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17 May 2002

Ms. Michelle DiGeambeardino
Naval Facilities Engineering Command
Engineering Field Activity North East
Environmental Division, Code EV2
10 Industrial Highway, Mail Stop No.82
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RE: Preliminary Assessment/Site Inspection Results
Site 47 and Site 48, Naval Weapons Station Earle, Colts Neck, New Jersey
Contract No. N62472-92-D-1296, Task Order No. 0100
EA Project No. 2960100

Dear Ms. DiGeambeardino:

At the request of the Navy, EA Engineering, Science, and Technology performed Preliminary Assessment and Site Inspection (PA/SI) activities at Site 48, the Mine Battery Disposal Area, and Site Inspection activities at Site 47, the former Pesticide Shop. Both sites are located within the boundaries of Naval Weapons Station Earle in Colts Neck, New Jersey.

1. OBJECTIVES

The objectives of the PA/SI activities were as follows:

- To complete an assessment of the significance of slight exceedances of pesticide standards in ground water beneath Site 47, the former Pesticide Shop. These exceedances were observed prior to completion of a removal action in this area. The purpose of the additional site inspection was to assess whether the exceedances have been mitigated by completion of the removal action. A preliminary assessment was not required or performed for site 47.

- To complete an initial assessment of the horizontal and vertical extent of batteries at Site 48 and to assess the presence or absence of impacts to site media (soil, ground water, surface water, and sediment) from past mine actuator disposal activities.

To satisfy these objectives, project activities included the following:

- Collection of ground-water grab samples via direct push sampling technology at up to 6 locations at Site 47, including those at which historical exceedances of ground-water quality standards were observed

- Review of available historical information for Site 48

- Performance of an unexploded ordnance survey in the terrestrial portions of Site 48 to identify potential unexploded ordnance prior to sampling activities

- Excavation of test pits to attempt to identify areas of significant actuator disposal at Site 48, to assess potential soil impacts resulting from disposal, and to assess the horizontal and vertical extents of actuator disposal at the site

- Collection of ground-water grab samples at Site 48 via direct push technology to assess the potential for impacts related to historic disposal activities

- Collection of surface water and sediment samples from West Pond and the adjacent Mine Brook to assess the potential for impacts to surface water in Area 48 related to historic disposal activities.

Analytical data, field procedures, and other information specific to field activities are presented in the PA/SI Report (EA 2002)[1], submitted under separate cover. This letter is intended to be a summary of conclusions and recommended further investigation activities, as applicable.

2. CONCLUSIONS AND RECOMMENDATIONS

Based on the results of these activities, as detailed in the PA/SI report (EA 2002), EA has developed the following conclusions and recommendations.

2.1 SITE 47 – FORMER PESTICIDE SHOP

Pesticides were not detected in ground water at concentrations that exceed New Jersey Category IIA Ground Water Quality Criteria. Endosulfan I, the constituent of concern previously identified in ground water beneath Site 47 during the removal action, was not detected in any of the 3 samples. As such, no significant impacts to ground water are present and no further action is warranted at Site 47 at this time.

2.2 SITE 48 – MINE BATTERY DISPOSAL AREA

Conclusions and recommendations for each medium of concern at Site 48 are presented below.

2.2.1 Soil

Several target analytes, arsenic and cadmium in particular, were detected in soils at Site 48 at concentrations above New Jersey Department of Environmental Protection (NJDEP) Residential and Non-Residential Direct Contact Cleanup Criteria and/or Impact to Ground Water Criteria. Beryllium and total chromium were detected above or slightly below the residential criteria across Site 48 as well. No apparent correlation between the distribution and concentration of metals at Site 48, and the observed locations of actuators, was observed, and the Navy has no record of use of these constituents at Site 48. Rather, target analyte concentrations varied widely and with no discernable trends related to location or depth, with one exception discussed below. Similar concentrations were also detected in sediment. The presence of these constituents

independent of proximity to actuators suggests that historic deposition of actuators in this area have not resulted in observable impacts to media at Site 48.

Soils in the area of Monmouth County in which Naval Weapons Station (NWS) Earle is located include glauconite, which often contain elevated concentrations of target analytes, including cadmium, arsenic, beryllium, and others, that are consistent with the range of concentrations detected at Site 48. The observed nature of the distribution of these analytes in soil and sediment, and lack of documented historical use of these constituents in any raw or finished materials, suggest that their presence at Site 48 is the result of natural, or background, concentrations. As a result, a background study in accordance with New Jersey Administrative Code 7:26E-3.10 is recommended. The study would seek to verify that the concentrations of the various target analytes detected in soils at Site 48 above applicable cleanup criteria (arsenic, beryllium, cadmium, total chromium, lead, and zinc) are due to natural, or background, conditions.

One location at Site 48 (11-TP-48-11B) contained elevated concentrations of lead and zinc in addition to those constituents discussed above. The residential criteria for lead, and both the residential and non-residential criteria for zinc, were exceeded, and concentrations of both lead and zinc were several orders of magnitude higher than concentrations detected elsewhere at Site 48. Based on these data, EA recommends inclusion of these constituents in the background study recommended above. However, should the study fail to demonstrate that the elevated concentrations of zinc and lead at this location are a result of natural, or background, concentrations, EA may recommend that additional samples be collected in the area of this test pit to delineate the horizontal and vertical extent of the elevated lead and zinc concentrations.

2.2.2 Ground Water

Analysis of ground-water samples collected at Site 48 indicate the presence of aluminum, arsenic, chromium, iron, lead, and manganese at concentrations that exceed the greater of the Ground Water Quality Criteria and practical quantitation limit for each constituent. Ground-water samples were collected using direct push methods and temporary well points. Although the well points were purged and a low flow method was used for sampling, temporary well points generally result in samples that are more turbid than those collected using permanent monitoring wells. The highest concentrations of target analytes detected were observed in the sample from well point 3-WP48, which was observed in the field to be the most turbid of the three samples collected. As a result, concentrations of metals in ground water in this area may be attributable to the presence of suspended solids rather than dissolved metals. Therefore, it is EA's recommendation that a permanent monitoring well in the approximate location of 3-WP48 be installed, developed, and sampled via the low flow procedure to obtain a more accurate assessment of metals concentrations in ground water, and to assess the effect of suspended solids on concentrations of metals in ground water.

2.2.3 Sediment

Sediment samples were collected from West Pond and the tributary of Mine Brook. NJDEP has not developed criteria for contaminants in sediment; as such, analytical results were compared to NJDEP Residential and Non-Residential Direct Contact Cleanup Criteria and Impact to

Ground-water Criteria for soils. Concentrations of arsenic exceeded all three criteria in the 5 samples, while beryllium and cadmium exceeded these criteria in 4 of 5 and 2 of 5 samples, respectively. Concentrations of these and several other target analytes (aluminum, barium, calcium, chromium, copper, iron, lead, magnesium, manganese, nickel, and potassium) were consistent with those detected in soils at Site 48, and also appear to be naturally-occurring, background concentrations. EA recommends that a minimum of 3 additional sediment samples be collected upstream of the junction of the tributary running from Site 48 and the tributary leading offsite to establish background concentrations of target analytes in sediment. Analytical results from these samples would then be used in conjunction with existing analytical results to perform a Baseline Ecological Evaluation pursuant to New Jersey Administrative Code 7:26E and NJDEP's Guidance for Sediment Quality Investigations (1998)[2].

2.2.4 Surface Water

Surface water samples were collected from West Pond and Mine Brook at the same locations as the sediment samples. Surface water samples were collected prior to sediment sample collection to minimize the presence of suspended solids. Analysis of surface water samples at Site 48 indicate the presence of arsenic at concentrations in excess of the applicable New Jersey Surface Water Quality Standard in 2 of 5 surface water samples. Because arsenic was not known or suspected to have been used in this area, these exceedances are also believed to be a result of naturally-occurring, background arsenic in soils and sediment at NWS Earle. EA recommends that additional upstream surface water samples be collected, in conjunction with the recommended sediment sampling above, for inclusion in a Baseline Ecological Evaluation.

We appreciate the opportunity to assist you with this project. If you have any questions or require additional information, please call me at (732) 404-9370, extension 220.

Sincerely,

EA ENGINEERING, SCIENCE,
AND TECHNOLOGY, INC.

Christopher J. Kerlish
Contract Task Order Manager

Cc: L. Burg, NWS Earle
K. Kilmer, EA
Contract File, 29601.00