

at the time, though they were qualitatively evaluated again in 2012, as described in Table 2-1. Tables summarizing the Marine ERA and associated results are presented in Appendix D.

2.7.3 Basis for Action

Unacceptable risks were identified at OU5, including unacceptable cancer and non-cancer risk associated with exposure to benzo(a)pyrene through ingestion of shellfish via subsistence fishing and adverse effects to fish, shellfish, and seabirds from PCBs, HMW PAHs, and lead. Because unacceptable risks were identified under current and/or future use, the response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

In addition, asbestos was identified in sediment samples collected beneath Pier 1 where a known asbestos release occurred. While in place at the seafloor, this asbestos does not pose a current risk to human health or the environment since there is no opportunity for exposure, but there is a small potential for the asbestos-containing sediment to be brought to the surface where it may dry and pose a risk. Therefore, while asbestos is not a COC at this site, the Navy determined that it would be appropriate to include a response action for asbestos in sediment to address this concern.

2.8 REMEDIAL ACTION OBJECTIVES (RAOs)

RAOs are medium-specific goals that define the objective of conducting remedial actions to protect human health and the environment. RAOs specify the COCs, potential exposure routes and receptors, and acceptable concentrations (i.e., cleanup levels) for a site and provide a general description of what the cleanup will accomplish. RAOs typically serve as the design basis for the remedial alternatives described in Section 2.9.

The **RAOs** for Site 19 marine sediment are as follows:

- Reduce human health risk associated with ingestion of shellfish impacted by benzo(a)pyrene by reducing exposure concentrations in sediment to achieve the established cleanup goals.
- Reduce risk to aquatic organisms from sediment impacted by lead, PCBs, and HMW PAHs by reducing exposure concentrations in sediment to achieve the established cleanup goals.

These RAOs are based on current and reasonably anticipated future site use (industrial use of the piers and the waterfront, and potential future commercial and recreational fishing). Demonstration of achieving cleanup goals will be determined on a surface area weighted average basis as described in Section 2.9.1.

To address the potential for a future risk from exposure to asbestos at OU5 during implementation of the proposed remedy and future dredging of Site 19, the Navy will:

- Prevent exposure to potential asbestos in dredged shipyard sediment through development of documented precautionary measures and safe work practices.

Chemicals associated with unacceptable human health risk (ILCRs greater than 1×10^{-4} or HIs greater than 1) were identified as **COCs** that require remediation (Table 2-5). Chemicals found to pose greatest risk to ecological receptors were also identified as COCs that require remediation (Table 2-5).

PRGs were developed during the FS as target cleanup goals for remedial actions that, if met, would result in acceptable COC concentrations in the media of concern and thereby mitigate risks to human health and the environment. PRGs were established for the COCs identified (benzo(a)pyrene, HMW PAHs, PCBs, and lead) (SAIC, 1998). Candidate PRGs were developed for marine sediment for the COCs that contributed significantly to unacceptable risk to human health and adverse effects to ecological receptors.

RECORD OF DECISION

SITE 19 – FORMER DERECKTOR SHIPYARD MARINE SEDIMENT OPERABLE UNIT 5



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