

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107

SUBJECT: Willow Grove Naval Air Station: Draft Phase II RI/FS WP **DATE:** 7/2/96

FROM: Barbara Okorn, ^{BO}Coordinator
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TO: Drew Lausch, RPM
Federal Facilities Branch (3HW50)

The BTAG has reviewed the subject documents and offers the following comments on behalf of FWS, NOAA, and EPA members. This memo also reflects the findings and discussions from the June 13, 1996 Air Station visit.

The Phase II RI is to provide the additional data needed to fill the data gaps identified from review of the previous Phase I RI and the scoping process for the investigation. The Phase II RI Draft Work Plan describes the work proposed for four sites at the Willow Grove Naval Air Station (i.e., Site 1 - the Privet Road Compound, Site 2 - the Antenna Field Landfill, Site 3 - the 9th Street Landfill, and Site 5 - the Fire Training Area). During the visit the Air Station fueling / defueling Area 11 was also visited and discussed.

BTAG finds the Work Plan presentation for each site generally informative and logical. For each site, the Work Plan presents the history, surface and subsurface features, ecological setting, nature and extent of contamination as determined from the previous investigations, transport pathways and potential receptors, data gaps, and proposed Phase II RI work to address data gaps.

The Work Plan's description of ecological features on the Station and at each site fails to represent the full diversity of avian and terrestrial biota observed at or expected to utilize the sites and to be exposed to the sites' contaminants. The Station's ecosystem is portrayed as modified landscape with limited vegetative communities and wildlife species that are common in urbanized areas. This portrayal leads to the Work Plan's assessment that the Station's ecosystem has limited terrestrial value. The Work Plan reflects this limited ecosystem valuation by failing to consider terrestrial ecological receptors as potential receptors at any of the four Station sites. BTAG observed numerous terrestrial ecological receptors at all four sites and Area 11. The Work Plan does not correctly identify for each proposed study site the presence or absence of potential aquatic receptors.

GENERAL COMMENTS

BTAG notes the following general additions or changes to the Work Plan that will require specific changes to the proposed scope of work for all the sites:

- reevaluate the Station's ecological features especially in regard to potential terrestrial ecological receptors that may utilize each of the proposed study sites and include a figure for each site showing the type and extent of the dominant vegetative communities;

contact the Commonwealth of Pennsylvania and U.S. Fish and Wildlife Service in accordance with Section 7 of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) for current information on the presence of state or federally listed or proposed endangered and threatened species within the Station that potentially could be affected by Station contamination or remedial actions (i.e., for the Service use the following address:

Mr. Edward Perry, Acting Field Supervisor
U.S. Fish and Wildlife Service
Suite 322, 315 South Allen St.
State College, PA 16801;

and for the Commonwealth requests for information regarding State-listed endangered or threatened species should be directed to the Pennsylvania Game Commission [birds and mammals], the Pennsylvania Fish and Boat Commission [fish, reptiles, and amphibians], and the Pennsylvania Department of Environmental Protection [plants]);

conduct a site-specific wetland determination and characterization at each site following the "Routine Onsite Determination Method" from the Corps of Engineers Wetlands Delineation Manual; and,

where soil samples are analyzed in the field by an immunoassay to determine the PCB concentration and some duplicate soil samples are collected for confirmatory PCB laboratory analysis, ensure confirmatory samples for each site cover the entire site range of PCBs levels as established by the immunoassay analysis (e.g., take at least two, preferable three, confirmatory samples at the highest, median, and lowest PCB concentrations as determined by the immunoassay).

SPECIFIC COMMENTS

BTAG offers specific comment and recommends change to the following Draft Work Plan sections:

- Section 1.3.2, "Topography and Surface Water Hydrology," in the second paragraph on page 1-4 change the regional drainage basin into which the Station Creeks drains from the Schuylkill to the Delaware River.

Section 2.6, "Surface Soil Sampling," in the first paragraph on page 2-5 drop the word "composited" from the paragraph's last sentence so the sentence reads as follows: "the surface soil sample shall be from the top 6 inches of the subsurface sampling apparatus."

- Section 3.0, "Site 1 - The Privet Road Compound": Expand the proposed delineation of site soil PCB contamination to address levels of total PCB that are of potential risk to site terrestrial receptors (e.g., total PCB soil concentration greater than 1 ppm is considered a potential risk to terrestrial ecological receptors). The proposed soil sampling for dioxin and semivolatile organics should as a minimum cover the same site surface area as sampled during the Phase I RI. Take an additional sediment sample in the ditch forming the site's northwest boundary. The additional sediment sample should be located upgradient from the previous RI SS-2 sample in the first fine-grained ditch depositional area. The additional sediment sample should undergo full TAL inorganic and TCL (i.e., VOCs, SVOCs, PCBs, and pesticides) analyses including total organic carbon (TOC) and grain size.

- Section 4.0, "Site 2 - The Antenna Field Landfill": The shallowest surface soil sample proposed on page 4-9 should be from 0 to 6 inches and not from 0 to 2 feet. The proposed five seep samples on page 4-13 should include both the water and sediment media. The water should be analyzed for TCL VOCs and the sediment for TAL inorganics, TCL SVOCs, PCBs, pesticides, TOC, and grain size. The seep sediment sample should be taken from a fine-grained depositional area that receives surface runoff from the seep even if no water is present at the time of sampling.

- Section 5.0, "Site 3 - Ninth Street Landfill": Additional surface water and sediment sampling is needed to determine the source of the high polycyclic aromatic hydrocarbon (PAH) levels detected in the Phase I RI pond sediment samples SS-6 and SS-7. This may require additional pond sediment samples upgradient of sample SS-6. Water and sediment should also be sampled from the detention basin of the drainage ditch and the active spring located on the southeast side of the pond in the vicinity of the Phase I RI W-2 shallow well. The additional surface water and sediment samples should, at a minimum, be analyzed for TCL SVOCs and TOC and grain size for the sediment samples.

Section 6.0, "Site 5 - The Fir Training Area": The site history notes disposal and burning of liquid wastes generated by the Station (e.g., solvents, paint chemicals, toluene, and various petroleum compounds) occurred at the site. As dioxin may be formed from low temperature burning of petroleum compounds, a subset of the proposed surface and subsurface samples should be analyzed for dioxin. This dioxin sampling should focus on and around the burn ring. Burned material was observed inside the burn ring, and storm water has apparently transported material from the burn ring to the adjacent land surface. The land surface immediately adjacent and downgradient of the ring has not revegetated. This barren area is estimated to extend 10 to 15 feet out from the burn ring. Since dioxin analysis is already proposed for three other Station sites, the additional overhead cost of dioxin sampling at Site 5 during the Phase II RI is probably already covered.

There is an apparent error in Table 6-1 in regard to the analyses proposed for the respectively listed ten and three subsurface soil samples at locations FTAB-17 through FTAB-29. The text for "Soil Sampling" on page 6-10 states ten subsurface soils will be field screened for PCBs using the immunoassay procedure, and three subsoil samples will be submitted to a laboratory for PCB analysis to confirm the field screening. Table 6-1 for subsurface soil samples does not reflect this proposed work.

Section 7.0, "Background Sampling": The Work Plan proposes to collect ten background soil samples with two samples from each of the four major soil series mapped within the Station. If the background soil data are to be used in statistical comparison to the Station sites' data, then at least three samples per major soil series should be taken. The BTAG expressed caution about using the soil background data from the Naval Air Warfare Center in Warminster, Pennsylvania as the surrounding land use at the two Stations appears very different, and the Warminster background stations are generally located closely down gradient of the Warfare study sites.

Area 11, Fuel / Defueling Area: If additional soil sampling is conducted in the Area, ensure surface and subsurface soil samples are collected in the same manner as proposed for the other Station sites, and that analysis include TCL SVOCs. The additional soil sampling should include the cattail dominated wetland on the northeast side of Area 11 that is part of the Areas's storm water drainage system.

ECOLOGICAL RISK ASSESSMENT

The Work Plan does not provide any details on how the potential for ecological risk will be assessed at each of the Station's study

sites. BTAG offers initial guidance for conducting the Station's Ecological Risk Assessment.

The Environmental Risk Assessment (ERA) for each site should be planned using the EPA Region III INTERIM ECOLOGICAL RISK ASSESSMENT GUIDELINES, of July 27, 1994. The ERA should be conducted in a phased approach that starts with a comprehensive (Tier I) screening level assessment. The screening ERA must use all existing site information such as the Phase I and II RI contaminant data, and consider the characterization of the site's habitats and ecological receptors and the ecotoxicity potential of the contaminants.

The screening evaluation of soil, surface water, and sediment data, including identification of site "hot-spots," should be conducted and submitted to EPA before further risk assessment tasks are conducted [emphasis added]. The screening ERA should be appropriate to address the overall ERA goal. The main ERA goal is to determine for each distinct site habitat (e.g., lakes, streams, wetlands, old fields, and forest) the occurrence and level of potential ecological risk from exposure to all contaminants detected in each medium of each habitat.

The screening assessment should for each site habitat compare the media (i.e., soil, water, or sediment) chemical results to criteria (e.g., Ambient Water Quality Criteria for surface water) and other benchmarks. Long and MacDonald (1992) provides sediment benchmarks for some site contaminants. For soil compare site exposure values to several literature reported effect levels (e.g., NOAELs, LOAELs, LC₅₀, or EC₅₀) for different biotic families (e.g., soil microbes, earthworms, and plants [i.e., phytotoxicity, seed emergence, or root elongation]).

Medium-specific exposure values (for use in the screening ERA) are derived from on-site analytical results. Initially, the maximum reported contaminant concentration in each medium will serve as the exposure value. This task is performed to ensure that contaminant "hot-spots" are addressed in the screening risk assessment. Next, exposure values are set to the 95% upper confidence limit (UCL) of contaminant concentrations, if appropriate. That is, the Region III guidelines (mentioned above) provide specific instructions for the derivation and use of the 95% UCL, and, in a number of circumstances, the 95% UCL should not be used as an exposure estimate. The investigator is urged to become familiar with these conditions.

The Tier I results should then be reviewed from a risk management perspective to determine if sufficient information is available for undertaking remedial action in select habitat areas. The Station's background data can and should only be used in the risk management phase of the assessment [emphasis added].

The risk management process involves evaluating site-related contaminants that exceed screening or literature-based effect levels by considering the following factors: 1) the location, frequency, and magnitude of the contaminants of concern, 2) the potential for

transport or exposure to ecological receptors, 3) the overall habitat quality and structure of the contaminated area, and 4) the impact to habitat from implementing a site remedy.

To assist the risk assessment and management process it is recommended figures for each study site be prepared showing the location of samples that have contaminants determined to be of potential risk to ecological receptors. The figures should for each site contaminant of concern show the following: 1) sample analytical result; 2) what screening level is exceeded (i.e., ER-L or ER-M for sediment, chronic or acute Ambient Water Quality Criteria for water, and for soil whether the screening level is a NOAEL, LOAEL, LC₅₀, or EC₅₀); and, 3) the relation of the sample concentration to the range of the contaminant's background concentration (i.e., below, above, or within the background range [e.g., near the mean, the maximum, or the minimum background level]).

Thank you for the opportunity to offer these comments. If you have any questions, please feel free to contact me.

Long, E.R. and D.D. MacDonald. 1992. National Status and Trends Program Approach. In: *Sediment Classification Methods Compendium*. EPA 823-R-92-006. EPA Office of Water (WH-556). Washington, D.C.