APPENDIX C

Responsiveness Summary

RESPONSIVENESS SUMMARY

Harbor at Hastings Site
Operable Unit No. 1
Village of Hastings-on-Hudson, Westchester County New York
Site No. 360022

The Proposed Remedial Action Plan (PRAP) for the Harbor at Hastings site was prepared by the New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), and was issued to the document repositories on October 27, 2003. The PRAP outlined the remedial measure proposed for the contaminated soil and groundwater at the Harbor at Hastings site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on November 13, 2003, which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on December 29, 2003.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the NYSDEC's responses:

Verbal Comments

The following verbal comments and questions were received during the November 13, 2003 public meeting:

General Comments Concerning the PRAP, ROD and Remedial Design

COMMENT 1: The PRAP complements the settlement reached between the Village of Hastings, ARCO and Riverkeeper. It is protective of public health and the environment, provides similar measures as the settlement, and in certain areas, provides additional protection.

RESPONSE 1: The NYSDEC acknowledges the Village of Hastings-on-Hudson's support of the PRAP.

COMMENT 2: In terms of timing, what is the plan for the release of the RODs and the implementation of the remedies for Operable Unit 1 and Operable Unit #2?

RESPONSE 2: Based on a request from the Village of Hastings, the NYSDEC extended the comment period on the OU#2 PRAP until January 28, 2004. Combined with the large volume of public comments that have already been received on the OU #2 PRAP, the NYSDEC has decided to proceed with issuance of this OU#1 ROD while the OU#2 PRAP comments are addressed and the ROD is prepared.

As far as timing, the NYSDEC expects that the OU#1 remedy will be constructed prior to the OU#2 remedy. This is desirable because it will eliminate the migration of additional contamination of the river sediments by controlling the on-site source first. The time frame for implementing these remedies will also depend on the progress of legal negotiations towards an Order on Consent for the remedial design and remedial action phases of the project.

COMMENT 3: The remedial design process should provide opportunities for continuing public comment.

RESPONSE 3: A citizen participation plan will be developed as part of the remedial design work plan that will identify the milestones and methods for keeping the public informed.

COMMENT 4: The ROD should structure the excavation depths as performance standards, rather than including a figure, such as PRAP Figure 6, in which the excavation depth in each area appears to be prescribed. Additional sampling needs to be performed to precisely delineate the excavated area, and structuring the ROD as a performance standard is the proper way to accommodate new data.

RESPONSE 4: The NYSDEC agrees in principle with this comment. The reference to Figure 6 in the ROD text has been clarified to indicate that it is a conceptual representation of Alternative 12C based on current data. The NYSDEC believes that Figure 6 should be retained in the ROD to help the public conceptualize the remedy, and other commenters have suggested that additional such figures should be included. The selected remedy, as detailed in the Declaration and Section 8 of the ROD, is based on the performance standard stated therein. The NYSDEC expects that some additional sampling will be necessary during the remedial design phase to further delineate the extent and

depth of excavation. This sampling will likely be done around the perimeter of the known area of contamination to determine whether the excavation area should be expanded. If additional areas are identified that meet the performance standard for excavation, these will be excavated.

COMMENT 5: If new data finds additional contamination, will the remedial plan be adjusted?

RESPONSE 5: See Response #4 above.

Comments Concerning the Soil Barrier System, Membrane, and Drainage

COMMENT 6: How will the impermeability of the barrier layer that is part of the deep PCB containment system hold up over time? How can the membrane be maintained in the long term if it's under soil?

RESPONSE 6: Research on the durability of geomembranes, such as high density polyethylene (HDPE), has identified and modeled the mechanisms of degradation, and the service conditions which would accelerate such degradation. Much of this research has focused on the use of HDPE as a municipal landfill liner, in which the material is in contact with leachate, and where temperatures in the landfill may be elevated due to waste decomposition. Studies that are relevant to a capping application, such as this project, indicate that the service life of an HDPE membrane is at least 200 to 400 years. Copies of the articles "Durability of HDPE Membranes" and "The Durability of HDPE Membranes" are included in the Administrative Record for reference.

COMMENT 7: Is the material for the demarcation layer of the soil barrier system specified in the PRAP? When will this be decided?

RESPONSE 7: A single material is not specified in the ROD. The alternatives developed in the FS specify an asphalt barrier, but the NYSDEC has concerns that large areas of impervious subsurface asphalt could cause unacceptable drainage problems. As a result, the ROD also provides for the use of geotextiles or other materials as the demarcation layer. The final decision will be made during the project design phase.

COMMENT 8: A 6-inch asphalt layer is preferable to snow fencing or other plastic material as a demarcation layer because it is hard and will cause a contractor to stop digging when they hit it. However, proper drainage

must be designed if asphalt is used.

RESPONSE 8: The NYSDEC agrees that proper drainage is essential. The use of permeable geotextiles, such as snow fencing, is retained in the ROD as an alternative to asphalt if these drainage issues cannot be resolved. Another concern with the use of asphalt is its common occurrence at former industrial sites. Geotextiles may be more effective as a warning layer because they are typically not encountered during excavations.

COMMENT 9: Asphalt alone should not be used as the demarcation layer. The NYSDEC should require the use of both asphalt and a membrane for this purpose.

RESPONSE 9: The NYSDEC does not see the justification for the use of a redundant demarcation layer. Asphalt deterioration is likely to result in cracking, but would leave evidence of the overall asphalt barrier still apparent. Because this layer is not intended to function as an impermeable layer, any such cracking would not reduce the effectiveness of the remedy.

COMMENT 10: How will utilities be installed and maintained to avoid damage to the soil cap? What about the "river" that runs beneath the site?

RESPONSE 10: Utilities that must be placed below the demarcation layer would have to be installed in a manner that complies with the Site Management Plan. This plan would have to address health and safety of workers and the community, restoration of the demarcation layer and soil cover, and proper management of any excavated fill. Utilities should be installed in a sufficiently large trench of clean soil, underlain by a demarcation layer, so that future maintenance can be performed without the need to encounter contaminated fill.

The "river" in this comment refers to surface water that flows down the ravine to the east of the Metro North railroad tracks and passes under the railroad tracks and the site before entering the Hudson River. This flow is directed under the tracks through a culvert and discharges into the river at an unknown location along the site shoreline, in the vicinity of the North Boat Slip. This flow will have to be maintained or improved during implementation of the remedy to avoid an unacceptable buildup of water behind the bulkhead.

COMMENT 11: The PRAP proposes to "entomb" PCBs (in the impermeable containment structure), but only to cover the other contaminants with soil. Will this allow the other contaminants to migrate to the Hudson

River? Why are the PCBs being treated more seriously than other contaminants.?

RESPONSE 11: The remedy will prevent contaminants from migrating to the Hudson River by sealing off the shoreline with a water tight bulkhead and covering surface soils with a soil cover. The PCBs are treated more seriously because their concentrations are much higher, and they would pose a much greater health risk if people were to be exposed to them.

COMMENT 12: I am concerned that without adequate surface and subsurface drainage, the site will become a bathtub, and runoff and groundwater will have no place to go.

RESPONSE 12: The NYSDEC agrees with this comment. The need for proper drainage, including active pumping of groundwater from within the containment area, was discussed in the PRAP and is retained in this ROD.

Comments Concerning Health and Air Monitoring

COMMENT 13: Who will be legally responsible if people living at the site become sick in the future?

RESPONSE 13: The NYSDEC does not handle "liability" issues relating to people who may get sick from contamination at a site. That is more in the nature of a toxic tort case. Instead, the Department's responsibility is to make sure that an appropriate clean-up of the site is completed. To the extent that the cleanup does not sufficiently address the contamination at the site, and such contamination is determined to be causing people to get sick, the Department would require appropriate additional remediation and/or controls to be performed at the site by the Responsible Parties.

With respect to the future liability of the Responsible Parties, should it be determined that contamination left at the site is causing people to get sick, generally liability in this type of case would be determined in a civil proceeding, not by the NYSDEC.

COMMENT 14: I am concerned that people, particularly the residents of Hastings, will become sick (due to contaminant exposure) as a result of the soil removal process.

RESPONSE 14: Contaminated soil will be excavated and removed from the site in a manner that minimizes the exposure to site workers and the surrounding community. Air monitoring will be performed in the work area, at the site boundary, and in the community to ensure that unacceptable levels of airborne contamination are identified and mitigated. Site-specific action levels and contingency measures will be developed in the remedial design phase to ensure that health risks to the community are minimized.

COMMENT 15: I would like to see some justification that there is less risk to public health associated with performing the proposed remedy than with leaving the site in its current condition. If the risk to the community is greater to have the contamination removed than to leave it in place, then it should not be removed.

RESPONSE 15: The February 2001 Human Health Risk Assessment (HHRA) determined that the cancer risks associated with potential future uses of the unremediated site exceed New York State's guideline of 1 in 1,000,000 (10^{-6}). For the park and commercial/industrial scenarios, the excess cancer risk was estimated to be 1 in 1000 (10^{-3}), and for the residential scenario, the risk was estimated to be 1 in 100 (10^{-2}). These estimates are presented in Table 5-1b of the HHRA.

The HHRA also estimated potential exposures and the associated risks for maintenance workers who could breathe contaminated dusts over the long term under an uncontrolled future use scenario. This exposure scenario is different than potential community exposures during short term removal operations, but provides a conservative reference point for comparison. Short term community exposures during excavation are expected to be less than long term maintenance worker exposures. For the latter, inhalation of particulate fill particles is estimated to result in an excess cancer risk of 1.3 in 1 million (1.3×10^{-6}). This is presented in the "Attachment to Appendix" of the HHRA, page 15 of 18. The Hazard Quotient, which evaluates non-cancer health effects, is 0.016 for this scenario, well below the target Hazard Quotient of 1.0 (Attachment to Appendix, page 16 of 18).

In summary, the risk associated with long term inhalation of contaminated dust by maintenance workers was estimated to be much less than the risks associated with future residential, recreational or commercial use of the unremediated property. With proper implementation of a Community Air Monitoring Plan, the short term risk to the community during excavation will be much less than the long term risk to maintenance workers.

COMMENT 16: What is the basis for the 100 ng/m^3 action level for PCBs in ambient air

that is included in the Community Air Monitoring Plan in Appendix B?

RESPONSE 16: Appendix B is a generic Community Air Monitoring Plan (CAMP) that is included in the ROD as an example for the community and a baseline for the development of a site-specific CAMP. The 100 ng/m^3 action level for PCBs is a level that the NYSDEC has used on recent PCB removal projects. An ambient air PCB action level is also currently being developed for the Upper Hudson River remediation project. Rather than setting this action level in the ROD, the site-specific action level will be developed and documented during the remedial design phase.

For comparison, the EPA developed a screening level for PCBs in ambient air to interpret the results of air monitoring conducted after the September 11, 2001 World Trade Center attack. This screening level is 730 ng/m^3. According to EPA, this screening level is set well below exposure levels shown to cause cancer in animals, as well as those associated with any other health effects, based on continuous exposure for one year.

Another comparison is the exposure concentration used in the HHRA to model the hypothetical exposures to the maintenance worker, as discussed in Response #15 above. The subsurface fill exposure level used is 9.6 x 10^{-4} mg/m^3 of combined Aroclors 1254 and 1260, which is equivalent to 960 ng/m^3. [Attachment to HHRA Appendix, Table "Estimated Concentrations (mg/m^3) in Ambient Air", page 1 of 1] As discussed in Response #15, this resulted in an excess cancer risk of 1.3 in 1 million to the maintenance worker.

COMMENT 17: Will air monitoring continue after the construction phase is complete?

RESPONSE 17: The NYSDEC does not foresee the need for post-construction air monitoring. However, any excavation activities in contaminated fill that are conducted during the post-construction monitoring and maintenance period will likely be required to monitor for air quality.

Comments Concerning Building Piles

COMMENT 18: Will any new buildings constructed at the site be supported by piles driven through the fill? What kind of monitoring will be done for penetrations of the soil cover by new building piles? Would it be safer to build on top of the existing foundations so that new piles don't have to be driven through the fill?

RESPONSE 18: New buildings constructed at the site will need pile-supported foundations

for long-term stability. Modern designs typically do not employ wooden timber piles, but rather steel columns or concrete-filled steel tubes. Steel H piles are less likely to carry down contaminated fill as they are driven than wooden timber piles due to their profile. Steel-jacketed concrete piles would likely be installed by augering in hollow steel tubes and then filling them with concrete, rather than driving or vibrating the filled pile. This would cause contaminated fill to be brought to the surface by the augers, rather than driving the contaminants downward. As with any excavation, contaminated fill brought to the surface must be managed in accordance with an NYSDEC-approved site management plan.

Penetrations beneath the soil cover system will have to be documented by "as-built" drawings of their location and a description of their installation. The NYSDEC will require compliance with the Site Management Plan.

Provided that existing foundations are adequate to support new construction, it would be preferable to use them and avoid any penetrations of the marine silt layer.

COMMENT 19: Will the existing piles eventually disintegrate, and will this open a conduit for PCBs to migrate down to the Basal Sand aquifer?

RESPONSE 19: Many of the existing piles at the site have been there for more than 100 years and are still functional. Piles that support buildings are expected to have a much longer life than piles installed along the shoreline, which are subject to much more physical weathering along with insect and bacterial action. Piles beneath buildings will eventually decompose, but this will happen very slowly, allowing the Marine Silt to fill into any voids that are created. It is unrealistic to expect that a conduit through the Marine Silt could be created by disintegrating building piles.

COMMENT 20: Could the installation of new piles drive contamination down into the Basal Sand aquifer?

RESPONSE 20: See Response #18 above.

COMMENT 21: If concrete jacketed piles are used for new construction, I am concerned that the salt water of the Hudson River will corrode them.

RESPONSE 21: The sealed shoreline bulkhead will further minimize the potential for saline or brackish water to infiltrate into the site.

Comments Concerning the Shoreline Bulkhead

COMMENT 22: Who will be responsible for the repair and replacement of the bulkhead in the future?

RESPONSE 22: The NYSDEC will negotiate an Order on Consent with the responsible party for the design, construction, monitoring and maintenance of the remedy. If ARCO enters into this Order on Consent, they would be responsible for the maintenance of the bulkhead as an element of the site remedy.

COMMENT 23: Will cathodic protection of the shoreline bulkhead, as specified in the PRAP be extended to the section that has already been built along the southern shoreline? Will the design of the new bulkhead be the same as the southern section?

RESPONSE 23: Yes, cathodic protection will be installed on the entire shoreline bulkhead, including the section along the southern shoreline that has already been installed. The design of the new bulkhead will generally be the same as for the southern section. Potential differences will be the final height of the steel (see Comment #52 below), and the need for hydraulic relief to avoid groundwater accumulation behind the barrier wall. The latter may result in design variations along certain sections of the wall to allow filtered water to pass.

COMMENT 24: Is the existing southern bulkhead 5 feet higher than the land behind it, or will it have to be raised to accommodate the soil cover? I don't want a sloped surface down to the bulkhead because the shoreline won't be usable.

RESPONSE 24: This comment was repeated in a letter. Please see response #52 below.

Other Comments

COMMENT 25: How do we know the annual certification will be truthful? Who is responsible for reviewing and approving the annual certification, and will there be any verification of it?

RESPONSE 25: Generally, the NYSDEC will rely on a licensed professional, such as a registered Professional Engineer, to prepare and certify the annual certification of institutional and engineering controls. That professional would risk being fined or disciplined, or potentially losing their license for

making false statements. At a minimum, the NYSDEC will be responsible for tracking and reviewing the annual certifications.

COMMENT 26: Benzene is a potent carcinogenic chemical that has not been given sufficient attention in the PRAP.

RESPONSE 26: Benzene was detected in only one sample collected from the site. This was in the liquid elastic matrix found in one monitoring well in the Northwest Corner. The presence of benzene and toluene in this more fluid sample of elastic matrix led ARCO and the NYSDEC to conclude that this was a remnant of the original solvent in which the Aroclor was dissolved. Because benzene was only found in one sample, and because this sample also contained a very high concentration of PCB, benzene will be addressed by the overall site remedy.

COMMENT 27: Has stabilization of inorganic contamination, particularly lead and arsenic, been considered? What about the use of HRC, ORC and MRC to degrade or bind the contaminants in place?

RESPONSE 27: Please see responses #28 and #31 below.

COMMENT 28: Have alternative treatment methods been considered for the excavated soils, other than disposal at a landfill?

RESPONSE 28: Solidification/stabilization of excavated fill was considered in the Feasibility Study, but was not retained because it is significantly more costly than landfilling. In-situ (in-place) solidification was not retained because the high organic content of the fill and the saline/brackish groundwater conditions would reduce the effectiveness of the solidification process. Treatment or incineration of all or some of the excavated fill may be necessary to comply with land disposal restrictions or other EPA regulatory policies. This will be addressed during the remedial design phase.

COMMENT 29: Why is the NYSDEC allowing a higher concentration of PCBs in groundwater than in soil?

RESPONSE 29: The NYSDEC is not allowing higher concentrations in groundwater. The groundwater standard for PCBs in groundwater is 0.09 parts per billion (ppb), while the cleanup objective for soils is 1,000 ppb (1.0 ppm) at the surface and 10,000 ppb (10 ppm) in the subsurface. A higher level of PCBs in subsurface soils is acceptable because direct human exposure is less likely than for surface soils. The subsurface cleanup objective is established based on the soil concentration (10,000 ppb PCB) that would

enable the groundwater moving through it to meet water quality standards (0.09 ppb PCB).

COMMENT 30: Provisions for a citizen's volunteer monitor, both during construction and in the long term, should be included in the remedy.

RESPONSE 30: It is not clear what is envisioned by "monitoring" in this comment. The NYSDEC would welcome citizen monitoring of long-term compliance with the institutional controls to be enacted at the site. However, the NYSDEC would have concerns with citizens performing air or other media monitoring, in which proper training, particularly health and safety training, is required.

Written Comments:

The following written comments were received during the public comment period:

Mr. Jacques Padawer submitted a letter dated December 6, 2003 which included the following comments:

COMMENT 31: The remedy should include the use of Oxygen Release Compound (ORC), Hydrogen Release Compound (HRC), Metals Remediation Compound (MRC) and bacterial enrichment to address metal contaminants, including arsenic and chromium, that are not removed from the site.

RESPONSE 31: ORC is an applicable technology for treating arsenic that is dissolved in groundwater under chemically reducing conditions, and which is migrating from a source area. These conditions typically occur in leachate from municipal landfills where arsenic-bearing wastes were disposed. The technology works by raising the redox conditions of the aquifer, precipitating out iron that is also dissolved in groundwater, and causing the arsenic to adsorb onto the iron precipitate. The technical literature provided by the ORC vendor states that lead is also adsorbed by this process, but that zinc and cadmium are less adsorbed. Similarly, MRC is a technology for removing dissolved metals from groundwater and immobilizing them as insoluble sulfide minerals. HRC is primarily used for treating chlorinated solvents and nitrogen-bearing contaminants. Although the vendor's literature suggests HRC can treat chromium and certain other metals, it provides no detailed information or case studies in this regard.

Groundwater monitoring data from the Hastings site indicates that arsenic does not exceed water quality standards in dissolved form; it exists

primarily in particulate form without ORC or MRC treatment. Use of this technology would not address the direct exposure of future site users to contaminated soils, nor would it address the migration of particles through groundwater and into the Hudson River. As a result, the soil cover and shoreline bulkhead would still be required.

The vendor's technical literature also states that this technology is effective, provided that oxidant can be delivered to the soil volume of interest. It is questionable whether oxidant could be effectively delivered to the widespread area of inorganic contamination that exists at the site. Chemical oxidants are also preferentially consumed by organic matter in the soil matrix. The fill material at this site contains an average of 10.2% total organic carbon, indicating that a significant amount of the oxidant would be consumed by the formation before iron would begin to be oxidized.

Due to the current lack of dissolved arsenic contamination, the unlikely ability to effectively deliver oxidant to the formation, and the fact that a cover system and shoreline barrier would still be necessary, the NYSDEC does not believe that ORC and MRC are feasible technologies for this site.

COMMENT 32: The variable concentration of lead at different depths may be due to the differing retention qualities of the fill. High levels of lead at intermediate depths may have been caused by the leaching of process-related wastes that were preferentially retained by the fill at these depths. Similarly, arsenic contamination may be attributed to wire manufacturing process, since arsenic was used to increase the ductile properties of copper in wire drawing.

RESPONSE 32: The NYSDEC agrees. The text of the ROD has been modified accordingly.

COMMENT 33: Lower molecular weight Aroclors, which were reportedly found in the southern portion of the site, are more mobile and more toxic than the Aroclor 1260 found in the northern areas. Where do these lower molecular weight Aroclors come from, and what are the Aroclors involved?

RESPONSE 33: The lowest molecular weight Aroclor reported in the southern part of the site was Aroclor 1254. These may be related to the storage of transformers in this area of the site.

COMMENT 34: Interviews with surviving Anaconda workers should have been conducted as a source of additional information.

RESPONSE 34: The NYSDEC reviewed the depositions of former Anaconda employees, the records held by the Hastings Historical Society, and received written comments from several former Anaconda employees. These provided valuable information concerning past operations.

COMMENT 35: Both asphalt and a membrane should be used for added safety and redundancy.

RESPONSE 35: It is unclear whether this comment pertains to the design of the containment cell or the soil cover system. Please also see Responses 7 and 9.

Mr. Werner Sicvol of Atlantic Richfield Company (ARCO) submitted a letter dated December 23, 2003, supporting the proposed remedy and offering the following comments:

COMMENT 36: As part of ARCO's Consent Decree negotiations with the Village of Hastings and Riverkeeper, public meetings were held, and a public comment period was provided. Examples of favorable public reaction were attached to the comment letter, along with the final Consent Decree, an expert report and an analytical data package. ARCO requests that these documents be included in the Administrative Record for the site.

RESPONSE 36: ARCO's letter and associated attachments will be included in the Administrative Record for the ROD, as are all written comments received on the PRAP.

COMMENT 37: Recent sampling results of soil material in floor drains and pipe locations in Building 52 indicate that PCBs exceed their soil cleanup objective. These locations should therefore be required to be remediated in accordance with the framework established in the PRAP.

RESPONSE 37: The NYSDEC agrees that the area in question meets the criteria for excavation in this ROD. Additional sampling in this area may be necessary to fully delineate the extent of required excavation.

Ms. Eileen Badell, owner of the Hudson Valley Health & Tennis Club and the restaurant Blu, submitted a letter dated December 23, 2003 which included the following comments concerning Operable Unit #1:

COMMENT 38: Air monitoring should be conducted throughout all remedial work to ensure the health and safety of the community, specifically patrons and employees of the restaurant and tennis club that lie in close proximity to the northwest corner of the site.

RESPONSE 38: Based on the proximity of the restaurant and tennis club to the areas of highest contamination and prevailing wind direction, this location is a likely "community occupied structure" targeted for PCB monitoring during remediation activities, as discussed in the generic Community Air-Monitoring Plan (Appendix B). As discussed in Response 48 below, the details of the site-specific air monitoring plan will be developed during the remedial design phase.

COMMENT 39: The permanency and aesthetics of the land remediation and bulkhead construction should be considered with respect to the preservation of a rustic waterfront. Plans for these activities should be developed in consultation with the community.

RESPONSE 39: The permanency of the land remediation and bulkhead construction is an important aspect of the remedial program for this site. The NYSDEC will develop, or require ARCO to develop, a Citizen Participation Plan to keep the public informed during the design and construction phases of the project.

COMMENT 40: For any operations conducted on her property, written access agreements or easements must be obtained.

RESPONSE 40: The NYSDEC agrees with this comment, and typically executes Temporary Use and Occupancy agreements with landowners for State-funded construction activities conducted on private property. For work conducted by responsible parties, such access agreements are the responsibility of the private parties involved.

Ms. Lisa Rosman of the National Oceanic and Atmospheric Administration (NOAA) submitted a letter dated December 24, 2003 which included the following comments concerning Operable Unit #1:

COMMENT 41: The PRAPs are difficult to evaluate. So many alternatives were presented that it is difficult to evaluate the relative merits of each. Diagrams should be included that highlight the areas targeted under each alternative.

RESPONSE 41: For more detailed information concerning each alternative, including figures showing the areas targeted, the reader is referred to the Feasibility Study.

COMMENT 42: The detailed discussion of the Alternative 12 group should clarify that surface soils exceeding 1 ppm PCB would be removed along with subsurface soils exceeding 10 ppm PCB at the various depths.

RESPONSE 42: The ROD has been revised accordingly.

COMMENT 43: The status of on-going IRMs should be discussed relative to the Alternative 12 group, as they are for the other alternatives presented. These include IRMs to recover PCB-contaminated oil from the water tower area and interim cover in the Northwest Corner of the site.

RESPONSE 43: For all alternatives that would remove PCB-contaminated soil to a depth below the water table, the NYSDEC expects that all floating oil will also be removed. Similarly, the excavation and backfill provided by the Alternative 12 will remove the contaminated fill and interim cover that was placed on the Northwest Corner of the site, and replace it with at least 14 feet of clean fill (9 feet of backfill plus 5 feet of a soil cover system). As a result, neither IRM will be continued after the remedy is completed.

COMMENT 44: Alternatives 11 and 12 should discuss the removal of the "elastic matrix" of highly contaminated material. The PRAP should clarify how the elastic matrix will be addressed by the proposed alternative.

RESPONSE 44: Alternatives 11 and 12 were developed based on excavation depths and the associated technical feasibility and balance of criteria. The elastic matrix would be removed to the extent that it is within the excavation depths associated with each alternative and sub-alternative. Elastic matrix that is present below the targeted excavation depth would not be removed, and would be managed by the long-term containment system. The ROD was revised to reflect that high concentrations of PCB, including elastic matrix, would remain at the site.

COMMENT 45: The PRAP does not provide the most comprehensive remedy available, and addresses only 45% of the mass of PCBs present in soils at the site. NOAA supports Alternative 4, which removes 99% of PCBs from the site, along with lead hot spots, and would provide an impermeable cap. This would minimize the future migration of contaminants to the Hudson River.

RESPONSE 45: As discussed in the PRAP, the NYSDEC believes that the risks associated with extensive, deep excavation do not justify the additional removal of PCB mass from the site. These risks include the risk of additional releases to the Hudson River. With proper monitoring and maintenance of the selected remedy, the future migration of contaminants to the Hudson River will be eliminated.

COMMENT 46: Of the Alternative 12 group, both Alternatives 12A and 12B would remove a higher percentage of PCBs from the site with an insignificant

increase in cost. These alternatives should be given further consideration.

RESPONSE 46: As discussed in the PRAP, the additional excavation to remove higher percentages of PCB mass from the site does not change the need for long-term containment, nor the size of the containment area. Excavation below 9 feet requires the use of jet grouting, which adds to the unit cost of excavation. The cost to excavate an additional 3 feet would be $11.7 million, and would be $14.5 million for an additional 6 feet. These costs are significant, and are not offset by any significant benefit, such as a reduction in the area requiring long-term management. Because the NYSDEC believes that this remaining contamination can be effectively managed, Alternatives 12A and 12B were not selected.

COMMENT 47: The long term monitoring program should target areas where contaminants will remain. Both soil and water samples should be analyzed for PCBs and metals. Surficial soil sampling should also be conducted in areas where an impermeable cap is not constructed to evaluate the potential for contaminant runoff into the Hudson River.

RESPONSE 47: The NYSDEC generally agrees with this comment. Section 8 of the ROD is revised to clarify that the soil cover must also be inspected and maintained as necessary to ensure it functions properly. However, the utility of sampling the surface of the clean cover system to evaluate surface runoff over the long term is questionable. Provided that this material does not become contaminated during construction activities, the likelihood of site-related contamination migrating through 2 feet of soil is minimal. The site will comply with applicable requirements for point source and non point source runoff to the Hudson River.

Mr. Rich Schiafo of Scenic Hudson submitted a letter dated December 29, 2003 which expressed general support for the proposed remedy, and included the following comments concerning Operable Unit #1:

COMMENT 48: The remedial design process should be open and transparent, and should provide specific opportunities for public input in shaping the remedies.

RESPONSE 48: The NYSDEC agrees. Specific milestones will be identified in the Citizen Participation Plan for the remedial design phase for the distribution of design documents to the community. The NYSDEC recognizes that air monitoring is a particular concern of the community, and commits to developing the air monitoring plan with community input.

COMMENT 49: There is concern that the PCBs remaining at the site pose a potential threat to the Hudson River and future users of the property. The NYSDEC

should pursue the alternative excavation methods outlined in the PRAP for removing small pockets of deep contamination. Small-scale flooded excavations should be evaluated for the three areas outside of the containment area that contain PCBs greater than 10 ppm at depths exceeding12 feet.

RESPONSE 49: The provisions in the PRAP that relate to alternative excavation methods remain as elements of the selected remedy.

COMMENT 50: Deep excavation can occur in areas of the northwest corner and northern shoreline that did not contain pile-supported structures. One of the PRAP's principal arguments against flooded excavation is the presence of piles and the risks associated with pulling them during excavation. An excavation approach using reinforced sheetpiles and grout injection could make deep excavation possible in areas where no piles are present.

RESPONSE 50: While the presence of piles is a particular concern that could result in the release of contaminants, it is not the only factor that makes flooded excavation more difficult. The presence of turbid, contaminated water makes the excavation difficult to monitor and control, and is likely to re-contaminate the clean soil used to backfill the hole. Also, Figure 1-3 of the Feasibility Study indicates that most of the 1.3-acre area where deep contamination is present contains piles that were apparently associated with historical buildings, docks, and bulkheads. If deep excavation were attempted in areas where no piles are present, this would result in pockets of removal, and an irregularly-shaped containment structure for the remaining contamination.

COMMENT 51: The grading and drainage of the soil barrier system are important for controlling runoff and infiltration. The stormwater collection system should be carefully designed to protect the water quality of the Hudson River.

RESPONSE 51: The NYSDEC agrees.

COMMENT 52: The southern bulkhead that was installed as an IRM in 2000 must now accommodate the 5 feet of cover that results from the Riverkeeper/Village/ARCO settlement agreement. Scenic Hudson recommends that a new bulkhead be installed outboard of the IRM bulkhead that is 5 feet higher, so the cover can be properly placed behind the wall.

RESPONSE 52: The southern bulkhead IRM was installed approximately 2.4 feet higher than the existing surrounding grade, and can accommodate some of the

added cover material. Details as to how the cover system will be integrated with the existing bulkhead and new shoreline containment system will be determined during the design phase.

COMMENT 53: The new shoreline barrier should be designed with an outer bulkhead and tiebacks sufficient to support the future berthing of vessels. Berthing vessels directly to the shoreline barrier could damage the integrity of the containment system. An institutional control should be added to protect the shoreline bulkhead barrier against damage from the berthing of vessels.

RESPONSE 53: The NYSDEC agrees that this is an important consideration. The ability of the bulkhead to withstand stresses and impacts from berthing will be evaluated during the remedial design phase, along with the need for additional structures and/or institutional controls to protect the barrier.

COMMENT 54: The OU1 PRAP does not clearly describe how the excavated soils will be handled. Will the dewatering facility be designed for both remedial projects (OU#1 and OU#2)?

RESPONSE 54: The "Excavation Alternatives" sidebar summarizes how the excavated soils will be handled on-site, transported off-site and disposed. Additional detail may also be found in the Feasibility Study. Because the soil type and moisture content of OU#1 excavated soils and OU#2 dredged sediments are widely different, the dewatering facility is not expected to be shared by both projects. However, certain process elements, such as filter presses, lime addition and carbon filtration units may have use in both treatment trains.

COMMENT 55: Annual certification of the institutional controls is essential. The NYSDEC should work closely with the Village of Hastings-on-Hudson to ensure that they are strictly enforced.

RESPONSE 55: The NYSDEC agrees.

COMMENT 56: The PRAP does not clearly state how long monitoring and maintenance will be required. Scenic Hudson recommends a minimum of a 100-year monitoring and maintenance program.

RESPONSE 56: As stated at the beginning of Section 7, for alternatives with an indefinite duration of long term monitoring and maintenance, a convention of 30 years is used for the purpose of cost comparison. This does not imply that these activities will cease after 30 years. Monitoring and maintenance of the remedy for this site will continue until the remedial goals for the site

are fulfilled and the NYSDEC, in consultation with the NYSDOH and community, determines that they are no longer required.

COMMENT 57: A comprehensive air monitoring program should be set up during the design phase to establish a baseline for assessing impacts during remedial construction. The Community Health and Safety Plan should provide a mechanism for keeping the community informed about health and safety issues, including air monitoring during the construction phase.

RESPONSE 57: The NYSDEC agrees.

COMMENT 58: Other community issues, such as noise, odor and traffic should be part of the Community Health and Safety Plan.

RESPONSE 58: Odors associated with remedial activities are typically addressed in Community Health and Safety Plans (CHASP). Noise and traffic are beyond the scope of the CHASP, and the NYSDEC typically defers to municipal ordinances regulating these concerns.

COMMENT 59: Releases of contaminants to the Hudson River should be minimized during the remedial construction. There should be baseline, short term and long term monitoring of both the fill and the river for all contaminants of concern to assess the performance of the containment system.

RESPONSE 59: The NYSDEC agrees.

COMMENT 60: There does not appear to be a sufficient number of samples to accurately characterize the concentrations of contaminants throughout the entire 30-foot (+) depth of soil. During the remedial design, data should be collected at least every 5 feet in key areas of the site.

RESPONSE 60: The NYSDEC believes that there are a sufficient number of samples to characterize the nature and extent of contamination at the site, and to develop a conceptual excavation remedy. Certain areas of the site may have data gaps that preclude an accurate delineation of the excavation area. These areas will be identified and sampled as necessary during the remedial design phase. Because the depth of excavation is limited by feasibility, the NYSDEC does not expect to sample the full 30-foot (+) depth of soil in this effort, but rather only those depths that would potentially be excavated.

COMMENT 61: More data on groundwater flow volume and velocities are necessary to design the containment system.

RESPONSE 61: The NYSDEC agrees with this comment. The groundwater flow regime must be thoroughly evaluated and, if necessary, modeled during the design of the containment system and the shoreline bulkhead. This is necessary to properly design the groundwater diversion and relief structures, or any groundwater withdrawals that may be necessary to prevent groundwater from accumulating within the containment area or behind the shoreline bulkhead.

COMMENT 62: To address the deep contamination that will be left at the site and the movement of groundwater that may transport contaminants to the Hudson River, was the feasibility of installing recovery wells considered? Was the feasibility of a tunnel and drain system, as is proposed for the GE Hudson Falls plant site, considered for this site?

RESPONSE 62: The feasibility of installing recovery wells as a remedy for deep PCB contamination was not considered because this contamination is not significantly mobile. Due to Aroclor 1260's very low solubility (2.7 ppb), it is not realistic to expect that groundwater pumping would remove significant amounts of PCBs. However, groundwater pumping may become necessary to prevent groundwater from accumulating within the containment area or behind the shoreline bulkhead. The tunnel and drain system proposed at the Hudson Falls site is a remedy to collect a mobile PCB dielectric fluid (primarily Aroclor 1242) from a shale bedrock aquifer system. Because these conditions are not present at the Harbor at Hastings site, this type of system was not considered.

Ms. Nancy Mattson submitted a letter dated January 1, 2004 which included the following comments:

COMMENT 63: A former employee at the Anaconda Wire and Cable mill reported to her that beryllium was used as a wire alloy. Beryllium should be specifically included in the long term monitoring plans for the site.

RESPONSE 63: Based on the high frequency of beryllium detections and it's reported use as in alloying at the site, the ROD was modified to include beryllium as a listed contaminant of concern. Beryllium will be included, along with lead, copper and other inorganic contaminants in long term monitoring plans.

APPENDIX D

Administrative Record

Administrative Record

Harbor at Hastings
Operable Unit No. 1
Site No. 360022

1. Proposed Remedial Action Plan for the Harbor at Hastings site, Operable Unit No.1, dated October 2003, prepared by the NYSDEC.

2. Order on Consent between NYSDEC and Atlantic Richfield Company, executed on November 16, 1995.

3. “Remedial Investigation/Feasibility Study Work Plan”, October 1995, Golder Associates

4. “Summary and Evaluation of Existing Data”, October 1995, Golder Associates

5. “Remedial Investigation/Feasibility Study Work Plan, Addendum 1", November 1995, Golder Associates

6. “Closure Report - Interim Remedial Measure, Building 14 sumps/Trench Closure”, February 1998, GT Engineering

7. “Final Report, Phase I Treatability Study”, April 1998, Fluor Daniel GTI

8. “Sampling Plan, Northwest Corner Investigation, Phase II”, May 1998, Fluor Daniel GTI

9. “Performance Report, Interim Remedial Measure, Northwest Corner”, October 1998, GT Engineering, Inc.

10. “Southwest Corner Bulkhead Interim Remedial Measure, Final Work Plan”, March 23, 2000, IT Corporation

11. “Final Project Work Plan - Building Demolition”, July 2000, IT Corporation

12. “Remedial Investigation Report, Volume 1 - Report Text”, October 27, 2000, IT Corporation

13. “Remedial Investigation Report, Volume 2 - Figures”, October 27, 2000, IT Corporation

14. “Remedial Investigation Report, Volume 3 - Tables”, October 27, 2000, IT Corporation

15. “Remedial Investigation Report, Volume 4 - Appendices A through D”, October 27, 2000, IT Corporation

16. "Remedial Investigation Report, Volume 5 - Appendices E and F", October 27, 2000, IT Corporation

17. "Remedial Investigation Report, Volume 6 - Appendix G", October 27, 2000, IT Corporation

18. "Remedial Investigation Report, Volume 7 - Appendix H", October 27, 2000, IT Corporation

19. "Remedial Investigation Report, Volume 8 - Appendix I", October 27, 2000, IT Corporation

20. Fact Sheet, December 2000, announcing completion of the revised RI for OU#1 and shoreline bulkhead IRM.

21. "Human Health Risk Assessment", February 2001, ENVIRON Corporation

22. "Project Work Plan, Demolition of Buildings 5A, 5B, 5C", November 29, 2001, IT Corporation

23. "Fill, Fill Water and Groundwater Sampling Results", January 11, 2002, IT Corporation

24. "Building Decontamination and Demolition Report", August 23, 2002, Shaw Environmental and Infrastructure, Inc.

25. "Feasibility Study Report", September 18, 2002, Shaw Environmental and Infrastructure, Inc. and Haley & Aldrich

26. Fact Sheet, October 2003, announcing the PRAP, public meeting and comment period.

27. "DEC Waterfront Tape Transcription" (Transcript of November 13, 2003 PRAP Public Meeting), Esquire Deposition Services

28. "The Durability of HDPE Membranes", Tisinger, L.G. and Giroud, J.P., Geotechnical Fabrics Report, September 1993

29. "Durability of HDPE Geomembranes", Rowe, R. K. and Sangam, H. P., Geotextiles and Geomembranes, #20, 2002.

30. Letter dated December 6, 2003 from Mr. Jacques Padawer

31. Letter dated December 23, 2003 from Werner Sicvol, Atlantic Richfield Corporation, including exhibits

32. Letter dated December 23, 2003 from Ms. Eileen Badell, owner of the Hudson Valley

Health & Tennis Club and the restaurant Blu.

33. Letter dated December 24, 2003 from Ms. Lisa Rosman of the National Oceanic and Atmospheric Administration (NOAA)

34. Letter dated December 29, 2003 from Mr. Rich Schiafo of Scenic Hudson

35. Letter dated January 1, 2004 from Ms. Nancy Mattson