July 12, 2000

MEMORANDUM

4WD-*FFB*

SUBJ: Evaluation of *Naval Air Station Key West*'s status under the RCRIS Corrective Action Environmental Indicator Event Codes (CA725 and CA750)
EPA I.D. Number:FL6 170 022 952

FROM: Wm. Turpin Ballard
RPM

THRU: Earl Bozeman, Chief
DOD Section

TO: Jon Johnston, Chief
Federal Facilities Branch

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of *Naval Air Station Key West*'s status in relation to the following corrective action event codes defined in the Resource Conservation and Recovery Information System (RCRIS):

1) Current Human Exposures Under Control (CA725),

2) Migration of Contaminated Groundwater Under Control (CA750).

Concurrence by the Federal Facilities Branch Chief is required prior to entering these event codes into RCRIS. Your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations is satisfied by dating and signing at the appropriate location within Attachments 1 and 2.

II. HISTORY OF ENVIRONMENTAL INDICATOR EVALUATIONS AT THE FACILITY AND REFERENCE DOCUMENTS

This particular evaluation is the second evaluation for Naval Air Station Key West's environmental indicators. The first evaluation (EI-1) discussed areas where site characterization identified contamination in soil, sediment, and ground water at concentrations that exceeded certain risk-based criteria, and identified follow-on work to be done in the form of additional sampling to better identify the extent and significance of the contamination. For example, EI-1 identified ground water/surface water transport as a likely pathway for contaminant migration

and potential ecological risk. Subsequently, a sediment toxicity study conducted at IR's 1 and 8 found that sediments had not been significantly impacted by migration of contaminated ground water. No further action was selected for the sites, which will be subject to long-term monitoring (LTM), including periodic bioassays, to ensure the remedy remains protective.

At other sites identified in EI-1, interim corrective measures (ICM) have been implemented to eliminate or reduce potential exposures to acceptable levels. For example, at SWMU-1, EI-1 identified ground water contamination as a potential future risk if used as a potable source of drinking water. The source of the contamination was in surface soils. An ICM removed the surface soil and called for re-establishing mangrove trees over the area. Subsequent ground water sampling has shown reduced contaminant concentrations, indicating that source removal has had a positive impact on the ground water contamination. Although some additional soil contamination has recently been identified at SWMU 1, human exposure continues to be controlled through the corrective measures implemented pursuant to a permit modification effective in June,1999. In addition, the State of Florida has classified the ground water at all identified SWMUs, AOCs, and IR sites as G-III, non-potable water, although the adjacent surface waters are classified as Outstanding Florida Waters.

A permit modification issued by EPA in June, 1999 selected final corrective measures for SWMUs 1-4. Based on prior removals, the only remaining actions were land use controls and media or ecological monitoring. EPA has concurred on Statements of Basis (SOB) for SWMs 5 and 7, which also call for land use controls and long-term monitoring. A SOB for SWMU 9 was completed in Q2/00. The approved corrective measure will be enhanced bioremediation of ground water.

A copy of EI-1 is attached.

III. FACILITY SUMMARY

The NAS Key West facility lies primarily on Boca Chica Key approximately six miles east of Key West. The sites subject to the corrective action permit lie within this facility. In addition, NAS Key West has taken response actions at 8 sites under the Installation Restoration Program (IRP), and 11 sites to be transferred under the Base Re-alignment and Closure Act (BRAC). The permitted units lie within the boundaries of an active naval air station where a variety of operational and maintenance activities occur. The SWMUS are located primarily in isolated areas of the facility that are seldom visited by Navy personnel. SWMU 1, 3, and 9 are adjacent to wetland or lagoon areas. SWMU 5 has a concrete-lined drainage ditch that drains to a settling pond which communicates with open water.

The facility generates a variety of wastes associated with aircraft maintenance operations, including paint wastes, sandblast residues, machining oils and cuttings, waste solvents and fuels. widespread occurrence of pesticides is due to normal application. SWMU 2 was a DDT mixing area, and had higher pesticide levels in soil than are generally found at the facility, indicating past spills.

In addition to the corrective action sites, the facility maintains a hazardous waste storage unit that is in compliance with the terms of the 1990 RCRA permit.

IV. CONCLUSION FOR CA725

After evaluating the current site conditions against the criteria in Attachment 1, and consulting with the other Key West Partners (Navy, Florida DEP), I have determined that current human exposures are under control, and that CA 725 should be yes (YE)

V. CONCLUSION FOR CA750

After evaluating the current site conditions against the criteria in Attachment 2, and consulting with the other Key West Partners (Navy, Florida DEP), I have determined that migration of contaminated ground water is under control, and that CA 750 should be yes (YE).

VI. SUMMARY OF FOLLOW-UP ACTIONS

Because both CA 725 and CA 750 are YE, no follow-up actions are required. However, as a point of information, at SWMU 9 enhanced bioremediation will be implemented in order to more rapidly degrade the area of ground water contamination and avoid long-term monitoring costs. The basis for this decision was a cost comparison between natural attenuation with LTM over 20 years and enhanced bio with monitoring over 2-3 years to meet ground water standards.

Attachments:
1. CA725: Current Human Exposures Under Control
2. CA750: Migration of Contaminated Groundwater Under Control

ATTACHMENT 1
DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRIS Code (CA725)
Current Human Exposures Under Control

Facility Name: **Naval Air Station Key West**
Facility Address: **Key west, FL 33040**
Facility EPA ID #: FL6 170 022 952

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

__**x**__ If yes - check here and continue with #2 below,

_____ If no - re-evaluate existing data, or

_____ If data are not available skip to #6 and enter"IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

Media	Yes	No	?	Rationale/Key Contaminants
Groundwater	X			VOCs @ SWMU 9>MCLs
Air (indoors)[2]		X		
Surface Soil (e.g., <2 ft)	X			pesticides, As, Pb, PAH> FL soil stds. per RFI/CMS for SWMUs 1-4. 5,7,9
Surface Water		X		
Sediment	X			pesticides, As, CN in seds. at several SWMUs
Subsurface Soil (e.g., >2 ft)	X			PAH, As, Pb at concentrations > Residential RBCs. ICMs cleaned up contamination to industrial re-use level. Land use controls prevent residential use in future
Air (outdoors)		X		

____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

__X__ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

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[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s): **References -** RFI and CMS reports for SWMUs 1-5, 7, 9. SOB for SWMUs 1-5, 7,9. Permit modification for SWMUs 1-4.
Rationale - These documents, especially the RFIs, identified concentrations of pesticides, arsenic, cyanide, PAHs, PCBs, and occasional antimony in surface soil that exceeded State soil cleanup standards and/or Region 3 RBCs.

Ground water at SWMU 9 exceeds MCLs for benzene, TCE, cis and trans-1,2, DCE. 1996 pump and treat ICM reduced contaminant mass. 2000 SOB selected enhanced bioremediation to complete contaminant reduction to below MCLs.

Sediments contain arsenic and pesticides. Arsenic is found in virtually all site soils, and pesticides in this area are typically the result of normal application; no spills or other high-concentration releases have been documented.

Subsurface soils contain sediments in excess of industrial RBCs, but less than State ground water leachability criteria. These areas are under clean backfill placed during ICMs to address surface soil contamination.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table
Potential **Human Receptors** (Under Current Conditions)

"Contaminated" Media	**Residents**	**Workers**	**Day-Care**	**Construction**	**Trespassers**	**Recreation**	**Food[3]**
Groundwater	No	No	No	No	N/L	N/L	No
Soil (surface, e.g., <2 ft)	No	Yes	No	Yes	Yes	No	No
Sediment	No	No	N/L	N/L	Yes	No	Yes
Soil (subsurface, e.g., >2 ft)	N/L	N/L	N/L	No	N/L	N/L	No

Instructions for Summary Exposure Pathway Evaluation Table:

[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

1. For Media which are not "contaminated" as identified in #2, please strike-out specific Media, including Human Receptors' spaces, or enter "N/C" for not contaminated.
2. Enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations, some potential "Contaminated" Media - Human Receptor combinations (Pathways) are not assigned spaces in the above table (i.e, **N/L - not likely**). While these combinations may not be probable in most situations, they may be possible in some settings and **should be added as necessary**.

____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

__X__ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s): **References** - RFI and CMS reports for SWMUs 1-5, 7, 9. SOB for SWMUs 1-5, 7,9. Permit modification for SWMUs 1-4.
Rationale: - Although Interim Corrective Measures (ICMs) have been taken at SWMUs 1-5, 7, and 9, contaminant concentrations remain in soil media that do not allow for unrestricted use. Land use controls have been implemented at SWMUs 1-5, 7 and 9, where residual soil and/or ground water contamination exists.

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

__X__ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code.

Rationale and Reference(s): **References: RFI reports for SWMUs 1-5, 7, 9.**
Rationale: Surface soils - General Worker - ICMs performed at the SWMUs have removed the top two feet of surface soil and replaced with clean backfill. Lateral extent of excavation proceeded until State soil standards or Region 3 industrial soil RBCs were achieved. The SWMUs are in isolated, access-restricted areas of the facility and are infrequently visited by workers. SWMU-1 was not backfilled, but the SOB required re-vegetation of the area with mangrove trees, which will prevent routine contact with remaining soil residuals. Land use controls (LUCs) include appropriate warning signs and restriction from residential use. Restrictions are currently recorded with the Facility Master Plan. Quarterly briefings are given to facility personnel to maintain awareness of the special CA status of these areas

Surface soils - Construction Worker - Similar rationale as above. Construction in affected areas would be of a more intensive nature than general worker category, but of shorter duration. Residuals are protective under this category.

Sediments - Trespasser - Contaminant concentrations in sediments are generally low and do not pose an unacceptable threat to humans. Areas adjacent to SWMUs are infrequently accessed by people. Sediments are in near-shore or wetland areas and difficult to reach except by boat.

Sediments - Food chain - Bioassay and sediment toxicity studies indicate low potential for food-chain toxicity. Area adjacent to the facility is not used for subsistence fishing.

5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

_____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination"

are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

__X__ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the **Naval Air Station, Key West** facility, EPA ID # **FL6 170 022 952**, located at Key West, Florida, under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

____ NO - "Current Human Exposures" are NOT "Under Control."

____ IN - More information is needed to make a determination.

Completed by(signature) _____ Date _____
(print) _____
(title) _____

Supervisor (signature) _____ Date _____ [5]
(print) _____
(title) _____
(EPA Region or State) _____

[5] **FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.**

Locations where References may be found:

United States Environmental Protection Agency, Region 4, Waste Management Division Records Center. 61 Forsyth St., 10th Floor, Atlanta GA 30303.

Florida Department of Environmental Protection, 2600 Blair Stone Rd., Tallahassee, FL 32399-2400

Naval Air Station Key West, Building A-629, Key West FL 33040 (Ron Demes)

Contact telephone and e-mail numbers

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ATTACHMENT 2
DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRIS Event Code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: Naval Air Station Key West
Facility Address: Key west, FL 33040
Facility EPA ID #: FL6 170 022 952

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   __X__ If yes - check here and continue with #2 below,

   _____ If no - re-evaluate existing data, or

   _____ If data are not available, skip to #8 and enter"IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the

Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[6] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

   _X_ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

   ____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

   ____ If unknown - skip to #8 and enter "IN" status code.

   Rationale and Reference(s): **References -** 1999 RFI, 1999 CMS, 2000 SOB, 1996 ICM for SWMU 9.
   Rationale: Ground water exceeds MCL for benzene, TCE, and cis/trans 1,2,-DCE. Plume is adjacent to a surface water body but COCs have not been detected in surface water or sediment. Aquifer is approximately 2 feet BGS and brackish. State of Florida does not consider it a potential source of drinking water. Potential hydraulic connection exists to designated Outstanding Florida Waters.

[6] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[7] as defined by the monitoring locations designated at the time of this determination?

__X__ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[7]).

____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[7]) - skip to #8 and enter "NO" status code, after providing an explanation.

____ If unknown - skip to #8 and enter "IN" status code.

Rationale and References: **References -** RFI/CMS for SWMU 9.
Rationale - Distal portion of the plume has remained in approximately the same location with respect to surface water over 5 sampling events from 1993 to 1998, including at least one major hurricane. Contamination is in the oolitic limestone surficial aquifer, which retards progress, allowing natural attenuation to operate. An ICM was implemented in 1996 to remove source material. 2000 SOB requires residual to be treated using enhanced bioremediation to limit the duration required LTM.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

____ If yes - continue after identifying potentially affected surface water bodies.

__X__ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): **References -** RFI/CMS for SWMU 9.

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[7] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

Rationale - No evidence found in surface water or down-gradient sediments of site-related ground water COCs.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[8] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature and number of discharging contaminants, or environmental setting) which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

   _____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[8] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) providing a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

   _____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[8] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[8] greater than 100 times their appropriate groundwater "levels," providing the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identifying if there is evidence that the amount of discharging contaminants is increasing.

   _____ If unknown - enter "IN" status code in #8.

Rationale and
Reference(s):_____
_____
_____

[8] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[9])?

   _____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR

   2) providing or referencing an interim-assessment,[10] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

   _____ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

   _____ If unknown - skip to 8 and enter "IN" status code.

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[9] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[10] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

__X__ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

____ If no - enter "NO" status code in #8.

____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): References - 2000 SOB for SWMU 9, Long-Term Monitoring Plan for NAS Key West, August, 1999. **Rationale -** EPA-approved document presents the plan and schedule for LTM at all areas of the facility where residual contamination or newly-completed corrective measures require a period of confirmation sampling to ensure long-term effectiveness of the remedy. In addition, SWMU 9 SOB requires a corrective measure to address residual ground water contamination. The selected remedy is enhanced bioremediation using oxidation and reducing agents to stimulate naturally occurring bacteria to treat the VOCs in question. Although the current plume is not migrating, this action will reduce or eliminate the need for LTM at SWMU 9 once contaminant concentrations are verified to be below acceptable limits (MCLs or risk-based concetrations)

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

__X__ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the **Naval Air Station, Key West** facility , EPA ID # FL6 170 022 952, located at Key West, Florida . Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

_____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

_____ IN - More information is needed to make a determination.

Completed by(signature)_____ Date _____
(print)_____
(title)_____

Supervisor (signature)_____ Date_____
(print)_____
(title)_____
(EPA Region or State)_____

Locations where References may be found:

United States Environmental Protection Agency, Region 4, Waste Management Division Records Center. 61 Forsyth St., 10th Floor, Atlanta GA 30303.

Florida Department of Environmental Protection, 2600 Blair Stone Rd., Tallahassee, FL 32399-2400

Naval Air Station Key West, Building A-629, Key West FL 33040 (Phillip Williams)

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