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LETTER OF TRANSMITTAL AND ERRATA PAGES FOR FINAL FIVE YEAR REVIEW FOR
OPERABLE UNITS 1, 2, 3, 4, 5, 6, 7 AND 8 REVISION 2 NAS JACKSONVILLE FL (PUBLIC
DOCUMENT)
09/06/2011
TETRA TECH NUS



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Project Number 112G02098

Naval Facilities Engineering Command Southeast
ATTN: Adrienne Wilson (Code 36)
Remedial Project Manager
Code OPA6, Cube 36
Building 135
NAS Jacksonville, FL 32212-0030

Reference: CLEAN IV Contract Number N62467-04-D-0055
Contract Task Order Number 0152A

Subject: Errata Pages for Final Five-Year Review for Operable Units 1, 2, 3, 4, 5, 6, 7, and 8,
Revision 2
Naval Air Station Jacksonville, Jacksonville, Florida

Dear Ms. Wilson:

Tetra Tech NUS, Inc. (Tetra Tech) is pleased to present errata pages for the Final Five-Year Review for Operable Units (OUs) 1, 2, 3, 4, 5, 6, 7, and 8, Revision 2, Naval Air Station Jacksonville, Florida. The errata pages include the Five-Year Review Summary Form and protectiveness statements for OU 1, OU 5, OU 6, OU 7, and OU 8 and reflect changes requested by the United States Environmental Protection Agency (USEPA) to incorporate language regarding the evaluation of monitored natural attenuation (MNA) remedy components after the collection of five years of monitoring data for the purpose of evaluating if the remedies remain protective.

If you have any questions regarding the enclosed material, or if I can be of assistance in any way, please contact me at (904) 730-4669, extension 213, or by e-mail at Mark.Peterson@tetrattech.com.

Sincerely,

Mark A. Peterson
Task Order Manager

Enclosure (hard copy/CD)

- c: Tim Curtin, NAS Jacksonville (2 hard copies/2 CDs)
Mike Singletary, NAVFAC SE (hard copy)
Pete Dao, USEPA (hard copy/CD)
David Grabka, FDEP (hard copy/CD)
Chris Pike, Tetra Tech (unbound/CD)
Debra Humbert, Tetra Tech (cover letter only)
Glenn Wagner, Tetra Tech (NIRIS hard copy/CD)
Julie Johnson, Tetra Tech (Administrative Record/Webb-Wesconnett Regional Library)
CTO 0152A Project File

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name (from WasteLAN): Naval Air Station Jacksonville		EPA ID (from WasteLAN): FL6 170 024 412
Region: 4	State: FL	City/County: Jacksonville/Duval
SITE STATUS		
NPL status: Final		
Remediation status (under construction, operating, complete): Under Construction and Operating		
Multiple OUs*? (highlight): <input checked="" type="checkbox"/> N		Construction completion date: To be determined
Has site been put into reuse? (highlight): Y <input checked="" type="checkbox"/>		
REVIEW STATUS		
Lead agency: Department of the Navy, Naval Facilities Engineering Command Southeast		
Author name: Adrienne Wilson	Author title: Remedial Project Manager	
Author affiliation: Department of the Navy, Naval Facilities Engineering Command Southeast		
Review period: May 2005 to January 2010		Date(s) of site inspection: August 25-26, 2010
	Type of review (highlight): 1. Pre-SARA 2. Post-SARA 3. NPL-Removal Only 4. Regional Discretion 5. NPL State/Tribe-lead	Review number (1, 2, etc.): 3
Triggering action: Interim Remedial Action at Operable Unit 1		
Trigger action date (from WasteLAN): March 1, 2006**		
Due date (five years after triggering action date): March 1, 2011**		

* ["OU" refers to operable unit.]

** This five year review is due on March 1, 2011, five years after the prior five year review was approved by USEPA. Due dates for future five year reviews will be triggered off of the remedial action start date, which would make the next five year review due by March 6, 2015.

Issues:

Issues discovered for NAS Jacksonville during the Five-Year Review were as follows:

OU 1

1. A proposed boundary expansion was completed to encompass monitoring well MW109S and a Land Use Control Remedial Design (LUC RD) was prepared. The LUC RD has been submitted to USEPA and FDEP but it has not yet been approved.
2. Trigger levels for contingent action (TLCAs) for OU 1 surface water have not been established for 1,2-dichloroethane (DCA), trans-1,2-dichloroethene (DCE), and vinyl chloride and are recommended.

OU 2

1. No issues regarding OU 2 were discovered during the Five-Year Review.

OU 3

Optimization efforts are currently underway at OU 3. The NAS Jacksonville Partnering Team is pursuing the development of an updated ROD focused on a risk based OU 3 wide approach that will eliminate issues associated with the current remedies in place that are focused on individual source areas, and to more fully evaluate the indoor air vapor intrusion pathway and the potential for ecological risks posed to the St. Johns River. An RI/FS Addendum is currently being developed that will support the updated ROD. As a result of the optimization study, actions are currently being taken that will address the findings of the Five Year review as it relates to the current ROD for OU 3. These issues include the following:

Monitoring well networks at Buildings 106 and 780 are insufficient.

1. Remediation systems at PSC 48 and Building 780 have been shut down as a result of the optimization study, but documentation is incomplete.
2. Areas C and D are not being monitored quarterly as stipulated in the ROD, but will be included in the updated ROD.
3. Monitoring well networks at Areas C and D do not encompass all of the groundwater contamination (e.g., the COC concentrations in the perimeter wells exceed GCTLs). Contamination has migrated beneath the St. Johns River. Additional optimization efforts have shown that COCs are attenuating prior to discharge to the river.
4. The RAO of reducing VOCs in groundwater to the ARARs/action levels within five years has not been achieved at Areas C and D. The results of the optimization study have shown that prior treatment has been effective at reducing COC concentrations in groundwater, but it is anticipated that ARARs have been achieved within the five year period specified. Alternative remedies will be evaluated in the updated ROD.
5. Monitoring well network at Area G does not encompass all of the groundwater contamination (e.g., the COC concentrations in the perimeter wells exceed GCTLs). The remedial action objective for Area G is not being met via natural attenuation. This finding is also currently being investigated and will be included in the RI/FS Addendum and updated ROD.
6. There are no groundwater use restrictions in place at OU 3 for Buildings 106 and 780, Areas B, C, D, F and G. A LUCRD is pending regulatory approval for these groundwater use restrictions. LUC requirements will also be addressed in the updated ROD.
7. Reported groundwater contamination exists to the west of Building 106, which is outside the existing boundary of OU 3. Currently this area is being investigated.
8. Remedial design efforts at Area F encountered much lower levels of contamination than originally reported. As a result, the optimization efforts resulted in a recommendation to not implement the remedy for Area F (chemical oxidation). Area E assessment has not been completed.
9. Groundwater contamination has been identified infiltrating a second (eastern) storm sewer downgradient of Areas F and G. Work is ongoing to characterize the nature of the contamination and the potential impacts to the St. Johns River.
10. Vapor intrusion pathway for indoor building exposure has not been completely evaluated for all buildings in OU 3 based on new USEPA and Navy policy and guidance.

11. The base enforces dig restrictions over the entire OU 3. Additional sampling is being considered to reduce the size of the area that may be included in the LUC RD, to be prepared after completion of the RI/FS Addendum.

OU 4
1. LUCs are being implemented; however, a LUC RD was not completed. A LUC RD has been developed is pending regulatory approval.

OU 5
1. No issues regarding OU 5 (PSC 51) were discovered during the Five-Year Review.

OU 6
1. No issues regarding OU 6 were discovered during the Five-Year Review.

OU 7
1. Implementation of the soil removal aspects of the remedy have been delayed by the discovery of potential UXO at the site. As a result, the GW remedy has yet to be implemented. Resumption of remedy implementation is anticipated to begin in 2011.

OU 8
1. No issues regarding OU 8 were discovered during the Five-Year Review.

Recommendation and Required Actions:

The following actions for NAS Jacksonville are recommended to be protective of human health and the environment:

OU 1
1. Approval of LUC RD by USEPA and FDEP.
2. Florida Administrative Code (FAC) 62-777 provides freshwater surface water cleanup target levels (CTLs) for 1,2-DCA, trans-1,2-DCE, and vinyl chloride. Evaluate the CTLs and determine if the CTLs should be used as TLCAs for OU 1. If the determination is that the CTLs will be adopted, then an Explanation of Significant Difference will be completed as appropriate.

OU 2
1. No issues regarding OU 2 were discovered during the Five-Year Review.

OU 3
1. Issues 1 - 6, 9 through 12 should be addressed as a part of the investigation for the RI/FS Addendum for OU 3.
2. For issue 7, a LUC RD has been developed to address groundwater use restrictions for all of OU 3 but required regulatory approval.
3. For issue 8, redraw the existing boundary of OU 3 to include identified groundwater contamination in the updated ROD.

OU 4
1. Continue LUC inspections in accordance with an approved LUC RD.

OU 5
1. No issues were discovered at OU 5 during the Five-Year Review.

OU 6
1. No issues were discovered at OU 6 during the Five-Year Review.

OU 7
1. After UXO clearance has been obtained, resumption and completion of the remedies specified for OU 7 is recommended.

OU 8
1. No issues were discovered at OU 8 during the Five-Year Review.

Basewide (All OUs)

Continue inspections as required by land use control implementation plans (LUCIPs).

Protectiveness Statement(s):

OU 1

1. The remedy at OU 1 currently protects human health and the environment for the short term because LUCs are in place to prevent any potential ecological or human health exposure to contaminated media. The MNA effectiveness determination after collection of five years of data has been completed at this site and MNA for the groundwater component of the remedy was found to be meeting the RAOs, therefore the remedy for the short and long terms are protective for the groundwater component of the remedy. However, in order for the surface water component of the remedy to be protective in the long term the following actions need to be taken. Evaluate if FAC 62-777 freshwater CTLs for 1,2-DCA, trans 1,2-DCE, and vinyl chloride should be used as target concentration action levels for OU 1.

OUs 2, 4, and 5

The remedies at these sites are protective of human health and the environment.

OU 3

1. Protectiveness for OU 3 cannot be determined and is being deferred until further actions currently underway are completed supporting the development of an RI/FS Addendum and updated ROD for OU 3. A protectiveness determination will be made via an addendum to this Five Year Review after completion of the updated ROD anticipated to be prepared by September 30, 2013.

OU 6

1. The remedy at OU 6 is protective for short term and for long term it is expected to be protective and will be determined when we have reviewed 5 years of groundwater monitoring data. The institutional controls, groundwater monitoring, and surface water monitoring at OU 6 provide an acceptable degree of protection of human health and the environment as long as they are conducted as required.

OU 7

1. The remedy at OU 7 is protective is expected to be protective of human health and the environment upon completion, and in the interim exposure pathways that could result in unacceptable risks are being controlled. After implementation the protectiveness of the MNA component of the remedy will be evaluated after review of 5 years of groundwater monitoring data.

OU 8

1. The remedy at OU 8 is protective for short term and for long term it is expected to be protective and will be re-evaluated after review of 5 years of groundwater monitoring data. The institutional controls, groundwater monitoring, at OU 8 provide an acceptable degree of protection of human health and the environment as long as they are conducted as required.

Other Comments

USEPA's dioxin reassessment has been developed and undergone review over many years with the participation of scientific experts in USEPA and other federal agencies, as well as scientific experts in the private sector and academia. The Agency followed current cancer guidelines and incorporated the latest data and physiological/biochemical research into the assessment. The results of the assessment have currently not been finalized and have not been adopted into state or federal standards. USEPA anticipates that a final revision to the dioxin toxicity numbers may be released by the end of 2010. In addition, USEPA/OSWER has proposed to revise the interim preliminary remediation goals (PRGs) for dioxin and dioxin-like compounds, based on technical assessment of scientific and environmental data. However, USEPA has not made any final decisions on interim PRGs at this time. Therefore, the dioxin toxicity reassessment for this Site will be updated during the next Five Year Review.

Overall

This Five-Year Review shows that that the Navy is meeting the requirements of the Records of Decisions (RODs) for OUs 2, 4, 5, 6, and 8. The NAS Jacksonville Partnering Team is evaluating the environmental conditions at OU 3 and is preparing to implement additional remedial actions to protect

human health and environment. In addition, the five-year review shows that remedies for OU 1 remains protective in the short term, and the remedy for OU 7 is expected to be protective upon completion.

Signature of U.S. Department of the Navy and Date

Jeffrey Maclay
Captain, U. S. Navy
Commanding Officer
NAS Jacksonville

Date

2.7.3 Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

Several monitoring wells have detected concentrations of iron that considerably exceed background values and FDEP's GCTL of 300 µg/L and FDEP's surface water criteria for iron (1,000 µg/L). FDEP has expressed concern that iron-rich groundwater could discharge into the nearby stream that drains into the St. Johns River. Because surface water samples collected at locations SW-20 and SW-55 are not analyzed for iron, the protectiveness of the remedy could be questioned.

2.8 ISSUES

Issues discovered during this Five-Year Review, along with recommendations for follow-up actions, are summarized below in Table 2-8. None of these are sufficient to warrant a finding of not protective as long as the issues are resolved.

2.9 PROTECTIVENESS STATEMENT

The remedy at OU 1 currently protects human health and the environment for the short term because LUCs are in place to prevent any potential ecological or human health exposure to contaminated media. The MNA effectiveness determination after collection of five years of data has been completed at this site and MNA for the groundwater component of the remedy was found to be meeting the RAOs, therefore the remedy for the short and long terms are protective for the groundwater component of the remedy. However, in order for the surface water component of the remedy to be protective in the long term the following actions need to be taken. Evaluate if FAC 62-777 freshwater CTLs for 1,2-DCA, trans 1,2-DCE, and vinyl chloride should be used as target concentration action levels for OU 1.

6.10 PROTECTIVENESS STATEMENT

The remedy at OU 5 (PSC 51) is protective of human health and the environment. The MNA effectiveness determination after collection of five years of data has been completed at this site and MNA was found to be meeting the RAOs, therefore the remedy for the short and long terms are protective. The institutional controls, groundwater monitoring, and surface water monitoring at PSC 51 provide an acceptable degree of protection of human health and the environment as long as they are conducted as required.

- **System O&M:** There are no active remediation systems at OU 6 and therefore no system O&M is required.
- **Cost of System Operations/O&M:** There are no active remediation systems at OU 6 and therefore no system O&M is required.
- **Opportunities for Optimization:** Optimization of the groundwater monitoring effort will be completed after the initial year of monitoring and updates to the Groundwater Monitoring Plan will be completed as necessary.
- **Early Indications of Potential Remedy Failure.** No early indications of remedy failure were noted.

7.7.2 Question B: Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy selection still valid?

There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. There have been no significant changes to the standardized risk assessment methodology or toxicity criteria data that could affect the protectiveness of the remedy.

A vapor intrusion assessment was conducted during the RI/FS and found that no unacceptable risks were posed to site workers as a result of the potential for indoor air vapor intrusion of site related COCs.

7.7.3 Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No other information has come to light that would call into question the protectiveness of the remedy.

7.8 ISSUES

No issues concerning OU 6 were discovered during this Five-Year Review.

7.9 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Since no issues were discovered, there are no recommendations and follow-up actions.

7.10 PROTECTIVENESS STATEMENT

The remedy at OU 6 is protective for short term and for long term it is expected to be protective and will be determined when we have reviewed 5 years of groundwater monitoring data. The institutional controls,

groundwater monitoring, and surface water monitoring at OU 6 provide an acceptable degree of protection of human health and the environment as long as they are conducted as required.

... of the monitoring system at OU 6 ...

... of the groundwater monitoring system ...

... of the monitoring system ...

Groundwater Monitoring System

There have been no changes in the physical condition of the monitoring system ...

A regular maintenance program was conducted during the last year ...

Surface Water Monitoring System

No other information has been received ...

7.8

... of the monitoring system ...

Monitoring System

... of the monitoring system ...

Monitoring System

... of the monitoring system ...

8.7.2 Question B: Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy selection still valid?

The PRGs issued in the ROD for OU 7 were obtained from the FDEP 1999 SCTLs for residential and industrial receptor scenarios for soil. Subsequent to the ROD being published, SCTLs were re-issued by FDEP in 2005 that revised the risk-based concentrations allowable in soil for several of the constituents identified as COCs by the ROD of OU 7. The Remedial Action Work Plan, published in October 2007 compared the soil and sediment analytical data collected to date against both the 1999 and 2005 FDEP Direct Exposure-Commercial/Industrial SCTL criteria and incorporated those differences into the work plan (Tetra Tech, 2007e). However, the discovery of potential UXO could change the exposure assumptions.

USEPA's dioxin reassessment has been developed and undergone review over many years with the participation of scientific experts in USEPA and other federal agencies, as well as scientific experts in the private sector and academia. The Agency followed current cancer guidelines and incorporated the latest data and physiological/biochemical research into the assessment. The results of the assessment have currently not been finalized and have not been adopted into state or federal standards. USEPA anticipates that a final revision to the dioxin toxicity numbers may be released by the end of 2010. In addition, USEPA/OSWER has proposed to revise the interim preliminary remediation goals (PRGs) for dioxin and dioxin-like compounds, based on technical assessment of scientific and environmental data. However, USEPA has not made any final decisions on interim PRGs at this time. Therefore, the dioxin toxicity reassessment for this Site will be updated during the next Five Year Review.

8.7.3 Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

Yes, potential UXO was discovered during soil removal. Excavation methods and procedures have been modified to address the possible risk posed by any remaining UXO.

8.8 ISSUES

Implementation of the soil removal aspects of the remedy have been delayed by the discovery of potential UXO at the site. As a result, the groundwater remedy has yet to be implemented. Resumption of remedy implementation is anticipated to begin in 2011. See Table 8-2.

8.9 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

After UXO clearance has been obtained, resumption and completion of the remedies specified for OU 7 is recommended. See Table 8-2.

8.10 PROTECTIVENESS STATEMENT

The remedy at OU 7 is protective is expected to be protective of human health and the environment upon completion, and in the interim exposure pathways that could result in unacceptable risks are being controlled. After implementation the protectiveness of the MNA component of the remedy will be evaluated after review of 5 years of groundwater monitoring data.

OU 7's MNA component has been developed and undergoes review over many years in the protection of public health and the environment. The Agency followed current guidelines and accepted the latest data and physicochemical parameters in the assessment. The results of the assessment have consistently not been limited and have not been subject to state or federal standards. US EPA considers that a protective remedy is being provided to the public. The Agency will be pleased to provide additional information to the public. The Agency will be pleased to provide additional information to the public. The Agency will be pleased to provide additional information to the public.

8.11

OU 7's MNA component has been developed and undergoes review over many years in the protection of public health and the environment. The Agency followed current guidelines and accepted the latest data and physicochemical parameters in the assessment. The results of the assessment have consistently not been limited and have not been subject to state or federal standards. US EPA considers that a protective remedy is being provided to the public. The Agency will be pleased to provide additional information to the public. The Agency will be pleased to provide additional information to the public.

8.12

OU 7's MNA component has been developed and undergoes review over many years in the protection of public health and the environment. The Agency followed current guidelines and accepted the latest data and physicochemical parameters in the assessment. The results of the assessment have consistently not been limited and have not been subject to state or federal standards. US EPA considers that a protective remedy is being provided to the public. The Agency will be pleased to provide additional information to the public. The Agency will be pleased to provide additional information to the public.

8.13

OU 7's MNA component has been developed and undergoes review over many years in the protection of public health and the environment. The Agency followed current guidelines and accepted the latest data and physicochemical parameters in the assessment. The results of the assessment have consistently not been limited and have not been subject to state or federal standards. US EPA considers that a protective remedy is being provided to the public. The Agency will be pleased to provide additional information to the public. The Agency will be pleased to provide additional information to the public.

9.7 TECHNICAL ASSESSMENT

9.7.1 Question A: Is the remedy functioning as intended by the ROD?

The review of documents, ARARs, risk assumptions, and the results of the site inspection indicates that the remedy is functioning as intended by the ROD.

- **HASP/Work Plans:** A Site specific HASP and Groundwater Monitoring Work Plan has been developed.
- **Remedial Action Performance:** Review of the first annual groundwater monitoring report indicates that the remedial action is performing as intended.
- **System O&M:** There are no active remediation systems at OU 8 and therefore no system O&M is required.
- **Cost of System Operations/O&M:** There are no active remediation systems at OU 8 and therefore no system O&M is required.
- **Opportunities for Optimization:** Optimization of the groundwater monitoring effort was completed.
- **Early Indications of Potential Remedy Failure.** No early indications of remedy failure were noted.

9.7.2 Question B: Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy selection still valid?

There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. There have been no significant changes to the standardized risk assessment methodology or toxicity criteria data that could affect the protectiveness of the remedy.

The potential risks posed by soil vapor intrusion were evaluated in the RI/FS for PSC 47. The Johnson Ettinger volatilization model was used to estimate risks from exposures from vapor intrusion. The Hazard Index and Incidental Lifetime Cancer Risks for residents were less than USEPA's target risk range and FDEP's level of concern.

9.7.3 Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No other information has come to light that would call into question the protectiveness of the remedy.

9.8 ISSUES

No issues regarding OU 8 were discovered during the Five-Year Review.

9.9 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

There are no recommendations or follow-up actions for OU 8.

9.10 PROTECTIVENESS STATEMENT

The remedy at OU 8 is protective for short term and for long term it is expected to be protective and will be re-evaluated after review of 5 years of groundwater monitoring data. The institutional controls, groundwater monitoring, at OU 8 provide an acceptable degree of protection of human health and the environment as long as they are conducted as required.