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LETTER AND COMMENTS FROM FLORIDA DEPARTMENT OF ENVIRONMENTAL
PROTECTION REGARDING REVIEW OF FINAL REMEDIAL INVESTIGATION REPORT SITE
41 NAS PENSACOLA FL
3/23/2001
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION



Department of Environmental Protection

Jeb Bush
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David B. Struhs
Secretary

March 23, 2001

Mr. Bill Hill
Code 1851
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
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RE: Final Remedial Investigation Report, Site 41, NAS
Pensacola Wetlands, NAS Pensacola

Dear Mr. Hill:

I have completed the technical review of the above referenced document dated August 31, 2000 (received September 1, 2000). The document has been extensively reorganized since the submittal of the draft report. As a result, it is not considered a final document. I have the following comments that must be addressed in the final report.

General Comments, Volume I and II

Section 4.5, Deviations from the Site 41 SAP Addendum: It is indicated in this section that due to a sampling error, mercury was not included in the analysis of the fish tissue samples. Since the submission of the draft report, a mercury model has been utilized to estimate mercury in upper trophic fish based on observed sediment concentrations. Since mercury was detected in sediment samples collected in a number of the wetlands, fish tissue samples should be collected and analyzed for mercury in order to reduce the uncertainty in the human health risk assessment.

Table 6-2, Site 41 Sediment Inorganic Reference Concentrations: Analytical results on this table should be reported in mg/kg (see Volume III, Appendix A) and not ug/L since these are sediment samples.

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Mr. Bill Hill
Page Two
March 23, 2001

Table 6-3, Site 41 Fresh Surface Water Inorganic Concentrations: The Freshwater Surface Water Criteria for Aluminum is 13 ug/L based on toxicity (Table 1, Chapter 62-777, Florida Administrative Code [FAC]).

Table 6-4, Site 41 Salt Surface Water Inorganic Concentrations: The Marine Surface Water Criteria for Aluminum is 13 ug/L based on toxicity (Table 1, Chapter 62-777, Florida Administrative Code [FAC]). The FDEP Criteria of 1500 ug/L, published in Chapter 62-302.530, Parameter (2) Aluminum, is modified later in Chapter 62-302.530, Parameter (62) Substances in concentrations which injure, are chronically toxic to, or produce adverse physiological or behavioral response in humans, plants, or animals.

Figure 7-1, Wetland Functional Use Assessment: Why is a variable condition indicated for mammals at Wetland 18 but not for the other wetlands on this table?

Page 7-27, Great Blue Heron Food Chain Model: This section presents calculations of site foraging factors (SFF) for the Great Blue Heron. In addition to the Great Blue Heron, a number of piscivorous birds have been observed in the NAS Pensacola Wetlands (e.g. Little Blue Heron, Belted Kingfisher, and Tricolored Heron). Has any comparison been made to these species and their respective foraging ranges?

Page 7-29, Fish Exposure Model: A SFF for level 4 fish has been calculated based on the ratio of each wetland area to the total area of Bayou Grande. There is some potential to underestimate the SFF since this assumes there is no preference for feeding areas to be along the shore or in shallow waters.

Page 7-32: This page is presented twice in the report.

Figure 8-1, Conceptual Surface Water Migration Pathways: The figure presents the conceptual model for surface water migration pathways between many of the wetlands and is of great value to the reviewer. Why isn't a similar figure available in the report presenting a conceptual groundwater migration pathway.

Section 8.3.4.1, Screening Comparisons, Sediment and Surface Water Data, Page 8-14: It is stated that concentrations of lead reported in surface water were compared to 15 ug/L, the treatment technique action level. For wetlands located adjacent to marine surface waters, a comparison should be

Mr. Bill Hill
Page Three
March 23, 2001

made the marine surface water criteria of 5.6 ug/L (Chapter 62-302.530, FAC).

Pages 8-16 and 8-17: Tables 8.3-4 and 8.3-5 should be corrected to 8-4 and 8-5 as indicated in the List of Tables and in the text.

Page 8-23: A SFF for level 4 fish has been calculated based on the ratio of each wetland area to the total area of Bayou Grande. There is some potential to underestimate the SFF since this assumes there is no preference for feeding areas to be along the shore or in shallow waters.

Section 10.1.5.5 states that no surface water data were available and no COPCs were identified. What data is presented in Table 10-1-12 then?

Section 10.1.5.7, Remedial Goal Options: This section is printed twice in the report.

Page 10-3-2: The text discusses DDT and alpha-chlordane results for a sediment sample collected at location 0103. A comparison with Figure 10-3-1 and Table 10-3-2 indicate that this is possibly location 0303. This location should be verified and corrected if necessary.

Page 10-9-21, Section 10.9.6, Conclusions and Recommendations: This section is missing from the report.

Site Specific Comments, Volume II

Section 10.1, Wetland 64

Sediment chemistry data indicate that metals/PAHs/DDx/PCBs exhibit elevated HQs. Toxicity data indicate some mortality for amphipods but a higher survivability for polychaetes (a pollution tolerant species). Analysis of the sediment quality triad suggest that contaminants are stressing the benthic community.

Level 3 fish tissue do not exhibit unacceptable risk. Level 4 fish tissue was not collected and concentration was modeled in order to determine risk. Level 4 fish exhibit acceptable risk for the assumption of a site foraging factor (SFF) of 0.043 but unacceptable risk for an SFF of 1 for Aroclor-1060 and Mercury.

Mr. Bill Hill
Page Four
March 23, 2001

Surface water samples exhibit elevated HQs for some metals and it is stated that there is a potential risk in Level 3 fish species from directly toxic effects (Page 10-1-56).

The recommendation on page 10-1-57 is to transfer the site to the petroleum program; however, elsewhere in the report there is a recommendation to transfer the site to the base stormwater program. The source of contamination to this wetland is apparently from some of the sites associated with Operable Unit (OU)2 and also from storm water runoff. An evaluation of the Conceptual Surface Water Migration Pathways presented in Figure 8-1 suggests that this wetland is closely associated with Wetlands 5a , 5b, and 6.

Transfer of these sites to the Base Stormwater Program will be considered; however, the source of water into these wetlands needs to be identified and pretreatment will be required since the wetland cannot serve as the final remedy for treatment of stormwater. The source of petroleum contamination has not been established therefore it is unclear if transfer of any portion of this site to the petroleum program is appropriate at this time.

Section 10.2, Wetland 5A/5B

Several metal were reported to exceed leachability criteria in these wetlands including cadmium, chromium, lead, mercury, and zinc. Cadmium, chromium, lead, and mercury were also detected in surface water samples. In addition, chloroform and bis(2-ethyl-hexyl)phthalate (BEHP) were also detected in surface water samples. The ecological risk assessment suggests that these chemicals are not bioavailable. The human health risk assessment indicates that lead (sediments and surface water) and vinyl chloride (surface water) are chemicals of potential concern (COPCs).

Wetland 5A and potentially 5B are impacted by Site 30 due to the presence of several volatile organic compounds (1,1-Dichloroethane, cis-1,2-dichloroethene, and vinyl chloride) detected in surface water samples. These compounds potentially represent degradation products of chlorinated solvents located in the Site 30 area.

Other volatile compounds (bromodichloromethane, chloroform, and dibromochloromethane) are potentially an artifact from the potable water supply release into Wetland 5A.

Mr. Bill Hill
Page Five
March 23, 2001

Section 10.3, Wetland 3

Iron was detected in all sediment samples. Based on the detected concentration, iron made up approximately 38% of one sediment sample. Cadmium and chromium were calculated to have leaching potential to surface water from sediments. HQs were high at sample location 0303 for DDT (184), DDE (57), and DDD (327).

Results of the benthic toxicity study indicate that sediment contaminants are not bioavailable; however, toxicity samples were not collected at location 0303.

Surface water criteria was exceeded for aluminum, cadmium, copper, iron, lead and Aroclor-1260 (one location). The HQ for iron was as high as 176 in one location. Four VOCs (benzene, chlorobenzene, methylene chloride, and cis-1,2-dichloroethene) were also detected in surface water samples and are potentially leaching from Site 1.

Toxicity results for fathead minnow indicated acceptable survivability (97.5%) at location 0301.

Wetland 3 is directly impacted by discharge of groundwater from Site 1 (OU1) and is currently sampled as part of the Site 1 Long Term Monitoring Program.

Section 10.4, Wetland 4D

Sediment samples exhibited elevated HQs for DDD (90.16) at location 401 and for arsenic (2.76) at location 201.

Iron and thallium exceed marine surface water criteria in one or more samples; however, the calculated HQs are 5.2 (lead) and 1.7 (thallium).

Table 10-4-12 indicates a slight human health risk for the trespasser and maintenance worker from arsenic in the sediments. Carcinogenic risk for the trespasser and maintenance worker from arsenic is $1.67E-06$ and $2.71E-06$, respectively. Arsenic is most likely attributed to normal herbicide application on the golf course where Wetland 4B is located.

Since there is no apparent ecological risk at this wetland a no further action (NFA) decision is appropriate.

Mr. Bill Hill
Page Six
March 23, 2001

Section 10.5, Wetland 16

Eight metals (arsenic, cadmium, chromium, copper, lead, mercury, silver, and zinc), dieldrin, aroclor-1254, and BEHP exceed sediment benchmark levels at sample location 1603. DDT and its metabolites, where detected, did not exceed basewide reference values.

Iron and thallium exceed marine surface water criteria at two or more locations. Two VOCs (1,1-dichloroethane and chlorobenzene) are detected in surface water samples below respective criteria.

Calculated maximum HQs for analytes or compounds in sediments were arsenic (1.51), cadmium (12.5), chromium (1.5), copper (4.86), lead (6.03), mercury (3.15), silver (2.47), zinc (2.57), dieldrin (5.83), aroclor-1254 (3.61), and BEHP (3.96). Calculated maximum HQs for metals in surface water were iron (3.4) and thallium (2.3).

Evaluation of the sediment quality triad (sediment chemistry, toxicity, and diversity) indicate acceptable survival rates for benthic organisms at location 1603.

No human health risks were identified at Wetland 16.

The two VOCs (1,1-dichloroethane and chlorobenzene) detected in surface water at Wetland 16 may be associated with leachate from Site 1 (OU1). The recommendation for NFA may be appropriate for Wetland 16; however, some monitoring of the wetland may be required in conjunction with monitoring of Site 1.

Section 10.6, Wetland 18

Wetland 18A is fed by a groundwater seep originating from Site 1 (page 10-6-1).

Some of the compounds detected in sediment samples include DDT and associated metabolites, arsenic, and naphthalene. for DDT and its metabolites. The source of naphthalene is unknown but may have been associated with Site 1.

Elevated HQs for chemicals in sediments include DDT (1512), DDD (762), DDE (130), arsenic (11.5), and naphthalene (8.6).

Twelve metals were detected in surface water samples, a semi-volatile organic compound (SVOC), and two VOCs.

Mr. Bill Hill
Page Seven
March 23, 2001

Chromium in surface water is attributed to possible leaching from sediments and iron is attributed possibly from groundwater discharge from Site 1. The SVOC (1,4-Dichlorobenzene) and VOCs (benzene and chlorobenzene) may also have originated from Site 1.

Toxicity testing indicated acceptable benthic community survival in Wetland 18B.

DDT and PCBs were detected in level 3 fish tissue. HQs estimated for heron exposure to total DDT in fish tissue exceeded 1 (3.67) based on feeding territory during the fall season.

The human health risk assessment (HHRA) identifies arsenic as a sediment and surface water COPC. Fish tissue COPCs are DDE, DDD, Aroclor-1260, and alpha-Chlordane.

Cummulative risk for the recreational and subsistence fisher are below 1E-06. HQs were calculated for arsenic in surface water (6E-06) and sediments (1E-01) based on reasonable maximum exposure for current and future trespasser.

No further action is recommended in the report for this wetland based somewhat on restricted access due to thick foliage and potential for encountering poisonous snakes. I do not agree with this recommendation. A more formal mechanism to restrict site access is recommended. Further delineation of DDT is recommended for this wetland. In addition, monitoring of surface water may be required in conjunction with the monitoring at Site 1.

Section 10.7, Wetland 10

Twenty one metals were detected in sediment samples collected at Wetland 10. Sediment HQs include cadmium (5) and chromium (23). Sediment HQs were elevated for DDT (40), DDD (98), and DDE (46).

Surface water HQ for cadmium is 7. Silver was detected at one surface water sample location at a concentration of 24,500 ug/L. The HQ for silver is not reported on Table 10-7-4. The freshwater surface water criteria of silver is 0.07 ug/L (Chapter 62-302, FAC).

A review of the surface flow conceptual model indicate that this wetland is potentially affected by Wetlands 12 and 13. Wetland 11 (East of Building 3644) may also potentially impact Wetland 10 if an overflow culvert from Wetland 11

Mr. Bill Hill
Page Eight
March 23, 2001

extends east under a road into Wetland 10. It is likely that Wetland 10 is impacted by Sites 32, 33, and 35.

Additional assessment is required in order to evaluate a final remedy for this wetland.

Section 10.8, Wetland 12

Wetland 12 received a direct release of oily bilge water from the bilge water plant in 1992.

Sediment samples collected in the wetland exhibited elevated HQs for endrin ketone (3), 2-methylnaphthalene (351), fluorene (61), naphthalene (37), and phenanthrene (28).

Surface water criteria were exceeded for iron and thallium.

The Pensacola Partnering Team referred Wetland 12 to the State of Florida Petroleum Program (documented in the September 19 and 20, 1996 Partnering Meeting Minutes). I agree with this decision.

Section 10.9, Wetland 1

Six metals (cadmium, chromium, copper, lead, mercury, and zinc) exceeded sediment benchmark criteria at one or more locations. Three pesticide compounds (dieldrin, alpha-chlordane, and gamma-chlordane) exceeded sediment benchmark criteria at one or more locations. Aroclor-1260 exceeded sediment benchmark criteria at one or more locations. Seven PAHs also exceeded sediment benchmark criteria at one or more locations.

Four metals (aluminum, chromium, iron, and lead) exceed surface water criteria at sample location 1W01.

A potential source to Wetland 1 is Site 1 (OU1) Sanitary Landfill.

Benzo(a)pyrene equivalents are identified as COCs for sediment based on contribution to the cumulative risk.

The source of PAHs should be confirmed. This wetland will potentially require monitoring as part of the remedy at Site 1.

Mr. Bill Hill
Page Nine
March 23, 2001

Section 10.10, Wetland 15

Metals (arsenic, copper, and lead), pesticides (DDE, DDD, endrin), PCBs (aroclor-1260), and PAHs (flouranthene and pyrene) exceeded sediment benchmark criteria at one or more locations.

Metals (aluminum, arsenic, beryllium, chromium, copper, iron, lead, mercury, nickel and zinc) exceed marine surface water criteria at sample location 1501.

HQs were elevated for DDD (164) in sediments; and for lead (143) and mercury (38) in surface water.

Arsenic is a sediment COPC; and aluminum, arsenic, and lead are surface water COPCS.

A potential source to Wetland 15 is Site 1 (OU1) Sanitary Landfill.

No further action is recommended in the report for this wetland based somewhat on restricted access due to thick foliage and potential for encountering poisonous snakes. I do not agree with this recommendation. A more formal mechanism to restrict site access is recommended. The source of mercury in the surface water should be identified. In addition, monitoring of surface water may be required in conjunction with the monitoring at Site 1.

Section 10.11, Wetland 6

Metals (cadmium, chromium, copper, lead, silver, and zinc), pesticides (DDE, DDT, dieldrin, and endrin), and PAHs (acenaphthene, chrysene, and flouranthene) exceeded sediment benchmark criteria at one or more locations.

Metals (aluminum, cyanide, lead, and mercury) and a VOC (1,1-dichloroethene) exceed surface water criteria at sample location 0610.

HQs were elevated for DDT (218) and DDD (32) in sediments; and for iron (1000), mercury (73), and BEHP (10) in surface water.

A review of the surface flow conceptual model indicate that this wetland is affected by Wetland 5. Groundwater discharge into Wetland 6 from sites associated with OU2 and Site 23 (Chevalier Field Pipe Leak Area) is also likely to occur.

Mr. Bill Hill
Page Ten
March 23, 2001

The conclusions state that Wetland 6 is a channelized ditch without a viable aquatic community; however, it is stated on page 10-11-1 that small fish and crayfish have been observed in this wetland. In addition, the blue heron has been observed in this wetland on occasion.

Transfer of this wetland to the Base Stormwater Program will be considered; however, the source of water into this wetland needs to be identified and pretreatment will be required since the wetland cannot serve as the final remedy for treatment of stormwater.

Section 10.12, Wetland 63A

Metals (cadmium, chromium, lead, and mercury), a pesticide (dieldrin), PCB (aroclor-1260) and a PAH (flouranthene) exceeded sediment benchmark criteria at one or more locations.

Metals (aluminum, copper, iron, and lead) exceed surface water criteria at sample location 63A2.

HQs are elevated for cadmium (11) and aroclor-1260 (12) in a sediment sample and for lead (53) in a surface water sample.

Lead was identified as a surface water COPC.

Probable sources include Site 14 (Dredge Spoils Disposal Area) and UST Site G (Building 2662).

Fish tissue data was not available at this site. This assessment endpoint needs to be evaluated further. Given the proximity to Pensacola Bay, there is a high probability of impacting the adjacent sediments and surface waters in the bay.

Further investigation is required before an NFA decision can be considered at this wetland.

Section 10.13, Wetland 48

DDD (2,600 ug/kg), DDE (620 ug/kg), and DDT (240 ug/kg) were detected at concentrations that exceed sediment benchmark levels in sample 4801.

No metals detected in a surface water sample exceeded surface water criteria.

Mr. Bill Hill
Page Eleven
March 23, 2001

Sediment HQs were elevated for DDD (2131), DDE (299), and DDT (201).

No COPCs were identified for sediments and surface water; however, no formal ecological or human health risk assessment was conducted.

Thick foliage is stated to keep adolescent trespasser away from the site. A more formal institutional control is recommended for the site. High DDT and metabolite concentrations should be further evaluated in order to determine nature and extent of the exceedence; and the extent of appropriate institutional controls.

Section 10.14, Wetland 49

DDD exceeded the basewide reference value (50 ug/kg) at locations 4901 (94 ug/kg) and 4902 (59 ug/kg). BEHP exceeded its sediment benchmark level at location 4901 (1,700 ug/kg).

Aluminum and lead exceed the surface water criteria at sample location 4903.

This wetland is apparently self-contained with Wetland 51 and surface water enters the wetlands only during rainy periods. A fuel release (Site 19, Fuel Farm Pipeline Leak) occurred near the Wetland 49 area in 1958.

No sediment or surface water COPCs were identified.

Public access is restricted to Wetland 49 due to the proximity of Forrest Sherman Field and the base pistol range.

A no further action decision is proposed for this site.

Section 10.15, Wetland 13

Seventeen metals, 3 pesticides, and 3 SVOCs were detected in one sediment sample at concentrations below their respective screening values.

Twenty-one metals were detected in one surface water sample. The sample is reported to have a high turbidity (greater than 1,000 NTUs).

Mr. Bill Hill
Page Twelve
March 23, 2001

Surface water HQs were elevated for aluminum (1,666), beryllium (33), cadmium (12), chromium (20), copper (18), lead (713), and mercury (108).

Sites 32, 33, 35, and the bilge water plant may potentially impact the wetland.

Aluminum, arsenic, and lead are identified as surface water COPCs.

Surface water risk to the trespasser for arsenic is 2.4E-06.

Surface water sample turbidity may have contributed to the observed elevated HQs in metals. The Navy should consider collecting a confirmation sample at this location to justify a no further action decision.

Section 10.16, Wetland 17

BEHP (2,300 ug/kg) was detected in sample collected at location 1702 at a concentration exceeding the sediment benchmark value (182 ug/kg).

Gamma-BHC (0.51 ug/kg) was detected in sample collected at location 1703 at a concentration exceeding the sediment benchmark value (0.32 ug/kg)

Thallium (16.3 ug/L) was the only metal to exceed surface water criteria.

Site 1 (OU1) is the only site that may potentially impact Wetland 17.

Sediment HQs were elevated for BEHP (12.64) and gamma-BHC (1.59); and surface water HQs were elevated for thallium (2.5873).

Thallium is identified as a surface water COPC; however, the total HI was calculated to be 0.20.

A no further action decision will be considered for Wetland 17; however, surface water monitoring may be required in conjunction with monitoring at Site 1.

Section 10.17, Wetland 19

Arsenic exceeded the sediment benchmark level at sample location 19A1.

Metals (aluminum, arsenic, beryllium, chromium, copper, iron, lead, mercury, and zinc) and a PAH (di-n-

Mr. Bill Hill
Page Thirteen
March 23, 2001

butylphthalate) exceeded surface water criteria in one or more sample locations.

HQS were elevated for arsenic (2.17) in sediments and for aluminum (1,275), arsenic (5.36), beryllium (30.7), chromium (9), copper (5.3), iron (332), lead (50.8), mercury (49), zinc (2.9) and di-n-butylphthalate (9.3) in surface water samples.

Arsenic is identified as a sediment COPC and arsenic, lead, and manganese (based on screening concentration in Table 10-17-7) are identified as surface water COPCs.

HHRA determined that there is some risk associated with arsenic in sediment and surface water for the trespasser and maintenance worker.

The location and conceptual surface water flow indicate that this wetland is probably accepting storm water runoff from Sherman Field during heavy rain events and directing the runoff toward Redoubt Bayou. Access to this area would be restricted due to the airfield.

The Partnering Team decided that an NFA decision for Wetland 19 was appropriate (September 18, 1996 Eco Meeting Minutes and September 19 and 20, 1996 Partnering Team Minutes).

Section 10.18, Wetland 52

Two pesticides, 9 PAHs and a SVOC exceeded sediment benchmark criteria in one or more sampling locations.

HQs were elevated for dieldrin (13) and acenaphthene (11) in sediments.

Aluminum and iron exceeded surface water criteria in one or more sampling locations.

HQs were elevated for aluminum (29) in surface water for one sampling location.

No COPCs were identified and no formal risk assessment was conducted.

Based on the surface flow conceptual model this wetland is receiving storm water overflow from Wetland W1 and is possibly impacted from NAS Fuel Farm, Sherman Field, and UST Site 18 (Crash Crew Training Area).

Mr. Bill Hill
Page Fourteen
March 23, 2001

The wetland cannot serve as the final remedy for treatment of stormwater. The source of petroleum contamination has not been established therefore it is unclear if transfer of any portion of this wetland to the petroleum program is appropriate.

Section 10.19, Wetland 56

DDD and gamma-BHC exceeded their respective sediment benchmark levels in one sample. Aluminum exceeded the surface water criteria in one sample.

HQ was elevated for DDD (43) in sediment and aluminum (6) in surface water. No sediment or surface water COPCs were identified.

The wetland receives stormwater runoff from Sherman Field and has an active NPDES permit for a stormwater outlet. This wetland should be transferred to the Base Storm Water Compliance Program.

Section 10.20, Wetland 57

Mercury and gamma-BHC exceeded their sediment benchmark levels in a soil sample. Aluminum, iron, and lead exceeded surface water criteria. HQs for mercury (1.08) and gamma-BHC (1.25) were slightly elevated in sediments. HQs for aluminum (84), iron (7.36), and lead (9.88) were elevated in surface water. Lead was identified as a surface water COPC.

The wetland receives stormwater runoff from Radford Blvd. This wetland should possibly be transferred to the Base Storm Water Compliance Program. The Navy should consider collecting a confirmation surface water sample in order to determine if NFA is appropriate for this wetland.

Section 10.21, Wetland 58

Six SVOCs exceeded their respective sediment benchmark values in one sediment sample. Aluminum, iron, and lead exceeded surface water criteria in one sample. HQs were elevated for 2-methylnaphthalene (5.45), acenaphthene (16.39), anthracene (1.79), fluorene (5.66), naphthalene (6.36), and phenanthrene (2.88) in the sediments. HQs were elevated for aluminum (12.5), iron (4), and lead (4.3) in surface water. No sediment or surface water COPCs were identified during the assessment.

Mr. Bill Hill
Page Fifteen
March 23, 2001

The wetland apparently receives stormwater runoff from roads in the area, possibly Site 39 (Oak Grove Campground), and the area adjacent to Sherman Field. This wetland should possibly be transferred to the Base Storm Water Compliance Program. The Navy should consider collecting a confirmation surface water sample in order to determine if NFA is appropriate for this wetland.

Section 10.22, Wetland 63B

Four PAHs exceeded sediment benchmark criteria at sample location 63B04. Iron and di-n-butylphthalate exceeded surface water criteria at location 63B02. HQs were slightly elevated for 2-methylnaphthalene (1.19), acenaphthene (5.81), fluorene (2.22), and phenanthrene (1.38) in sediments. HQs were slightly elevated for iron (5.2) and di-n-butylphthalate (6.4) in surface water. No sediment or surface water COPCs were identified during the assessment.

Since this wetland is receiving stormwater runoff (potentially from the bilge water plant area), the wetland should possibly be transferred to the Base Storm Water Compliance Program. The Navy should consider collecting a confirmation surface water sample in order to determine if NFA is appropriate for this wetland.

Section 10.23, Wetland 72

Copper and fluoranthene exceeded their respective sediment benchmark levels. Aluminum, silver, and thallium exceeded their respective surface water criteria. HQs were slightly elevated for copper (2.08) and fluoranthene (1.06) in sediments. HQs were elevated for aluminum (10), silver (62.8), and thallium (1.3) in surface water.

Wetland 72 receives discharge by stormwater piping from Wetland W1 in the Sherman Field Area. The report states that no sediment nor surface water COPCs were identified. It is not clear where the source of silver originates from and how it was not considered a COPC.

Since this wetland is receiving stormwater runoff from Sherman Field, the wetland should possibly be transferred to the Base Storm Water Compliance Program. The Navy should consider collecting a confirmation surface water sample in order to determine if NFA is appropriate for this wetland.

Mr. Bill Hill
Page Sixteen
March 23, 2001

Section 10.24, Wetland 79

Wetland 79 no longer exists since being filled in with concrete debris around 1995 (approved by Corps of Engineers). Lead, dieldrin, endrin, alpha-chlordane, gamma-chlordane, and fluoranthene exceeded their respective sediment benchmark levels in one sample. No surface water samples could be taken. No sediment COPCs were identified in the assessment.

This area received stormwater runoff at one time from parking areas near Sherman Field. There are no apparent risks at the site and since no suitable wetland habitat remains, I agree with a NFA decision for Wetland 79.

Section 10.25, Wetland W2

Wetland W2 is also known as the Southeast Drainage Ditch. Arsenic and BEHP exceeded sediment benchmark values in separate locations. Iron and copper exceeded their surface water quality criteria in one sample.

HQs were slightly elevated for arsenic (1.95) and BEHP (2.53) in sediments. HQs were slightly elevated for iron (1.03) and copper (2.34) in surface water. No sediment or surface water COPCs were identified during the assessment.

Since this wetland is receiving stormwater runoff from Sherman Field, the wetland should be transferred to the Base Storm Water Compliance Program.

Section 10.26, Wetland 25

Five metals (arsenic, cadmium, chromium, copper, and lead) and a pesticide (gamma-BHC) exceeded their respective sediment benchmark values. Aluminum, iron and lead exceeded their respective surface water criteria in one sample. Methylene chloride also exceeded the surface water criteria but is attributed to be a laboratory contaminant.

HQs were slightly elevated for arsenic (1.22), cadmium (1.91), chromium (1.13), copper (1.05), lead (1.94) and gamma-BHC (4.06) in sediment. HQs were elevated for aluminum (20.9), iron (4.03), and lead (2.86) in surface water. Methylene chloride was identified as a surface water COPC. Risk is estimated to be 1.6E-06.

Mr. Bill Hill
Page Seventeen
March 23, 2001

Wetland 25 was identified as a reference wetland since there is no apparent connection to any CERCLA site and is located in an undeveloped area of the Base.

Section 10.27, Wetland 27

Sediment samples did not exhibit concentrations exceeding either sediment benchmark values or base reference values (DDT and metabolites). Aluminum, iron, lead, and mercury exceeded surface water criteria in a single sample.

HQs were slightly elevated for aluminum (3.7), copper (3.1), iron (7.4), lead (4.6), and mercury (6.8) in surface water. Lead was identified as a surface water COPC.

Wetland 27 was identified as a reference wetland since there is no apparent connection to any CERCLA site and is located in an undeveloped area of the Base.

Section 10.28, Wetland 32

Metals (lead and mercury), pesticides (alpha-chlordane, gamma-chlordane, gamma-BHC, dieldrin, endrin, and endrin aldehyde), a PCB (Aroclor 1254), and a SVOC (pyrene) exceeded their respective sediment benchmark values in one or more location. Surface water samples did not exceed the surface water quality criteria.

HQs were elevated for lead (1.73), mercury (3.92), alpha-chlordane (7.06), gamma-chlordane (3.47), gamma-BHC (4.38), dieldrin (18.06), endrin (4.55), endrin aldehyde (1.27), Aroclor 1254 (9.72), and pyrene (1.11) in sediment. No sediment or surface water COPCs were identified during the assessment.

Wetland 32 was identified as a reference wetland since there is no apparent connection to any CERCLA site and is located in an undeveloped area of the Base.

Section 10.29, Wetland 33

Ten SVOCs (acenaphthene, anthracene, benzo(a)anthracene, benzo(a) pyrene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene) exceeded sediment benchmark data at one location. Mercury exceeded surface water criteria at one location.

HQs were elevated for acenaphthene (26.83), anthracene (14.93), benzo(a)anthracene (24.06), benzo(a)pyrene (12.39),

Mr. Bill Hill
Page Eighteen
March 23, 2001

chrysene (13.89), fluoranthene (23.89), fluorene (10.85), naphthalene (1.33), phenanthrene (21.91), and pyrene (18.95) in sediments. HQ was elevated for mercury (6.4) in surface water.

A Phase IIB sediment sample exhibited gamma-BHC above the sediment benchmark value and an HQ of 3.44 and a surface water sample exhibited dieldrin above the surface water criteria and an HQ of 2.11. A benthic assessment on this sample showed acceptable survival and diversity. No sediment or surface water COPCs were identified during the assessment.

Fish tissue samples were collected at Wetland 33 but not analyzed for mercury. DDE, DDT, heptachlor, and gamma-chlordane were identified as fish tissue COPCS. There were no apparent exceedence when screening to Level 4 fish based on Level 3 tissue concentrations; however, this is based on using a SSF of 0.00002. The SFF for level 4 fish has been calculated based on the ratio of each wetland area to the total area of Bayou Grande. There is some potential to underestimate the SFF since this assumes there is no preference for feeding areas to be along the shore or in shallow waters.

Wetland 33 was identified as a reference wetland since there is no apparent connection to any CERCLA site and is located in an undeveloped area of the Base.

Section 10.30, Wetland W1

Wetland W1 is a mowed swale that collects surface water runoff from the Sherman Field airfield and directs it off site by drain pipes to Wetland 52.

Metals (notably lead), DDT and metabolites, SVOCs, and a VOC (xylene) were detected above respective screening values in sediments. Copper, iron, and lead exceed surface water quality criteria in surface water samples.

Lead is the most prominent analyte to exceed HQs in sediment and surface water. Lead is identified as a sediment and surface water COPC. The lead model shows no unacceptable risk to ingestion.

Since this wetland is receiving stormwater runoff from Sherman Field, the wetland should be transferred to the Base Storm Water Compliance Program.

Mr. Bill Hill
Page Nineteen
March 23, 2001

Section 10.31, Wetland 75

Wetland 75 was originally evaluated as a reference wetland; however, this status was later dropped.

Gamma-BHC exceeded the sediment benchmark value in a single sediment sample collected at Wetland 75. Aluminum, iron, and dieldrin exceeded surface water criteria in a single surface water sample. HQs were elevated for gamma-BHC (7.8) in sediment; and aluminum (4.08), iron (1.49), and dieldrin (1.63) in surface water. A benthic assessment showed acceptable survival and diversity.

No sediment or surface water COPCs were identified. Prey fish were sampled but not analyzed. Piscivorous bird health was considered acceptable based on forage fish data.

Since this wetland is receiving stormwater runoff from a highway, the wetland should possibly be transferred to the Base Storm Water Compliance Program.

Summary

Based on my review of the data, the wetlands can be grouped in several ways. Wetlands 5a, 5b, 6 and 64 are associated with the OU2 Industrial Area. Wetlands 13, 12, 11, and 10a are associated with the area north of former Chevalier Field. Wetland 63A and 63B are potentially associated with the eastern portion of former Chevalier Field as well as Site 14 (Dredge Spoil Fill Area). Wetland 1, 18a, 18b, 17, 16, 15, and 3 are associated with Site 1. Wetlands 19A, 19B, W1, and 72 are associated with Sherman Field. Other wetlands have no apparent association with any site but serve as a stormwater drainage pathway.

Many associated wetlands exhibit similar contaminants in sediment and surface water validating the surface water transport mechanism. Surface water standards are exceeded in many wetlands.

The source of contamination may be historical for some wetlands; however, a continuing source is probable and should be addressed if remediation is to be achieved.

Many of the NFA recommendations are not supported without additional data.

Mr. Bill Hill
Page Twenty
March 23, 2001

If I can be of any further assistance with this matter,
please contact me at (850) 921-9989.

Sincerely,

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TJB _____ JJC _____ ESN _____