: During the remedial design, before the physical on-Site remedial action is implemented, a Health and Safety Plan will be developed to address potential hazards posed by conditions at the Site and the remedial action itself. A component of the plan will address Site communications and potential emergency situations such as fires. The local fire department will be provided with a copy of the Site Health and Safety Plan. Also an on-Site health & safety officer will be designated who will be responsible for coordinating all emergency response actions including communication with local authorities (i.e., fire department).

5. COMMENT: Are people in the immediate area of the Site at risk from dust generated from the excavations, especially on windy days? Will monitors be set up so EPA can warn the people in case of an accident? What controls will EPA have in place to protect against dust during excavation activities?

EPA RESPONSE: Dust suppressants, such as water and/or foam will be used to minimize the generation of dust and therefore the likelihood that dust particles will migrate into the community. Additionally, an air monitoring program will be implemented during the excavation work to monitor dust and contaminants such as mercury. Monitors will be placed upwind and downwind of the remediation. Certain monitors will be placed near or at the Site perimeter to allow for added protection to the community. All activities will be temporarily stopped until levels are reduced if the concentrations exceed a pre-determined threshold level which will be identified in the Site Health and Safety Plan. The levels will be set low enough to include a margin of safety so that any activities can be stopped or modified before elevated levels of mercury are released. The New York State Department of Health (NYSDOH) will assist in reviewing the monitoring plan which will include details such as the placement and operation of the air monitors and also the notification of NYSDOH in the event that any exceedances occur.

6. COMMENT: In the case of an accident, will residents, especially those close to the Site, be immediately notified? How will EPA notify nearby residents of any releases that may occur during the remedial action?

EPA RESPONSE: A Health and Safety Plan is required and will be adhered to for the on-Site workers so that appropriate action is taken to prevent injuries or accidents. An accident or an occurrence that directly affects the neighboring community on a Site such as this is unlikely to occur based on EPA's experience with other similar remediation sites. In the unlikely event of an accident, the nearby residents will immediately be notified as per the Site Health and Safety Plan. One of those safeguards is a community air monitoring plan (See Response to Comment 5, above). If a significant release were to occur, the residents in the neighborhood will be notified and appropriate action will be taken. Major and minor incidents and any associated follow-up corrective actions will be documented on-Site. Incident reports will be maintained by the Health and Safety Officer. A decision as to the best method to utilize for community notification will be made as part of the drafting of the Health and Safety Plan.

EXTENT OF CONTAMINATION

7. COMMENT: Has EPA taken into consideration unknown contamination contributed by the railroad such as pesticides used to kill weeds?

EPA RESPONSE: During the RI, EPA collected soil samples on and around the Mercury Refining property and the railroad tracks. The samples were analyzed for a full suite of organic and inorganic compounds, including pesticides. Some pesticides were found, but not at levels which would warrant a cleanup action.

8. COMMENT: Is there any impact on the residential areas north of the Site? Have they been tested?

EPA RESPONSE: Mercury was detected in the surface soil at 0.3 ppm, approximately 300 feet from the northern edge of the Mercury Refining property. This concentration is below the NYSDEC soil cleanup objective for mercury (0.81ppm) for residential properties. Another sample which was collected approximately 350 feet from the northern edge did not reveal the presence of mercury. The nearest residences are located to the north of the Site, approximately one quarter mile away.

9. COMMENT: Did EPA collect samples downstream of the I-90 Pond?

EPA RESPONSE: EPA sampled sediments beyond the I-90 Pond. The furthest downstream sample was located approximately 1,000 feet downstream of the Pond. EPA found 0.32 ppm of mercury at this location, which is well below the cleanup level of 1.3 ppm for sediments.

10. COMMENT: There is a lot of contamination in the I-90 Pond from the 1953 fallout, the NL Industries Site, and the Mercury Refining Site. Also, there have been two previous studies which indicate a high rate of cancer within a five-mile radius of these Sites.

EPA RESPONSE*:* Anyone with concerns or questions about the former NL Industries Site may contact the New York State Department of Environmental Conservation or the New York State Department of Health for more information. The NL Site is not part of the study area for the Mercury Refining Superfund Site. Consequently, no sample data were collected to evaluate risks associated with the NL Site. However, EPA analyzed sediments from the I-90 Pond and tissue from fish caught from the Pond as part of the Mercury Refining Remedial Investigation ("RI"). The data did not indicate an unacceptable cancer risk due to human exposure to the pond sediments, but it did show the possibility of a slight increase in cancer risk due to consumption of fish from the Pond. A significant portion of the cancer risk was due to the presence of polychlorinated biphenyls (PCBs) in the fish tissue samples. However, PCBs are not a contaminant of concern for the Site and therefore will not be addressed by this remedy. As discussed in the Proposed Plan and in the Record of Decision, PCBs were found in the Unnamed Tributary, Patroon Creek and the I-90 Pond.

EPA collected sediment data in 2001 and 2004 as part of the RI and the PCB data for each sample event were largely similar. The results for the 2001 event ranged from 0.41 ppm of Aroclor 1260 in the background (upstream) segment of the Unnamed Tributary to 4.4 ppm of Aroclor 1260 in sediments collected from the I-90 Pond. (Different commercial mixtures of PCBs are classified as "Aroclors," and the different Aroclor names reflect the percent chlorine (by weight) for each mixture. Aroclor 1260, for example, is 60 percent by weight of chlorine.) In 2004, the results ranged from 0.68 ppm of Aroclor 1254 in sediments from the upstream Inga's Pond to 1.1 ppm of Aroclor 1260 detected downstream in the sediments of the I-90 Pond. Another sample was collected in 2004 next to the location in the I-90 Pond where the 2001 sample detected the PCB Aroclor 1260 at a concentration of 4.4 ppm. This sample did not detect PCBs. For the 2001 and the 2004 sampling events, 4.4 ppm of Aroclor 1260 was the highest concentration of PCBs detected. Aroclor 1260, however, was not detected in the soils at the MERECO property above its screening level. This along with the detection of Aroclors 1260 and 1254 up and downstream of the MERECO property, has led to the conclusion that the PCBs detected in the sediment are not a contaminant of concern for the Site.

11. COMMENT: The Vertical Profile groundwater data collected as part of the remedial investigation overstates the magnitude of on-site groundwater contamination. Vertical Profile data are suitable only for screening purposes, not evaluation of groundwater quality. Vertical profiling utilizes a direct push tool and bailers or oscillating inertial pumps to create a surging effect that mobilizes particles which can lead to uncertain results. The NCP requires that remedial decisions be based on scientifically defensible, valid data. Screening tools such as vertical groundwater profiling devices do not produce this level of data. Only one of fifteen filtered Vertical Profile samples exceeded the groundwater standard of 0.7 ppb. The extent of mercury impact to groundwater most likely is smaller than indicated by the Vertical Profile data.

EPA RESPONSE: EPA did not rely only on Vertical Profile data but also on data for monitoring well MW-05D which clearly established that the groundwater was contaminated above the cleanup level for groundwater of 0.7 ppb. The Vertical Profile data were used to estimate the extent of the groundwater contamination to be addressed.

Vertical Profile data obtained with direct push technology (DPT) is routinely used for both screening purposes and as a means of obtaining groundwater quality data. The groundwater sampling procedure employed at the Mereco Site involved extraction of a sample at designated intervals with a peristaltic pump. New polyethylene tubing was switched in before each new sample was taken to reduce cross-contamination. The samples were analyzed at a certified laboratory in compliance with quality-assurance standards and constitute quality, defensible groundwater samples. Nevertheless, EPA anticipated that higher turbidity may be associated with DPT well points compared to monitoring wells, and that mercury tends to adhere to particles, and thus collected both filtered (dissolved) and unfiltered (total) groundwater samples. While, the results from the Vertical Profile investigation showed dissolved mercury concentrations to be less

than total concentrations, the data still indicate, along with the monitoring well data, that a plume of contaminated groundwater exists. The Feasibility Study used the sample results from the vertical sample location VPW-02 and the groundwater data monitoring well MW-05D to estimate the extent of the plume.

12. COMMENT: Mercury is not migrating off–Site and is not expected to do so. Applying solidification/stabilization (SS) is an overly conservative approach that is not warranted by the data. Furthermore, applying SS to the limited portion of the aquifer in which mercury is exceeding the groundwater standard will not restore the aquifer. Since the groundwater downgradient of the area targeted for SS treatment already meets groundwater standards, there is little benefit in applying SS. It is also likely that most, if not all, of the possible downward mercury migration has already occurred since the release of elemental mercury ceased more that two decades ago and most of the release occurred well before that time, due to changes in MERECO waste storage and disposal practices at the Site. Finally, most of the mercury is in the form of elemental mercury and there is no evidence of methyl mercury originating from the subsurface soils in the groundwater or the surface water. The low level of dissolved mercury in the groundwater is not indicative of high oxidative subsurface soils on the Site.

EPA RESPONSE: The conclusion that mercury has not migrated very far is based on data collected for the RI which confirmed that most of the plume of dissolved mercury is on the Mercury Refining property with some of the plume on the Allied Building Products property. Releases did not cease two decades ago, and are ongoing. There is also a potential for future releases.

Elemental mercury is also a highly toxic metal. The concentrated mass of mercury in Area E will not break down or otherwise be diffused through natural processes nor can the aquifer be restored through more traditional treatment of the groundwater (e.g. pump and treat or air sparging) since mercury has a strong tendency to bind to soil particles which makes in-situ removal using traditional methods impracticable. This contamination has been determined by EPA to be a Principle Threat Waste which can pose significant health risks to anyone exposed to the soil or to anyone who may consume the groundwater from Area E. The fact that the mercury contamination tends to adsorb onto the soil and is relatively immobile or that the groundwater which is downgradient of Area E does not exceed groundwater standards does not change the fact it remains a potential future threat to human health.

Because of the large amount of elemental mercury in Area E, mercury has in fact dissolved into the groundwater as evidenced by groundwater samples collected from MW-05D and from Vertical Profile sample VPW-02. Groundwater samples from both sample locations exceeded the MCL for mercury of 2 ppb and the New York State Water Quality Standard (NYSWQS) limit of 0.7 ppb. Elemental mercury also emits mercury vapor which can adversely affect construction workers who could work in Area E. The Site risk assessment calculated a significant noncancer risk (HI of 40) for construction workers who work in this area.

Simply maintaining the existing caps on-Site, as contemplated by Alternative S-2, would not address the Principle Threat Wastes posed by the mass of contamination in Area E. Section 300.430(a) of the NCP states EPA's intention to address principle threats through treatment. Passive remedial measures for addressing a principle threat, such as capping or institution controls, may be used in combination with treatment but should not substitute for treatment. By utilizing solidification and stabilization treatment technology, along with institutional controls and the maintenance of the clay cap, the Principle Threat Wastes in Area E will be appropriately addressed.

13. COMMENT: Did EPA investigate all the depths in the Unnamed Tributary of the Patroon Creek and the I-90 Pond?

EPA RESPONSE: As part of the RI, EPA analyzed the top six inches of sediment from samples collected from the Unnamed Tributary to Patroon Creek, the Patroon Creek, and the I-90 Pond (The I-90 Pond is also known as the Three Mile Reservoir). Sediments samples were also collected to a depth of one foot in the Unnamed Tributary at two depositional areas: the Mercury Refining stormwater outfall, and at a location which is a short distance downstream of the outfall. Additional sampling will be performed at the stormwater outfall prior to remediation to define better the volume of contaminated material. No additional sampling is necessary at the downstream area since it was determined not to be contaminated above the Site cleanup concentration of 1.3 ppm. At the I -90 Pond, samples were collected to a depth of 3 feet. However, EPA does not plan to collect deeper samples in the pond since the deeper sediments are isolated by the pond's top layer of relatively uncontaminated sediment which continues to thicken thereby isolating the deep, more contaminated sediments.

14. COMMENT: If the sediment contamination is down so deep, why dredge it up?

EPA RESPONSE: EPA's selected remedy specifies the removal of surficial and deeper sediments at the Mercury Refining stormwater outfall which discharges into the Unnamed Tributary of the Patroon Creek. Elevated levels of mercury exist at or near the surface at the outfall. Mercury was detected in the sediments at the outfall at 38 ppm at a depth of 2 to 4 inches and 29 ppm at a depth of 4 to 6 inches. Shallow contamination is a source of contamination to ecological receptors downstream during periods of high water flow. During these periods, the rate of surface water flow increases which in turn erodes areas of contaminated sediments and carries them downstream.

Regarding the sediments of the I-90 Pond, EPA performed an analysis of the potential for the erosion of the relatively uncontaminated surface layer and resuspension of the deeper, more contaminated sediments during flooding events such as a 100-year storm. The analysis indicated that sediments are unlikely to become resuspended during a major storm event due to the critical water velocity and shear stresses which would be induced by such a storm. Also, the top layer of sediment in the Pond continues to thicken so that the possibility of contaminated sediment migrating downstream of the Pond is unlikely. Therefore, the deeper sediments in the Pond will not be removed. Also, as

stated in the description of the selected remedy, the fish, surface water, and sediments in Patroon Creek, the Unnamed Tributary, and the I-90 Pond will be sampled to assess any future impacts on the biota on an annual basis for five years. Sampling beyond the first five years will be based on the results of the initial sampling rounds which will be reported within the first five-year review of the Site. Also, if conditions should change with regard to the I-90 Pond dam (i.e., the dam is repaired, removed, or if it should fail), EPA will evaluate the potential impact of any significant releases and, if necessary, take or require response actions to mitigate their potential impact.

15. COMMENT: Since mercury doesn't normally leach into water and since the I-90 Pond sediments are above the cleanup criteria for sediment and the concentration of mercury in the pond's surface water is low, can EPA also assume that the Site soils will never impact the groundwater?

EPA RESPONSE: The deeper soils at the Site in Area E are heavily contaminated. The levels are so high that mercury has leached from the soil into the groundwater. Therefore, EPA cannot assume that the soils will never impact the groundwater. The soils in Area E will be remediated.

16. COMMENT: EPA's Proposed Plan follows the completion of the Remedial RI in February 2003 and issuance of an amended FS in March 2008, which was prepared with admitted data deficiencies. The data compiled for the RI are insufficient to support the remedial alternative identified by EPA in the Proposed Plan. This pattern was repeated with EPA's initial selection of a preferred remedy in 2006. By failing to collect sufficient data to support EPA's preferred remedy, and by failing to reopen the RI to allow for additional data collection to support its preferred remedy, EPA has "short-circuited" the FS process in a manner which is inconsistent with the NCP.

EPA RESPONSE: Contrary to the commentor's assertion, the FS that was issued by EPA in March 2008 was not an amended FS, nor had EPA selected a preferred remedy in 2006. The commentor also asserts "admitted deficiencies," but EPA is not aware of any such admissions nor does the commentor specifically identify them**.** The commentor may have inadvertently seen an incomplete, working draft FS in 2006. However, that draft was not finalized until 2008 and no remedial decision was made prior to the issuance of the Proposed Plan. EPA does not believe that the information generated by the RI was insufficient to proceed to the FS. Section 300.430 of the NCP, states that the purpose of a Superfund remedial investigation is to collect enough data to characterize the site and to evaluate potential remedial alternatives. The RI sufficiently characterized the nature and extent of contamination at the Site which has allowed EPA to identify mercury and methyl mercury as the contaminants of concern. This information also has allowed for a complete assessment of human health and ecological risk pathways so that all Site risks have been identified. Data on the nature and extent of contamination were sufficient for EPA to perform a feasibility study which identified and screened all potential alternatives for the contaminated media. EPA therefore disagrees that the RI is incomplete.

THE PREFERRED REMEDY

17. COMMENT: Did EPA perform an analysis of how much it would cost to completely excavate the site?

EPA RESPONSE: The FS evaluated excavation as a potential alternative, but it did not pass the NCP's screening criteria for remedial alternatives. The FS found that excavation of the entire Site was not feasible because of the proximity to the railroad tracks and the depth of the contamination. The contamination in Area E is approximately 50 to 60 feet below ground surface and shoring to these depths would be infeasible. Excavation was screened out for deeper soils due to the high cost of implementation and possibly impracticability, but not for the shallower, more accessible soils.

18. COMMENT: How much soil will be excavated?

EPA RESPONSE: Based on the results of the RI/FS, approximately 2,270 cubic yards of soil will be excavated and disposed of off-Site and approximately 14,400 cubic yards will be treated in situ on-Site. In order to delineate the actual excavation and treatment areas, additional samples will be collected during the remedial design phase. The actual excavation and treatment areas may be larger or smaller than estimated during the RI/FS, but the cleanup criteria will remain the same. In addition, sampling will be performed after the remedial action is completed to confirm that the remedial goals are met.

19. COMMENT: Is EPA going to excavate any soil above 5.7 parts per million at the Diamond W. Property?

EPA RESPONSE: Yes. Figure 4-1 of the ROD shows the approximate area to be excavated at the Diamond W. Property.

20. COMMENT: Why can't EPA just place a deed restriction that says the Site can't be developed?

EPA RESPONSE: According to Section 121(b) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. §9621(b), and Section 300.430 (a)(1)(iii)of the NCP, EPA is expected to use treatment to address the Principle Threat Wastes at a site. Section 40 CFR 300.430(a)(1) (iii)(D) of the NCP states that institutional controls should not be preferred over an active response measure. Passive controls, such as institutional controls, may be used in combination with an active response action but they can not replace them. In the case of EPA's selected remedy, institutional controls will be used in combination with solidification/stabilization and excavation, to prevent exposure to soils which may not be treated or removed from the Site, to ensure that the Site remains industrial, to protect the mass of solidified soil, to prevent the disturbance of the existing clay cap and to prevent anyone from drinking contaminated groundwater at the Site.

21. COMMENT: How long will the stabilized soil remain stabilized?

EPA RESPONSE: Stabilization is a permanent treatment technology that has been used on a number of contaminated sites in New York as well as for stabilizing nuclear waste, mine waste, and other metallic contaminants. Stabilization/solidification results in an irreversible change in the mobility of the contaminant. Laboratory tests have simulated the long-term stresses associated with weathering. Long-term monitoring at other sites has confirmed that the technology can be effective. EPA and the New York State Department of Environmental Conservation are confident that, by using the proper binding agents, stabilization/stabilization will be an effective long-term remedy for Site soils. Long-term monitoring along with inspection and maintenance of engineering and institutional controls will help to ensure that future releases do not occur. As noted below in the response to Comment 33, a pilot study of this technology will be performed. EPA expects that the study will, in part, confirm the effectiveness of solidification/stabilization treatment agents in stabilizing the mercury contamination.

22. COMMENT: Is the sediment at the MERECO outfall the only sediment that will be excavated?

EPA RESPONSE: Yes.

23. COMMENT: When does EPA expect the remedial action to start?

EPA RESPONSE: EPA expects to start the remedial action (actual construction) in approximately 2 years. Prior to construction,, EPA will contact the major potentially responsible parties (PRPs) for the Site to negotiate a consent decree for their performance of the remedial design and remedial action and payment of EPA's past costs. If EPA and the major PRPs reach a settlement, the consent decree is then lodged with the Court and published for public comment. After the settlement becomes effective, the PRPs would prepare the remedial design which must be approved by EPA. If EPA cannot negotiate a consent decree, there are other enforcement options available to EPA including unilateral issuance of an administrative order and/or performance of the remedy followed by a cost recovery action.

24. COMMENT: Has any of the excavation work been done yet?

EPA RESPONSE: No excavation work has been performed in the areas targeted for excavation in the remedy. However, as discussed in the Proposed Plan and the RI/FS, some areas on the MERECO property were excavated in 1985.

25. COMMENT: Will the remedial action occupy a large area of the Allied Building Products property.

EPA RESPONSE: The selected remedy will be implemented so as to minimize the impact on Allied Building Products' operations. The area to be remediated on the

Allied Property encompasses in an area of approximately 26,000 square feet. To the extent possible, all remedial work at the Allied Property will be limited to this area.

26. COMMENT: EPA has not adequately correlated the Site's risk to human health and the environment to an appropriate alternative. EPA's preferred remedy is overly aggressive for a low-risk site. Why doesn't EPA select Alternative 2, which is cheaper, requires no disturbance, but monitors what's already in place?

EPA RESPONSE: Solidification and stabilization of contaminated soil and groundwater and excavation of lesser contaminated soils, which is the selected remedy for the Site, will be protective of human health and the environment, and will comply with applicable or relevant and appropriate requirements (ARARs), To-Be-Considered (TBCs) and other guidance. The selected remedy was evaluated against each of the NCP's nine criteria and offers a permanent solution to address the Site contamination. Alternative S2 was not selected since it would not address the mercury contamination in the soils below the existing concrete/asphalt cap or the plume of dissolved mercury in the aquifer. Therefore, the capping alternative would not be as protective to construction workers who may, in the future, come into contact with the contaminated soil or anyone who may consume the contaminated groundwater on-site.

27. COMMENT: EPA's Proposed Plan contains poorly defined remedial action objectives (RAOs). EPA should provide a more detailed description of the RAOs.

EPA RESPONSE: Consistent with EPA policy, the FS, which is part of the Administrative Record for the Site, provides a description of the RAOs for the Site. The FS derived the RAOs from a review of existing federal and New York State regulations, and guidance which apply to mercury in groundwater, soil and sediments. During the FS, EPA compared the Site data to New York State soil cleanup objectives. Consistent with EPA policy, the Proposed Plan, which is based on the FS, identifies the RAOs.

28. COMMENT: The RAOs identified in the Proposed Plan could be attained by selecting Alternative S-2 (repair and maintenance of the existing caps on the Site) as the preferred remedy.

EPA RESPONSE: As indicated in the Proposed Plan and above, the capping alternative would not completely address the RAOs for soil or groundwater nor would it address the Principle Threat Wastes in Area E of the Site. Repairing and maintaining the existing clay and asphalt caps would not effectively prevent future exposure to construction workers who could be exposed to the contaminated soils nor would it effectively prevent future consumption of contaminated groundwater. According to Section 300.430 (a)(1)(iii) of the NCP, EPA expects to use treatment as the means of addressing principle threats posed by the Site. The capping alternative also would not address the contaminated groundwater, which is classified as a 'Class GA' water body by New York State regulations at 6 NYCRR Part 701, as a potable source of drinking water.

29. COMMENT: Unacceptable human exposure does not exist at the Site. The Site is in active use and any hypothetical future risk could be controlled through the application of engineering and institutional controls. Also, New York State's Brownfield Cleanup Program specifies that the top one foot of exposed soil should not exceed the Site background values for the contaminants of concern so that it is not necessary to remove or otherwise treat soil containing mercury at concentrations which are beneath structures or capped areas or from depths greater that one foot below the ground surface to provide for industrial use of the Site.

EPA RESPONSE: Section 300.430(d)(2)(v) of the NCP requires that the remedial investigation evaluate "actual and potential exposure pathways." EPA has determined that unacceptable risk exists for the Site. In other words, the risks exceed the thresholds in the NCP. Future Site redevelopment could involve on-Site construction work below the top one foot of soil and also involve groundwater use. Both are potential exposure pathways, which would pose significant risks to construction workers or to anyone who would consume the groundwater from Area E. Application of only containment-type engineering and/or institutional controls at the Site would also not meet the preference for treatment under the Superfund program.

New York State Brownfield regulations do not apply to Superfund sites which are listed on the National Priorities List (NPL) and therefore cannot be applied to the Mercury Refining Site. However, approximately the top one foot of soils in Areas A, B, C and D of the Site does exceed the Site cleanup level for soil of 5.7 ppm and will be excavated. The actual depth of the contaminated soil will be determined by further sampling during the remedial design. This cleanup level has been established using the NYSDEC Part 375 soil cleanup objectives to be protective of human receptors at sites which are zoned for industrial use.

30. COMMENT: EPA's preferred remedy presents short-term risks to human health and the environment. The preferred remedy involves excavation, retorting and relocation of mercury-contaminated soils that do not currently present a risk to human health and the environment. Excavated soil will present an unacceptable short-term risk to humans.

EPA RESPONSE: As indicated in Section 4.2.3.5 of the FS, implementation of the selected remedy for soil and groundwater (S-3 solidification with soil excavation and institutional controls) would be performed without significant risk to the community. The Site includes private properties which are surrounded by a fence. A Site Health and Safety Plan will be developed to address any potential short-term hazards such as low-level generation of fugitive dust or contaminant emissions which may occur during construction. Operational controls, along with emissions monitoring for relevant contaminants during construction work, will be established to minimize these impacts. The Health and Safety Plan will also require Site workers to wear appropriate personal protective equipment (PPE) to minimize exposure to contamination. Therefore, any short-term risks during implementation of the remedy are expected to be minimal and can be mitigated. EPA disagrees with the commentor's assertion that mercury-contaminated

soils present an unacceptable short-term risk to human health and the environment under the Superfund Program.

31. COMMENT: The NCP requires that the FS be correlated to the achievement of the RAOs, be cost-effective, and that it employ institutional controls where appropriate. To ensure that the remedy is responsive to these requirements, EPA should reopen the RI to allow for collection of a complete data set and revisit the FS to incorporate the new data.

EPA RESPONSE: Under the Superfund program, an FS involves an analysis of numerous factors in addition to cost-effectiveness and the appropriateness of institutional controls. That analysis was done for this Site. The data collected during the RI were sufficient for EPA to perform both the human health and ecological risk assessments and to identify and screen all potential remedial alternatives in the FS. Reopening of the RI the FS or the RI/FS reports is unnecessary, since they support the remedy selected for the Site.

32. COMMENT: The application of solidification and stabilization to the mass of mercury contaminated soil and groundwater will not restore the aquifer. The process will simply make the aquifer less permeable.

EPA RESPONSE: Traditional methods of aquifer restoration such as pump and treat or air sparging would not be effective due to mercury's strong tendency to bind to saturated and unsaturated soil particles. As mentioned above in the response to Comment 12, this tendency makes in situ removal using traditional methods costly and inefficient. Solidification and stabilization will address the Principle Threat Wastes in Area E of the Site. Area E poses significant future risks to construction workers and to anyone who may consume the mercury-contaminated groundwater. Implementing the remedy will eliminate the potential for exposure to the area of contaminated groundwater. While solidification/stabilization will make Area E impermeable, the groundwater will flow around the solidified mass. Any groundwater which is not immediately treated will be restored through the natural processes of dispersion and dilution.

33. COMMENT: The complex behavior of mercury makes it a challenging contaminant to treat by solidification/stabilization. Factors which can impede the effectiveness of solidification/stabilization (SS) include: incomplete mixing, high moisture content, particle size, pH and redox potential and material inconsistencies.

EPA RESPONSE: EPA acknowledges that the complex behavior of mercury makes it a challenging contaminant to treat and many factors can affect the effectiveness of the treatment. However, the USEPA report entitled "Treatment Technologies for Mercury in Soil, Waste and Water" (USEPA, 2007), which the commentor cites, recommends solidification/stabilization for treating mercury contaminated soil and indicates that SS is the most often used treatment technology for mercury-contaminated soil and wastes. More importantly, the Mercury Refining Company performed two

laboratory-scale treatability studies using Site soils demonstrating that SS is a viable treatment technology for the mercury-contaminated soil at this Site.

Because the factors cited by the commentor can impede the effectiveness of SS, the performance of a pilot-scale treatability study will be necessary to obtain the proper formulation of SS reagent(s) and design parameters for in-situ treatment at the Site. EPA will require that the design and performance of this treatability study be under conditions that will be representative of actual Site conditions. Information obtained from this treatability study will be used to refine the design and the cost estimate of the full-scale remedy.

34. COMMENT: The treatability tests performed for the MERECO Site do not represent the actual conditions under which SS will be applied. Importantly, the tests did not demonstrate the ability of the technology to treat contamination to a depth of 66 feet. A site-specific treatability study will be needed to simulate conditions under which SS would be applied at the Site including groundwater chemistry, soil moisture and physical properties of the slurry mixes. Information from such a study could result in material increases in the cost of the remedy.

EPA RESPONSE: Treatability tests performed by Kiber (1999a) at MERECO 's request were able to stabilize soil collected from the Site with mercury contamination of 1,430 mg/kg to below the Resource Conservation and Recovery Act Toxicity Characteristic Leaching Procedure limit of 0.2 mg/L (40 CFR 261). The existing soil sample data indicates that the majority of soil at the Site contains concentrations of mercury below 1,430 mg/kg, although concentrations up to 38,800 mg/kg and elemental mercury have been observed in one borehole "hot spot." It is assumed that soils at concentrations higher than 1,430 mg/kg would also achieve a TCLP result of less than 0.2 mg/L through physical encapsulation of the contaminants which reduces the solubility and therefore the leachability of mercury. The treatability tests demonstrated that SS is a viable treatment technology for the soil on-Site. Contamination at a depth of 66 feet may only affect the method of delivering the SS treatment agents, but will not materially affect the technology.

As mentioned in the response to the above comment, pilot testing will be conducted to demonstrate the effectiveness of SS. Treatability testing would be performed using representative contaminated soil samples from the Site in order to optimize the treatment results and to achieve the desired treated waste strength and durability. As mentioned above, SS technology is not limited by the depth of contamination at the Site; solidifying/stabilization agents can be applied to contamination at a depth of 66 feet with the correct equipment.

35. COMMENT: There are no case studies demonstrating the effectiveness of in-situ solidification/stabilization of mercury contamination in the saturated zone.

EPA RESPONSE: Solidification/stabilization has been used at numerous EPA, DOD, and private party sites with mercury contamination. The EPA report, entitled

"Treatment Technologies for Mercury in Soil, Waste and Water" (USEPA, 2007), lists several sites where this technology has been successfully applied. With the correct formulation of treatment reagents and the correct equipment for delivering the reagents to the contaminated soil, this technology should successfully treat contamination to the required depth in the saturated zone. The use of either in-situ augering or grout injection could be used in and around the contaminated area. Grout injection is a technology that has been well proven in the field. The remedial pre-design and design will include engineering controls and testing for the effectiveness of the remedy including a treatability study.

36. COMMENT: Alternative S-3, which uses solidification/stabilization to treat the deeper contaminated groundwater, has the potential to exacerbate groundwater contamination during implementation.

EPA RESPONSE: EPA has included a provision in the remedy to perform a pre-design investigation to fully delineate the extent of contamination prior to implementing the remedy. Techniques to prevent off-site migration of contamination during implementation of the remedy include isolating the area to be treated by first treating the outside perimeter of the contaminated area to create an impermeable vertical barrier and then proceeding with SS treatment towards the center.

37. COMMENT: The existing buildings limit the area to which SS can be applied; mercury will remain adjacent to and beneath the buildings after treatment.

EPA RESPONSE: EPA realizes that there may be contaminated soil underneath the buildings on-Site. However, EPA does not expect that a significant amount of contamination will be inaccessible to treatment. The pre-design investigation will refine the treatment area which will include soil and groundwater that contains dissolved mercury which exceeds the New York Groundwater Quality Standard of 0.7 ppb. During the design, every effort will be made to include treatment of contaminated soil under the buildings. A geotechnical evaluation will be conducted as part of the pre-design to assess the use of angle drilling for the application of SS underneath the building(s). During the remedial investigation of the Site, elemental mercury was observed and high concentrations of mercury were detected in the subsurface soil borings. The highest levels of contamination were observed to occur within a small area along the eastern border of the property. The mercury distribution suggests that contamination in the subsurface was likely the result of spills or discharges in a fairly limited area. In addition, due to its high specific gravity, the major direction of elemental mercury migration in subsurface soils is vertically downward so that most of the contamination should not be underneath the buildings.

38. COMMENT: The need for excavation to 10 feet below the ground surface at Area D is not supported by the data.

EPA RESPONSE: Soil samples from boring SBW-5, which were collected as part of the RI, indicate the presence of mercury-contaminated soil which extends at least

to a depth of 6 to 8 feet. This location will be sampled again as part of the pre-design investigation. The exact depth of excavation for Area D will be based on the pre-design data. The excavated depth of Area C, which surrounds Area D, is assumed to be approximately the top one foot of soil based on historic and more recent sample data. However, the actual depth of contamination in Area C will also be confirmed by pre-design sampling.

39. COMMENT: The cost estimate for Alternative S-3 has a higher degree of uncertainty than for S-2, given the technology limitations and challenges associated with applying SS in the saturated zone to a depth of 66 feet. The unit cost does not reflect: 1) the increased level of effort when SS is applied at depths greater than 40 feet; 2) the fact that the greater depth may require smaller augers which would reduce the production rate; and 3) the fact that the treatability study may indicate that higher quantities of treatment agents may be required. Also, the auger spacing may need to be reduced, the treatment process may spread the groundwater contamination and the RAOs may not be met so that the treatment process may need to be repeated.

EPA RESPONSE: EPA's cost estimate was performed in accordance with standard engineering practices for developing a cost estimate and conforms to EPA's RI/FS guidance. Based on recent solidification/stabilization projects completed in EPA Region 2, EPA believes that the total estimate for the remedy falls within the required accuracy for Superfund remedy estimates of plus 50 percent to minus 30 percent. With regard to the claim that the treatment process may spread the groundwater contamination, as stated above in response to Comment 36, the design will specify engineering controls to prevent the migration or spread of contamination during implementation. An example of such controls for SS implementation may include isolating the area to be treated by first treating the outside perimeter of the contaminated area to create an impermeable vertical barrier and then proceeding with SS treatment towards the center.

40. COMMENT: The cost estimates for all the alternatives increased dramatically from the Draft FS to the Final FS.

EPA RESPONSE: The draft FS, which was never released by EPA, was a working document and, as such, did not contain the final costs estimates, the ultimate cleanup levels, nor did it specify all of the various components for each of the potential remedial alternatives. The final FS accurately reflects the final remedy, the potential alternatives, the final cost estimates as well as the final set of RAOs.

41. COMMENT: Alternative S-3 does not meet Green Remediation criteria compared with Alternative S-2.

EPA RESPONSE: While EPA supports the principles of green remediation, this initiative cannot be used as a selection criterion for a federal Superfund remedy. The only criteria that are used are the nine criteria which are set forth in the NCP for evaluation of potential remedial alternatives for a site.

OPERATION AND MAINTENANCE

42. COMMENT: The Proposed Plan says that the Site will to be reviewed once every five years. Is that for a specific duration or is that indefinite?

EPA RESPONSE: Section 121(c) of CERCLA, 42 U.S.C. §9621(c), requires that a Site be reevaluated no less than every five years whenever hazardous substances remain on-Site at levels that do not allow for unlimited use and unrestricted exposure after completion of a remedial action. This reevaluation is conducted every five years as long as hazardous substances remain on-site and have the potential to present an unacceptable risk to human health and the environment. In the case of the Mercury Refining Site, the hazardous substances will permanently remain on-Site, so five-year reviews will be ongoing. Every five years, the Site will be evaluated to ensure that the remedial action continues to be protective of human health and the environment. The five-year review will evaluate information required by the Site Management Plan including monitoring data for the Unnamed Tributary, the Patroon Creek and the I-90 Pond. If necessary, additional samples will be collected to close any data gaps which may prevent a complete review.

43. COMMENT: The I-90 Pond monitoring program is not justified since EPA has already evaluated the potential for movement of contaminated sediment during a storm event. Annual monitoring for five years, then every five years to 30 years, is more extensive than necessary, to confirm that conditions are stable.

EPA RESPONSE: As indicated in the RI/FS and the Proposed Plan, mercury was found in the deeper sediments of the I-90 Pond at concentrations which were above the RAO of 1.3 ppm. EPA performed an analysis of the potential for erosion of the Pond's relatively uncontaminated surface layer and resuspension of the deeper, more contaminated sediments, during a flooding event such as a 100-year storm. The analysis indicated that sediments are unlikely to become resuspended and move past the I-90 Pond during such an event. However, this analysis is predictive and not based on actual data. Monitoring is necessary to confirm that the contamination remains isolated.

Regarding the commentor's point that the monitoring is excessive, the remedy specifies sampling yearly for five years. Sampling thereafter would be based on a review of the first five years of data. EPA believes that yearly sampling for five years is necessary to establish enough data on which to determine whether the sediments in the I-90 Pond are adequately contained.