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LETTER REGARDING REGULATORY REVIEW AND COMMENTS ON DRAFT FEASIBILITY STUDY AT OPERABLE UNIT 4 (OU 4) NTC ORLANDO FL
3/16/1999
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Department of
Environmental Protec

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Jeb Bush
Governor

Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

March 16, 1999

Mr. Wayne Hansel
Code 18B7
Southern Division
Naval Facilities Engineering Command
P.O. Box 190010
North Charleston, South Carolina 29419-0068

RE: Draft Feasibility Study, Operable Unit 4, Naval Training Center Orlando, Florida

Dear Mr. Hansel:

I have completed the review of the Draft Feasibility Study for Operable Unit 4, NTC Orlando, dated January 1999 (received February 2, 1999), prepared and submitted by Harding Lawson Associates. I have attached comments from Bill Neimes, P.E., that should be addressed. I have the following comments that also should be addressed in the Final Feasibility Study Report:

(1) Natural Attenuation at this site has been through reductive dechlorination of PCE and TCE. The treatment alternatives V-3 (In Situ Treatment by Chemical Oxidation), V-4 (In Situ Treatment by Air Sparging) and V-5 (Recirculation Wells) for the northern plume VOC source areas will apparently change the conditions in the treatment area from anaerobic to aerobic for the amount of time the treatment systems are operating, potentially longer. Source reduction to levels where natural attenuation, as calculated in the treatability study, will complete treatment prior to groundwater discharging to Lake Druid is a component of several of the treatment alternatives. The potential upset in the natural attenuation already occurring at the site by oxygenating a portion of the aquifer should be considered in the report.

(2) The report should discuss in more detail the operational history of the IRA recirculation wells, including problems encountered, lessons learned and whether any of the problems encountered would make the use of recirculation wells technically infeasible. The latest information verbally related by Bechtel casts some doubt as to the long term effectiveness of using recirculation wells.

(3) The first paragraph on page 1-6 states that "monitoring well and direct-push technology have shown that (the northern) plume

is likely confined to Area C along the northern property line, and does not extend into the condominium property located north of OU 4." Any groundwater monitoring that occurs at the site will have to confirm that the plume is confined to Area C and that a treatment system does not cause the plume to migrate onto the condominium property.

(4) There are a few areas of the report that still specify Florida SCGs instead of SCTLs. These should be corrected. On page 3-14, beryllium is identified as being detected at concentrations exceeding the SCGs. Beryllium was not detected at concentrations exceeding the SCTLs.

(5) The addition of the 5-year site review costs for the VOC treatment alternatives and for the antimony plume treatment alternatives may overestimate costs. It is assumed that 5-year reviews will be conducted for the entire OU 4 site and not for each component of the site. This should be explained in the text.

If I can be of any further assistance with this matter, please contact me at (850)488-3693.

Sincerely,

David P. Grabka
Remedial Project Manager

cc: Lt. Gary Whipple, NTC Orlando
Barbara Nwokike, Navy SouthDiv
Nancy Rodriguez, USEPA Region 4
Richard Allen, HLA, Jacksonville
Steve McCoy, Brown & Root, Oak Ridge
Robin Manning, Bechtel, Oak Ridge
Bill Bostwick, FDEP Central District

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Florida Department of

Memorandum **Environmental Protectio**

TO: David Grabka - Project Manager

THROUGH: Tim Bahr - Technical Review Section

FROM: Bill Neimes - Technical Review Section

DATE: February 15, 1999

SUBJECT: Feasibility Study - Operable Unit 4
Naval Training Center
Orlando, Florida

I have reviewed the subject document prepared by Harding Lawson Associates and dated January 1999. This report discusses the selection of remedial alternatives to alleviate the contaminated groundwater plumes of chlorinated solvents and antimony. Media such as surface water, sediments and subsurface soils are not being addressed since it has been determined that neither human nor ecological receptors are at risk from these media. Being proposed for the surface soils is a limited soil removal where contamination in exceedance of the soil cleanup target levels have been determined.

I have included the following comments for your consideration:

- **Executive Summary.** Figures ES-2 and ES-3 have been inadvertently misplaced for each other. Figure ES-2 should represent the future worth costs for VOC Alternatives V-1 through V-7 and Figure ES-3 should show the present worth costs for Antimony alternative A-1 through A-4.

- **Section 5.0. State's Acceptance.** This report notes that since the State has participated in partnering team meetings and have concurred with the issuance of this report, the State has accepted the Feasibility Study. I would have to disagree in that the State, through its partnering meetings, have only conceptually accepted the recommended technology of choice. In reviewing this report in detail there are several assumptions which require further explanation before the State will approve of this Feasibility Study.

- **Section 5.1.3.1. (Page 5-21) $KMnO_4$ Injection.**

  - **Petition for Variance.** As we discussed and you are aware, prior to injection of potassium permanganate, the Department would require the facility to submit the proper documentation to petition for a variance for violating the secondary standards of color, manganese, and pH. Since these are all secondary standards and no primary standards should be violated via this process, there should be no difficulties in obtaining a variance from the Department for these constituents. I have worked with OGC several times on this process and can assist you through this paperwork process.

- **Groundwater Model.** The groundwater model (Wellhead Protection Area) assumes a homogeneous aquifer with a hydraulic conductivity of 40 ft/day. This report notes that the hydraulic conductivity in the upper portion of this aquifer (down to 25 feet below land surface) is only 10 ft/day. The consultant should run the model with this lower conductivity value to determine what effects a lower conductivity would have on this model.

- **Injection well.** Page 5-21 of the report mentions that a PVC cased will be installed to a depth of 40 feet. Please explain how the potassium permanganate will be distributed through the aquifer if the injection well is not screened throughout the aquifer.

Section 5.1.6.1. Alternative V-6. The length of time estimated to cleanup up groundwater to achieve MCL's via pump and treat was given at 108 years. Such a time frame appears to be quite excessive, especially since there was no justification of this to support such a time frame. A groundwater model and the assumptions for this model would be necessary to justify these apparent excessive time frames. It also is ironic that Alternative V-6B (which specifies pump and treat for 59 years and natural attenuation for 30 years) would require less time overall than a more aggressive pump and treat alternative (89 years versus 108 years). How can one justify natural attenuation taking less time than pump and treat?

Appendix D. Table D-9 and D-10. The present worth calculation for Alternative V-7A and V-7B omitted the treatment system O&M cost. Thus the actual cost for operating this system will be much more expensive than that indicated in this report. I have included a table noting this difference.

PRESENT WORTH COSTS FOR ALTERNATIVE V-7

	Reported Alternative V-7A Costs	Actual Alternative V-7A Costs	Reported Alternative V-7B Costs	Actual Alternative V-7B Costs
O&M Costs UV Oxidation	$299,214	$1,862,407	$290,286	$1,806,837
Total O&M Costs	$929,115	$2,492,308	$921,106	$2,437,657
Total Capital and O&M Costs	$1,318,678	$2,881,871	$1,310,669	$2,827,220
Total Costs	$1,450545	$3,170,058	$1,441,736	$3,109,942

From this table we see that the total present worth costs for Alternative V-7A and V-7B have more than doubled from the costs reported in this document. These costs would appear to be more representative of this technology as it is highly unlikely that the costs for this type of treatment would be less expensive than the costs for a conventional air stripper under Alternative V-6A and Alternative V-6B. (The present worth costs for Alternative V-6A and Alternative V-6B was reported as $1,868,725 and $1,843,974 respectively.)

Appendix D. Table D-14. There are some costs items that have been omitted from Alternative A-4. These items include: (1) Cost for a Replacement NP Treatment System - The cost data includes an original NP treatment system. However vendor information indicates that this system will last for a period of five years at most. Based on an estimated operational period of nine years, this cost data should include two NP treatment systems. (2) System Maintenance - The labor cost to operate and maintain this system is estimated to be the same as that to operate and maintain the system with a direct discharge to the POTW. However vendor information notes that it will take 2-4 hours per week of labor to maintain this system. Therefore, the O&M costs for this alternative should be more than the O&M costs for pumping and discharging directly to the POTW.

Appendix E. NP-7010 Unit. The assumptions for groundwater influent information appear to be low. For example do you expect there will not be any suspended solids when pumping raw groundwater directly to the microfiltration unit. In addition, the dissolved solids value of 20 mg/l appears to be low. Information should be collected during a pump test to determine specifics for TDS and TSS.

Appendix F. Hydrogen Release Compound Design Calculations.

- **Spreadsheet.** Although I could follow many of the spreadsheet calculations provided in this appendix, there were a few computations which I could not derive. It would be beneficial if either the consultant or Regenesis could provide the Department a copy of this spreadsheet program so that we can determine if all the assumptions provided are reasonable.

- **Safety Factor.** I have noted a safety factor of 130X (676 lbs/5 lbs) when computing the required HRC poundage for the source area. I realize that this safety factor is based on the necessity to fill all boreholes with HRC, however this factor of safety appears to be excessive. Are there methods of diluting HRC so that the applied dosage of HRC per borehole could be somewhat less than 40 pounds?

Precipitation of Antimony. With the addition of a reducing agent within the antimony plume it is likely that the concentration of sulfate in the groundwater will be reduced to hydrogen sulfide. Any dissolved hydrogen sulfide may combine with the dissolved antimony to form an antimony sulfide precipitate (Sb_2S_3 or stibnite). Metal sulfide precipitates typically have very low solubility products. Thus the addition of HRC may not only mitigate the dissolved chlorinated groundwater plume but also may mitigate the dissolved antimony plume. The consultant should review the chemistry of this to determine what effects a reducing environment will have on antimony precipitation.

If you have any comments or questions on this review, please see me in my office.

cc: Greg Brown - BWC