

**Basewide Remedial Investigation/Feasibility Study
Fort Ord, California**


Volume II - Remedial Investigation

Basewide Surface Water Outfall Investigation


Prepared for

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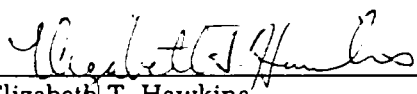
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Summary of Text Changes

This final version of the Basewide Surface Water Outfall Investigation addresses comments received on the Draft Final version of the report dated December 1994. Responses to agency comments on the Draft Final report are included in Volume VI of this report. Text changes have been made to the following pages in response to agency comments. Replacement pages are indicated with an R.

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Fort Ord, California**

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EXECUTIVE SUMMARY

This report presents the results of the basewide investigation of the surface water and storm drain outfalls at Fort Ord in Monterey County, California. The investigation was conducted on behalf of the U.S. Army Corps of Engineers (COE), Sacramento District, which has been retained by the Army to conduct the remedial investigation/feasibility study (RI/FS) at Fort Ord.

The purpose of the Basewide Surface Water Outfall Investigation (SWOI) was to evaluate the quality of the discharges from the surface water drainage system (including the storm drain system) and characterize the impact of these discharges on soils at the outfalls.

In 1991 and 1992, Phase 1 of the investigation consisted of prioritizing the basewide surface water outfalls based on their potential to transport contaminants to the outfall, sampling and analyzing soil gas samples, and obtaining soil boring samples and sediment samples at each prioritized outfall. The work was performed in accordance with the RI/FS Work Plan (HLA, 1991c) and the field procedures presented in the *Site Characterization report, Site 34 - Fritzsche Army Airfield Fueling Facility, Part 2: Field Procedures and Quality Control Implementation, Remedial Investigation/Feasibility Study, Fort Ord, California (HLA, 1992d)*. The results of the 1992 Phase 1 field investigation and a work plan for additional Phase 1 activities were presented in the *Draft Basewide Surface Water Outfall Investigation*, dated April 5, 1993.

The additional Phase 1 investigative and assessment activities completed in 1993 included: a source area evaluation; additional soil, sediment and particle size sampling; remote video reconnaissance of a portion of the storm drain pipe system; a human health risk evaluation of the 1992 and 1993 data, and the preparation of a *Draft Data Summary Report and Work Plan, Phase 1 1992 and 1993 Sampling*, dated April 18, 1993.

Inorganics were detected in all of the 1992 and 1993 soil and sediment samples. In general, the

near-surface (0.0 to 0.5 feet bgs) soil and sediment samples had higher metals concentrations than the deeper (5.0 to 5.5 feet bgs) soil samples both near the outfalls and 20 feet down gradient of the outfalls.

Organic compounds were generally detected less frequently than the inorganic compounds. Fluoranthene, dieldrin, 4,4'-DDE, 4,4'-DDT, 4,4'-DDD, endosulfan II, endosulfan sulfate, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, pyrene, phenanthrene, and benzo(ghi)perylene were detected in at least one sample. Pesticides and unknown hydrocarbons were detected in 29 and 27 of the 83 soil and sediment samples, respectively. No organic compounds were detected in 18 of the 83 soil and sediment samples.

The human health screening risk evaluation was utilized to evaluate the Phase 1 soil and sediment samples and identify three sampling locations for further characterization. Additional characterization at Sampling Location OF-15 and an evaluation of potential groundwater impacts at Sampling Location OF-11 proceeded under Phase 2 of the Basewide SWOI. Sediment within the storm drain system upgradient of Sampling Locations OF-25 and OF-26 is scheduled for removal.

Two additional storm drain outfalls were identified for sampling during a June 9, 1994 site visit to FAAF with previous employees of the base. These two outfalls (Sampling Locations OF-34 and OF-35) discharge into a vegetated drainage channel west of Buildings 533 and 535 at the western end of FAAF. Sampling at these two outfalls was completed under the Phase 2 Basewide SWOI field activities.

Phase 2 sampling took place on September 28 and 30, 1994. Soil samples were obtained from 10 additional soil borings within and surrounding a concrete channel that lies beneath 2.5 to 3.5 feet of soil and extends approximately 61 feet west of Sampling Location OF-15. Concentrations of an unknown hydrocarbon,

1,1,1-TCA, and PCE attenuated with distance from the outfall in the soil samples from within the concrete channel; and attenuated to none detected at a depth of 5.5 feet bgs in samples obtained from soil borings completed around the channel perimeter. Dibromochloromethane and bromoform were detected in a 0.0-foot to 0.5-foot bgs sample from a soil boring within the buried concrete channel. On the basis of these data, it is recommended that the soil above the buried channel at Sampling Location OF-15 be excavated under the Interim Action Record of Decision (IAROD).

Recommend actions presented in the Phase I SWOI included further evaluation of the potential impacts to groundwater from a TPH concentration at Sampling Location OF-11 that did not attenuate with depth. Further evaluation of the analytical results during Phase 2 determined that the non-attenuated concentration reported at depth was an incorrectly reported surrogated result and was not present in the soil at the outfall. Therefore, no potential impacts to groundwater were identified and no further action at Sampling Location OF-11 was recommended.

Two PCBs were detected at levels above PRGs in the 5.0- to 5.5-foot bgs soil sample from the soil boring completed adjacent to the outfall at Sampling Location OF-34. No other organics or inorganics detected in the samples obtained at Sampling Location OF-34 were determined to present human health risk. Exposure at the outfall location is expected to be much lower than the calculated residential exposures due to the depth of the sample and non-residential future land use of FAAF. Further characterization of the vertical extent of the PCBs present in the soil at Sampling Location OF-34 to assess potential groundwater impacts will be completed under the IAROD.

Lead and cadmium were detected at levels above PRGs in the 0.0- to 0.5-foot bgs sample from the soil boring completed adjacent to the outfall at Sampling Location OF-35. An unknown petroleum hydrocarbon was also detected at an estimated concentration of 780 mg/kg in the same near-surface sample. Concentrations of these potential contaminants attenuated below human health risk PRGs with depth and distance from the outfall. On the basis of these data, it is recommended that the soil at Sampling Location OF-35 be excavated under the IAROD.

The remaining outfalls require no further action under this investigation.