

III. RESPONSIVENESS SUMMARY

***Atlantic Wood Industries, Inc. Site
Operable Units 1, 2 and 3***

Portsmouth, Virginia

This page left blank intentionally.

RESPONSIVENESS SUMMARY

1. INTRODUCTION

This Responsiveness Summary provides a summary of significant public comments and concerns regarding the Proposed Plan for the Atlantic Wood Industries, Inc. (AWI) Superfund site and provides EPA's responses to those comments. After reviewing and considering all public comments received during the public comment period, EPA has selected a remedy to address the contamination at the site.

The Proposed Plan and supporting documentation were made available to the public in the Administrative Record at <http://www.epa.gov/reg3hwmd/super/sites/VAD990710410/index.htm> and then clicking "Administrative Record." EPA provided notice to the public that the Administrative Record could be viewed at publicly available computers at the following locations:

Portsmouth Public Library
601 Court Street
Portsmouth, VA 23704

Chesapeake Library
298 Cedar Road
Chesapeake, VA 23320

Kirn Memorial Library
301 E. City Hall Avenue
Norfolk, VA 23501

U.S. EPA Region 3
1650 Arch Street, 6th Floor
Philadelphia, PA 19103

EPA issued a notice in the *Virginian-Pilot* on July 11, 2007, which contained a list of the components of EPA's preferred alternative, information relevant to the duration of the public comment period, the date of the public meeting, and the availability of the Proposed Plan and the entire Administrative Record. The original 30-day comment period was to close on August 10, 2007. Due to a timely request, EPA extended the comment period to September 10, 2007.

EPA conducted two public meetings in Portsmouth to inform local officials, interested citizens, and other stakeholders in attendance about EPA's proposed cleanup plan and the Superfund process, to respond to questions, and to receive comments on the Proposed Plan. The public meetings were held by EPA on July 24, 2007, and August 21, 2007, at the Craddock Recreation Center at 4300 George Washington Highway in Portsmouth. Responses to the comments received at the public meeting and during the public comment period are included in this Responsiveness Summary.

The Responsiveness Summary provides a comprehensive summary of significant questions, comments, concerns, and responses by summarizing oral and written comments received during the public comment period and EPA's responses. In section 2 on page 116, there is a brief discussion, along with a brief response from EPA, of the comments that many stakeholders made to EPA. Section 3 on page 118 contains a more detailed list of comments along with EPA's responses. In section 3, the comments are grouped into the following subject categories:

- Community Involvement
- Extent and Sources of Site Contamination
- Site Risks
- Elements and Cost of the Preferred Alternative

- Effectiveness of the Preferred Alternative
- Implementation of the Preferred Alternative
- Future Site Use
- Other Technical Issues.

2. GENERAL COMMENTS

2.1 Wetland and Shallow River Habitat Loss Versus Restoration

Many commenters, including the Virginia Marine Resource Commission (VMRC), expressed concerns about the filling in of several parts of the river (the Wyckoff Inlet and the area immediately off-shore of the AWI property). The concerns stemmed from the fact that the preferred alternative would result in destruction of wetlands in the Wyckoff Inlet and lost river bottom habitat in both areas.

EPA's Response: One of EPA's goals at this, and every other, Superfund site is to provide for the overall protection of the environment. EPA acknowledges that the selected remedy will result in some habitat destruction, and we understand that some stakeholders believe that this will be a detriment to the environment. EPA shares the desire to restore the habitats and avoid filling in the river. However, in consideration of the nine criteria for choosing a remedy, pursuant to the NCP at 40 CFR 300.430 (e)(9)(iii), and other conditions at and near the site, EPA has determined that filling small areas of the river containing the most contaminated sediments in the context of the selected remedy best meets the requirements of the Superfund law and regulations. The dredging and consolidation, combined with the enhanced monitored natural recovery (MNR), will remediate approximately 23 acres of river bottom, including areas that are heavily contaminated with dense non-aqueous phase liquid (DNAPL) creosote. The area of sediment consolidation is approximately 4 acres, resulting in approximately 19 acres of river bottom with viable habitat for aquatic life. The remedy also provides for wetlands mitigation (see section 11.2.11 on page 97), so there will be no net loss of wetlands. Additionally, the rip-rap that will be placed at the foot of the sheet pile wall(s) to help stabilize and protect the wall will provide oyster habitat (see section 11.2.1.13 on page 88), which would be consistent with and enhance the many other oyster habitat restoration efforts in the river.

While Alternative 5 does not result in any lost area of river bottom habitat, and in fact may slightly increase the area of habitat, EPA does not believe the engineering efforts to contain DNAPL in the subsurface sediments while providing a clean living layer in the surface sediments will perform well in the long term and could require significant maintenance. EPA shared these concerns with many of the commenters in early 2007, but has not heard from any stakeholders as to how to overcome these concerns. EPA has determined that the sheet pile wall in the Wyckoff Inlet area in the selected remedy offers significantly greater protection to the river compared to the containment system for this area that is described in Alternative 5.

2.2 Future Land Use

Many commenters, including the Commonwealth of Virginia's Virginia Port Authority, supported the consolidation of contaminated sediments behind an off-shore sheet pile wall(s), which would create land, given the assumption that the installation and new land would not hinder redevelopment in the area.

EPA's Response: Providing for the reuse of contaminated land is a major goal of EPA. An added benefit of the sheet pile wall(s) and sediment consolidation beyond the barrier to

contaminant migration and protecting human health and the environment from the contaminated sediment is that the water front will have improved capabilities for shipping activities. In addition, when completed, the cleanup will not negatively impact other redevelopment activities, both inland or at the shore-line. While precautions would be necessary during subsurface work because of the contamination that will be present in the subsurface soils, redevelopment can take place just as it does at many Superfund and Brownfields sites across the country. EPA frequently interacts with parties interested in redevelopment of Superfund sites to help ensure the public's safety during the redevelopment project.

2.3 Land Ownership and Access to Navigational Waters

Several commenters have expressed concern that filling of the river presents challenging property rights issues.

EPA Response: EPA acknowledges that the selected remedy, and in fact all the alternatives, present property issues. Pursuant to Code of Virginia Section 28.2-1200, the people of the Commonwealth own subaqueous lands, with VMRC being the trustee on behalf of the Commonwealth, unless such subaqueous lands have been conveyed by special grant or compact according to state law. One landowner submitted comments that claimed that a portion of the river bottom was granted to a previous owner of his parcel back in 1711 and that the conveyance ran with the land. VMRC, through its encroachment permit process, provides permission and access in order for people to fill bottom lands that are owned by the Commonwealth. Pursuant to CERCLA Section 121(e)(1), no Federal, State or local permits are required for work conducted at a Superfund site; however, access to property is required to conduct cleanup work.

In addition, constructing the sheet pile wall(s) and filling a portion of the river, as required by the remedy, could interfere with some owners' access to navigable waters of the Southern Branch of the Elizabeth River because the fill will create land that separates some parcels from the river. EPA has carefully evaluated this potential impact (see the discussion in section 11.1 on page 85) as part of the remedy selection process. EPA intends to work with the Commonwealth and the property owners to design the remedy in a manner than minimizes any negative impacts on water access that may result from implementation of the remedy.

Many of these issues cannot be worked out without knowing what party or parties will implement the selected remedy. This part of the Superfund process takes place after a ROD is issued.

2.4 Consolidation of Heavily Contaminated Sediments and Soils Near the Elizabeth River and Long-term Effectiveness of the Sheet Pile Wall(s)

Many commenters were concerned that EPA planned to consolidate heavily contaminated waste immediately adjacent to the river where it has the most opportunity to cause an impact to the environment if the containment system fails or does not function as intended.

EPA Response: EPA acknowledges that risk of river re-contamination rises with proximity to the river. However, the increase in risk is low compared to the very significant increase in short-term impacts of consolidating all of the sediment on the west side of the AWI property and, in the case of offsite disposal, the excessive risk and cost associated with transportation of the contaminated material. EPA believes that sheet pile wall(s) with sealed interlocks will contain contamination at this site far into the future. Containment will be ensured by periodic inspections, operations and maintenance activities, and comprehensive site reviews performed every five years as required by CERCLA to ensure that the selected remedy continues to protect human health and the environment. Additionally, the selected remedy requires that the contaminated sediment immediately behind the sheet pile wall(s) be treated using *in-situ* solidification/stabilization (S/S) to further enhance the ability of the wall(s) to contain the

contamination. The *in-situ* S/S treatment binds up contamination and reduces the ability of ground water to pass through the sediments.

Even if the wall(s) were installed at the current shore line and dredged sediment were disposed elsewhere, there would be significant contamination, including DNAPL, immediately behind the wall. Cleanup alternatives that address all of the contamination near the river (Alternatives 5, 6, and 7) ranked poorly in terms of implementability, short-term effectiveness, and cost.

3. DETAILED QUESTIONS, COMMENTS, AND CONCERNS

3.1 Community Involvement

3.1.1 Commenters noted that the announcements of the July 24, 2007, public meeting were not received until July 25 or later. Concern was expressed regarding the cost of a mailing sent so late.

EPA Response: Unfortunately, a number of people did not receive notice by postal mail of the July 24 until after the meeting. To compensate for the mistake, EPA hosted an additional public meeting on August 21 and made sure that the postal mail invitations were sent to provide adequate notice of the meeting. While the first notice did not arrive in a timely manner, EPA published a paid quarter-page newspaper announcement on July 11, 2007, and sent approximately 3,000 electronic mail notices prior to the meeting. The *Virginian-Pilot* also ran an article about the site and the meeting on July 24, 2007. The second public meeting was held by EPA on August 21 to accommodate those citizens who were unaware or unable to attend the July meeting. In addition, the comment period was extended until September 10.

3.1.2 One commenter expressed the opinion that the Proposed Plan was lengthy and technical for the general community and that a less technical report should also be made available that organizes the information by alternative rather than by the evaluation criteria.

EPA Response: EPA acknowledges that the site information and the description and evaluation of the cleanup alternatives in the Proposed Plan was lengthy and contained technical discussion. However, due to the complexity of the site and wide scope of the preferred alternative, it was necessary to include a significant level of detail in the Proposed Plan to allow many commenters to have the information necessary to make the most useful comments. EPA developed and distributed a four-page, easy-to-read fact sheet that summarized the site description and the Proposed Plan. EPA distributed, mainly by postal mail, approximately 15,000 fact sheets to local stakeholders, many of whom were local community members. To assist the community in understanding the issues at the site, EPA held two public meetings and a public comment period during which citizens were encouraged to ask questions, make comments, and contact EPA.

3.1.3 A commenter stated that the citizens of Norfolk have protested the many sources of pollution along the river for decades and expressed dismay at the current contamination. The commenter also expressed the opinion that the effectiveness, not the cost of the remedy, should be the driving factor in the selection of a cleanup alternative.

EPA Response: EPA acknowledges that the site encompasses some of the most potent and wide-spread contamination in the Elizabeth River and concurs that an effective remedy that functions to protect human health and the environment from contamination at levels that present unacceptable risk is crucial for the site. The Superfund law requires that selected remedies meet certain statutory requirements, including "utilization of permanent solutions and alternative treatment technologies to the maximum extent practicable" (see section 12.1.4 on page 110) and that the remedy must be "cost effective" (see section 12.1.3 on page 110). EPA developed the

nine criteria (see section 10 on page 72) for remedy selection, as codified in the NCP at 40 C.F.R. 300.430(e)(9)(iii), to ensure that selected remedies meet the statutory requirements of CERCLA and provide for a fair balance of competing objectives, such as minimizing short-term risk while achieving long-term permanence. All remedies selected pursuant to CERCLA, including here, must and do provide for the overall protection of human health and the environment while remaining sufficiently cost-effective to ensure that the remedy is undertaken and completed.

3.1.4 A commenter asked about the current phase of the process and whether or not EPA has already decided on Alternative 4. The commenter also asked about what EPA will do with the community's comments.

EPA Response: At the time the question was asked, EPA had not decided on the final cleanup remedy. EPA needed comments from the public in order to adequately evaluate the "community acceptance" criterion (one of the nine remedy evaluation criteria required by the NCP, see page 72). EPA has now carefully considered comments from the public and their potential impact on EPA's preferred alternative that was described in the Proposed Plan and at the public meetings. EPA's final decision is documented by this ROD.

3.2 Extent and Sources of Site Contamination

3.2.1 One commenter asked if EPA had sampled the school district property adjacent to the AWI facility to check for creosote contamination.

EPA Response: EPA collected soil samples along the AWI-school district property boundary and from wells on the school district property, and determined that there is a small amount of ground water contamination from the site underneath the school district property. Based on the metals contamination found on the AWI side of the property boundary, and considering past land use, it is likely that there is contamination on the school district property. However, AWI would not be the source of the contamination. Metals contamination on the PPSD property would be from Navy operations (it is EPA's understanding that the Navy owned the PPSD property at one time). If EPA finds contamination from wood-treating operations on the school district property, the contaminated soil will be moved to and addressed at the AWI property. There is also some contamination at the school district property that has come from underground storage tanks that were once located on the school district property.

3.2.2 A commenter asked if the AWI site was the only site causing contamination along the river.

EPA Response: There are many contaminated sites along the Elizabeth River. See sections 5.1 and 5.2 on pages 21 and 22, respectively, and **Figures 1** and **3** for a description of some of these sites.

3.2.3 A commenter asked if EPA had concerns about completing the AWI site cleanup with the possibility of an ethanol plant being constructed nearby.

EPA Response: EPA does not expect the ethanol plant that may be constructed upstream of the site to interfere with the cleanup due to its distance upstream. Additionally, EPA does not expect that any discharges to the river from the plant (if it is built) would recontaminate the area of the river cleaned up at the AWI site since the Virginia Department of Environmental Quality (VADEQ) would ensure that limits sufficient to protect the water quality of the river are placed on any discharges.

3.2.4 A commenter asked how to obtain a list of Superfund sites along the river.

EPA Response: EPA's web site called "Window to My Environment" maps known environmental sites by area. The website can be accessed at <http://www.epa.gov/enviro/wme/>. "Window To My Environment" is a powerful web-based tool that provides a wide range of federal, state, and local information about environmental conditions and features in an area of your choice. The application is provided by EPA in partnership with federal, state, and local governments, and other organizations.

Three other NPL sites are located on or just beyond the Elizabeth River. These include the Norfolk Naval Shipyard and St. Julien's Creek Annex, which are located nearby and the Norfolk Naval Base located downstream, after the Elizabeth River joins the James River. There are a number of other environmental projects in the area, some of which EPA manages, although they are not on the NPL. For example, EPA, VADEQ, the Elizabeth River Project, and Hess Oil are combining to clean up another wood-treating facility, the former Eppinger and Russell site, located upstream and across the river. The Chesapeake Products site is located downstream and across the river. The J.G. Wilson Site is located on the other side of the Jordan Bridge. The Elizabeth River Project has organized a number of stakeholders over the years, and a number of projects are coming together that will result in a vast improvement up and down the Southern Branch of the Elizabeth River. This work will also help eliminate one of the largest sources of pollution affecting the Chesapeake Bay.

3.2.5 The commenter reported several past instances of oil slicks and creosote spills in the Elizabeth River, as well as a "drip area" near the treatment tanks where creosote regularly dripped into the river. The commenter noted that there were indications that the "drip area" had been sanded and cleaned by bulldozing the oily sand into the river. The commenter went on to state his/her belief that the most successful cleanup efforts use natural and bacterial action, and that creosote is a good candidate for bioremediation. The commenter recommended that core samples be taken to confirm the spill contents. If present, the contamination could be cleaned by vacuum truck from the shore side and the vacuum trucks unloaded into portable tanks which should be aerated to enhance residual bacteria. After removing the "blob" of creosote, the commenter suggested aerating the river water in front of the shoreline to assist in the natural cleaning process. The commenter concluded by stating his opinion that spending a relatively small amount of money to assist the site in its final stages of natural remediation would be more effective than a soil handling and dredging program which might upset the balance that has developed over several decades.

EPA Response: EPA appreciates the information about how parts of the site were or may have been contaminated. In some situations, both the method of sediment removal and the treatment method proposed by the commenter would be appropriate. However, at this site, both the location and the amount of heavily contaminated sediment would make removal from shore by a vacuum truck impracticable. Aerating the river water would likely not have the desired remedial effect. While increased dissolved oxygen helps with aerobic biodegradation, a vast majority of PAHs are particle bound in the sediments. Injecting air into the sediment would cause sediment transport and likely spread contamination. In the 1995 ROD, EPA selected bioremediation for the soils contaminated with PAHs. During the design of the cleanup, EPA determined that this technology would not successfully remediate the soil contamination at the site (see section 2 on page 19).

3.2.6 EPA was asked if the Wyckoff Inlet is included in the AWI project.

EPA Response: Yes.

3.2.7 A commenter stated that the area between Nicholson Street and Kennedy Drive in the Craddock area of Portsmouth was previously wetlands that were filled with sandblast sand. Cooper Street is now there, with houses on it. The commenter noted that a family member has property on Nicholson Street which includes vegetable gardens from which the family eats, and asked if EPA would be testing for contamination in that area.

EPA Response: Part of the AWI site has been filled with contaminated sandblast sand from the Navy. The extent of soil contamination associated with the AWI site has been determined and is shown in **Figure 3**. Soil contamination beyond this area in the figure is not associated with the site and will not be addressed by this project. EPA suggests that the commenter discuss their concerns with the Navy at a NNSY Restoration Advisory Board (RAB) meeting.

3.2.8 One commenter questioned EPA's decision to include all of the contamination in the Southern Branch of the Elizabeth River in Operable Unit (OU) 3 of this site and to focus almost entirely on the AWI site as a source, ignoring other likely sources. The commenter claimed that there is documented evidence that portions of the AWI property were contaminated by Navy wastes, and that Navy contaminants were found in ground water on the Portsmouth Public School District Operations Center property. Furthermore, the commenter stated that nothing in the Administrative Record supports a conclusion that AWI contamination has affected sediments beyond those in the immediate vicinity of the AWI property. The commenter notes that other sites, including the NNSY, are likely sources of contamination, and that it is not appropriate for EPA to attribute sediment contamination up- and downstream of the AWI property solely to AWI.

EPA Response: EPA acknowledges that there are sources of soil and ground water contamination in the area other than contamination emanating from the AWI property or from past AWI operations. EPA also acknowledges that AWI operations may not be the only source of contamination in the sediments that will be cleaned up as part of the selected remedy. Other known or likely sources of sediment contamination that will be addressed by this cleanup include the NNSY (calcium hydroxide sludge) and the 3975 Elm Avenue site (the location of the former Wyckoff Pipe & Creosoting plant). However, EPA is not including all contamination in the Southern Branch of the Elizabeth River in the AWI site cleanup. For example, the Elizabeth River Project is planning an extensive sediment remediation project to address contamination from another former wood-treating facility in the Money Point area of the river, which is upstream and across the river. EPA is supporting that project by providing technical support and conducting source control activities.

While the area of the sediment cleanup outlined in this selected remedy may include sources of creosote contamination beyond AWI operations, the area is being addressed as one project for the following reasons: (1) with the close proximity of the areas of highest contamination, if they are not addressed together the potential would remain for recontamination of the remediated sediments; and (2) there is evidence in the Administrative Record (e.g., the Final Remedial Investigation Report for OU2 Groundwater and OU3 River Sediment [April 2007] and a 1947 aerial photograph showing discharge from the Northern Inlet migrating underneath the Jordan Bridge [see **Figure 38**]) that AWI operations have contaminated areas beyond the immediate vicinity of the AWI property.²⁸

3.2.9 One commenter noted that there are several other contaminants (e.g., calcium hydroxide sludge, ABM, PCP, dioxin, PCBs and TBT) in the river and that the proposed remedy

²⁸The river current changes direction with the ebb and flow of the tide, which facilitates migration of contamination including AWI waste both upstream and downstream beyond the immediate vicinity of the AWI property.

focuses only on remediation of PAHs. A commenter stated that EPA should sample sediments immediately off-shore of the Navy's Southgate Annex prior to completing the design and implementation of the remedy.

EPA Response: By addressing the PAHs and the calcium hydroxide sludge, EPA expects the selected remedy will also address PCP, dioxin, and metals associated with the AWI site. EPA acknowledges that there are other contaminants in the sediments, such as TBT, that are not associated with the releases from the AWI facility. Because of this, areas beyond that which requires dredging due to site-related contamination must be sampled for other contaminants, especially metals, but also PCBs and dioxin, to determine if there is contamination beyond, but in close proximity to, the area contaminated with PAHs and calcium hydroxide sludge that must also be dredged to prevent recontamination (see section 11.2.3.1.4 on page 89).

3.2.10 A commenter noted other contaminated sites near the site and on the river. For example, the commenter noted that there are other potential sources of dioxin in the area including the SPSA trash incinerator, historic Navy incinerators, and open trench burning of industrial waste at the Norfolk Naval Shipyard landfills. The commenter also discussed that the northwest corner of the former Wood Storage Area (see **Figure 1**) was sold by AWI to SPSA. The commenter stated impacted soil material may have been stored on the property since the sale to SPSA and that this possibility should be considered when evaluating results of any soil samples collected from this property.

EPA Response: EPA acknowledges the comments. EPA understands that there are other sources of contamination in the area (see section 5.2 on page 22 and **Figure 3**) including sources of dioxin. EPA will consider the ownership history of the SPSA property in the review of any soil sample results from this property.

3.2.11 One commenter expressed concern that contamination from other sources was apparently being considered part of the AWI site. The commenter stated that other agencies participating in the remedy selection process have commented that it is not clear whether the PAH contamination outside of the area immediately off-shore of the AWI property stems from the AWI site, raising questions about whether all of the PAH contamination in this stretch of the river should be addressed as part of this site. In support of the argument, the commenter included a quote from a May 24, 2004, electronic mail message from the U.S. Fish and Wildlife Service (USFWS) to EPA: "I was never really that comfortable with the lumping that was done for PAHs, but for a rough cut it worked well enough." The commenter noted that the same email mentioned that one PAH hotspot is located in an area where barges transporting coal tar were off-loaded. The commenter also referenced a memorandum from an EPA consultant that stated that, even though there may be ownership and source considerations, there is no technical reason to divide the remedy approach for the area north of the Jordan Bridge from the area south of the Jordan Bridge. In reference to an internal EPA memorandum regarding the NNSY, the commenter stated that "some EPA representatives also questioned the sediment no further action determination for the Navy Site, asserting that actual data was necessary before such a conclusion could be reached. See, e.g., July 28, 2006 Memorandum from Bruce Pluta. Such concerns inexplicably were ignored."

EPA Response: In regard to the concern that sediment contamination from other sources is being addressed by this remedy, see comment 3.2.8 on page 121. In regard to the email from the USFWS, the conclusion drawn by the commenter is incorrect because the quote is taken out of context. The USFWS was concerned, not about "lumping" PAH hotspots together, but about "lumping" together individual creosote constituents into a measure of total PAHs and suggested that EPA may want to refine its list of COCs by narrowing the list of base neutral acids (the class of compounds that includes many individual creosote constituents). The USFWS email did

mention a hotspot that it associated with an area where barges off-loaded coal tar. EPA understands that this activity may have occurred and spills from barge off-loading could partially explain the pattern of contamination seen in the river. However, EPA understands that it is only speculation as to whether or not this activity contributed to contamination in this area of the river. Additionally, barge off-loading could have been in relation to the AWI operations. In any case, EPA has determined that the creosote contamination north and south of the Jordan Bridge (see **Figure 29**) must be addressed together to prevent recontamination of sediments. Additionally, as discussed in comment 3.2.8 on page 121, it is very highly unlikely that AWI operations have not caused contamination north of the Jordan Bridge.

The July 2006 memorandum of Bruce Pluta, an ecotoxicologist with EPA Region 3, offered technical commentary to EPA's project manager for the NNSY site regarding the Navy's conclusion that extensive maintenance dredging had addressed Navy pier-side contamination and that no further action is necessary in that area of the NNSY site. Specifically, the Pluta Memo stated that the Navy's draft decision document lacked the analytical data necessary to verify the Navy's conclusion.²⁹

Note that most of Site 15 at the NNSY (the pier-side area at issue in the Pluta memo) is downstream of and unrelated to the AWI site. By the remedial action required by this ROD, EPA is only addressing contamination caused by AWI operations and contamination that must be addressed to protect the cleanup area from recontamination after completion of the remedial action, which could involve contamination from a small area of Site 15. It is not EPA's objective to address contamination that may exist at Site 15 of the NNSY site by this ROD beyond what was caused by releases from AWI and what may be required to protect the AWI site cleanup from recontamination.

3.2.12 The commenter expressed concern that EPA was expanding the AWI sediment site to include contamination caused by operations at the South Annex of the NNSY site based on the conclusions of a Navy-funded demonstration study concerning PAHs in sediments in the vicinity of the Annex. The commenter claimed that the Navy's study was self-serving and contradicted "an independent examination by EPA contractors that had previously concluded that the contamination in the sediment immediately east of the Annex was likely predominantly or solely petroleum product-based." The commenter was concerned that "the study was commissioned by the Navy and an inherently adversarial forensic exercise, not as an objective effort to assess the extent of Navy responsibility for the sediments. Most notably, the Navy study did not consider or ever acknowledge its own potential links to contamination immediately adjacent to its land or under its piers, something required by the Navy's own guidance concerning such sediment studies." The commenter stated that "EPA should have [sic] independently sampled sediments immediately off-shore of the Southgate Annex prior to completing design and implementation of the remedy. This would appear to be a necessary step prior to any final decision to deposit this material on the AWII property. It should do so now."

EPA Response: EPA acknowledges the commenter's concern about EPA's reliance on a Navy report that provides information that appears to be beneficial to the Navy. When EPA conducted its substantial sediment boring program in the summer of 2005, PAHs were found in borings in sediments adjacent to the northern portion of the South Annex of the NNSY. EPA's contractor that collected the samples reported that the borings had a petroleum aroma that was distinctly different from the creosote odor of the borings downstream of the Annex. At that time, EPA

²⁹On December 6, 2006, the Navy issued a report entitled "Final Preliminary Assessment and Action Determination for Site 15, Norfolk Naval Shipyard, Portsmouth, Virginia." The report included the "Concurrence for No Further Action" for Site 15 which was agreed to by the Navy, EPA, and VADEQ.

reported to stakeholders, including AWI and the Navy, that EPA was presuming that all of the PAH contamination the Agency found in the sediments adjacent to the Southgate Annex to be associated with the Navy operations and not the AWI site based on the petroleum odor. EPA believed that presuming that the contamination originated from Navy operations, without more data, was the most advantageous position for the AWI remedial investigation at that time since: (1) it provided a boundary of site-related contamination that did not extend to sediments adjacent to the South Annex; (2) the Navy, at that time, was planning on dredging the river at the South Annex for navigational purposes, which may have served to remediate those sediments; and (3) stating the presumption about origination of the contamination adjacent to the Southgate Annex provided an opportunity for objections to be voiced, which may have provided the impetus for EPA to conduct fingerprinting studies instead of relying on field aromas. There were no objections to EPA's presumption over a number of stakeholder meetings.

In the spring of 2006, the Navy brought to EPA's attention at a stakeholder meeting that the Navy's fingerprinting study concluded that there were creosote-related PAHs in sediments off the South Annex. Subsequently, EPA reviewed the Navy's fingerprinting study and found its conclusion that there were creosote-related PAHs in sediments off the South Annex to be credible and convincing. The data was presented such that a reader could evaluate the Navy's methodology, data evaluation, and conclusions in detail. Moreover, one would expect to find site-related contamination upstream of the AWI facility since the river is tidal and flow changes direction with the changes in tide. Thus, EPA decided that conducting its own fingerprinting study would waste resources, delay the project, and not add significant value to the project.

Since the NNSY is also an NPL site, EPA asked the Navy if it intended to address sediments off the South Annex (by this time, the Navy had decided not to perform navigational dredging for what EPA understands to be several reasons: a slower sediment depositional rate and changes in operational plans). Once the Navy communicated to EPA that it did not plan to address any sediments adjacent to the South Annex, EPA decided to include areas of contaminated sediments off the South Annex in its feasibility study for the AWI site sediment cleanup. By that time, EPA had decided that this ROD could be a final ROD for the site, and as such had to prepare alternatives that addressed the full extent of contamination originating in part or in full from the AWI site. Since the definition of a Superfund site is wherever the contamination has come to be located; for purposes of the RI and FS, the AWI site boundary was extended to sediments off the South Annex.

The commenter should also note that the Navy has been issued a general notice letter by EPA notifying the Navy that it is a potentially responsible party at the AWI site. Since Congressional intent in enacting the Superfund law was to ensure that responsible parties pay for the cleanup, EPA expects the Navy to help clean up the AWI site.

3.2.13 The commenter expressed concern that EPA was expanding the AWI site by including sediments off the South Annex in a way that requires a rulemaking (which would include a Federal Register notice and an opportunity for public comment). The commenter stated that in May 2006, it "learned for the first time, via a vague reference in an email between EPA and the Navy on which it was copied, that EPA was considering significantly expanding the scope of the AWI Site (and, notably, not the Navy Site) to include sediments both upstream and downstream from the AWI Site." The commenter stated that when it questioned EPA, "EPA's response was that this was a preliminary discussion." The commenter stated that "EPA asserted authority to 'follow the contamination' from the AWI Site, apparently without considering other sources of similar contamination all along the River." The commenter stated that it "does not believe EPA has discretion to follow contamination in such a manner under CERCLA or without appropriate rulemaking. Moreover, expansion of the AWI Site in the manner now proposed would have the effect of reducing the size of the Norfolk Naval Shipyard

Site. Unlike other situations where a site is expanded on the basis of tracing its waste, here there are two neighboring Superfund sites, each with a site description provided at the time of listing.”

EPA Response: As mentioned in comment 3.2.12 on page 123, the definition of a Superfund site is wherever contamination has come to be located (from the release that is described in the NPL listing notice). Congress established the definition of “facility” to include “any site or area where a hazardous substance has been deposited, stored, disposed of, or placed, or **otherwise come to be located.**” See CERCLA Section 101(9)(B), 42 U.S.C. § 9601(9)(B) (emphasis added). EPA has interpreted the “come to be located language” to give “EPA authority to clean up contamination when it has spread from the original source.” See the preamble to EPA’s National Oil and Hazardous Substances Contingency Plan at 54 Fed. Reg. 13296, 13298 (1989) (citing U.S. v. Bliss, 667 F. Supp. 1298, 1305 (E.D. Mo. 1987)).

One of the goals of an RI is to define the extent of contamination at a site, which is virtually never known at the time of listing. Sites can become extremely large relative to the initial area of the release depending on how far contamination has migrated. Contamination often crosses property boundaries at sites. For example, at the AWI site, contamination has migrated from the AWI property to the river bottom, which is owned by the Commonwealth of Virginia. It is also not uncommon for contamination from one site to intermingle with contamination from another release, especially in an urban area.

EPA believes that the commenter references a May 24, 2006, email from EPA’s project manager for the AWI site to EPA’s project manager for the NNSY site (which was copied to AWI and VADEQ). By the email, the AWI project manager informed the NNSY project manager of the decision to include PAH-contaminated sediments off the South Annex, immediately upstream of the sediments adjacent to the AWI property, as part of the AWI site for purposes of planning and undertaking any cleanup that may be necessary under CERCLA because of the conclusions in the Navy fingerprinting study and the AWI project manager’s understanding that the Navy did not have plans address sediments in the South Annex. In addition to informing EPA’s project manager for the NNSY of the decision, the AWI project manager requested the NNSY project manager’s help to obtain additional confirmation from the Navy that it had no plans to address sediments at the South Annex. The additional confirmation was requested because of the significance of the decision to both sites. The message of the email was not vague. A vague message would not have achieved the objective of the communication. The decision could only be considered preliminary in that EPA was awaiting additional confirmation regarding any potential Navy response action for the sediments adjacent to the South Annex to ensure that the teams for the two Superfund sites did not undertake duplicative work.

3.2.14 The commenter stated that there is documentation in the administrative record that the NNSY is a likely source of PAH contamination. The commenter referenced a June 6, 1997 letter from Atlantic Wood Industries to the Navy, which states that approximately 40% of soil samples collected by the Navy at the South Annex contained at least one of the following physical descriptions (each of which would or could have PAHs): coal ash, coal fines, oil-based paints, waste oils, boiler ash, coal-tar coatings, creosote-treated wood and asphalt. The commenter did not report whether or not chemical data was available for these samples. The commenter also reported that the Navy operated a 15-inch storm drain that discharged into the acetylene sludge on AWI’s property. The commenter claimed that waste from Navy operations could have been transferred to the AWI property through this storm drain. The document referenced by the commenter alludes to numerous potential sources of contamination at the South Annex including PCP as an additive in paint.

EPA Response: The letter referenced by the commenter is a June 6, 1997 letter from Ross Worsham of Atlantic Wood Industries to Jeffrey Kidwell of the Naval Facilities Engineering Command regarding comments on a Draft Final Data Evaluation Report for Sites 3 and 9 at the Norfolk Naval Shipyard NPL site. The letter was not included the AWI site Administrative Record at the start of the public comment period for this ROD; however, in response to the comments, EPA requested a copy of the letter from the commenter and has added it to the Administrative Record for this site.

EPA acknowledges that activities at the NNSY, including the South Annex, have contaminated the AWI site (for example, see sections 1, 2, 5.2, and 5.3 on pages 17, 17, 22, and 23, respectively), and EPA has issued a General Notice letter to the Navy notifying the Navy of its potential liability at the AWI site. EPA also acknowledges that some of the PAH contamination in the sediments of the Southern Branch of the Elizabeth River may be present in part due to activities at the South Annex. However, a wood-treating facility such as the AWI facility would have used great volumes of creosote (which has substantial amounts of PAHs) to preserve wood over its many decades of operation. Thus, remedial response to address the PAH-contaminated sediments in the river that are adjacent to the AWI facility and those sediments adjacent to the Southgate Annex is reasonable. Regardless of PAH contamination that could have been contributed by the Navy, it is overwhelmingly likely that at least some of the PAH contamination located in the sediments adjacent to the Southgate annex originated from AWI operations over the years. Additionally, the AWI facility predates the South Annex and operated during a time when much of the area that is today the South Annex was river. This area of the river was likely contaminated with AWI-related creosote before it was filled to create land.

EPA is concerned that a storm drain from the South Annex may be emptying into the restored acetylene sludge wetland and could potentially be transferring contamination to the AWI site. Therefore, EPA has included in this ROD the requirement that this outfall be identified and monitored for the discharge of contamination, and if any discharge is found that could pose a risk to the environment, that the contamination be addressed prior to any river cleanup (see section 11.2.18.7 on page 105).

3.2.15 The commenter referenced an EPA document from EPA's Hazel Court removal action where EPA is addressing creosote contamination from the former Eppinger & Russell wood-treating site. The commenter states that the document supports the commenter's assertion that there is likely PAH contamination in the river from other sources.

EPA Response: EPA acknowledges that there is PAH contamination in the river related to the former Eppinger & Russell site. Part of the source area is being addressed pursuant to the Virginia Voluntary Remediation Program, and the remainder of the source area is being addressed by EPA's Hazel Court removal action. The sediment contamination that resulted from migration of contaminants from the source areas is being addressed by the Elizabeth River Project (ERP). This site is located across the river and upstream of the AWI site. EPA's work at the AWI site and ERP's work upstream show that the sites are distinct PAH hotspots separated by a significant distance. As a result, it is highly unlikely that the Eppinger & Russell site has contributed PAH contamination of any significance to the AWI site.

3.2.16 The commenter stated that there is no evidence or studies linking the AWI site to PAH contamination throughout the area considered to be OU3. The commenter went on to state that there is evidence that the former Wyckoff facility contributed to contamination in the area considered to be OU3. The commenter referenced a report to The Elizabeth River Restoration Trust by ERP and others (dated February 2006) regarding sediment samples collected near the Wyckoff and Republic Creosote wood-treating sites. The report presented PAH data from 25 sediment samples in the vicinity of the former Wyckoff and Republic Creosote wood-treating facilities. The report claims that 20% of

the samples contain PAH levels that are among the highest measured in sediments worldwide. The commenter also stated that the report concluded that it is possible to distinguish between the PAHs from AWI and those generated by Wyckoff and Republic.

EPA Response: EPA acknowledges that the former Wyckoff facility likely contributed contamination to the Southern Branch of the Elizabeth River in the area EPA considers to be OU3. EPA also acknowledges that the PAH levels measured in some of the samples were very high. However, this does not mean that AWI did not cause or contribute to the contamination north of the Jordan Bridge. Nor does it confirm whether or not the area north of the Jordan Bridge is more contaminated than the area south of the Jordan Bridge as the commenter appears to imply.³⁰ Regardless, the contamination both north and south of the Jordan Bridge that EPA considers part of OU3 must be remediated together. If only one area is remediated, it could easily be recontaminated by the other area. See also comments 3.2.8 and 3.2.11 on pages 121 and 122, respectively.

There is evidence linking releases from the AWI site to PAH contamination north of the Jordan Bridge. For example, an aerial photograph taken in 1947 (see **Figure 38**) shows discharge coming from the Northern Inlet (at the northern boundary of the AWI property next to the Jordan Bridge) with the current (most likely mainly from the out-going tide) carrying the discharge north underneath the Jordan Bridge. Some contamination entering the river this way would easily be expected to be found in sediments north of the bridge. Wood-treating operations at the AWI site have resulted in significant creosote DNAPL discharges from a storm sewer to the Northern Inlet. As discussed in section 2 on page 17, AWI conducted a Superfund removal action in 1995 to repair the sewer line to prevent creosote that had leaked, and/or was still leaking, from storage tanks from migrating into and down the sewer line to the Southern Branch of the Elizabeth River. The removal action included excavation of a small amount of sediments in the Northern Inlet. The sediments were soaked with creosote. This release was not stopped until approximately 60 years after the Wyckoff facility stopped operation. One would expect that the more recently deposited surficial sediments sampled by ERP to have more PAH contamination from releases from the AWI facility than from the former Wyckoff facility.

Another example that shows there is a potential migration pathway for contamination from the AWI facility to the Wyckoff Inlet is the fact that the surficial sediments in the Wyckoff Inlet have dioxin with a congener mix that is similar to that found in PCP (see section 5.5.4 on page 33 more details). AWI used PCP as a wood-treating agent (see section 2 on page 17). Due to its period of operation, the former Wyckoff facility would hardly have had the opportunity to use PCP as a wood-treating agent.

EPA also acknowledges that the report discusses PAH ratios that may be used to fingerprint types of PAH sources and useful for distinguishing between specific creosote sources. The report does not conclude that it is possible to distinguish between the PAHs from AWI and those generated by Wyckoff and Republic as stated by the commenter. The report more accurately concludes that a “more detailed analysis will be required to distinguish the PAH source

³⁰Note that one has to be careful when drawing conclusions from comparing analytical chemistry data from different sites (or areas of the same site) as to which is more contaminated. Often, when creosote DNAPL is present samples are not collected because (1) the high level of contamination is evident without laboratory analysis and (2) the DNAPL can cause problems for the instruments used for laboratory analysis. There are areas immediately off-shore of the AWI facility that have creosote DNAPL in the sediments for which EPA does not have analytical chemistry data because the contamination can be seen and analytical data is not necessary. This does not mean that the sediments are less contaminated than sediments where analytical data is available which shows high levels of contamination. The ERP report did not provide any evidence that DNAPL was present in the samples that it collected near the former Wyckoff facility.

signatures of the Republic and Wyckoff sediment samples from coal/coke sources of PAHs and other creosote contaminated sediments in the Southern Branch of the Elizabeth River.”

EPA does not believe that it is possible, using the fingerprinting methodology discussed in the report, to fingerprint PAHs in OU3 as having come from the former Wyckoff operations as opposed to AWI’s former wood-treating operations. With the long operational history of these two facilities (an estimated 30 years for the Wyckoff wood-treating operations and 60 to 70 years for the AWI operations), it is virtually impossible for the ratios of various PAH isomers to have remained constant for a facility throughout its period of operations.

Data in the report does show that samples collected relatively near each other in the vicinities of the four known creosote wood-treating operations along the Southern Branch of the Elizabeth River can have consistent ratios of various PAHs. However, EPA understands that the Bernuth-Lembke facility (which was once part of the Eppinger & Russell facility) provided creosote to all of the wood-treating plants in this area of the river. If the Wyckoff and AWI operations obtained creosote from the same source,³¹ distinguishing the difference in the river becomes all that much more challenging.

With the pattern of contamination in the river, it is not appropriate to conclude that the samples labeled as from Wyckoff in the report are actually from the Wyckoff facility.³² For this type of fingerprinting to be of potential value, it requires ratios of PAHs from samples that are definitely known to have come from each facility. When facilities are as close together as the AWI and former Wyckoff facilities (just across the street), samples in the river thought to be from the former Wyckoff facility, for example, would first need to be compared to samples from the ground, for example, from an area of the former Wyckoff facility that could not have contributions from the AWI facility.

3.3 Site Risks

3.3.1 One commenter raised concerns about the consideration of arsenic in EPA’s risk assessment calculations regarding the consumption of crabs and oysters. The commenter stated that most of the arsenic present in fish, shellfish, and crabs is organic arsenic, which has been shown in numerous studies to be nontoxic to humans. Inorganic arsenic, which is of concern for human health, is generally found in seafood at concentrations ranging from 1% to 5% of the total arsenic concentrations. EPA calculated the risk assuming total arsenic as 100% inorganic arsenic.

EPA Response: EPA agrees with the contention that the majority of the arsenic found in crab tissue is likely to be in an organic form and may have lower toxicity than inorganic forms of arsenic (although more recent studies have shown that some organic forms of arsenic may be more toxic than previously thought). EPA acknowledges that the OU3 Human Health Risk Assessment contains risk calculations assuming that the arsenic is 100% inorganic arsenic. However, the risk assessment also contains risk calculations assuming a much lower percentage of the arsenic is inorganic. EPA has based its risk communication to the public based on risks calculated assuming that a low percentage of the arsenic is inorganic (for example, see **Table 4** on page **46** and **Table 5** on page **48**). Meanwhile, EPA is in the process of determining what

³¹EPA is not implying that Bernuth was the only supplier of creosote to these facilities. In fact, EPA understands that AWI used multiple creosote suppliers.

³²EPA recognizes that the report’s authors would have had a difficult time utilizing information from EPA’s OU3 RI data gathering activities in their data analysis. Until EPA conducted its OU3 RI, the magnitude of the creosote contamination and the complexity of contaminant distribution was not known.

portion of arsenic in the crab and oyster samples used in the risk assessment is organic and what portion is inorganic.

3.3.2 The commenter stated that the average concentration approach to calculating risk represents a more realistic exposure (compared to EPA's method of using the 95 percent upper confidence limit [UCL] of the mean as the exposure point concentration [EPC]) and is protective of human health.

EPA Response: EPA, in accordance with Risk Assessment Guidance for Superfund (RAGS) Volume I Human Health Evaluation Manual (Part A), EPA/540/1-89/002, determined contaminant EPCs by calculating the 95 % UCL of the mean. This statistical test is used due to the uncertainty associated with estimating exposure concentrations in environmental sampling. The 95% UCLs were then used as the reasonable maximum exposure (RME) concentrations for the EPCs. EPA bases its actions at Superfund sites on the RME because it is expected to be the highest exposure that is reasonably expected to occur at a site. By using these concentrations, EPA can ensure protection for sensitive subpopulations such as pregnant women, women of child-bearing age, children, persons with a compromised immunosystem, and other sensitive subgroups. Using the mean concentration would not ensure protection for these subpopulations.

3.3.3 Questions were raised about EPA's assumptions regarding the effect of seafood consumption on human health risks. One commenter stated that prohibitions are currently in place regarding consumption of shellfish from the Elizabeth River and that this prohibition is unrelated to activities at the AWI site. In addition, the commenter claimed that it is common knowledge that fish and shellfish should not be eaten out of this section of the river, so it is unlikely that the area would be used for subsistence fishing. Thus, the commenter concluded that EPA's assumption that the adult is consuming 104 to 156 meals per year for oysters and crabmeat, respectively, is very conservative. Concerning the recreational fisher, the commenter claimed that EPA's assumption that the adult consumes one meal per week of shellfish from the creek is very conservative.

Another commenter noted that, according to the Chesapeake Bay Angler Interviews report, 97.4% of fishers eat their catch 1 to 2 times per week or less. In addition, the commenter stated that many fishers only catch fish between the months of May and September. Given this information, the commenter claimed that it is safe to assume that anglers do not consume more than 52 meals per year. In addition, 84% of the anglers surveyed did not consume the hepatopancreas, further reducing possible adverse health risks.

EPA Response: While conservative, EPA's assumed tissue ingestion rates that were intended to include a wide range of potential crab and oyster consumption scenarios. EPA developed its assumptions using information from several sources including employees personal experiences and the 2004 Chesapeake Bay Program Angler Interviews Report ("Survey") (see footnote 8 on page 45 for a web link to the report), which indicated that 13 out of 60 (22%) crabbers interviewed consumed crabs 1 to 2 times per week, and 4 out of 60 (~7%) consumed crabs 3 or more times per week. Overall, based on this survey, over 28% of crabbers (17 out of 60) consumed crabs more than once per week.

Also unknown is what percentage of crabbers may freeze, can, and/or store crabs for consumption when crabs are not in season. Without more detailed information, EPA believes it is speculative to assume that crabbers consume fewer than 52 meals per year due to a six-month crabbing season. Considering the numbers of people who use the Southern Branch of Elizabeth River for crabbing, EPA believes that its estimates are appropriate and that determining risks only for "average" consumers does not serve to protect subsistence crabbers.

EPA did evaluate the risk from ingesting the hepatopancreas or mustard (which has higher levels of contamination compared to the muscle tissue) and the crabmeat together. While 84% of the anglers surveyed did not consume the hepatopancreas, a significant percentage (the other 16%) do, which could aptly describe hundreds of people. Therefore, EPA believes including risk from mustard consumption is appropriate. It is also unknown what happens to the hepatopancreas during the cooking/steaming process. It is unclear whether the contaminants are bound to insoluble membrane fragments or whether they can be dispersed throughout the crab into muscle tissue or other food in which a crab might be cooked (e.g., sauce).

3.3.4 The commenter stated that the cancer and non-cancer risks from consuming a meal of 12 crabs (8 ounces) worth of crab meat once per week for 70 years, assuming 1% and 5% inorganic arsenic from the AWI site, are within acceptable limits. The commenter noted that blue crabs are only available from May to October for recreational fishing and that, as winter approaches, most crabs will bury themselves in the mud and shallow grass beds of the river and bay. Thus, it is more likely that crabs will only be consumed for 6 months of the year, further lowering the risks associated with their consumption.

EPA Response: EPA conducts conservative risk assessments to ensure that it can adequately protect all people that may potentially be exposed to contamination. EPA does not believe that the consumption assumptions used by the commenter will lead to a risk characterization that EPA could use to accomplish its goals at the site.

3.3.5 The commenter raised concerns about EPA's risk calculations with respect to oysters. The commenter claimed that the carcinogenic risk associated with a consumption rate of 18 oysters per meal (8 ounces) using 1% and 5% inorganic arsenic are 9.7×10^{-5} and 1.1×10^{-4} , respectively, which is within EPA's risk range. The corresponding non-cancer hazard index values are 4.1 and 4.2; however, those values include copper and zinc, which are essential elements for plant and animal life and are considered essentially non-toxic to humans. Without copper and zinc, the non-cancer hazard index for natural oysters falls to 0.9 and 1, according to the commenter.

EPA Response: EPA acknowledges the comment. While EPA agrees that copper and zinc are required for plant and animal life, consuming too much can create harm. The fact that zinc and copper contribute as much as they do to the hazard index means that the concentration, coupled with the quantity consumed, would result in a person consuming more zinc and copper than is healthful.

3.3.6 The commenter raised concerns about EPA's assumption that all of the carcinogens studied will have a cumulative effect on the body. The commenter stated that while this is a worst case scenario, contaminants included in the risk assessment do not affect the same target organs within the body. Based on this presumption that carcinogenic risk is not additive, the commenter stated that the risk for each contaminant of concern is much lower than the total cancer risk and well within the 10^{-4} to 10^{-6} limit. Therefore, the commenter does not see the need for the issuance of any advisory on crab consumption at the AWI and Scuffletown Creek sites in the Elizabeth River, nor the King's Creek site in the York River. The commenter also claimed to have calculated non-cancer risks for the consumption of crab meat and determined that the non-cancer hazard index for crab meat (without the hepatopancreas) is 0.75, which is below the EPA limit of 1.0. The commenter concluded that consumption of crab meat from the AWI site, Scuffletown Creek, King's Creek and Sarah's Creek sites does not pose a significant risk to human health.

EPA Response: EPA's practice is to calculate cancer risks by adding the individual risks from each contaminant to determine the overall cancer risk. This practice may result in an over- or

underestimation of risk. For *non-cancer* risks, risks are calculated by target organ such that the risk from every contaminant is not added together in one sum. It appears that cancer and non-cancer endpoints have been combined in the description of “target organ” risk in the comment, which is incorrect.

While EPA is not advocating at this time that Virginia issue a fishing advisory for crabs, EPA has determined that it is appropriate to educate the public regarding the presence of contamination and the possible risks, especially for sensitive subpopulations who consume crabs from the Southern Branch of the Elizabeth River on a regular basis throughout their life (see section 11.2.16.5 on page 103).

EPA’s crab and oyster consumption risk assessment was intended to consider: (1) subsistence and recreational fishing; (2) low, medium, and high consumption rates; and (3) consumption of crab meat only and consumption of whole crabs (as a number of contaminants will preferentially locate to the mustard). EPA believes the ingestion assumptions used, which were based in part on the Survey, are reasonable (and in accordance with Superfund risk assessment methodology) and that modeling risk based on consumption of only crab meat without the mustard in moderate amounts may not accurately represent risks to many consumers of crabs.

3.3.7 Concerning the human health risk assessment, the commenter questioned how EPA’s assumed sediment ingestion rates of 100 and 200 milligrams per day for the adult and child, respectively, could occur with sediment below the water line.

EPA Response: EPA uses contact rates appropriate for each activity. Sediment ingestion rates were determined based on the exposure from wading/swimming in the river, during which direct exposure to sediment occurs.

3.3.8 With regard to the human health risk assessment, the commenter stated that explanation was needed to illustrate how EPA’s dermal contact rates of 0.316 milligrams per square centimeter per event (reed gatherer) and 20.6 milligrams per square centimeter per event (child in mud) could occur with sediment below the water line.

EPA Response: See previous response.

3.3.9 The commenter claimed that EPA’s exposure frequency assumptions led to an overestimation of risk. In particular, the commenter questioned the assumption that a one to six year old child would be trespassing without an adult approximately 24 days/year (childhood trespassing scenario) and the childhood recreational exposure assumption that the one to six year old child recreating 16 days/year without adult supervision (childhood recreational scenario).

EPA Response: One does not have to draw the conclusion that EPA’s exposure frequency assumptions for these scenarios could only happen if an adult was not present with a young child. For example, a child would not have to visit the site with the same adult each time.

3.3.10 The commenter claimed that (1) EPA’s Human Health Risk Assessment does not offer sufficient information about the connection between the AWI site and arsenic in the sediments and (2) there is no evidence of a transport mechanism to the river for the arsenic presumed to be present on AWI’s site. The commenter also stated that it is not clear how the preferred alternative would address arsenic in the sediments.

EPA Response: There are areas of elevated arsenic levels at the site. Transport to the river could occur via erosion or ground water discharge. EPA acknowledges that the arsenic found in the crabs and oysters could have come from a number of sources, both naturally occurring and

anthropogenic. Any arsenic in Elizabeth River sediments that came from an AWI site-related release of arsenic would not in all likelihood be outside the extent of the area of PAH contamination requiring cleanup as part of the AWI site. Any arsenic found beyond this area could not be fingerprinted to an AWI-site release even if it were from the site. The quantity of creosote contamination released from the AWI facility to the river is in great excess of the arsenic that could have been released at the site to the river sediments. Therefore, EPA has determined that in addressing the PAH contamination, the selected remedy will address the arsenic contamination in the river sediment associated with the AWI site.

3.3.11 One commenter noted that the Human Health Risk Assessment (HHRA) evaluated sediment as though it were soil, which is inappropriate.

EPA Response: In regard to human health risk evaluation of direct contact to contaminated sediment, EPA Region 3 normally evaluates sediment as though it were soil with some modifications in determining the contaminants of potential concern (COPCs). Additionally, as with any exposure scenario, exposure assumptions regarding frequency and duration of exposure, intake, etc., may be adjusted based on site-specific circumstances. To determine the COPCs for carcinogens, soil contaminant levels are compared to the carcinogenic residential soil RBCs (set at a 1×10^{-6} risk level), while sediment contaminant levels are compared to levels 10 times the RBCs (i.e., a 1×10^{-5} risk level). To determine the COPCs for non-carcinogens, soil contaminant levels are compared to one-tenth of the non-carcinogen residential soil RBCs, while sediment contaminant levels are compared to the non-carcinogen residential soil RBCs themselves. These adjustments are made because it is expected that exposure (frequency, duration, etc.) to sediment would be a fraction of what exposure to soil is.

3.3.12 One commenter expressed concern that EPA finalized the HHRA despite significant technical concerns that the report's conclusions overstated risks (i.e., inorganic versus organic arsenic risks) and that such actions on the part of EPA perpetuates the belief that EPA has "fast-tracked the Site" without adequate regard to sound science or public input. The commenter stated that this process is inconsistent with the National Contingency Plan, which requires that all public and private interests be kept informed and that their concerns and comments be considered throughout the process (see 40 C.F.R. 300.155).

EPA Response: Since 2004, when the Elizabeth River sediment study began, EPA has interacted regularly with many stakeholders through meetings of the Elizabeth River Project Sediment Remediation Partnership. Scoping, data collection, and results of HHRA have been discussed at these meetings. The level of detail provided to stakeholders and the level of participation by stakeholders has been very significant at this site.

EPA acknowledges that crab and oyster consumption risks in the draft HHRA for the Elizabeth River sediments overstated the risks because it assumed that all of the arsenic in the organisms was inorganic arsenic. However, EPA worked with a number of stakeholders and significantly revised this aspect of the HHRA before it was finalized. EPA participated in several stakeholder meetings in the spring of 2007 where the oyster and crab consumption risk was the major topic of discussion. The stakeholders included the Virginia Department of Health (VDOH), the Portsmouth Health Department, several divisions within VADEQ, the Agency for Toxic Substance and Disease Registry, and the Elizabeth River Project. Two of the biggest concerns with the draft HHRA were the assumption that all of the arsenic was in an inorganic form and the assumptions regarding the consumption amounts, which many stakeholders perceived as very high.

EPA believes the consumption rates used in the crab and oyster risk assessment were appropriate in order to protect, for example, subsistence fishers. However, in order to address stakeholder concerns about the consumption rates and the assumptions regarding the portion of the arsenic

that was inorganic in form, EPA calculated the number of crabs or oysters that would have to be consumed to produce a certain risk level at varying percentages of inorganic arsenic (see **Table 5** on page 48). Additionally, EPA committed to conduct arsenic speciation to determine the relative percentages of inorganic and organic arsenic in crabs and oysters, which EPA is undertaking at this time. See section 7.1.4 on page 40 for a detailed discussion of these issues.

In May 2007, EPA provided the stakeholders with the new risk analysis and EPA's draft conclusions regarding the results. Later in May 2007, EPA provided VDOH with the electronic files so it could review in detail EPA's calculations. None of the stakeholders responded to the information provided by EPA except VDOH, which sent EPA a memorandum shortly before EPA approved the HHRA. The main impact that the discussions with VDOH had on the HHRA was the revision of some of the oyster risk calculations based on changes in which set of data was used to conduct the calculations. The information provided to the stakeholders in May was incorporated into the HHRA and this ROD. The HHRA and VDOH's comments are included in the Administrative Record for the site.

Note that 40 C.F.R. 300.155 instructs EPA's remedial project managers and community relations personnel to ensure that "all *appropriate* public and private interests are kept informed . . ." (emphasis added). The regulation serves to ensure that interested stakeholders and regulators are kept informed, not that every interest be kept informed of every issue which may be an impossible goal for some site responses.

3.3.13 One commenter asked why preliminary remediation goals (PRGs) were calculated only for biota and not sediment. The commenter also noted that the PRG value for arsenic used in the HHRA is below the background (reference) sample for biota, and that if exposure to background location biota were estimated using the current exposure scenarios, the acceptable risk level may be exceeded.

EPA Response: EPA acknowledges that the OU3 Elizabeth River sediment HHRA has PRGs for biota but not for sediment. There was not a need to calculate PRGs for direct contact with sediment since the sediment cleanup criterion derived for tPAHs (45 ppm) to provide protection to the environment, also provides protection for human health.

PRGs by definition are "preliminary." The biota PRGs in the HHRA were an initial calculation to help determine what contaminant level would provide a 1×10^{-6} risk level. The initial PRG calculations did not take into account a number of site-specific factors, and they do not impact the actions selected in this ROD.

3.4 Elements and Cost of the Preferred Alternative

3.4.1 A commenter asked why EPA is moving contaminated material toward the river and suggested that it would save money and be more protective of the river to leave the contamination on the western part of the site and cap it in place.

EPA Response: The selected remedy calls for creosote DNAPL located on the western side of the AWI property to be excavated and moved to the eastern side because the Columbia clay, which if sufficiently thick provides an effective barrier against downward migration because of its low permeability, is thin on the west side and very thick on the eastern side. The Columbia clay on the eastern side can prevent downward migration of DNAPL, which will sink through ground water due to its density. The thin clay on the western side is an ineffective barrier to DNAPL migration and cannot adequately prevent the DNAPL from sinking and contaminating more areas of ground water. See section 5.5.2 on page 29 for more information.

3.4.2 Another commenter asked EPA to confirm that, under the preferred alternative, excavated soil from the west side of the property would be moved to the east because there is a thick layer of clay that would help prevent the contamination from seeping into the ground water. Additionally, the commenter asked if dredged material from the east side would be moved to the west, and, if so, if such a transfer would just re-contaminate the western portion of the site. The commenter stated that any selected remedy should make the area better, not the same or worse, and that removing the material is the best way to achieve this goal. Another commenter was concerned that putting the dredged sediments on the west side would contribute to ground water contamination in that area.

EPA Response: DNAPL will be moved from the western side to the eastern side so that it can be adequately contained. While most of the sediment dredged from the river will be placed behind the sheet pile wall(s), some of the less contaminated sediment will be moved to the western portion of the site before the area is covered with clean soil. This sediment will be less contaminated than much of the soil that already exists and that will remain in the western side. Therefore, consolidation of lesser contaminated river sediment on the western side of the site will not overall make the soil or ground water any more contaminated, increase site risks, or affect redevelopment potential. Utilizing the western side for some of the sediment consolidation will help minimize the amount of the river that has to be filled in. The soil cover or pavement placed on the western part of the site will be protective of human health and the environment.

3.4.3 A commenter asked if EPA will be putting down a membrane on the site to help prevent contamination from going into the ground water.

EPA Response: The selected remedy does not call for placement of a membrane, or plastic liner, on the ground before dredged sediments are put on the ground. The soil cover or pavement that will be constructed over the dredged sediments will minimize rain water infiltration, which is one way contamination could migrate to the ground water. The ground water underneath the areas where the dredged sediments will be put is already heavily contaminated. Since the selected remedy does not call for this ground water to be cleaned up, it is only necessary to minimize, not completely prevent, the downward migration of contamination.

3.4.4 One commenter asked if EPA foresees any work being done within the Paradise Creek area as a result of this cleanup plan.

EPA Response: EPA does not anticipate that this cleanup project will require any work in Paradise Creek. EPA is undertaking a removal project at the Peck Iron & Metal site, which is on the banks of Paradise Creek. There is other environmental work being done in the Paradise Creek area not associated with the AWI Site.

3.4.5 A commenter asked about the amount of clean soil that will be placed on top of the contaminated fill.

EPA Response: As described by section 11.2.10.2 on page 96, the soil cover will have a one-foot thick low-permeability layer and six inches of top soil. Alternatively, six inches of pavement can be used to cover the contamination.

3.4.6 One commenter asked about the City of Portsmouth's property to the north of the AWI property and what provisions will be made to make sure that the material behind the sheet pile wall does not recontaminate the river.

EPA Response: The sheet pile wall along the eastern tip of the City property is required so that dredging can occur without the riverbank sloughing into the river. Since the ship channel is so

close to the riverbank in this area, the slope of the river bottom is steep. This sheet pile wall does not require sealing since there is no evidence of creosote underground in that area.

3.4.7 A commenter asked about EPA's plans for mitigating the potential for spreading contamination in the river once dredging begins, and the possibility of creosote spreading across the river surface and sticking to bulkheads, piers, and other areas along the river.

EPA Response: As detailed in section 11.2.3.3.2 on page 90, precautions will be taken to prevent the spread of contamination. For example, silt curtain (which look like large plastic sheets hanging in the water) may be used to limit the migration of sediment that is resuspended during dredging. Monitoring, as required in section 11.2.3.4 on page 91, will be conducted near the dredge area to help determine if unacceptable amounts of sediment and/or contamination are migrating away from the dredge area. If this happens, work will be stopped and steps taken to control the migration (see section 11.2.3.3.4 on page 90). In addition, oil booms will likely be used to control creosote sheens that may float on the surface.

3.4.8 A commenter asked EPA to clarify that the recommended alternative would include dredging the river and putting the dredged sediment back onto the site. If this is the case, the commenter asked EPA how the remedy would prevent runoff from carrying contamination back to the river.

EPA Response: Yes, the selected remedy involves dredging the river and consolidating the dredged sediment either behind the sheet pile wall(s) or on the western side of the AWI property. The dredged sediments would then be covered with clean soil or pavement. Rain water that runs off the property to the river will not come into contact with the dredged sediments.

3.4.9 Several commenters noted the potential for future stormwater problems at the site and asked how EPA will maximize stormwater retention on-site in order to minimize movement of contamination, such as PAHs and metals from roadways, into the river. They noted that stormwater is currently one of the largest contributors of new contamination to the river.

EPA Response: EPA acknowledges that stormwater can carry a significant amount of contamination, both in the form of pollutants and sediment load, into water bodies, especially in urban areas. As described in section 11.2.12 on page 98, the selected remedy calls for a stormwater management system to filter runoff from areas such as the AWI property to minimize the potential for recontamination of the newly dredged areas. The stormwater management system will be built to comply with the ARARs listed in **Table 7** in **Appendix B**.

3.4.10 A commenter asked why EPA's preferred alternative does not include thermal desorption on the western portion of the site.

EPA Response: Low-temperature thermal desorption would not address the metals contamination that is located in most of that portion of the site. The areas where thermal desorption could provide sufficient treatment to address contamination are fairly small, and it would not be cost effective to bring in a huge treatment unit for those areas.

3.4.11 Looking at the differences between Alternatives 4 and 5 (Alternative 5 includes *in-situ* soil stabilization and then a soil cover, while Alternative 4 only requires a soil cover), one commenter asked if Alternative 5 could be implemented with only a soil cover as in Alternative 4.

EPA Response: Yes, a new alternative could be created by taking Alternative 5 and removing the requirement for *in-situ* solidification/stabilization. In fact, a number of new alternatives could be

developed by mixing various components from the alternatives described in this ROD. EPA has managed the site in three phases called operable units: the soil and DNAPL, the ground water, and the river sediments. Alternatives to address each unit were developed in three separate feasibility studies (FSs). Components from each FS were then combined into alternatives that address the entire site.

3.4.12 Several commenters asked about who is responsible for funding the site cleanup. One commenter expressed the desire to have the responsible parties pay for the site cleanup and restoration.

EPA Response: EPA's policy is for the polluters to pay for the cleanup. At sites where it is impossible, EPA can spend its funds to clean up a site. Two potentially responsible parties (PRPs), AWI and the Navy, have been identified at this site, but EPA is not yet able to say who will fund the AWI site cleanup. After this ROD is issued, EPA will negotiate with the PRPs regarding implementation of the cleanup. These types of negotiations can take 6 to 12 months. If the negotiations at a site are unsuccessful, EPA has the authority to order a PRP to perform the cleanup. At some sites, PRPs pay for part of the cleanup, and EPA pays for the other part.

3.4.13 A commenter asked about EPA's budget and what guarantee the community has that EPA will not decide on an alternative less protective than Alternative 4.

EPA Response: Congress typically gives EPA an annual budget of \$7 to \$8 billion, and about \$1 billion of that appropriation funds the Superfund program. There is not specific money set aside for the AWI cleanup in the appropriation that EPA receives from Congress as one might see for a project in a Water Resources Development Act appropriation from which the U.S. Army Corps of Engineers receives its money for navigational dredging. If EPA has to pay for all or a portion of the cleanup, the project team will ask for the money during the latter part of the remedial design. Funding specifically for this site needs to be allocated by EPA from its budget; site-specific funding does not involve any further legislation which could introduce delays. Not all the money would be required at once: funding could be spread over the life of the project.

If EPA were to decide that a significantly different cleanup was required, for any reason, EPA would have to make another proposal to the public and a new set of public comments would be solicited and considered. Any cleanup plan would have to be protective of human health and the environment. Cost would not be considered unless the first two of the nine criteria are met: (1) overall protection of human health and the environment and (2) compliance with applicable or relevant and appropriate requirements (ARARs) (i.e., environmental laws and regulations). See section 10 on page 72 for further information on the nine criteria that EPA uses to select the best cleanup plan.

3.4.14 One commenter agreed with the proposed soil cover in the preferred alternative, but has significant concerns about depositing contaminated sediment on the western portion of the site where that portion of the site would become a regional repository of contaminated sediments with one landowner being responsible for the maintenance of the property.

EPA Response: EPA understands why one might think that the western side of the AWI property is becoming a regional repository for contaminated sediments since the Southern Branch of the Elizabeth River is a highly industrialized river. However, only sediments, with contaminant levels lower than what already exists on the western side of the AWI property, that are contaminated from hazardous substances that have migrated from the AWI facility, or whose removal is required to prevent recontamination of the areas where the previously-mentioned sediments were removed, will be put on the western side of the AWI property. This consolidation will be undertaken to fulfill the requirements of this ROD. EPA will not use the

western portion of the property as a regional repository of contaminated sediments. As part of the Superfund cleanup, this ROD requires that maintenance of the soil cover and/or pavement be conducted to ensure the long-term effectiveness of the remedy.

3.4.15 One commenter expressed concern that the proposed alternative included the possibility that modifications to the remedy may have to be made if monitoring determines that contamination in ground water needs to be treated using pump-and-treat technology before discharge to the river. The commenter notes that addition of a pump-and-treat system, if needed, would significantly increase the overall and long-term costs of the remedy.

EPA Response: EPA acknowledges that the selected remedy has requirements to upgrade the passive ground water discharge through the sheet pile wall(s) to an active pump-and-treat system and that if this upgrade is necessary, the cost of the remedy will increase. The selected remedy utilizes passive discharge because it will be less costly and easier to implement than other options. EPA estimates that if the upgrade is required, an additional approximately \$470,000 in capital costs and \$60,000 in annual operations and maintenance costs would be required, adding approximately \$1 million to the present worth of the selected remedy. This cost is already included in the estimated cost of the selected remedy (see **Table 8** in **Appendix B**).

3.4.16 The same commenter concurs with the proposed DNAPL/ground water monitoring for the site. However, the commenter believes that the proposed partial DNAPL excavation on the western portion of the site to minimize potential sources of ground water contamination should be reevaluated and reconsidered. The ground water table in this area is very high and ground water on the AWI site might become contaminated or recontaminated by an influx of ground water from neighboring sites as a result of the excavation work. The commenter also claims that the Yorktown Aquifer already shows impacts likely due to the Navy landfill/waste disposal areas immediately west of the AWI site, and that this contamination should be addressed as fully as the AWI site contamination. The commenter stated that if DNAPL in this area must be addressed, EPA should consider *in-situ* stabilization instead of excavation.

EPA Response: The Historic Disposal Area is the primary location where DNAPL is to be excavated on the western portion of the AWI site. Various investigations have shown that the waste materials were disposed in bermed lagoons/trenches, the bottom of which lie on silty clays in the upper Columbia Aquifer. These disposal areas were covered with a ridge of clean fill. The sands comprising the upper Columbia Aquifer are not highly permeable and yield only a small amount of ground water. While the lower Columbia Aquifer is more permeable and would yield more ground water, EPA anticipates that most of the waste to be excavated is in the upper Columbia Aquifer. It should not take very long to complete the excavation of the Historic Disposal Area. Although dewatering will likely be necessary during the excavation, the amount of water removed will be trivial given the volumes of the underlying Columbia and Yorktown Aquifers. Therefore, the excavation should cause no appreciable influence on contaminant migration from the Navy properties.

Ground water quality in the Yorktown Aquifer was monitored during the RI. The only organic constituents detected in the aquifer were very low levels of one pesticide and dioxin, both of which were at levels below screening criteria. Similarly, the only metals found in the Yorktown Aquifer above screening criteria were iron and manganese. The manganese concentrations are within a range of concentrations found in samples collected in the region (essentially, regional background concentrations). One iron sample had a concentration that exceeded the regional concentration for iron. There is no indication that the Navy landfills have impacted the Yorktown Aquifer underneath the AWI facility. As part of the selected remedy, ground water in the Yorktown aquifer will be periodically monitored.

The Navy landfills and any associated contaminated ground water are part of the NNSY Superfund site. The commenter appears to imply that the NNSY landfill waste is not being as aggressively remediated as the DNAPL on the west side of the AWI property. Remedy selection decisions are based on a number of site-specific conditions. Concerns about remedy selection at the NNSY site should be addressed to the Navy and/or EPA's project manager for that site. For the AWI site, EPA is selecting the least aggressive ground water cleanup option evaluated in the ROD. The selected remedy includes the excavation of the DNAPL on the west side of AWI's property to prevent it from being an on-going source of ground water contamination to deeper aquifers because the clay layer between the upper and lower Columbia Aquifers is not an adequate containment layer.

However, EPA acknowledges the commenter's concern and has included in the selected remedy the option to use *in-situ* S/S to bind up DNAPL on the west side of the site if EPA determines during the remedial design that it is a more appropriate remedy to minimize the DNAPL as a continuing source of ground water contamination while protecting the ground water during construction of the remedy (see section 11.2.7.3 on page 94).

3.4.17 A commenter made a statement that the dredging near the eastern end of the Portsmouth Port and Industrial Commission property may be accomplished without the sheet pile wall along the shoreline.

EPA Response: EPA acknowledges the comment and has included in the selected remedy the requirement for this wall only if necessary to stabilize the shoreline (see section 11.2.2.1 on page 88).

3.4.18 A commenter expressed support for the soil cover or pavement over the AWI facility as a cost-effective solution that facilitates redevelopment and can be implemented with minimal disruption to AWI's on-going business.

EPA Response: EPA acknowledges the comment.

3.4.19 A commenter stated that neither the OU1 FS nor the OU2 FS described and evaluated the partial DNAPL excavation and consolidation component of the preferred alternative.

EPA Response: When EPA approved the OU1 FS and the OU2 FS, the Agency included as part of each FS Sections 4 and 5 from the "National Remedy Review Board Review Document, Atlantic Wood Industries, Inc. Superfund Site, Portsmouth, Virginia" (January 29, 2007). The partial DNAPL excavation and consolidation component is described and evaluated in these sections, which are part of each FS.

3.4.20 A commenter stated that during the late 1970s, there were regular reports of oil slicks near the Jordan Bridge that could be seen from the air when the weather was warm and calm. The same commenter stated that during mid-1980s there was allegedly a 400 to 600 gallon creosote spill during a loading operation of a barge at the AWI pier. The commenter also reported other sources of creosote contamination at the site: (1) the tanks along Elm Avenue leaking onto the ground and (2) drips from treated wood. The commenter also reported that there were indications that creosote in the drip area was cleaned by pushing the oily soil into the river. The commenter stated that using vacuum trucks to collect creosote from the barge spill would, at a small cost, address much of the problem and assist the site in its natural recovery.

EPA Response: EPA acknowledges the comments. River sediment corings collected during the OU3 RI show a much more widespread creosote problem than could be addressed by a vacuum truck from shore (see **Figure 2**).

3.4.21 A commenter stated that maintenance of the off-shore sheet pile wall in perpetuity (including replacement costs) could be very costly compared to consolidating all dredged sediments on the western side of the AWI property.

EPA Response: A sheet pile wall(s) would be required even if all the dredged sediments are consolidated on the western side of the AWI property. The estimated cost for the sheet pile wall(s) is slightly more than \$10 million (see **Table 8** in **Appendix B**). If the net present value of the replacement cost was included on the estimate, it would only add about \$2.5 to \$3 million to the overall cost of the remedy (assuming replacement every 50 years).

3.4.22 A commenter referenced EPA Region 3's response to comments from EPA's National Remedy Review Board regarding EPA's RAO for the ground water at the AWI border with the South Annex. The commenter is concerned that the RAO for ground water (see section 8.2.1 on page 56) of minimizing the migration of metals contamination from the AWI site to the South Annex is backwards. The commenter states that, since the metals contamination in the soil came from the South Annex originally, the goal at the AWI site should be to prevent the South Annex ground water contamination from migrating to the AWI site.

EPA Response: EPA acknowledges and shares the commenter's desire to prevent ground water contamination at the South Annex from migrating to the AWI site. However, the current ground water flow direction is generally in a southeasterly direction from the AWI site to the South Annex (for example, see **Figure 7**), so the potential for migration of contaminants is from the AWI site to the South Annex.

3.5 Implementation of the Preferred Alternative

3.5.1 A commenter asked if signs will be posted during the site remediation. The commenter also wondered if, since people fish and crab in the area, there would be warnings against eating fish caught in this area of the river.

EPA Response: Signs have already been posted at the Scuffletown Creek pier about Virginia's PCB³³ fishing advisory. The selected remedy requires public education to inform the community about the contamination in the crabs (see section 11.2.16.5 on page 103). During the dredging operations signs or other markings will be posted as necessary to ensure boater safety. Additional public education activities will take place during the sediment dredging as appropriate (see section 11.2.16.5.3 on page 103).

3.5.2 Several commenters asked about the timeline for the implementation of the AWI cleanup, as well as other Superfund cleanups and environmental projects along the Southern Branch of the Elizabeth River.

EPA Response: EPA estimates that the AWI cleanup will be completed in 5 or 6 years. For information on the other NPL sites on the Elizabeth River, visit <http://www.epa.gov/reg3hwmd/super/va.htm> or <http://www.elizabethriver.org/Superfund/Superfund.htm>. Information on other EPA projects can be obtained by contacting EPA Region 3's office at 800-438-2474.

3.5.3 One commenter stated that it would be beneficial for AWI and EPA to coordinate the implementation of the remedy so that AWI's on-going operations can continue with as little disruption at possible. The commenter was specifically concerned about preserving AWI's ability to load materials onto barges, to continue to store inventory, to stage

³³PCBs or polychlorinated biphenyls are not a site-related contaminant.

materials, and to continue other necessary aspects of its operation during remedy implementation.

EPA Response: EPA agrees that it should coordinate implementation of the selected remedy with AWI in order to avoid as much disruption to AWI's on-going operations as possible. EPA cannot guarantee that there will not be any disruptions. Section 11.2.5 on page 93 addresses these concerns. One of the best ways to minimize disruptions would be for AWI, as a PRP, to implement the cleanup.

3.5.4 A commenter noted that if DNAPL is being dredged, the airborne odors will be very high, which could impact workers at nearby sites and possibly residents.

EPA Response: EPA acknowledges that Alternatives 3 through 7 could have odor problems and possibly air emissions that could pose a risk to on-site and offsite workers and require mitigation efforts. EPA will address these issues in the design phase. The nearest residents are a significant distance from the dredging operation and should not be impacted in this way by the cleanup. Section 11.2.18.2 on page 104 addresses this concern.

3.5.5 One commenter noted that while the plan addresses control of suspension and re-deposition of PAHs outside of the dredged area, it does not address re-suspension and deposition of PAHs at concentrations greater than 100 ppm within the dredged area.

EPA Response: When dredging a large area, as required at this site, controls such as silt curtains are not necessarily placed outside the overall dredge area, but more likely placed nearer the dredge itself so that movement of resuspended sediment can be minimized to near the dredging activity itself. In this way, the potential to recontaminate newly dredged areas during the actual cleanup can be minimized. Since the experience of the environmental dredging industry has shown that residual contamination in the dredge area is approximately the average concentration of the sediments that were not dredged and the sediments that were removed during the last pass of the dredge, thin-layer capping and/or MNR may be necessary to complete the attainment of the 45 ppm sediment cleanup criteria.

3.6 Effectiveness of the Preferred Alternative

3.6.1 A commenter expressed concern regarding the use of sheet pile walls and contaminated dredged sediments as fill along the shoreline. The commenter noted that placing the most contaminated material along the shoreline does not remove the contamination from the area, but simply moves it from the riverbed to the shore line. Questions were also raised about the effectiveness of the sheet pile wall. In particular, the commenter referred to the sheet pile wall's required maintenance, permeability, tendency to shift, and the possibility of washout in a flood event. In addition, the commenter expressed concern about the presence of the contaminated sediment behind the sheet pile wall as a possible obstacle and risk in the event of future site development, and stated preference for removal of the contaminated sediment to prevent continued contamination of the Elizabeth River. In a similar comment, the City of Chesapeake requested assurance that the dredged DNAPL material will not re-enter the water column and that contaminated ground water from the AWI site will not seep into the Elizabeth River.

EPA Response: Whether the sheet pile wall(s) is constructed in-shore, at the shore, or off-shore, there will be DNAPL directly behind the wall(s). One way to prevent DNAPL from existing immediately behind the wall would be to excavate about 15 feet of soil for a significant number of feet behind the planned location of the wall. This excavation would create additional materials for disposal, increase the difficulty of implementation, create more short-term impacts (particularly when having to excavate across Elm Avenue near the base of the Jordan Bridge),

and increase the cost without a corresponding increase in the level of protectiveness. Sealed sheet pile would still be required to separate the contaminated land and ground water from the river. *In-situ* S/S would likely still be required to increase the long-term effectiveness of the sheet pile wall(s).

Another way to address the DNAPL would be to solidify and stabilize it *in situ* throughout all areas of DNAPL (see Alternatives 5 and 7 on pages 67 and 71, respectively). This treatment would not remove the contamination from the soil but would prevent DNAPL, with its high quantity of contamination, from migrating to the river. This option is, in essence, the same as the selected remedy except that instead of a five-foot stabilized zone behind the sheet pile, there would be a stabilized zone of potentially hundreds of feet. The sealed sheet pile would still be required to prevent contaminated ground water from potentially recontaminating the river sediments. EPA has determined that a five-foot stabilized zone (see section 11.2.8.1.2 on page 95) is adequate to protect the river over the long term. Also, note that the process of dredging and consolidation behind the wall will cause some mixing of sediments, with the result being that DNAPL, which may be mobile as it currently exists in the river, will tend to become residual in nature (i.e., it remains as visible, oily coating of the sediment particles, but is not mobile as a separate phase).

The permeability of a typical sheet pile wall can be on the order of 1×10^{-4} cm/sec (i.e., fairly permeable) because the joints are permeable, not the steel. For environmental applications, there are technologies that can be used to seal the joints to significantly lower the overall permeability of the wall. For example, at the DuPont-Newport Superfund site in Newport, Delaware, a number of technologies were used: (1) welding two sheets together, (2) using sheets with tightly fitting joints that are filled with a sealant that swells upon contact with water, (3) encapsulating one side of the joint with bentonite clay (which also swells when in contact with water forming a tight seal), and (4) jet grouting behind a sheet pile wall.

Rip-rap will be placed at the bottom of the wall(s) in the river to prevent sediment erosion from occurring at the base of the wall due to, for example, floods or prop wash from a ship. See comment 3.6.2 below for further discussion about the stability of the wall.

EPA acknowledges that maintenance will be required. Even Alternative 7 (see page 71) at a cost of \$293 million would require maintenance of a sheet pile wall to ensure its long-term effectiveness. Since contamination will be left at the site, the site will never be suitable to allow unlimited use and unrestricted access. As a result, the Superfund law requires EPA to conduct formal reviews at a minimum of every five years to evaluate the on-going effectiveness of the selected remedy to protect of human health and the environment (see section 12.3 on page 111). EPA issues reports that are available to the public when it conducts five-year reviews.

3.6.2 Some commenters expressed concern that the option to drive sheet piling into the Columbia Aquifer and backfill to higher than mean high tide may not be technically feasible due to the amount of top shear placed on the sheet pile. In addition, a commenter expressed concern that the structure would be unstable because only the top three feet would be solidified. The commenter also questioned whether the underlying unconsolidated material might be released back to the river in the future or cause sinking and cracking of the structure. Additionally, the City of Chesapeake requested more detail on what will comprise the “stabilized waste material” proposed for the three-foot cover over all the DNAPL/dredged sediment fill.

EPA Response: It is very common to install sheet pile with a cantilevered load (i.e., the level of the soil on one side is higher than it is on the other, creating horizontal force on the sheet pile). Almost every bulkhead along a river has a cantilevered load. A general rule of thumb is that two feet of sheet pile must be completely in the ground for every one foot upon which there is a

cantilevered load; however, fulfilling this ratio is not always practical or possible. There are other engineered methods to help sheet pile support a cantilevered load, including the use of tie-backs. Cables or rods, for example, are connected to the sheet pile wall near the top or at various levels in the area supporting the cantilevered load and extended far enough back into the soil to “tie back” the wall (see **Figure 30**).

It is also not uncommon to place a load-bearing surface over the top of material that could not bear a direct load. The stabilized surface will act to spread the pressure of a surface load out over an area of sufficient size such that the underlying, unconsolidated base can support a heavy load. During the remedial design, a detailed engineering analysis will be conducted to ensure that the specifications of the sheet pile wall and the surface stabilization will be adequate to perform as needed. The approximately three-foot stabilized surface will be comprised of sediment (including some contamination) mixed with an agent(s) such as portland cement to solidify the material sufficiently to bear industrial equipment (see section 11.2.8 on page 95 for more details). Since this solidification will not destroy the contamination, the area will require a soil cover or pavement (see section 11.2.10.6 on page 96).

3.6.3 A commenter claimed that there is no guarantee that the encapsulation or bulkhead will never leak and therefore recommends that free-phase DNAPL and river sediment that is contaminated beyond 1,000 parts per million (ppm) tPAH be treated to remove or destroy contaminants down to a significantly lower level of contamination before it is encapsulated.

EPA Response: EPA acknowledges that there is no absolute guarantee that any remedy that leaves waste at a site will perform as intended. As a result, EPA is requiring monitoring to determine if the remedy is operating as designed. If EPA determines that the remedy is damaged or not operating as designed and is not providing overall protection of human health and the environment, EPA will repair the remedy or otherwise evaluate the need to modify the remedy to ensure the overall protection of human health and the environment. Disturbances short of an earthquake would not likely cause a catastrophic failure; thus, regular monitoring will provide EPA with sufficient information to protect the river. With the protection from the stabilized zone behind the wall, even a ship collision will not cause a catastrophic release of contamination.

3.6.4 The commenter stated that the pier area is a tangled mess of piles and structural members which should be removed by crawler cranes from shore side.

EPA Response: EPA acknowledges that there are a large number of pilings and a structurally unsound pier that are in areas of contaminated sediments that require remediation. They will be removed to the extent necessary to install the sheet pile wall(s) and conduct the dredging and consolidation operation. Some pilings that are located in an area slated to be enclosed by a sheet pile wall may be left in place. Due to the location of many of the piles, it is doubtful that many can be removed from land. More likely, barge-mounted equipment will be used to pull the pilings.

3.6.5 The commenter expressed a preference for Alternative 5 over Alternative 4. In the absence of active reduction of contaminants, the commenter claimed that Alternative 5 does a better job of containment. This commenter also recommended the division of Alternative 5 into two proposals, one including wetlands/mudflat restoration, and one without the restoration, which the commenter prefers. Lastly, this commenter noted that if monitoring reveals that the more limited containment of Alternative 4 does not prove effective, more costs will be incurred anyway.

EPA Response: EPA acknowledges that the commenter would prefer a remedy that has soil stabilization to bind up contamination throughout the site, thus containing the waste better than

Alternative 4, in which only five feet of sediments behind the sheet pile wall(s) will be stabilized. EPA has determined that the selected remedy will provide for the protection of the river. If the ground water seepage to the river must be treated, the additional cost is significantly less than stabilizing all of the soil contamination at the site, which would still leave contaminated ground water that could migrate to the river.

3.6.6 A commenter noted that Alternative 7 would be ideal, but understanding that cost is a factor, supports Alternative 5. The reason given was that the solidification/stabilization of the soil is a critical step in keeping contaminants out of the river. For the same reason, this commenter believes that the sheet pile wall should be on-shore, not off-shore in the water.

EPA Response: See comment 3.6.1 on page 140.

3.6.7 A commenter suggested that EPA seriously consider implementing Alternative 5 to avoid filling in the Elizabeth River but refrain from implementing the soil stabilization throughout the entire site as included in Alternative 5 to reduce the cost of that alternative. The commenter also suggested modifications to the sediment cap for the Wyckoff Inlet including placement of a geotextile mat with sand coving to enhance the existing habitat while also providing armoring. The commenter states that the habitat at the Wyckoff Inlet can be restored and still allow for future piers to be constructed from the land toward the ship channel.

EPA Response: While eliminating the requirement from Alternative 5 to implement *in-situ* S/S over much of the site would significantly reduce the projected cost of Alternative 5 and rank it much closer to Alternative 4 in terms of cost, EPA does not believe efforts to remediate and restore the Wyckoff Inlet to the same type of habitat that it is today will succeed, given other circumstances at the site. Sediment capping in all likelihood could be used to provide a habitat that has a clean living layer for biota and has varying depths of water. However, a sediment cap would have to extend much further into the river than shown on **Figure 32** in order to eliminate the need for the subsurface sheet pile wall (see **Figure 34** and section 9.2.5 on page 67). The depth of the DNAPL in sediments, the DNAPL at the shore, and the off-shore sheet pile present the need for a complicated capping system in order to prevent the mounding of ground water, which would cause an increased upward pressure on the cap. Extending the cap out into the river creates obstacles to the navigational flexibility of the river and does not address the need to prevent ground water mounding. The geomembrane and bentonite layer called for in Alternative 5 is a more substantial barrier than a geotextile.

Early in 2007, EPA provided many stakeholders, including those involved with the Elizabeth River Project Sediment Remediation Partnership, the component of Alternative 5 that addresses the Wyckoff Inlet, and EPA's view that it was not a viable way to restore the habitat at the inlet. None of the stakeholders have presented EPA with a more viable plan or presented reasons why they think EPA's component would work.

Even if EPA did restore the Wyckoff Inlet habitat, it could not prevent someone from obtaining a permit from VMRC and filling it in. By replacing the wetlands lost at the Wyckoff Inlet with new wetlands created by enlarging the wetlands at the acetylene sludge area, EPA can ensure the wetlands remain as wetlands.

3.6.8 A commenter suggested that land farming be utilized to decrease the contaminant levels in the sediments before they are consolidated and covered.

EPA Response: While land farming could reduce the PAH levels to some degree, it would not provide an increase in protectiveness compared to the challenges regarding implementability

(e.g., land farming may require odor and/or emission controls), short-term effectiveness (e.g., land farming would take up a considerable amount of land that could not be used temporarily for other purposes such as redevelopment), and cost (e.g., land farming would significantly lengthen the time of the project causing an increase in costs). Additionally, land farming would not result in any reduction on the actions required in the selected remedy to contain waste since, for example, there are significant amounts of waste that are not being disturbed by the selected remedy but that are located at or close to the river.

3.6.9 A commenter stated that the proposed plan refers to leaving PAH concentrations of 45 to 100 ppm in the river and then placing a layer of sand over the site to enhance natural recovery to 45 ppm. The commenter expressed concern that this level of contamination left in place does not seem protective of the river and suggested that EPA consider removing or capping material to 45 ppm or below.

EPA Response: The sediment cleanup criteria is 45 ppm (see section 8.3.2 on page 58), which EPA has determined provides protection to human health and the environment from contaminated sediment. The selected remedy utilizes two technologies to reach this criteria: (1) dredging of sediments with PAH contamination greater than 100 ppm and (2) enhanced monitored natural recovery to address contamination from 45 to 100 ppm. During the remedial design, EPA will determine the amount of “enhancement” that is required to attain the 45 ppm level in the top foot of sediments within a reasonable time (see section 11.2.4 on page 92). The selected remedy is assured of meeting the cleanup criteria because up to a one-foot layer of sand could be placed over existing sediments to meet the cleanup criteria.

3.6.10 A commenter noted that ground water weep holes are proposed for alternatives using sheet pile walls installed to retain PAH-contaminated sediments/soils. EPA is expecting a build up of hydrostatic pressure behind the sheet pile walls and is predicting that ground water impacted with PAH compounds behind the sheet pile walls will pass through the weep holes. The commenter asked what contingency plan is being considered to prevent the long-term discharge of PAH-impacted ground water to the Elizabeth River. The commenter recommended that EPA consider the use of phytoremediation as both a way to reduce PAH’s in soil/ground water and to reduce the hydraulic head behind the wall.

EPA Response: The selected remedy does rely on weep holes in small areas of the sheet pile wall(s) to prevent the buildup of ground water behind the wall, which would cause contaminated ground water to migrate around the wall(s) to the river. The selected remedy requires monitoring to evaluate whether or not the passive ground water migration is protective of the river. If not, treatment additives will be added to the sand gates behind the weep holes to remove some of the contamination. If monitoring continues to show the system is not protecting the river, the weep holes will be plugged and a ground water extraction and treatment system will be installed (see section 11.2.13 on page 98). Phytoremediation (in this case the use of trees to remove ground water) may be a viable technology to prevent the mounding of ground water behind the sheet pile wall(s). Phytoremediation could offer some advantages of the above methods including reduced monitoring requirements over the long-term and creation or enhancement of habitat. Several factors could limit the viability of phytoremediation including the potential for cross-media contamination, space requirements in areas being used for manufacturing and product handling, site security, and the fact that evapotranspiration does not occur year round. Due to its potential viability, EPA has included the option in the selected remedy to use phytoremediation (see section 11.2.13 on page 98) as recommended.

3.6.11 The commenter noted that the ground water wells on the western part of the property, which may be a pathway for contaminating the lower Columbia Aquifer, should be properly sealed to prevent possible vertical migration of contamination.

EPA Response: EPA acknowledges the concern. One well at the Historic Disposal Area likely acted as a conduit for DNAPL to migrate lower in the aquifer system. This well has been abandoned and plugged in such a way as to prevent further migration of DNAPL.

3.6.12 A commenter asked if a collision from a runaway barge or storm surge from a category 3 hurricane could breach the sheet pile wall.

EPA Response: In regard to a runaway barge, see comment 3.6.3 on page 142. A large hurricane could cause a storm surge that could flood the site. However, the chance of a release of site-related contamination in amounts that could potentially cause harm to human health or the environment is minimal. This general area where the site is located is very flat. Because of this topography and the fact that the site is located a significant distance from the ocean, EPA does not expect waves to be breaking in this area. Flood waters generally rise and fall without extreme currents in this area because of the topography. Without the breaking of waves or extreme currents, there would not be significant erosion. Flooding would temporarily raise the water table and temporarily increase the flow of ground water toward the river.

3.6.13 A commenter asked at one of the public meetings if VADEQ supports Alternative 4.

EPA Response: At the meeting, a representative of VADEQ stated that VADEQ was currently in the process of evaluating the preferred alternative, along with other state agencies. EPA noted that it has been working with the Commonwealth, as well as other stakeholders along the river, for a number of years. VADEQ continued its review after the close of the public comment period, including a review of a draft ROD, and has stated that it concurs with the ROD with reservations (see **Appendix H**). VMRC, Virginia's Office of the Attorney General, and the Virginia Port Authority provided comments to EPA during the public comment period. These comments are discussed in this Responsiveness Summary and in section 10.8 on page 83.

3.6.14 A commenter expressed concern about the lack of treatment of the saturated "purple" areas in the Former Creosote Tank Area and the possibility of future migration of that contamination.

EPA Response: While the DNAPL in the Former Creosote Tank Area can continue to be a source of ground water contamination, EPA found no evidence in the remedial investigation to believe the DNAPL is still mobile. EPA has determined that aggressively addressing this DNAPL through treatment is not appropriate in light of the comparison of the alternatives to the nine criteria. Treating or removing the visible creosote will not change the type of precautions that will need to be taken in the future at the site in regard to subsurface work or protection of the river.

3.6.15 A commenter expressed concern that sediment recontamination by other sources along the river including the Navy site is likely.

EPA Response: EPA acknowledges the concern. EPA has taken steps in making this remedial decision to ensure that recontamination does not occur after implementing this major sediment remediation project. EPA does not expect that the dredged area will become recontaminated for the following reasons: (1) the total PAH cleanup criteria of 45 ppm takes into account the background levels of PAHs in the river, (2) the requirements for delineation of the area requiring dredging includes sampling beyond the site-related contamination to determine if there is contamination in close proximity to the required dredging area that could cause recontamination (see section 11.2.3.1.4 on page 89), and (3) activities along the river are conducted in ways that provide for much more protection of the river than occurred in the past.

Other than adjacent sediments, seepage from the bulkhead at the South Annex of the NNSY presents the greatest potential to recontaminate remediated sediments. The selected remedy requires that the bulkhead be evaluated to determine if seepage is occurring that could cause recontamination of the sediments after dredging (see section 11.2.3.1.6 on page 90).

3.6.16 The Portsmouth Port and Industrial Commission of the City of Portsmouth has reviewed all seven cleanup options for the AWI Superfund site and agrees with EPA that Alternative 4 offers greater advantages compared to the other alternatives. In its comments, the Commission stated many of the same bulleted reasons stated in section 11.1 on page 85 of this ROD as the rationale for its view (these reasons were also listed in the Proposed Plan). The Commission also emphasized the importance of making this area of Portsmouth available to potential developers and small businesses as soon as possible.

EPA Response: EPA acknowledges the comments. Site reuse is a significant priority for EPA. EPA will continue to work with stakeholders, including the City of Portsmouth, to foster redevelopment at the site as soon as practicable.

3.6.17 Some residents expressed agreement with the selection of Alternative 4.

EPA Response: EPA acknowledges the comments.

3.6.18 Several commenters expressed the opinion that the contaminated soil and/or sediment should be removed from the site and not contained behind the sheet pile wall or beneath the site cap.

EPA Response: EPA acknowledges the comment; however, EPA has determined that the selected remedy will be protective of human health and the environment. Alternative 7 is most in accord with the commenters' opinion. This alternative ranked poorly in terms of implementability, short-term effectiveness, and cost. The selected remedy does include removing the contamination from the river, which is the location where it poses the greatest risk.

3.6.19 One commenter recommended that all sediments with DNAPL or tPAHs greater than 1,000 ppm be treated to significantly lower the concentration prior to encapsulating the sediment at the site.

EPA Response: EPA acknowledges the commenter's recommendation. Stabilizing just the highly contaminated sediments without stabilizing other highly contaminated areas of the site near the sheet pile wall(s) (including the DNAPL which would be directly behind the wall(s) the instant the sheet piles are driven) would add very little benefit in terms of protectiveness, but would add significant costs. The added benefit of the treatment would not be proportional to the cost or the short-term impacts from the treatment.

3.6.20 A commenter stated that effectiveness should far outweigh cost in selecting a remedy, especially in light of the amount of money spent on the war.

EPA Response: EPA acknowledges the comment. The Superfund law has four statutory requirements that each selected remedy must meet, which include overall protection of human health and the environment and cost effectiveness (see section 12.1 on page 108). EPA does not consider cost in remedy selection except among alternatives that provide for the overall protection of human health and the environment.

3.6.21 Another commenter stated that the site was not worth spending \$45 million to clean up and maintained that the site is not worth even a \$0.5 million cleanup.

EPA Response: EPA acknowledges the comment. Without the cleanup required by this ROD, the contamination at the site would continue to present significant risks to human health and the environment as described in section 7 on page 36.

3.6.22 In addition to the recontamination of sediments from other sites after remediation in the proposed dredging areas, a commenter expressed concern that contaminated sediments and contaminants dissolved in the water column will be dispersed during the dredging activities. The commenter stated that, even with turbidity curtains and oil booms, it may be difficult to control contamination of the surrounding area not presently impacted. The commenter referenced a news article that discussed a June 5, 2007, report prepared by the National Research Council (NRC) that states that dredging sediments under certain site conditions may worsen some situations. The NRC pointed out in its report that EPA should consider other alternatives to dredging, such as capping the polluted area with clean materials or simply relying on natural processes to break down contaminants. The recommendation was based on a review of 26 sediment removal projects at Superfund sites. The study found that dredging, by itself, achieved the desired cleanup levels in “only a few” projects.

EPA Response: EPA acknowledges that the NRC report expressed concerns about dredging. The report, which can be found at http://www.nap.edu/catalog.php?record_id=11968 as a prepublication edition, evaluated the effectiveness of dredging at Superfund megasites. EPA believes that the selected remedy contains many components that address issues raised by the report. For example, one of the reasons the study concluded that dredging alone achieved the desired cleanup levels in only a small percentage of the sites evaluated was because many sites did not collect monitoring data that the NRC thought necessary to perform such an evaluation. Besides the collection of sediment samples for chemical analysis to determine if the dredging is complete (see section 11.2.3.3.6 on page 91), the selected remedy includes extensive post-dredging biota monitoring to determine the effectiveness of the dredging (see section 11.2.15 on page 100). Additionally, EPA is not relying on dredging alone at this site. The selected remedy utilizes all three major types of technologies to address the contaminated sediments: (1) capping the worst contamination behind the sheet pile wall(s), (2) dredging, and (3) MNR for the areas with the lowest levels of contamination. Additionally, the selected remedy provides for thin-layer sediment capping to make the MNR more effective and to address residuals in the areas that are dredged, if found necessary by EPA.

3.7 Environmental Impacts of the Preferred Alternative

3.7.1 The commenter expressed support for Alternative 5, explaining that habitat restoration would create wetlands and oyster reefs, both of which are needed to provide a natural water filter. The commenter added that restoring the wetlands would also provide additional stormwater control, which is needed because the impermeable membrane encasing the contaminated sediment in the remedy will result in more run-off into the Elizabeth River.

EPA Response: EPA acknowledges the commenter’s support of Alternative 5. The commenter should note that in both the selected remedy and Alternative 5, the habitat in the Wyckoff Inlet will be destroyed. In Alternative 5, the restoration would take place at the same location as the Wyckoff Inlet, while for the selected remedy, the creation of new wetlands will take place by expanding the restored acetylene sludge wetland. In both alternatives, rip-rap would be placed at the bottom of sheet pile wall(s) that can provide oyster habitat. The selected remedy includes a stormwater management system to control runoff from the site (see section 11.2.12 on page 98).

3.7.2 A commenter expressed appreciation for the progress being made to remediate the Elizabeth River and the opportunity to comment on the Proposed Plan for the site.

However, the commenter did not recommend the selection of Alternative 4 due to the significant, permanent, and total loss of wetlands, open water, and bottom habitat that would result from filling at least 3.6 acres of the river. The commenter stated that the wetland cove to the north of the Jordan Bridge, representing at least 1.5 acres of fill, appears to be one of the highest functioning habitats for fisheries in the project area, and represents the only naturalized shore remaining on the Elizabeth River's western banks in a long industrialized stretch between downtown Portsmouth and the Jordan Bridge. The commenter reported that the Elizabeth River Project, NOAA, and U.S. Fish and Wildlife Service conducted finfish sampling in near proximity of this site and over 18 species of fish were caught. The commenter urged EPA to consider Alternative 5 or other options which minimize impacts to existing wetlands, open water, and bottom habitat.

EPA Response: EPA shares the desire with the commenter to avoid filling the river. However, the options evaluated that do not involve filling the river did not rank well against the nine criteria EPA uses to select remedies (see section 10 on page 72). EPA acknowledges that habitat for fish within an extended area of industrialized waterfront is important so fish have places for intermediate stops as they pass through the area. The selected remedy calls for the expansion of such an area near the Wyckoff Inlet (see section 11.2.11 on page 97). While a number of species of fish were caught during the finfish sampling event, the Wyckoff Inlet is currently a severely degraded habitat due to the presence of contamination such as creosote. The current habitat will be destroyed in Alternative 5 or Alternative 4. The issue then becomes where to restore the habitat. Note that the banks of the Wyckoff Inlet are made from fill (some of which is contaminated) and do not correspond to the historical banks of the river in that area.

3.7.3 A representative of NOAA noted concern that the proposed remedy would fill in parts of the river and would result in significant habitats lost, including tidal creeks, intertidal wetlands, mud flat, shallow open water, and deep open water. Under the Superfund law, the public would require compensation for those natural resources damages. The commenter noted that how the public would be compensated would have to be negotiated. The commenter added that NOAA is interested in working with EPA to evaluate other remedial options that would not involve filling in any of the river.

EPA Response: EPA understands that implementation of the selected remedy will result in changes to habitat at the site, including destruction of some severely contaminated areas to provide for a tremendous improvement to a much greater area of the habitat at the site (see sections 11.4 and 12.1.1 on pages 105 and 109, respectively). EPA acknowledges that the natural resource trustees have a role and responsibilities under the Superfund law and that often compensation is required at Superfund sites. EPA will continue to work with the trustees to maximize the overall environmental benefit of the selected remedy.

3.7.4 A commenter stated that he/she tended to agree with EPA's concern that if the habitat were restored in the Wyckoff Inlet, it may not be permanent because of development pressures.

EPA Response: EPA acknowledges the comment.

3.7.5 A commenter discussed a tool called "habitat equivalency analysis." Its goal is to evaluate an injured natural resource and design a comparable restoration project to provide compensation for losses of natural resources. Typically, injured resources are evaluated and, based on some calculations, a restoration project, such as the creation of tidal wetlands or another type of mitigation project is developed.

EPA Response: EPA has used habitat equivalency analysis at other Superfund sites and may do so at this site if it helps maximize the habitat value resulting from the selected remedy.

3.7.6 A commenter recommended that biological monitoring at the site include mummichog histopathology since there is data for the site and the mummichog would be one of the first groups of organisms to respond to the cleanup.

EPA Response: EPA has included mummichog monitoring in the selected remedy (see section 11.2.15.5 on page 100).

3.7.7 A commenter requested that compensation be made as part of the selected remedy for the loss of the river bottom habitat.

EPA Response: Unfortunately, EPA does not have the authority to provide compensation for the lost river bottom habitat as part of this selected remedy. The Superfund law does authorize the natural resource trustees to pursue compensation for lost habitat.

3.8 Future Site Use

3.8.1 Several commenters asked about the risks of possible future development of the site including what would happen if future developers start digging into contaminated material placed behind the sheet pile wall many years from now.

EPA Response: The selected remedy requires institutional controls to prevent site uses that would decrease the effectiveness of the cleanup and to protect construction workers at the site. However, many different forms of redevelopment could take place throughout this site while protecting the remedy, just as it does at many other NPL and brownfields sites across the country (including the nearby Abex Superfund site where the City of Portsmouth built a new fire station). Redevelopment of contaminated land has become so commonplace today that even obtaining financing from a bank is not as difficult as it once was.

If new construction activities were performed in an inappropriate manner that caused a release of contamination, a developer could incur financial liability for the cleanup. Protections would be put in place to prevent actions inconsistent with the remedy from happening. For example, a city ordinance could put limitations on and require special environmental permits for various types of development.

3.8.2 The Commonwealth of Virginia's Virginia Port Authority strongly encouraged EPA to remediate the upland and surrounding river bottom to levels that, in the future, will allow unrestricted maritime redevelopment and navigable access to the site. The Port Authority also stated that it supports EPA's decision to remediate the site as described in Alternative 4, provided the contaminated soils will be treated and fully contained to eliminate any future risk of recontamination of the Elizabeth River or area ground water.

EPA Response: One of the major benefits of Alternative 4 compared to alternatives that involve sediment capping is that there will be very little hindrance to maritime redevelopment and navigable access once the remedy is implemented. The one limitation would be deepening the river near the bulkhead such that the cantilevered load is no longer able to be supported by the sheet pile wall(s). This engineering problem would not be hard to address by installing, for example, another row of sheet pile on the river side of the wall(s) required by the remedy.

3.8.3 Commenters asked if AWI was still in business and, if so, whether or not its operating practices have changed so that the same type of problem does not happen again.

EPA Response: AWI no longer treats wood at the site. AWI has started an entirely new business— making pre-stressed concrete products like parking lot decks and concrete pilings for piers. This process does not use the chemicals that contaminated the facility in the past. AWI

has been working with EPA to address the site contamination for close to 20 years. In addition, there are now laws in place regulating waste disposal and addressing accidents that involve hazardous materials. In addition, decisions about how the site is used in the future are locally driven by zoning boards and planning commissions.

3.8.4 The commenter asked who owns the property now and could he buy it “as is” and do with it what he wants.

EPA Response: AWI owns most of the upland portion of the site. The part of the site that’s in the river is primarily owned by the Commonwealth of Virginia. The site can be sold if the owner wants to sell, but it cannot be used in just any way the buyer would want. The site owner(s) would have to comply with the ICs that are designed to keep the remedy functioning as designed. EPA encourages perspective buyers to consult an attorney before purchasing of any part of the site.

3.8.5 Several commenters, including the Virginia Marine Resource Commission (VMRC), expressed concern that, under the preferred alternative if the submerged lands are filled, adjacent landowners would no longer have water access since the area filled may be owned by others. Loss of access to the water seems to be counter-productive to future economic revitalization of the area. Some commenters, including the City of Chesapeake, were concerned that riparian rights would be taken from current owners of river front property. The City of Chesapeake also stated that EPA will need to procure these rights, with complete federal and state indemnification of the City from any and all environmental liability, prior to backfilling the Wyckoff Inlet with contaminated sediment fill from the Elizabeth River. One commenter stated that it has a grant pre-dating the Revolutionary War proving that it owned part of the river bottom (without proof of such a grant, the Commonwealth owns the bottomland). One commenter wondered whether or not EPA has the authority to use bottomland owned by the Commonwealth as part of the selected remedy.

EPA Response: EPA acknowledges the commenters’ concerns about having access to the river at the end of the cleanup and about landownership issues of the new land that is created by the consolidation of the sediments behind the sheet pile wall(s). EPA has carefully considered these issues in selecting the remedy (see sections 10.6 and 11.1 and general comment 2.3 on pages 81, 85, and 117, respectively). EPA will be working closely with the Commonwealth of Virginia to resolve any impacts to navigational access that may result from undertaking the remedy; specifically, it is EPA’s hope that, ultimately, a right in the new land created by the remedy, such as an easement or ownership of a portion of the land, can be conveyed to any property owner whose access to the water may be impacted by the remedy. EPA does not have the authority to indemnify the City of Chesapeake at this site as it has requested. While the issue of who owns the river bottom in areas impacted by the remedy is very important and must be resolved prior to implementation of the remedy so that access agreements can be negotiated, whether the Commonwealth or a private party owns the river bottom does not affect the selection of this remedy. EPA has the authority to utilize the part of the river bottom that is a portion of the AWI site for part of the cleanup.

3.8.6 One commenter stated that, regardless of who owns the river bottom, the United States may face a takings claim. Whether the Commonwealth or a private party owns the river bottom, the preferred alternative would require AWI to allow large volumes of contaminated materials generated by other parties and located away from its facility to be permanently placed on and adjacent to AWI’s property. The commenter stated that “[t]he purpose of the Takings Clause in the United States Constitution is to ‘prevent the government from forcing some people alone to bear public burdens which, in all fairness

and justice, should be borne by the public as a whole.’ Armstrong v. United States, 364 U.S. 40, 49 (1960).”

Under each of the alternatives, the commenter explained, EPA would burden the AWI parcel alone with contamination produced by many and varied operations dating back almost 100 years. The preferred alternative would utilize the western portion of the AWI property, which does not front the river and is unrelated to the contaminated sediment, as a location to receive a very large volume of the contaminated sediment. Impacting the western portion of AWI’s property in this manner raises further takings questions.

The commenter went on to state that, in addition to compensation for any loss to the productive use of its property and the reduction in property value resulting from limitations on future use and the stigma associated with serving as an unnecessarily large waste repository, AWI would expect just compensation for the CERCLA liability EPA is essentially imposing by virtue of depositing large volumes of hazardous wastes from other sources on its property. See, e.g., Bassett, New Mexico LLC v. United States, 55 Fed. Cl. 63 (2002). The commenter stated that such compensation issues should be discussed and resolved prior to selection of any remedy. At the very least, the commenter said that AWI expects a release from any share of future liability associated with contamination unrelated to AWI’s operations at the Site. The commenter stated that AWI has offered to participate in a discussion about these issues and has a record of constructive cooperation with EPA and the Navy.

EPA Response: EPA acknowledges the comments. The selected remedy only addresses the AWI site. In this river, EPA is only addressing contamination released from the AWI property or contamination that must be addressed to prevent recontamination of such areas that are cleaned up. According to the Superfund law, liability at a Superfund site is joint and several, thus, EPA will not agree to release AWI from liability, as the commenter has requested, unless EPA is presented with evidence that other entities are responsible for the contamination being remediated.

According to EPA’s reading of the Armstrong case cited by the commenter, although the quotation seems to differ slightly from that included in the comments, EPA agrees with the commenter’s interpretation of the court’s conclusion that the Takings Clause of the United States Constitution bars Government from imposing private burden when such burden should be borne by the public. It is EPA’s current understanding that the PAHs in the river sediment resulted from contamination introduced to the environment from AWI’s operations over the years. As such, pursuant to CERCLA Section 107, AWI is jointly and severally liable for the costs of remediation of the contamination, and thus, consolidation of some of that contamination on AWI’s property is not a private burden that should be borne by the public. However, EPA invites submission of any evidence that the PAHs in the river sediment originated from the operations of other entities.

Regarding the Bassett case cited by the commenter, the landowner plaintiff in that case was not a potentially responsible party for the removal action at issue, and the landowner did not grant access for disposal of remediation waste upon its property. These facts, and others, completely distinguish the case from the facts presented here.

EPA acknowledges that AWI has a record of cooperating with EPA.

3.8.7 A commenter expressed concern about the ability of AWI to continue its pre-stressed concrete business on the property during and after the cleanup. The commenter stated that AWI and EPA should work together to minimize disruptions to AWI’s business.

The commenter also said that issues regarding access to river should be worked out before selection of a remedy. The commenter stated that:

1. AWI is specifically concerned about preserving its ability to load materials onto barges, to continue to store inventory, to stage materials, and to continue other necessary aspects of its operation. The commenter further stated that, although it is difficult to project several years into the future, AWI believes that its business could continue for 30 to 45 days without access to the waterfront. Any longer interruptions to access could raise serious harm to the company's business.
2. AWI believes that covering the site soils can be accomplished with little disruption to its concrete manufacturing operations, but only if the EPA works closely with AWI to minimize disruptions.
3. AWI would like to be involved in final alignment and dimensions of the proposed sheet pile wall in order to design an acceptable slip configuration for future barge loading operations.

EPA Response: EPA acknowledges the commenter's concern. While EPA cannot guarantee that there will not be disruptions to AWI's business, EPA also desires to minimize disruptions. The selected remedy includes requirements that are designed to minimize such disruptions (see section 11.2.5 on page 93). However, EPA does not have an overall goal for the selected remedy to provide better facilities for the AWI business. AWI will have to work with EPA during implementation to help minimize disruptions to AWI's business. The more of the remedy that AWI, as a PRP, implements, the easier it will be for AWI and EPA to minimize disruptions.

3.8.8 A commenter proposed, and another supported, an alternate sheet pile wall layout that would offer additional redevelopment possibilities. The alternate layout would involve a nearly straight run of sheet piles from the eastern-most point of the City of Portsmouth's property to the restored acetylene sludge wetland. One commenter stated that this layout would: (1) greatly reduce the volume of sediment that would have to be dredged; (2) substantially reduce the need to remove old pilings and sunken vessels to allow for dredging; (3) while increasing the cost of the sheet pile wall, save costs associated with dredging and stabilization as well as transport of sediments to the western portion of the site; and (4) restore the former industrial waterfront properties. One of the commenters stated that the Commonwealth of Virginia, the Cities of Portsmouth and Chesapeake, and adjoining landowners would all benefit from the implementation of a remedy that allows for future use of the deep water channel in this area.

EPA Response: EPA acknowledges the comment and desires for the selected remedy to fit into anticipated future site use. Current and future site use are important factors in selecting a remedy at a Superfund site (see section 6 on page 35 for a discussion of this topic related to the AWI site). EPA has taken current and future site use into account in selecting the remedy for this site (see section 11.1 on page 85). However, EPA cannot include the proposal as a requirement of the selected remedy for numerous reasons. First, there would not nearly be enough contaminated sediments remaining outside the proposed wall location to fill the area behind the wall, which would then require fill from other sources to be transported to the site. Second, this proposal would require a greater loss of river habitat than currently anticipated from the selected remedy. It is the objective of EPA, as well as other stakeholders including the natural resources trustees, to minimize loss of habitat when undertaking a remedial action. Third, due to the scope of the filling operation, the proposal would create more new land than anticipated, which would magnify the problem of ownership of the new land and make efforts to satisfy desires for access to the river more difficult. EPA recognizes the importance of waterfront property near the site because of the proximity to the ship channel. EPA's selected

remedy would not prevent the kind of development proposed by the commenter from taking place in the future. If the Virginia Port Authority, for example, planned such a project in this area that could be implemented during the time of the cleanup, EPA would evaluate how its selected remedy could be dovetailed with the project in order to benefit both projects.

3.9 Other Issues

3.9.1 VMRC stated that it supports the removal of contaminated sediments from the river and the cleanup of the site. However, VMRC and the Commonwealth of Virginia Office of the Attorney General expressed several concerns about the installation of the sheet pile wall and filling of contaminated sediments on the river bottom, which is owned by the Commonwealth. VMRC stated that the construction of a sheet pile wall on State-owned subaqueous land some 100 feet from shore and filling of that area with contaminated material is inconsistent with Virginia law and the federal Coastal Zone Management Act. The commenters stated that, assuming that the preferred alternative is implemented as specified in the Proposed Plan, the Commonwealth would continue to own the subaqueous bed underlying the fill. Remaining issues concerning ownership of the fill and the acquisition of title to the Commonwealth's subaqueous land along with the covering fill in order to preserve private riparian access to the river would appear to require legislative resolution.

EPA Response: EPA acknowledges the concerns of VMRC. EPA made concerted effort to evaluate remedial options that addressed contaminated river sediment without installation of a sheet pile wall in the river and loss of river bottom, and EPA has been open to ideas for successful remedial options from all stakeholders including VMRC during the FS process and during this public comment period. Unfortunately, no remedial options have come to EPA's attention that compare more positively against the nine criteria required by the NCP than the selected remedy. EPA recognizes that access and land ownership are significant implementability issues. EPA hopes to work cooperatively with the Commonwealth to ensure, to the extent practicable, that properties currently adjacent to the river have access to the navigable water after completion of the remedy.

Note that EPA has determined that Section 307(c)(1)(A) of the Coastal Zone Management Act, which requires consistency with the enforceable policies of approved State coastal zone management programs, is an ARAR at this site (see **Table 7** in **Appendix B**). The Virginia Coastal Zone Management Program is authorized by Executive Order 21 issued by the Governor of Virginia and consists of numerous Commonwealth laws and regulations that seek to protect the Tidewater Virginia area. Each of the regulations included in the Commonwealth's coastal zone management program are listed as ARARs in this ROD. The selected remedy complies with each of these ARARs and does not waive any of them.

3.9.2 VMRC stated that filling of Commonwealth-owned subaqueous land to create upland property is generally not permitted under VMRC's guidelines. Comments submitted by the Commonwealth of Virginia, Office of the Attorney General, stated that it is a Class 1 misdemeanor to "build, dump, trespass or encroach upon or over" Commonwealth-owned subaqueous lands without a VMRC permit (except in several specific circumstances). In the absence of a VMRC permit or the federal government's exercise of eminent domain, EPA will need to seek the Virginia General Assembly's legislative authorization to use the Commonwealth's property.

EPA Response: EPA acknowledges the comments. It is EPA's view that the authority of the CERCLA statute (the federal Superfund law) supercedes state law, in accordance with the Supremacy Clause of the United States Constitution. By CERCLA Section 121(e), Congress declared that no federal, state or local permits are required to conduct work on a Superfund site;

however, EPA must obtain access to property in order to conduct a cleanup. EPA will continue to work with the Commonwealth to resolve the access issue.

3.9.3 The City of Chesapeake has a number of concerns about the potential impact that the cleanup could have on the Jordan Bridge. The City objects to any activity that may destabilize or weaken the structural integrity of the Jordan Bridge and requests that this issue be thoroughly studied and adequate assurances given to Chesapeake prior to the approval of any of the alternatives. The City requests assurance that cleanup of the AWI site will not interfere with the operation, maintenance, and repair of the Jordan Bridge. The City recommends that EPA consider installing the sheet pile further seaward under the open water bridge structure instead of tying into the western abutment sections. The City also requests that EPA take no action which would adversely impact any future reconstruction or realignment of the Jordan Bridge, including the ability to drive piles and otherwise construct the bridge and entranceway (the comments included a potential alignment of a new bridge).

EPA Response: EPA acknowledges the concerns of the City of Chesapeake. EPA shares the desire to not impact the Jordan Bridge or hinder future bridge replacement, but EPA can not provide guarantees that the City of Chesapeake will not have to modify any future bridge design to accommodate the selected remedy. However, implementation of the selected remedy should, in fact, help with the construction of a new bridge or major modification to the current bridge. After the cleanup, there will be less likelihood that bridge construction would cause a release of contamination that could cause the City of Chesapeake to incur liability for response actions at the site. Piling can be driven in the contaminated areas, although precautions may be needed to avoid providing a conduit for contaminant migration. Piling lengths may also be different depending on the subsurface geotechnical conditions. If the City of Chesapeake acquires additional parts of the site to construct a new bridge, it may have to conduct monitoring and maintenance on parts of the remedy such as the soil cover.

The selected remedy does require that the remedial design evaluate whether it is better for the sheet pile wall(s) to tie into the bridge base or to be installed underneath the bridge (see section 11.2.1.4 on page 87). The selected remedy also requires that the remedial design include mitigative measures to avoid adverse impacts to neighboring facilities such as the Jordan Bridge (see section 11.2.3.1.5 on page 89).

3.9.4 The City of Chesapeake commented that, “since considerable expense will go toward installing off-shore sheet pile and backfilling same for non-adjacent properties, the City seeks assurance that the future use of these properties, including the site owned by the Portsmouth Port and Industrial Commission, will be developed and used for purposes that will not potentially degrade water quality.”

EPA Response: Future land use plays an important role in how EPA addresses contamination at Superfund sites. Current land use is almost always obvious, but EPA looks to the local community to help the Agency determine what future land uses it should anticipate when conducting the RI/FS, especially the risk assessment, and selecting the remedy. Once a remedy is selected, EPA typically does not regulate land use, but ensures that the site is used in the future in such a way as to allow the selected remedy to continue to provide for the overall protection of human health and the environment. EPA will ensure that any future use of the AWI site is such that the selected remedy can continue to protect the Elizabeth River. However, EPA cannot provide assurance that future use of the site or adjacent property will not result in degradation of the river. That role belongs to local communities and, mainly, the permitting bodies of the state and local governments.

3.9.5 The City of Chesapeake requested more information on the status of the City's land under CERCLA.

EPA Response: EPA understands that the City of Chesapeake owns land at the base of the Jordan Bridge on the City of Portsmouth's side of the bridge. Based on information collected immediately adjacent to both sides of the City's property, EPA fully expects that DNAPL contamination is underneath a portion of Highway 337 (the road, shoulder, and/or right of way) that is on the City's property. A Superfund site is defined as wherever the contamination has come to lie. If there is contamination from the AWI operations on or underneath the City's property, the City owns a portion of the AWI site. Since removing such contamination would involve significant disruptions to the use of Highway 337 (Elm Avenue) for little environmental benefit, the selected remedy will leave any contamination in place, which will be capped by a soil cover or pavement, and that area will become part of the waste management area described in section 8.2.2 on page 57.

3.9.6 One commenter made a statement advocating for the creation of a new Superfund site for the sediments in the Southern Branch of the Elizabeth River and developing a comprehensive solution to the contamination that also enhances the use of river front properties.

EPA Response: EPA does not see a need to create a new Superfund site to address sediments from the Southern Branch of the Elizabeth River. Based on EPA's experience at the AWI site, ERP's data from the Money Point sediment study, and the USACE's study at Scuffletown Creek across the river from the AWI site, sediment contamination in the river requiring remediation is located in distinct areas and can be addressed as separate projects. With the commitment of many stakeholders in ERP's Sediment Remediation Partnership to see the river cleaned up and a number of projects already underway, EPA does not see an advantage to creating a new Superfund site.

3.9.7 A commenter stated that EPA's preferred alternative treated several property owners differently. The commenter stated that the preferred alternative includes replacement of the pier at the AWI property, but does not at the 3975 Elm Avenue property (the location of the former Wyckoff facility). The commenter requested that the pier at the 3975 Elm Avenue property be rebuilt. The commenter also pointed out that fill behind the sheet pile wall in front of the 3975 Elm Avenue property was not going to be the same elevation as the fill behind the wall at the AWI property. The commenter did not want any new wetlands created adjacent to the 3975 Elm Avenue property.

EPA Response: EPA acknowledges the commenter's concerns and desires. EPA is not treating property owners differently. The selected remedy does not require that a pier be built or rebuilt at either the AWI property or the 3975 Elm Avenue property. Such a requirement is beyond the scope of the cleanup. EPA acknowledges that the drawings in the proposed plan show the fill behind the wall at the 3975 Elm Avenue property would decrease in elevation from the current upland elevation to an elevation of mean sea level, which would allow the tide to regularly overtop the wall. The drawing was incorrect. EPA always intended for the elevation of the fill to be the same as the existing land. It is not beneficial to the remedy for the tide to overtop the wall on a regular basis. See **Figure 31** of this ROD to see the correction and section 11.2.1.6 on page 88 for the wall height requirement.

3.9.8 A commenter stated that AWI is willing to discuss with EPA measures that AWI can take to assist in implementation of the remedy. The commenter went on to say that it is AWI's expectation that any such measures, including the use of the western portion of the site as a repository for contaminated sediment, would be considered in-kind contributions to the cost of remediation. The commenter also stated that AWI's current

long-term plans for its property are to consolidate its pre-stressed concrete operations to the eastern portion of the site. By doing so, AWI would liberate 10 acres on the western parcel, which may allow AWI to implement the soil cover remedy on a large portion of the eastern area of the site.³⁴ The commenter stated that AWI currently envisions developing, leasing, or selling the western parcel after it is remediated.

EPA Response: EPA acknowledges the comments and AWI's desire to participate in the cleanup. After this ROD is issued, EPA will undertake negotiations and discussions regarding how, and by whom, the remedy will be implemented. AWI will have the opportunity to participate in those negotiations and make commitments regarding work at the site. At this time, it is premature for EPA to discuss or speculate about whether or not and/or how in-kind contributions would be considered as contributions to the cost of the remediation.

3.9.9 A commenter stated that AWI should be credited for the use of the western side of the facility as a waste repository as an in-kind contribution to the cleanup expenses.

EPA Response: The AWI facility is not being used as a regional waste repository. The western side of the AWI facility is going to be used to contain some contaminated sediments dredged as part of the selected remedy (see comment 3.4.14 on page 136 for further discussion). AWI is one of the PRPs at the site and is financially liable for all of the cleanup.

3.9.10 A commenter stated that AWI has worked cooperatively with EPA from the beginning of the Superfund site.

EPA Response: EPA acknowledges the comment. EPA agrees that AWI has worked cooperatively with EPA for a long period of time.

3.9.11 A commenter stated that the Navy may have sediment data from the Southgate Annex area the pre-dates dredging in that area in 2004 and 2005. The commenter stated that such data might also better inform stakeholders' understanding of the sediment in that area. The commenter requested EPA's assistance in obtaining such data, if it exists.

EPA Response: EPA acknowledges that sediment data, even from areas that have since been dredged, could help inform stakeholders about the sediment in the Southgate area and otherwise inform the remedial design. Although not a requirement of the selected remedy, EPA will make efforts to obtain such data if it exists.

3.9.12 A commenter stated that the Navy takes the position that there must be "conclusive" evidence concerning the Norfolk Naval Shipyard's contribution before they will participate in any remediation (in the river). The commenter stated that EPA has essentially agreed to release the Navy from participation in any sediment remedy on this basis. In contrast, AWI's site is being expanded to include large areas of sediment contamination upstream and downstream from its property, despite the fact that there is little or no evidence that AWI is the source of that contamination, much less "conclusive" evidence.

EPA Response: EPA has not agreed to release the Navy from any sediment remedy. The Navy has been issued a general notice letter from EPA informing the Navy that it is a PRP at the AWI site and is financial responsible for the cleanup. EPA is aware that the Navy has contributed to the sediment contamination (for example, there is acetylene sludge in the river that came from operations at the NNSY). Issues regarding the Navy's and EPA's management of the NNSY

³⁴Note that EPA is unsure if the commenter means the eastern or western portion of the AWI property.

NPL site should be raised with their respective project managers for that NPL site. EPA disagrees that there is little to no evidence that AWI has contributed to contamination up and downstream of its property (see comment 3.2.16 on page 126). If parties wish to submit evidence to EPA tying other PRPs to the AWI site, they can do so.

