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PROPOSED PLAN FOR TRUMAN ANNEX REFUSE DISPOSAL AREA SITE 1 NAS KEY
WEST FL
3/12/2000
NAS KEY WEST



PROPOSED PLAN



Naval Air Station Key West, Florida

Facility/Unit Type: Military Installation/Truman Annex Refuse Disposal Area (IR 1)
Contaminants: Metals, PCBs, and Pesticides
Media: Soil, Groundwater, Sediment, Biota
Remedy: Land-Use Controls

INTRODUCTION

This Proposed Plan is issued by the U.S. Navy, the lead agency for Naval Air Station (NAS) Key West remedial activities, with concurrence by the U.S. Environmental Protection Agency (EPA) and Florida Department of Environmental Protection (FDEP). The proposed remedial activities are conducted under the Department of Defense's Installation Restoration Program (IRP) in accordance with Section 120 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP). The Truman Annex Refuse Disposal Area is the site of interest and is known as IR 1.

The purpose of this Proposed Plan is several-fold. The Proposed Plan identifies the proposed remedy for IR 1 at NAS Key West and explains the rationale for the preference; solicits public review and comment on conclusions of the CERCLA Remedial Investigation (RI); and provides information as to how the public can be involved in the remedy selection process. The Proposed Plan provides a summary of past environmental work at IR 1. This document highlights key aspects of the Supplemental RCRA Facility Investigation and Remedial Investigation (RFI/RI) Report, January 1998, but should not be used as a substitute for this document. Additional details regarding the facility and the investigation conducted may be found in the Sediment Toxicity Report for Sites IR 1 and 8 that is kept as part of the information

repository. Please refer to the public participation section for its location.

The public is encouraged to comment on the proposed remedy that is based on the conclusions of the RFI/RI Report. The U.S. Navy emphasizes that the proposed remedy is the initial recommendation of the Agency. Changes to the proposed remedy, or a change from the proposed remedy to another remedy, may be made if public comments or additional data indicate that such a change would result in a more appropriate solution.

PROPOSED REMEDY

As discussed above, the proposed remedy represents the U.S. Navy's initial recommendation for IR 1. The proposed remedy is land-use controls (limited site access) with annual monitoring of groundwater, sediment, and biota quality. Minimal costs are associated with implementing and administering this remedy.

FACILITY BACKGROUND

The U.S. Navy owns 5,660 acres in Monroe County, Florida as part of NAS Key West. IR 1 is located adjacent to the open ocean along the southern shore of Truman Annex on Key West (Figure 1).

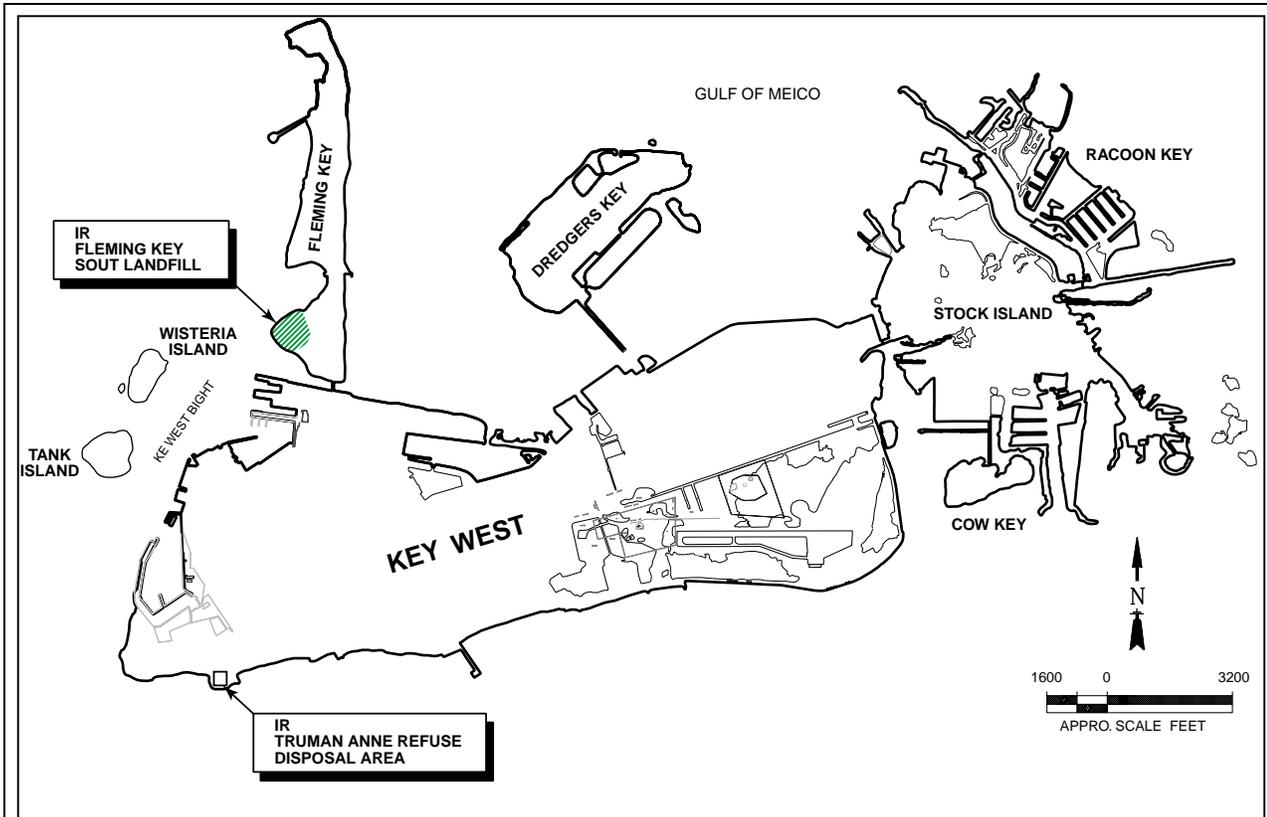


Figure 1. NAS Key West IR 1 Truman Annex Refuse Disposal Area.

IR 1 encompasses approximately 7 acres and consists primarily of a Navy antenna facility (Figure 2). A chain-link fence surrounds the site, and access to IR 1 is strictly controlled. The main sewer outfall line for Key West runs through the property. Treated sewage is pumped into the ocean at the outfall point 3,600 feet southwest of IR 1. From 1952 until the mid-1960's, the Truman Annex Refuse Disposal Area was used for general refuse disposal and open burning. No restrictions were placed on the types of wastes disposed at the site. General refuse, waste paint thinners, and solvents may have been disposed of at the site. In 1986, a preliminary investigation was conducted at NAS Key West. Based on the results of the investigation, a preliminary RI was performed at IR 1 in 1990 by IT Corporation. The preliminary RI indicated the presence of metals and suggested that migration of metals toward the Atlantic Ocean could be occurring. An RFI/RI was performed by IT Corporation in 1993 that recommended additional sampling, performing a focused feasibility study and an Interim Remedial Action (IRA), and conducting a baseline human

health risk assessment based on post-IRA sampling data. Subsequent to the submittal of a draft Supplemental RFI/RI Workplan by ABB Environmental Services in 1995, a Delineation Study focusing on metals was conducted at IR 1 to supplement the previous data, determine the extent of lead-contaminated soil, and delineate the limits of excavation. Lead contamination was suspected to be a result of dumping of general refuse at IR 1. In 1995, Bechtel Environmental (BEI) performed an IRA removing 4,878 cubic yards of lead-contaminated soil (Figure 2), reducing the highest lead concentration in soil from 35,200 milligrams per kilogram (mg/kg) to 680 mg/kg. Confirmation samples were collected in 1996 from the excavation area to confirm removal of contaminated soil. In fall 1996, Brown and Root Environmental (B&RE) performed the Supplemental RFI/RI at IR 1. The nature and extent of contamination at IR 1 is described in more detail in subsequent paragraphs.

Current activities at IR 1 include repair of the seawall and shoreline where damage was caused by a hurricane. Hurricane Georges, a

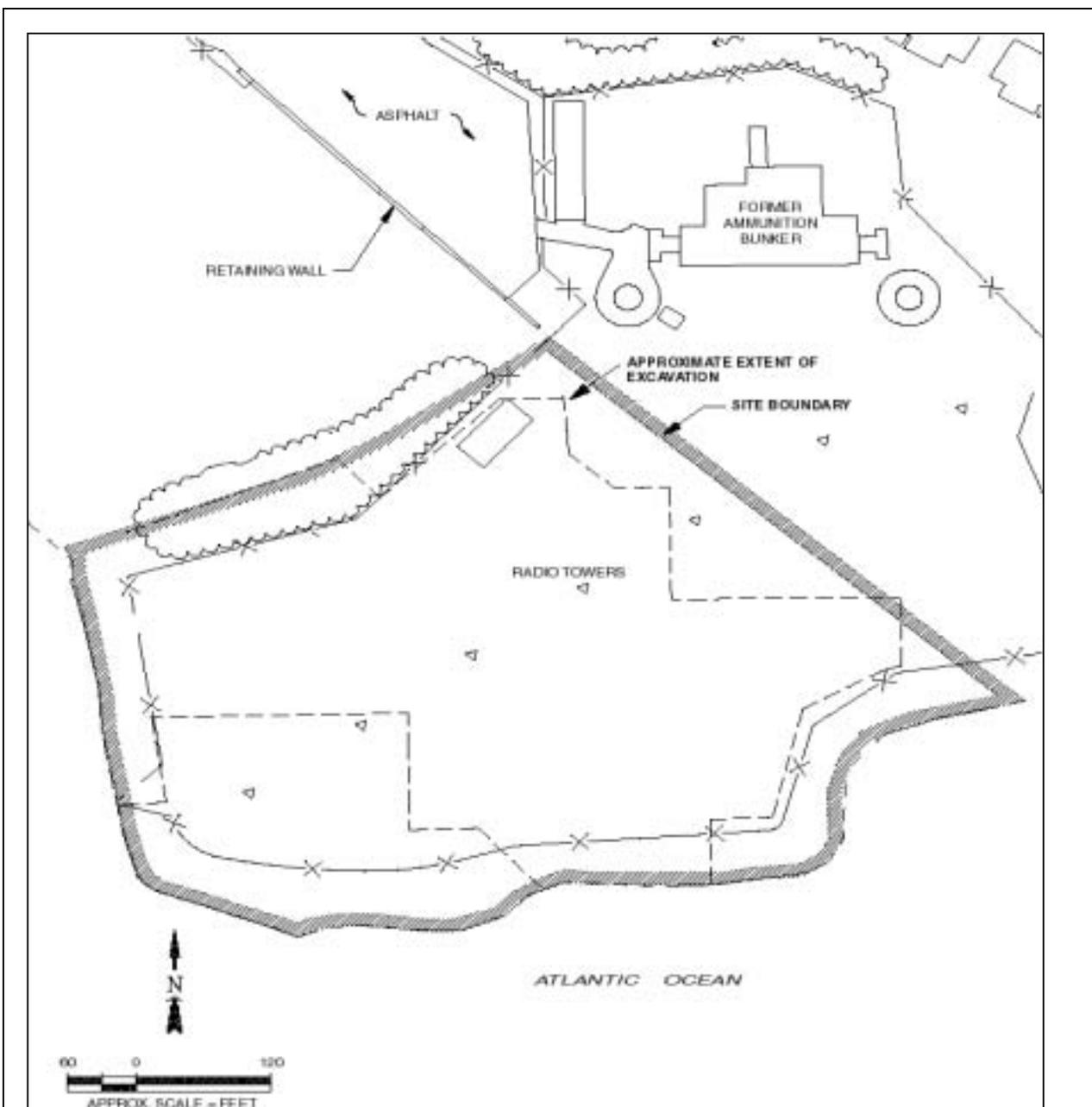


Figure 2. Site Map of IR 1.

Category 1 hurricane, passed directly over Key West on September 25, 1998. The hurricane caused significant damage and erosion to the shoreline at IR 1. Currently, the Navy is involved in response activities to repair the seawall and eroded area. The elevation of the shoreline will be increased to match the top of the seawall using boulders and riprap along the shoreline. In addition, the fence along the seawall will be replaced and new signs indicating restricted access will be placed at IR 1.

1993 and 1995, subsurface soil was sampled at IR 1. Sixteen semivolatile organic compounds (SVOCs) were detected in one sample, 14 of which were above action levels. In the same sample, two pesticides [4,4'-DDE at 420 micrograms per kilogram ($\mu\text{g}/\text{kg}$) and 4,4'-DDT at 150 $\mu\text{g}/\text{kg}$] and two polychlorinated biphenyls (PCBs) (Aroclor-1254 at 3,900 $\mu\text{g}/\text{kg}$ and Aroclor-1260 at 2,000 $\mu\text{g}/\text{kg}$) were also detected above action levels. Inorganic compounds were detected in all nine of the

subsurface samples that underwent inorganic analysis. Inorganic compounds were most frequently detected and were most frequently in excess of screening values in the sample where SVOCs, pesticides, and PCBs were detected above action levels. Aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, tin, and vanadium were detected above their action levels at this location.

Data from the 1995 Delineation Study and the 1996 Confirmatory Study were considered in the analysis of surface soil contamination at IR 1. Surface soil samples at IR 1 were analyzed only for inorganics. Aluminum, antimony, arsenic, beryllium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver, vanadium, and zinc exceeded soil screening values. High metal concentrations were commonly detected in the northwest and southeast portion of the site, although contamination was not limited to these areas.

In 1990, 1993, and 1996, sediment was sampled at IR 1. In general, metals were the most frequently detected chemicals, although 4,4'-DDT and 4,4'-DDE were also detected at nearly all sample locations. Acetone was the only volatile organic compound (VOC) detected in excess of its action level with a maximum detected concentration of 150 µg/kg. Several SVOCs exceeded their screening values in sediment samples collected from the southern shoreline. Benzo(a)anthracene, bis(2-ethylhexyl)phthalate, chrysene, fluoranthene, phenanthrene, and pyrene were detected at all three 1990 sampling locations. Only two SVOCs were detected in the 1996 investigation. Fluoranthene (289 µg/kg) and pyrene (326 µg/kg) were both detected in a single sample in excess of screening values.

In 1993, surface water was sampled at IR 1. Metals and VOCs were the only contaminants detected in surface water at IR 1. VOCs were detected in a single sample below action levels. Two metals, antimony and tin, exceeded screening values with maximum detected concentrations of 270 µg/L and 134 µg/L, respectively. Only antimony exceeded its screening value at every sample location.

In 1986, 1990, 1993, and 1996, groundwater was sampled at IR 1. Inorganics were detected in samples from each

investigation. In 1996, both the extent and degree of inorganic contamination were reduced in groundwater. Only five inorganic parameters (antimony, iron, lead, manganese, and selenium) exceeded screening values. The opposite was true of pesticide contamination. A limited amount of pesticide contamination was detected in sampling investigations prior to the Supplemental RFI/RI. Most of the detected pesticides were found in 1996 samples. Chlordane, heptachlor, 4,4'-DDD, alpha-BHC, gamma-BHC, endosulfan I, and dieldrin were detected above action levels in 1996. Although nine VOCs were detected in groundwater, only benzene (1.6 µg/L), methylene chloride (5.2 µg/L), and trichloroethene (14 µg/L) exceeded screening values. In 1986, a single SVOC, phenanthrene, was detected in excess of its screening value at a concentration of 14 µg/L. SVOCs were not detected in later investigations.

SUMMARY OF FACILITY RISKS

A Human Health Baseline Risk Assessment (BRA) and an Ecological Risk Assessment (ERA) were performed as part of the Supplemental RFI/RI Report. The IR sites at NAS Key West were evaluated for risk following CERCLA guidance at the request of FDEP and EPA Region IV. To account for the contamination that was removed at IR 1, no data from samples that were taken from the area excavated during the IRA were used during the risk analyses.

In the BRA, human health risks associated with exposure to detected contaminants in soil, sediment, and surface water were estimated for each potential receptor. Although groundwater was sampled and analyzed, it was not considered a pathway of concern since groundwater at this site meets the FDEP criteria for a Class G-III nonpotable aquifer. The full BRA is in the Supplemental RFI/RI Report, January 1998.

The potential receptors were based on current and future land uses. The current potential receptors identified for IR 1 include adolescent/adult trespasser, site maintenance worker, excavation worker, and occupational worker. Under the future land-use scenario, the most likely potential receptor is believed to be an excavation worker. Also considered under the

future land-use scenario is a residential child and adult, although residential development of IR 1 is considered unlikely. Under the master plan for land use on NAS Key West, the future land use for the area where IR 1 is located is a restricted-access military base, with future zoning to limit access at the site.

There is potential for a future resident to be exposed to concentrations of contaminants that may cause limited carcinogenic and noncarcinogenic risks. This potential risk was modeled for possible human receptors.

Chemicals of potential concern (COPCs) were selected within a medium based on comparison of the detected concentrations to risk-based screening levels. The selected COPCs represent those chemicals at IR 1 that are expected to contribute significantly to one or more of the exposure pathways selected for risk estimation. Conservative risk-based screening levels were used in the exposure pathway model for sediment and surface water. Therefore, COPCs may be selected that do not actually contribute significantly to the quantitative risk. The BRA identified several COPCs in surface and subsurface soil including metals (aluminum, antimony, arsenic, beryllium, chromium, copper, iron, lead, manganese, mercury, and zinc), PCBs (Aroclor-1254 and Aroclor-1260), and SVOCs [benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indeno(1,2,3-cd)pyrene, and phenanthrene]. In sediment, COPCs selected included metals (antimony, arsenic, iron, and manganese), PCBs (Aroclor-1248, Aroclor-1254, and Aroclor-1260), SVOCs [acenaphthylene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and phenanthrene], and one pesticide (delta-BHC). Surface water COPCs at IR 1 included metals (aluminum, barium, iron, tin, and zinc) and one VOC (acetone). The BRA also includes a calculation of risk to humans from the presence of contaminants in shellfish tissue. A pesticide (Aldrin) and a PCB (Aroclor-1260) were identified as COPCs in surface water for potential consumption of shellfish by the future resident.

The IR 1 BRA identified five risk scenarios equal to or greater than the FDEP target cancer risk of one in one million (1E-06). The principal constituents contributing to the cancer risks are arsenic in surface soil and sediment, Aroclor-1260 in sediment, and Aroclor-

1254 in sediment. The estimated carcinogenic risk for the hypothetical future resident is 1E-04, which is greater than both the EPA "target risk range" of 1E-04 to 1E-06 and the FDEP target cancer risk of 1E-06. The estimated carcinogenic risks for trespasser adults (1E-05), trespasser adolescents (1E-05), excavation workers (1E-06), and occupational workers (7E-06) are within the EPA target risk range and are equal to or greater than the FDEP target cancer risk. The estimated carcinogenic risk for maintenance workers (9E-07) is below the EPA target risk range and FDEP target cancer risk. The BRA indicates that COPCs at IR 1 are present at concentrations that may cause adverse carcinogenic health effects for the future resident using EPA standards and criteria.

The BRA also identified a single noncarcinogenic risk scenario for the future resident exceeding the hazard index threshold of 1.0. The hazard index for the future resident had a cumulative value of 4.0. The principal constituents contributing to the noncarcinogenic risk are antimony, copper, and iron in surface soil, arsenic in surface soil and sediment, and Aroclor-1254 in sediment. The noncarcinogenic risks for all other scenarios were significantly below the hazard index threshold of 1.0. COPCs at IR 1 were not present at sufficient concentrations to cause adverse noncarcinogenic health effects to any current potential receptors and the future excavation worker. However, adverse noncarcinogenic health effects could be caused by chemicals at IR 1 for the hypothetical future resident.

An ERA was conducted to evaluate the possibility that aquatic or terrestrial ecological receptors may be at risk from site-related contaminants. The ERA was based on laboratory analyses of groundwater, surface-water, sediment, and soil samples and on laboratory analyses of fish collected from the nearby lagoon. The ERA recommended sediment toxicity testing to evaluate whether elevated concentrations of copper, lead, zinc, and organic compounds are potentially impacting benthic organisms near the site. The results of the sediment toxicity testing are presented in the Sediment Toxicity Report for Sites IR 1 and 8 prepared in 1999. The Sediment Toxicity Report concluded that potential ecological risks to benthic organisms due to 4,4'-DDT, lead, and possibly copper exist in the vicinity of the sediment sample location IR1-7. Survival,

growth, and reproduction of benthic organisms were significantly reduced in sediment sample IR1-7.

The proposed remedy for IR 1 is land-use controls with annual monitoring of groundwater, sediment (including toxicity testing), and marine biota. The previous soil removal has eliminated the need for additional remedial action. Land-use controls will include limited site access to address unacceptable human health risks for the future resident. Groundwater, sediment, and biota at IR 1 will be monitored annually to address ecological risks identified in the Sediment Toxicity Report for Sites IR 1 and 8. Land-use controls with monitoring will be protective of human health and the environment at IR 1.

SCOPE OF THE REMEDIAL ACTION

The U.S. Navy recognizes that CERCLA allows various options for implementing remedies based on site conditions. For IR 1 at NAS Key West, the Supplemental RFI/RI Report recommended that a Feasibility Study (FS) be performed to evaluate possible site remedies. However, the NAS Key West Partnering Team made the decision to perform a Sediment Toxicity Study instead of an FS to determine if ecological risks exist at IR 1. The Sediment Toxicity Report concluded that potential ecological risks exist at IR 1. Therefore, land-use controls with annual performance monitoring of groundwater, sediment, and biota are recommended at IR 1. Minimal costs are associated with implementing and administering land-use controls with performance monitoring.

PUBLIC PARTICIPATION

To make a final decision and incorporate a remedy into the Decision Document, the U.S. Navy is soliciting public review and comment on this Proposed Plan for the proposed remedy to IR 1 at NAS Key West. CERCLA requires a comment period for public to review and comment of the proposed remedy.

The comment period will begin on Sunday, March 12, 2000, which is the date of publication of the public notice in *The Citizen* newspaper. Saturday, May 13, 2000 is the end of the comment period.

The Proposed Plan and the associated supporting documents, including the Supplemental RFI/RI Report, may be viewed and copied at the FDEP Office in Tallahassee, Florida between the hours of 8:00 a.m. and 4:30 p.m., Monday through Friday, except legal holidays. Additional copies of the Supplemental RFI/RI Report and Proposed Plan are available for public review at the information repository in the Local and State History Department at the Monroe County Library, 700 Fleming Street, Key West, Florida (Phone: 305-292-3595).

Further, the U. S. Navy has determined there is sufficient need to hold a public meeting. The public meeting will occur at 7:00 p.m. on Monday, March 27, 2000 at the Holiday Inn Beachside, N. Roosevelt Blvd., Key West, Florida. Please call Ron Demes at 305-293-2194 for directions to the public meeting. At the meeting, the proposed remedy will be discussed and questions will be answered. To request information about the public meeting or comment period, to obtain more information concerning this Proposed Plan, or to submit written comments, please contact Ron Demes at the following address:

NAS Key West Contact

Ron Demes
Engineering Division Director
Public Works Department
U.S. Naval Air Station Key West
P. O. Box 9007
Key West, FL 33040-9007

(Phone: 305-293-2194; Fax: 305-293-2542)

All comments must be postmarked by Saturday, May 13, 2000.

NEXT STEPS

Following the 60-day public comment period, the U.S. Navy will issue a final decision on the proposed remedy. The Decision Document, which will describe the remedy chosen for IR 1, will include responses to oral and written comments received during the public comment period. Concurrence from EPA and FDEP will be obtained before implementing the final remedy.

**Comments on Proposed Plan
Truman Annex Refuse Disposal Area (IR 1)**

Place
Stamp
Here

Ron Demes
Engineering Division Director
Public Works Department
U.S. Naval Air Station Key West
P. O. Box 9007
Key West, FL 33040-9007