3.2 Expended Materials

3.2 EXPENDED MATERIALS

3.2.1 AFFECTED ENVIRONMENT

For purposes of this Supplemental Environmental Impact Statement (EIS)/Overseas EIS (Supplemental EIS/OEIS), the Region of Influence (ROI) for expended materials remains the same as that identified in the March 2011 Gulf of Alaska Navy Training Activities Final EIS/OEIS and includes the Temporary Maritime Activities Area (TMAA) (the Study Area).

3.2.1.1 Existing Conditions

Expended materials, both hazardous and nonhazardous, can result from United States (U.S.) Department of the Navy (Navy) training activities in the TMAA. Both hazardous expended materials, to include heavy metals, propellants, explosives, and pyrotechnics, and nonhazardous expended materials are described in the 2011 GOA Final EIS/OEIS. Following a review of recent literature (peer reviewed literature, internet search, personal communications), the definitions, properties, and fates of expended materials in salt water, as presented in the 2011 GOA Final EIS/OEIS, have not appreciably changed since the publication of the 2011 GOA Final EIS/OEIS. However, additional information regarding military expended materials such as chaff, plastics, and metal constituents is provided below. This information does not change or alter the conclusions made in the 2011 GOA Final EIS/OEIS and is provided here for reference.

3.2.1.1.1 Contaminants from Expended Materials

Military expended material, including targets and vessel hulks involved in sinking exercises (SINKEXs), contains materials other than metals, explosives, or chemicals. Principal components of these military expended materials include aluminized fiberglass (chaff), carbon or Kevlar fiber (missiles), and plastics (canisters, targets, sonobuoy components, parachutes). Chaff has been extensively studied, and no indirect toxic effects are known at realistic concentrations in the marine environment (Arfsten et al. 2002). Glass, carbon, and Kevlar fibers are not known to have potential toxic effects on marine invertebrates. Plastics contain chemicals that have potential effects on fish and invertebrates (Derraik 2002, Mato et al. 2001, Teuten et al. 2007).

Potentially harmful chemicals in plastics are not readily adsorbed to marine sediments; instead, fish and invertebrates are most at risk via ingestion or bioaccumulation. Because plastics retain many of their chemical properties as they physically degrade into plastic particles (Singh and Sharma 2008), the exposure risks to marine invertebrates are dispersed over time. It is conceivable that marine invertebrates could be indirectly impacted by chemicals associated with plastics; however, absent bioaccumulation, these effects would be limited to direct contact with the material.

Since 2009, various research projects have been undertaken at deep-water munition disposal sites in the Hawaiian Islands that contain both conventional and chemical military munitions. This Army-funded research effort has been undertaken by the University of Hawaii's Ocean Earth Science and Technology department using towed side-scan sonars, research submersibles, and remotely-operated vehicles. Publications regarding this research include Briggs et al. (2015), Kelley et al. (2015), Koide et al. (2015), and University of Hawaii (2010). Conclusions are that the impact from materials, in particular copper, iron, and lead, have less of an effect on the environment than previously thought. Specifically, the concentrations of these metals were not significantly higher at underwater discarded military munitions sites as compared to control sites. Additionally, munitions were providing habitat for "hard substrate species" that would not have otherwise colonized the area (Kelley et al 2015). Finally, discarded World

War II military munitions were not contributing to the bioaccumulation of munitions-related chemicals for the species sampled (Koide et al 2015).

3.2.1.2 Current Requirements and Practices

As stated in the 2011 GOA Final EIS/OEIS, releases or discharges of hazardous wastes or materials are heavily regulated through comprehensive federal and state processes. In addition, the International Convention for the Prevention of Pollution from Ships (MARPOL) prohibits certain discharges of oil, garbage, and other substances from vessels. The MARPOL convention is implemented by national legislation, including the Act to Prevent Pollution from Ships (33 United States Code [U.S.C.] 1901, et seq.) and the Federal Water Pollution Control Act (Clean Water Act [CWA]; 33 U.S.C. 1321, et seq.). These and other requirements are implemented by Navy guidance documents and manuals (e.g., Chief of Naval Operations Manual [OPNAV M-5090.1D], *Environmental Readiness Program Manual*) that require hazardous materials to be stored and handled appropriately, both ashore and afloat. Environmental compliance policies and procedures applicable to shipboard activities afloat are defined in OPNAV M-5090.1D, Chapter 35, "Environmental Compliance Afloat"; and Department of Defense Instruction 5000.2-R (§C5.2.3.5.10.8, "Pollution Prevention"). In addition, provisions in Executive Order (EO) 12856, *Federal Compliance With Right-To-Know Laws and Pollution Prevention Requirements*, and EO 13101, *Greening the Government through Waste Prevention, Recycling, and Federal Acquisition*, reinforce the CWA prohibition against the discharge of harmful quantities of hazardous substances into U.S. waters out to 200 nautical miles (nm), and mandate stringent hazardous waste discharge and storage, dumping, and pollution prevention requirements.

Explosive detonations occurring during a SINKEX (described in the Final EIS/OEIS in Section 2.6.1.1 and Figure 2-7) would occur in accordance with a permit from the U.S. Environmental Protection Agency (USEPA). The target,[1] typically a decommissioned combatant or merchant ship that has been made environmentally safe for sinking according to standards set by the USEPA, is placed in a specific location that is greater than 50 nm out to sea in water depths greater than 6,000 feet (1,830 meters). Of note, the original SINKEX permit was from an agreement dated in 1999. The latest agreement between the USEPA and the Navy, which supersedes the 1999 letter, was signed on 27 January 2014.[2] The updated agreement includes additional information and clarification of the permit's requirements on Verification of Navy SINKEX Process, SINKEX Vessel Preparation Requirements Relating to PCB (polychlorinated biphenyls) Removal under Permit, Pre-sink SINKEX Vessel Preparation Verification, and Post-sink SINKEX Vessel Information to submit to Environmental Protection Agency (EPA). Some specific details within the updated agreement include:

- 100 pound (lb.) limit of estimated PCBs remaining onboard, if >100 lb. can ask for a specific permit.
- Navy is unlikely to sink a submarine or aircraft carrier.
- Navy to provide notice of SINKEX ship approvals to EPA.
- Navy to provide ship preparation information to EPA prior to SINKEX.
- Scraping now considered "practical" to increase amount of loose items removed during ship preparation.
- Annual SINKEX reports will be publically available after EPA review.
- If sampling data is available, calculate the amount of PCBs removed for the annual report.

[1] Per a 27 January 2014 EPA/Navy agreement, "Navy agrees that SINKEX vessels will not likely, in the future, include aircraft carriers or submarines" (as the target vessel of a SINKEX).

[2] The date stamp on the agreement is off by a year. The date stamp says 24 January 2013, but it was actually signed on 27 January 2014.

The final resolution is that the Navy may continue SINKEX operations as long as it remains in compliance with the permit, to include SINKEX vessel preparation and documentation-related requirements referred to above. This final resolution was a "determination and agreement," meaning that the EPA made a determination that the activity authorized under the general Permit for SINKEX program "does not pose an unreasonable risk of injury to human health or the environment." For additional details on the updated agreement, please see Appendix B (Agency Correspondence).

3.2.2 ALTERNATIVES ANALYSIS

All three alternatives (No Action Alternative, Alternative 1, and Alternative 2), as discussed in the 2011 GOA Final EIS/OEIS, remain the same for this Supplemental EIS/OEIS. The Navy conducted a review of existing federal and state regulations and standards relevant to expended materials, as well as a review of new literature, to include laws, regulations, and publications pertaining to expended materials. Although additional information relating to existing environmental conditions was found, the new information does not indicate an appreciable change to the existing environmental conditions as described in the 2011 GOA Final EIS/OEIS. Because the existing conditions have not changed appreciably, and no new Navy training activities are being proposed to occur in the TMAA in this Supplemental EIS/OEIS, re-analysis of the alternatives with respect to expended materials is not warranted. Subsequently, the conclusions made for the alternatives analyzed in the 2011 GOA Final EIS/OEIS remain unchanged in this Supplemental EIS/OEIS.

3.2.3 CONCLUSION

As described above, there is new information on existing environmental conditions, including updated Navy regulations, new research, and new information on a USEPA/Navy SINKEX agreement. However, this new information does not change the affected environment, which forms the environmental baseline of the expended materials analysis in the 2011 GOA Final EIS/OEIS. Additionally, no new Navy training activities are being proposed in this Supplemental EIS/OEIS that would affect expended materials in the TMAA. Therefore, conclusions for expended materials impacts made for the alternatives analyzed in the 2011 GOA Final EIS/OEIS remain unchanged in this Supplemental EIS/OEIS. For a summary of effects of the No Action Alternative, Alternative 1, and Alternative 2 on expended materials under both the National Environmental Policy Act and EO 12114, please refer to Table 3.2-24 (Summary of Effects by Alternative) in the 2011 GOA Final EIS/OEIS.

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