



STATE OF MAINE

Department of Environmental Protection

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August 15, 1991

DEAN C. MARRIOTT
COMMISSIONER

Mr. James Shafer
Department of the Navy, Northern Division
Naval Facilities Engineering Command
Building 77-L
Philadelphia Naval Shipyard
Philadelphia, PA 19112-5094

Re: Naval Air Station Brunswick, Draft Final Focused
Feasibility Study Sites 1 and 3, April, 1991, by E.C.
Jordan Co.

Dear Mr. Shafer:

The Maine Department of Environmental Protection (MEDEP) has completed its review of the Draft Final Focused Feasibility Study Sites 1 and 3, which was submitted to the MEDEP by E.C. Jordan Co. on July 17, 1991 on behalf of the U.S. Department of the Navy for the Naval Air Station Brunswick (NASB) Site.

The MEDEP wishes to submit the following comments to afford the Navy an opportunity to address the MEDEP's concerns before issuing the Proposed Plan.

General Comments:

- 1.) Proper consideration of State TBCs must be included in the Remedial Action Objectives Section. EPA guidance states that TBC values such as health advisories and reference doses will be used where ARARs are not sufficiently protective. The clean-up level for vinyl chloride must be set at Maine's Maximum Exposure Guideline (MEG), which is set at 0.15 ppb.
- 2.) Discussion of the pretreatment process of contaminated groundwater does not address inorganics contaminants other than iron and manganese. Arsenic, chromium, lead, and nickel were listed in tables 2-5 and 2-6 as inorganic contaminants and given target clean-up levels.

- 3.) As stated in previous correspondence, the MEDEP will favor alternatives that meet long-term remedial objectives. These objectives must result in the permanent reduction in volume, toxicity and mobility of contamination and that attain overall protection of human health and the environment as well as achieve chemical, location, and action specific ARAR's.
- 4.) Alternative 1,3-C (Containment): This alternative proposes to minimize groundwater contamination and reduce leachate by isolating the waste material. This will be achieved through the construction of a cap, slurry wall barrier, and a treatment of contaminated groundwater until the groundwater table is lowered below the landfilled material. The reduction of the groundwater table beneath the site will depend, in part, on the integrity of the cap and slurry wall and on the dependability of long term maintenance.

This alternative will not result in a long term permanent reduction in the volume, toxicity and mobility of the waste material. This alternative cannot be assured of meeting chemical specific ARARs. This fact should be made clear in any proposed plan utilizing this alternative.

E.C. Jordan estimates that the water table below the site will be initially reduced 6-8 feet and up to 11 feet after 5 years. The possibility exists that some of the waste material will still be left in contact with the water table. The contaminant source will not be remediated and the potential for groundwater and surface water contamination will continue to exist. Furthermore, if this alternative was implemented and found to be ineffective, the presence of the slurry wall could interfere with other alternatives that would then be considered.

Continued monitoring of the groundwater table beneath the site will be necessary. The extraction wells should be maintained indefinitely so that they may be utilized for future regulation of groundwater levels at the site.

- 5.) Groundwater Treatment: The Draft Final Focused Feasibility Study also included discussions concerning the treatment process of pumped groundwater and the discharge of treated effluent. These discussions were included in the evaluation of Alternative 1,3-C but also apply to all subsequent alternatives.

The FFS stated that since both vinyl chloride and methylene chloride are known not to adsorb well to vapor phase carbon, the likelihood exists that these

gases will be released from an air stripping operation at a rate exceeding MEDEP, Bureau of Air Quality Guidelines. U/V oxidation appears to provide a tried and proven method of treating VOC's in groundwater without the release of contaminants to a secondary medium. The MEDEP favors a U/V Oxidation treatment of VOC's at Sites 1 & 3.

- 6.) Treated Effluent Discharge: Four options for the discharge of treated water were discussed. Discharge of treated effluent to surface water (Mere Brook) may require meeting permit discharge requirements. In addition, citizen apprehension of the discharge of any effluent to the stream system and ultimately Harpswell Cove may be difficult to overcome.

Not enough information has been presented to determine the likely impact on flushing times in the site 1 & 3 landfill or on the eastern plume of groundwater discharge by infiltration, recharge or irrigation.

Little discussion was presented regarding the Town of Brunswick Storm Sewer System. This system is not a centralized system. Storm water runoff in the NASB and Cooks Corner area of town is directed to numerous streams and culverts. Mere Brook receives a substantial amount of runoff from NASB and nearby residential areas. Permit discharge requirements will be similar to those for direct discharges to Mere Brook.

The Brunswick Sewer District's publicly owned treatment works appears to offer a preferred alternative for effluent discharge in terms of public acceptance and ease of implementation. The MEDEP estimates that the combined treated discharge from Sites 1 & 3 and the Eastern Plume may be as much as 6% of the designed flow rate of the facility. Continual pumping of treated effluent may compete with residential and industrial use of the POTW at some future date.

If discharge to the POTW is not feasible, the MEDEP recommends that a combination of infiltration and surface water discharge be considered to lessen the impact to each geological feature.

- 7.) Alternative 1,3-D (Passive Groundwater Collection/Treatment): This alternative allows for natural flushing to reduce levels of contamination in the source area. Construction of a 2,300 foot passive groundwater collection system is intended to reduce the impact of contaminated groundwater and leachate on the Mere Brook system. The Department assumes that due to reliance on natural flushing action, time for contaminant reduction will fall in the upper range (or

greater) of the 18-73 year time estimate. Based on this assumption, the Department expects that the collection trench will require more frequent maintenance as it ages. Clogging of the trench system over time could reduce its effectiveness and may require rebuilding various affected sections of the system.

Due to the location of the weapons compound, the trench system will need to skirt the boundary of the compound. This will result in the trench being constructed through a portion of the landfill, possibly exposing workers to undetermined amounts of hazardous materials. Construction of the system in this manner will also leave a portion of the landfilled material untreated and located under a portion of the weapons compound.

Assuming that this alternative was implemented and was able to reduce levels of contaminants to acceptable levels, Sites 1 & 3 would still contain landfilled material. This site would continue to be classified as an unsecured landfill and would require closure under MEDEP, Solid Waste Regulations.

- 8.) Alternative 1,3-E (Cap/Groundwater Extraction/Treatment): This alternative appears to meet the remedial objectives previously listed. Installation of the eight extraction wells is expected to provide an effective alternative for the collection and treatment of contaminated groundwater while reducing discharges to Mere Brook. Installation of the extraction wells will also be a less intrusive procedure than constructing a 2,300 foot trench system. In addition, extraction wells offer a more flexible response through the alteration in pumping rates and/or addition of additional measures to achieve desired clean up goals. Construction of a suitable cap as described in alternative 1,3-C would isolate waste material and reduce infiltration. Such a cap would meet the Department's Solid Waste Regulations for landfill closures.

Preferred methods for the treatment of extracted groundwater and the discharge of the treated effluent have been discussed previously.

- 9.) Alternative 1,3-F (CAP/Passive Groundwater Collection/Treatment): This alternative also appears to meet remedial objectives. The construction of the specified cap will reduce infiltration, isolate waste material and meet landfill closure regulations.

The limitations of the passive groundwater collection system have been discussed previously.

Specific Comments:

- | Page | Section | Comment |
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| 1.) | 2-30, Table 2-5, Proposed Target Clean-Up Levels: | The proposed clean-up level of 2 parts per billion (ppb) for vinyl chloride is not sufficiently protective of human health and does not meet federal ARAR's since the level of 2 ppb exceeds the worst case 10^{-4} cut off specified in the NCP. |
| 2.) | 3-34, section 3.3, Water Treatment: | Since air stripper emissions may not meet state ambient air guidelines with or without vapor phase carbon treatment and UV/Oxidation would produce a cleaner effluent (table 3-4), the MEDEP prefers UV/Oxidation of groundwater. |
| 3.) | 3-41, section 3.3, Discharge of Treated Water: | Discussions concerning the effects of recharge of treated water upgradient of the landfill need to be clarified. Alternative 1,3-C with its cap and slurry wall is designed to prevent flushing through the landfill. Therefore, upgradient discharge should have no effect on this specific alternative. Alternatives 1,3-D,E, and F intend to allow flushing to lower contaminant levels. In these cases, up gradient discharge could "increase hydraulic gradients and seepage velocities within the landfill". Consequently, the volume of water passing through the landfill could be increased. Estimates of the volume of water needing treatment in alternatives D,E, and F may need to be altered to reflect this factor. |
| 4.) | 3-42, section 3.3, Discharge of Treated Water: | This report stated that infiltration or other upgradient discharge options are "likely to influence groundwater patterns over a larger area than that part of the aquifer associated with Sites 1 and 3". If no computer modeling or other data is available, then a statement implying that the changed groundwater flow pattern is not expected to influence (impact) the eastern plume should not be made. |
| 5.) | 3-44, section 3.3.1, Overall Protection of Human Health and the Environment: | The MEDEP will not concur with the removal of institutional controls which restrict groundwater use unless the groundwater meets state guidelines for drinking water quality (ie. MEGs). |

Previous statements concerning air stripping and off-gas treatment also apply to this section.

- 6.) 3-44 to 3-47, section 3.3.2, Compliance with ARARs: Successful implementation of Alternative 1,3-C would eventually, over time, decrease the amount of contaminated groundwater discharging to Mere Brook and leachate seeps thereby achieving target clean-up levels for groundwater and surface water. These goals will be reached only as long as the cap and slurry wall remain in place and are maintained.

The MEDEP is concerned that this evaluation is misleading for the following reasons:

- a.) some waste may remain in contact with groundwater and as a result, groundwater could continue to be contaminated in excess of target clean-up levels.
- b.) the remedy could fail and contaminated groundwater could continue to flow from the site.
- c.) alternative 1,3-C does not provide for a permanent reduction in source contamination.

- 7.) 3-47, section 3.3.3, Long Term Effectiveness: Groundwater modeling predicts the lowering of the groundwater table by .6 to 8 feet. Page 3-15 stated an 8 to 11 foot decline within 5 to 10 years. Please clarify under Long Term Effectiveness.

The discussion under long term effectiveness indicated that groundwater would be located below "most" of the waste. The possibility of having any waste in continued contact with groundwater without source treatment is unacceptable as it would defeat the purpose of this alternative.

- 8.) 3-75 & 3-76, section 3.4.5, Short Term Effectiveness: Once target clean-up levels are met, Site 1 & 3 will still be considered an unsecured landfill and will need to be considered for proper closure under MEDEP Solid Waste Regulations.

- 9.) Table 4-1, Compliance with ARARs:

- a.) Maine's TBC's must be listed with chemical as well as action specific ARARs.
- b.) Alternative 1,3-C would not comply with ARARs if groundwater in the landfill should remain in contact with part of the landfilled material and if any failure of the remedy results in migration of contamination.

- c.) Alternative 1,3-D will not be in compliance with Maine Solid waste ARARs at the completion of the remedy.

10.) Table 4-1, Long Term Effectiveness and Permanence:

- a.) Magnitude of Residual Risk: In alternative 1,3-C some groundwater could remain in contact with the source material.
- b.) Adequacy of Controls: Alternative 1,3-C would reduce contaminants in extracted groundwater only. Groundwater that remained in contact with waste material could continue to be contaminated. If the remedy were to fail, groundwater could become recontaminated and migrate off site.

Institutional controls must be the same for all alternatives except Alternative 1,3-A.

- c.) Reliability of Controls: Alternative 1,3-D is easily constructed but maintenance, if necessary, may be difficult.

11.) Table 4-1, Reduction of Mobility, Toxicity, or Volume:

- a.) Treatment Process and Remedy: Alternatives 1,3-D, E, and F permanently reduce contamination by flushing the wastes. Alternative 1,3-C does not.
- b.) Amount of Hazardous Material Destroyed or Treated: This criterion is misleading. What is actually described is the total volume (over time) of groundwater treated. The time factor under consideration should be included. The rate in gallons per minute should also be included.

The criterion as listed should describe the amount of source material treated. In the case of Alternative 1,3-C no source material is treated and permanent reduction of contamination is not achievable. Alternatives 1,3-D and F will treat most, but not all, of the landfilled source material depending on the final location of the groundwater collection trench. Alternative 1,3-E can treat all of the source landfilled material if appropriate adjustments are made in the pumping rate of each extraction well. Alternatives 1,3-D, E, and F will be able to permanently reduce contamination at the source.

If you have any concerns or questions regarding these comments, please contact me at (207) 289-2651.

Sincerely,



Ted Wolfe
Division of Site Investigation and Remediation
Bureau of Hazardous Materials and Solid Waste Control

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