

04.01-01/11/96-00241



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Ser N462/ 0122
[11 JAN 1996

From: Commanding Officer, Naval Amphibious Base Little Creek
To: Commander, Atlantic Division, Naval Facilities Engineering
Command (Code 18)

Subj: COMMENTS ON THE DRAFT FEASIBILITY STUDY, SITE 7

Encl: (1) Detailed Comments List
(2) Site 7 Habitat Restoration Preliminary Scope

1. Enclosures (1) and (2) are forwarded for inclusion in the final comments list on the Draft Feasibility Study, Site 7 prepared by Foster Wheeler, Inc.

2. For additional information, my point of contact is Kelly Greaser at 363-4571.

A handwritten signature in black ink, appearing to read "W. L. Niven", is located in the center-right of the page.

W. L. NIVEN
By direction

NAB LITTLE CREEK

COMMENTS ON THE

DRAFT FEASIBILITY STUDY, SITE 7

Table of Contents - The headings for section 3.3, 3.4 and 3.5 look like they can fit on one line. Sections 3.3.2, 3.4.2 and 3.5.2 need an "s" added to "Institutional Control" to be consistent with the heading that is in the body of the document.

List of Tables - It looks like there are some tabs out of place for the headings of the summary tables. For example, table 1-4 has a tab in between "Soil" and "Samples". There are no page numbers on the "Summary" tables themselves. It would help if the tables had the page numbers printed on them. Tables 1-4, 1-7 and 1-9 are actually two pages each, so the referenced page numbers will have to be changed accordingly. Table 1-9 should be two pages, but only the second page is included. Please include the first page of the table. Tables 4-1 through 5-1 need page numbers placed on the tables themselves. Table 4-4 is actually two parts, A and B. The "List of Tables" should include this information.

As a general note for all of the tables: Some of the entries have periods at the end and some do not. Be consistent and end them all with periods.

Section 1.1 - The third paragraph, first sentence states that eight sites were investigated in the IAS. This should be changed to seventeen sites. The second sentence should begin: "The IAS was completed in December 1984..." Delete the words "at the site".

Figure 1-2 - This figure has been changed from 2-1 to 1-2 by hand. Please make sure that it is done by computer for the next draft.

Section 1.2 page 1-5 - The top paragraph, second sentence should begin: "Currently, there is no metal collection, transfer activity or temporary storage..." Add the word "metal" and a comma.

Section 1-3 page 1-7 - The top paragraph states that the RBC Table is in Appendix A and the Federal and Virginia State Water Quality Standards are in Appendix B. These Appendices must be added to the FS. Under Subsurface Soils in the second sentence the comma should be deleted from "only beryllium, and lead..." Under Surface Water in the second sentence the comma should be deleted from "TAL metals, above their...". In that same sentence "Lead and Manganese" should not be capitalized.

Enclosure (1)

Section 1-3 page 1-21 - The first sentence contains the symbols Al, Cu, Fe, Pb, Mn and Zn. To be consistent with the rest of the document, completely spell the metals.

Section 1-6 page 1-22 - In the first bullet "Site" is capitalized twice. To be consistent with the rest of the document, don't capitalize the word. The third bullet should address the Supplemental Ecological Assessment.

Table 2-1A pages 2-5 to 2-9 - The "A" needs to be added to the heading on the table for these pages. Also, on page 2-9 the last entry under "Requirement" contains an extra "s" in the first sentence: "...requirements developed under s State implementation...". The "ARAR Determination" columns in all the tables should be filled out properly because the information is needed to complete the FS.

Table 2-1B pages 2-10 to 2-11 - On page 2-10 the last line in the last entry under "Prerequisites" the word "stodge" needs to be changed to "storage". On page 2-11 the "B" needs to be added to the heading on the table.

Table 2-1C page 2-12 - The second entry down under "Comments" needs the word "that" inserted between "...information on endangered species" and "have been observed in the site..."

Table 2-2A pages 2-14 to 2-16 - The "A" needs to be added to the heading on the tables for those pages. Also, on page 2-16 under "Action" delete the line in between the two "Solid Waste Disposal" entries and delete the second occurrence of the words "Solid Waste Disposal"

Section 2.2 page 2-23 - The plans for the habitat enhancement should be included as an RAO so that it is a consideration in evaluating alternatives. Also, none of the alternatives reflect our intentions of doing the enhancement, the benefits of such an enhancement or how it will affect the alternatives.

Section 2.2 page 2-23 - The third bullet at the bottom of the page should begin: "Mitigate the human health risks attributable to Site 7 associated with ingestion of and/or ...".

Section 3.1 page 3-1 - The last paragraph discusses "Soil Control Actions" however the actions control groundwater movement. Please clarify.

Section 3.1 page 3-2 - The last sentence of the first paragraph at the top is unclear. Please clarify and improve the grammar. Under Treatment the habitat enhancement should be included in the general response actions. We may need to deviate from the traditional general response actions to accommodate the project.

Table 3-1 - It looks like some of the entries in the top of the table are bold, but the rest are not. Please check this. Either bold all of the entries or none.

Section 3.3.6 page 3-10 - Under Chemical Treatment in the second sentence the word "form" needs to be changed to "from": "...it may be removed from the soil by some other process...". Under Neutralization at the end of the fifth sentence change (EQUALIZATION) to (Equalization). The sixth sentence is not complete, please clarify.

Section 3.3.6 page 3-12 - Under Stabilization in the first sentence of the fifth paragraph the word "form" needs to be changed to the word "from" and "server" to "service": "...using equipment technology available from service vendors."

Section 3.3.6 page 3-13 - The last sentence in the last paragraph of the section should read: "Institutional controls, capping, excavation and disposal are also screened for further consideration..." The word "and" needs to be inserted, one comma deleted and the word "in" deleted.

Section 3.4.2 page 3-13 - Under Access Restrictions the paragraph should begin: "Fencing is one option to restrict direct access to the site. A chain link fence borders..." Delete the words "of the" in the first sentence and the words "There is" need to be deleted from the beginning of the second sentence and the "a" capitalized. The fourth sentence should end: "... signs against unauthorized access." Delete "the".

Section 3.4.2 page 3-13 - Change the first sentence under Deed Restrictions to read: "Probable deed restrictions to reduce exposure to groundwater include ...".

Table 3-2 - Under "Description" for "Chemical Treatment" the first entry should read: "Contaminated water is passed through a resin bed where ions are exchanged between resin and water." The word "as" needs to be changed to the word "a".

Section 3.4.3 page 3-16 - The second sentence of the third paragraph should read: "At the site, these considerations do not apply." An "s" needs to be added to "consideration". The last sentence of the last paragraph should be as follows: "... groundwater containment option by preventing infiltration. Cap technologies are discussed under soil control technologies in section 3.3.3."

Section 3.4.6 page 3-18 - The top paragraph is a detailed discussion of biological treatment. However, considering that the technology is still experimental, such an elaborate explanation is not necessary. Please condense the information.

Section 3.5.2 page 3-21 - In the first sentence under Access Restrictions an "s" should be added to the word "option".

Section 3.5.3 - The first sentence of the first paragraph is missing a word, either "restrict", "direct", "block" or a different word entirely: "Vertical barriers can be constructed to [restrict/direct/block] the surface water flow..." The second paragraph needs the word "in" changed to "into": "...would not be introduced into any surface water body."

Section 3.6 pages 3-23 and 3-24 - Under Soils, Groundwater, and Surface Water the first bullet for each section should be "Alternative XX - No Further Action" The word "Further" should be inserted. Also, throughout the rest of the document, be consistent: the Alternative should be "No Further Action". In some places, Further is missing, and it is not capitalized.

Section 4.0 page 4-2 - Compliance with action-specific ARARs states that some ARARs may be waived. However, can ARAR waivers be determined/granted in an FS, or should the wording be changed to "whether a waiver is appropriate."?

Section 4.1.3 page 4-5 - In the first paragraph the words "applicable or" should be inserted before "relevant and appropriate..."

Section 4.1.7 page 4-6 - The "none issues" near the end of the first sentence should be changed to "non-issues".

Section 4.2.1 page 4-7 - In the second sentence of the first paragraph, the word "a" should be inserted: "In this alternative, top soil and a vegetative layer will be added...". The last sentence in the first paragraph states that the topsoil layer is two to four inches thick. This should be changed to about six inches thick. The last sentence of the fourth paragraph should read: "Warning signs prohibiting fishing and groundwater usage will be placed along the fence that would caution the public as to the status of the site." The word "and" should be inserted, a comma deleted, and the word "to" inserted.

Section 4.2.7 page 4-10 - The entire paragraph Administrative Feasibility is not applicable to the enhancement project.

Section 4.3.1 page 4-10 - In the first sentence of the first paragraph the "g" should be capitalized to "Geosynthetic".

Section 4.3.1 page 4-12 - The last sentence of the top paragraph should read: "Warning signs prohibiting fishing and groundwater usage will be placed along the fence that would caution the public as to the status of the site." The word "and" should be inserted, a comma deleted, and the word "to" inserted. In the first sentence of the second paragraph, the word "a" should be

inserted so the sentence reads: "Prior to installation of a GCL, ..."

Section 4.3.2 page 4-12 - The second sentence of the first paragraph is a run-on. Please fix.

Section 4.3.3 page 4-13 - In the first sentence at the top an "s" should be added to the word "provide".

Section 4.4.1 page 4-15 - The last sentence of the fourth paragraph should read: "Warning signs prohibiting fishing and groundwater usage will be placed along the fence that would caution the public as to the status of the site." The word "and" should be inserted, a comma deleted, and the word "to" inserted.

Section 4.4.3 page 4-17 - In the first sentence of the second paragraph an "s" should be added to the word "provide". Change the last sentence to the following: "The slurry wall will divert horizontal groundwater flow into the landfill and therefore prevent groundwater contact with the contaminated soil in the landfill." The last sentence of the last paragraph should end: "... drinking water levels is not considered a remedial action objective."

Section 4.4.4 - The first sentence of the first paragraph should begin: "The implementation of Alternative 4..." The word "the" before "Alternative" should be deleted.

Section 4.4.7 - Under Technical Feasibility the last sentence should begin: "The sampling, analysis of the samples and the five year site status reviews..." The word "and" should be deleted and a comma inserted in its place.

Section 4.5.1 page 4-21 - The first sentence of the first paragraph should read: "...contaminants of concern will be excavated and transported to an off-site permitted TSD..." The word "a" should be changed to "an". The last sentence in first paragraph should begin: "The significant ...". The first sentence of the second paragraph should read: "... will be treated on-site using a soil stabilization technology ...". Change "the" to "a". The second sentence of the third paragraph should read: "However, it is estimated that the landfill ...". Check the spelling of the first vendor listed in the first sentence of the fourth paragraph. The vendor might be "Laidlaw".

Section 4.5.1 page 4-22 - The first full sentence at the top should read: "Warning signs prohibiting fishing and groundwater usage will be placed along the fence that would caution the public as to the status of the site." The word "and" should be inserted, a comma deleted, and the word "to" inserted.

Section 4.5.3 page 4-22 - Fix the grammar of the first sentence

in the first paragraph.

Section 4.5.3 page 4-23 - The first sentence at the very top should end: "... drinking water levels is not considered an RAO.

Section 4.5.4 page 4-23 - The first sentence in the first paragraph refers to liner repair but Alternative 5 does not include the installation of a liner, and there is currently no liner on the landfill. Therefore delete the reference to the liner.

Section 4.5.5 - The second sentence of the first paragraph states: "Significant reduction of the rainfall infiltration will minimize the source of surface water and groundwater contamination." However, Alternative 5 does not include installation of a liner. Therefore, delete this entire sentence.

Section 4.5.7 - Under Technical Feasibility change the word "identifies" to "identified" in the third sentence. The last sentence should read: "The sampling, analysis of the samples and the five year site status reviews..." The word "and" should be deleted and a comma inserted in its place. In the second paragraph, "Laidlow" should be changed to "Laidlaw".

Section 4.5.8 page 4-24 - The third sentence should begin: "The decision of whether to expend a large..." Move the position of the word "to" and insert the word "of".

Section 5.0 - The second sentence should begin: "The comparison..." Insert the word "The" and don't capitalize "comparison".

Section 5.2 - The second sentence of the first paragraph should end: "... neither removed nor contained." In the first sentence of the second paragraph the word "contsminated" is misspelled. The word should be "contaminated". Also, fix the grammar of the sentence. The last sentence of the second paragraph should end: "... considered a RAO." In the first and second sentences of the third paragraph add an "s" to the word "alternative".

Section 5.4 page 5-2 - Begin the third sentence in the second paragraph with the following: "Alternatives 2 through 4 provide no means ...". Add an "s" to "involve" in the third paragraph.

Section 5.5 - The last sentence of the first paragraph should read: "This alternative does not achieve long-term protection of human health." The end of the second sentence in the second paragraph should read: "... potential for work related accidents to occur exists." Delete the word "is".

Section 5.6 - Under Technical Feasibility the last sentence should read: "The sampling, analysis of the samples and the five

year site status reviews..." The word "and" should be deleted and a comma inserted in its place.

Section 5.7 page 5-3 - What does "discount rate" mean?

Table 5-1 page 5-5 - Alternative 2 under Action-specific ARARs states "RCRA facility standards pertaining to top soil cover will be met." Include what these standards are.

Table 5-1 page 5-8 - Please check the horizontal alignment between the different Alternatives, it looks like it is not consistent.

Table 5-1 page 5-9 - Under Alternative 2 the bottom entry is "Top cover will be installed in 3 months." A 6" cover has already been installed. Therefore, please delete this and all references to installation of a soil cover in this Alternative.

In General - Throughout sections 4 and 5, institutional controls included fencing and fortification of the fencing to keep people out of the site. This attitude does not agree with our future plans to enhance the site and encourage people to use it. Therefore, please make it clear that risks from soil contact and ingestion will be reduced by interruption of the exposure pathway due to the soil cover and not the fencing. The main reason for the fencing would be to keep people away from surface water. It will be made clear in the "Plans" for the habitat enhancement that people will not have ready access to the water and they will be educated about the hazards associated with the water.

Our habitat enhancement plans should be evaluated and compared as a separate Alternative.

The entire document should be reviewed for grammar and spelling mistakes.

The importance of the wetlands around the site are not fully explained. Installing a cap and/or slurry wall will be more detrimental to the wetlands than leaving them alone. Also, the technical feasibility of installing a slurry wall in waterfront wetlands was not explained. The technical feasibility of installing a cap and/or slurry wall will require extensive investigation to determine the boundaries of the landfill, since currently, we can only estimate the boundaries. Also, we have no evidence that the wetlands are in a "contaminated" state, as stated in the document. Therefore, delete this statement throughout the document.

For Alternative 2, clarify that a six inch soil cover has ALREADY been installed on the landfill, and vegetation planted. Clarify that there is no need to install any additional soil as a cover. Before evaluation of the Alternatives, discuss the human risks

found in the RI/FS and the differences in "Exposure Time" and "Exposure Frequency" between "Trespassers" and "Recreational Users". We need to make it clear that the habitat enhancement will not endanger human health. Also, evaluate the five Alternatives relative to recreational users and the planned enhancement.

Review the entire document for internal inconsistencies and applicability to THIS base.

Recommendations/Conclusions Section - Needs to be included. The section should summarize our intention of enhancing the site, state that there are no risks to human health, and state the recommended Alternative.

HABITAT RESTORATION PRELIMINARY SCOPE

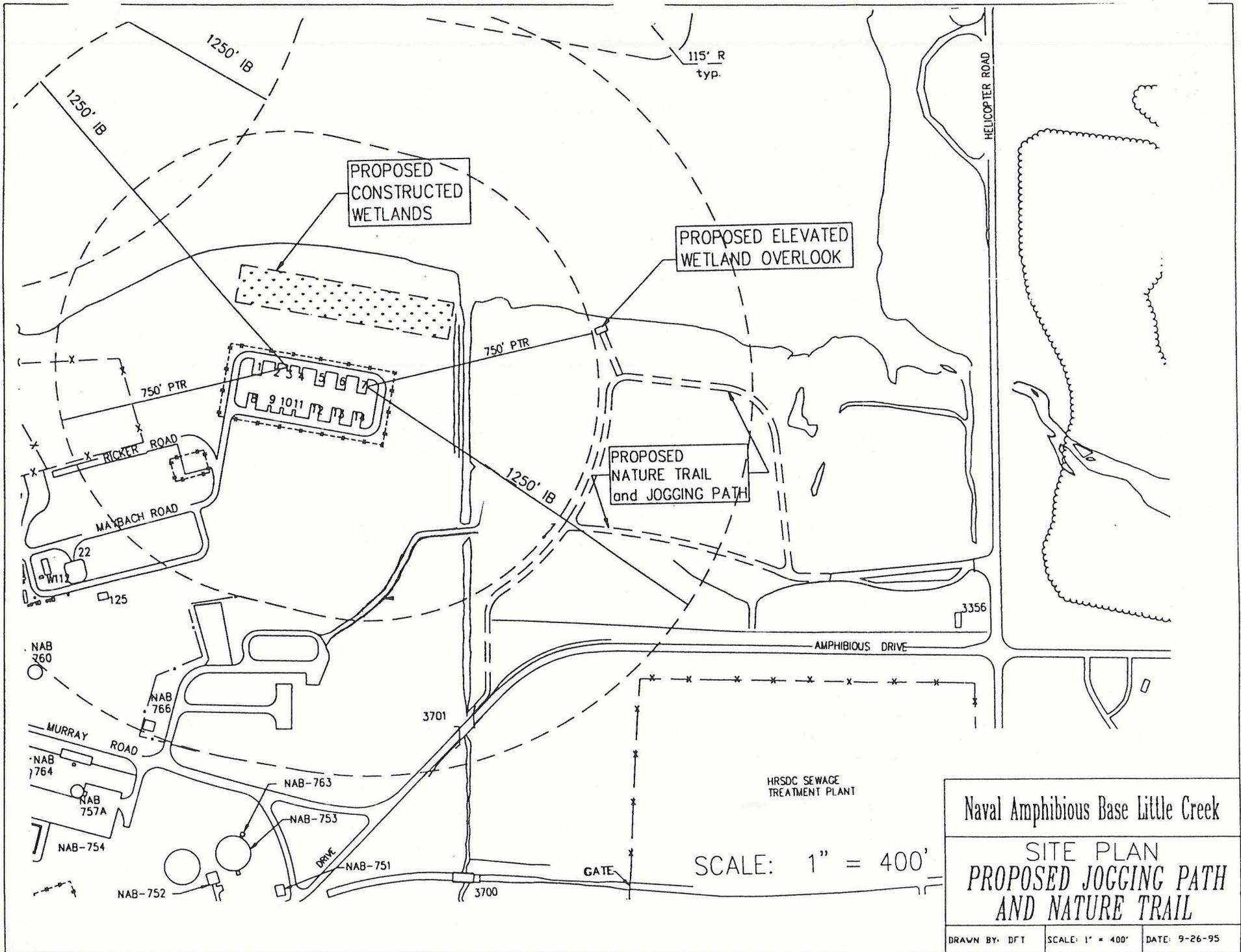
The purpose of the habitat restoration is to enhance the land-use capabilities of the site for both wildlife habitat and outdoor recreation/exercise while maintaining long-range management of the landfill. Since studies have shown that many former landfills do not undergo the usual process of woodland progression (grasses to shrubs to trees to mature forests), the intent of the project is to accelerate the process of natural succession while providing the public with an area to enjoy. The site has already been covered with six inches of soil and seeded with clovergrass. Edges of the site are naturally revegetating with native species of grasses, shrubs and trees. Wetlands are also on the edges of the site due to its proximity to Little Creek Cove. A 10 to 12 acre open area in the middle of the site is suitable for enhancement.

The proposed enhancement would be designed by a landscape architect who would work on a team with Virginia Department of Game and Inland Fisheries biologists, the Virginia Native Plant Society, NAB Natural Resources staff and other experts in landfill restoration/reclamation. The wildlife habitat will be diverse, with both native and naturalized plant species utilized which have high wildlife values for both feeding and nesting but are low maintenance. Five distinct habitat "cells" may be designed to attract a range of insects, amphibians, birds and mammals. These cells will mimic various stages of natural succession. Another option would be to mow the clovergrass in alternating years to maintain the area as a field. Fauna will continue to benefit from this low stage succession area for feeding.

The recreation/exercise area will include a jogging trail with loops to include the habitat cells. Turnouts will be designed for educational signs. Raised walking/viewing platforms will be used in the wetlands areas. Interactive stations could also be used for the habitats; one such example would be a bird viewing register and guide for visitors to log observations. The cells will be spaced so as to allow future additions of paths, educational signs etc.

Previous work in landfill restoration to incorporate wildlife habitat and outdoor recreation has proved successful and shown that some vegetative plantings actually help in landfill containment by absorbing surface water before it has a chance to penetrate the landfill and leach contaminants.

To protect the landfill, visitors of the habitat area will not be allowed to drive their vehicles into the site. Parking will be allowed along Helicopter Road, outside of the site. Also, signs will emphasize that the site is a former landfill, and therefore visitors will be instructed to stay on the paths provided. With the current soil cover and these site restrictions, risks related to dermal contact or ingestion of the soil will be mitigated. Also, city regulations require that paths be a minimum of 50 feet from any waterbody or wetlands area, therefore visitors will not have ready access to surface water.



Naval Amphibious Base Little Creek		
SITE PLAN PROPOSED JOGGING PATH AND NATURE TRAIL		
DRAWN BY: DFT	SCALE: 1" = 400'	DATE: 9-26-95

SCALE: 1" = 400'

Earl (2)