



DEPARTMENT OF THE NAVY

CRANE DIVISION
NAVAL SURFACE WARFARE CENTER
300 HIGHWAY 361
CRANE, INDIANA 47522-5000

IN REPLY REFER TO:

5090
Ser 095/9194

13 OCT 1999

U.S. Environmental Protection Agency, Region V
Waste, Pesticides, & Toxics Division
Waste Management Branch
Illinois, Indiana, and Michigan Section
ATTN: Mr. Peter Ramanauskas (DW-8J)
77 West Jackson Blvd.
Chicago, IL 60604

Dear Mr. Ramanauskas:

Crane Division, Naval Surface Warfare Center (NAVSURFWARCENDIV Crane) submits the Notice of Deficiency (NOD) comments and responses as enclosure (1). Enclosure (2) contains the revision pages for the Quality Assurance Project Plan (QAPP), and enclosure (3) is the required certification statement.

NAVSURFWARCENDIV Crane point of contact is Mr. Thomas J. Brent, Code 09510, telephone 812-854-6160.

Sincerely,

A handwritten signature in cursive script, appearing to read "James M. Hunsicker".

JAMES M. HUNSICKER
Director of Environmental
Protection Department
In the position of
the Commander

Encl:

- (1) NOD Comments and Responses
- (2) QAPP Revision Pages
- (3) Certification Statement

Copy to:

ADMINISTRATIVE RECORD (w/2 copies)
SOUTHNAVFACENCOM (Code 1864) (w/o encl)
IDEM (Mike Sickels) (w/1 copy)
TTNUS (Roger Clark) (w/o encl)

NOTICE OF DEFICIENCY
Dated June 10, 1999
Revised Draft Work Plan & Revised Draft Quality Assurance Project Plan
For Solid Waste Management Unit 30 (Landfarm)
Naval Surface Warfare Center
Crane, Indiana

A. Work Plan Comments

Comment A1:

Section 1.3: In the second paragraph on page 1-7 it is stated that only data from 1990 through 1992 were available for completion of the Work Plan although analytical data has been collected for the sludge since 1988. Please provide an explanation for the absence of additional data.

Response A1: according to previous NSWC Crane employees, the sludge was analyzed routinely for a select group of parameters. Most of these data could not be found with the exception of those from 1990 through 1992, which are included in Table 1-1 of the Work Plan. This issue was discussed during the early stages of Work Plan development. It is because of the lack of these data that parameters other than metals were required to be sampled.

Comment A2:

Section 1.4 & Section 1.8: The second paragraph on page 1-13 presents a ground water sampling schedule for the five quarterly groundwater sampling events. This schedule has one sampling event set for late fall, one for mid-winter, and the remaining three events performed quarterly thereafter. This conflicts with Section 1.8 (Project Schedule) which shows the first sampling event taking place in June of 1999. Please revise the Work Plan to maintain consistency throughout.

Response A2: The first round of sampling will depend on when final approval is obtained on the Work Plan. Both of these sections will be modified as follows:

"The first round of sampling will be conducted within 10 weeks of final Work Plan approval. Subsequent rounds will be collected at 3-month intervals following the first sampling event. Assuming final written approval of the Work Plan is received by September 1, 1999, the first sampling event would be completed by November 8, 1999. Subsequent rounds 2,3,4,and 5 would be conducted in February, May, August, and November of 2000, respectively."

Comment A3:

Section 1.5.1 & Figure 1-5: Due to staff changes at the U.S. EPA, please change the U.S. EPA representative from Carol Witt-Smith to Peter Ramanauskas.

Response A3: The requested change will be made.

Comment A4:

Table 2-2: On page 2-9 of Table 2-2, the analytical parameters for the trip blank of the third sampling round are shown to be the "Appendix IX VOC List as per Table 2-1". The analytical parameters for the trip blank of the remaining sampling rounds state only "VOC list as per Table 2-1". Table 2-1 references Table 1-2 in the QAPP which lists the specific analytes to be Appendix IX VOCs. Please revise Table 2-2 to correct this inconsistency.

Response A4: The trip blank entry on page 2-9 will be changed to read "VOC list as per Table 2-1" to be consistent with the remainder of the table and the explanatory footnote in Table 1-2 of the QAPP. Table 1-2 in the QAPP references Appendix IX VOCs, with exceptions listed in footnote 8. The exceptions in the footnote read, "1,4-Dioxane, acetonitrile, isobutyl alcohol, and propionitrile excluded from Appendix IX volatile target list because these compounds cannot be accurately analyzed using SW-846 Method 8260B, and they are not expected to be present at the Landfarm based on generator knowledge."

Comment A5:

Section 2.6: The "Development and Purge Fluids" section on Page 2-15 states that "All development and purge fluids will be collected and stored on site....and ultimately discharged to the NSWC-permitted sanitary sewer system following appropriate IDW analysis." This language seems to imply that the IDW will be discharged to the NSWC-permitted sewer system regardless of the analytical results. Please revise the Work Plan to clarify that the IDW fluids are not "ultimately discharged to the NSWC-permitted sanitary sewer system" in all cases.

Response A5: The beginning of the paragraph describing IDW handling will be modified as follows,

"Development and Purge Fluids - All development and purge fluids will be collected and stored on-site using a 300- and/or 2,100-gallon plastic holding tank, respectively, until appropriate IDW analyses are completed. Providing that IDW analyses are acceptable as described below, development and purge fluids will be discharged to the NSWC-permitted sanitary sewer system. IDW analyses from the first round of sampling will be deemed suitable for use on subsequent sampling rounds. The 2,100-gallon tank will be situated

Comment A6:

Section 3.4: This section shows *five* types of field samples defined, while Table 2-2 shows *four* types of QC samples. Please revise the Work Plan to correct this inconsistency.

Response A6: For samples designated for matrix spike (MS), matrix spike duplicate (MSD), and/or sample duplicate analyses, extra volumes of sample are collected in accordance with Tables 2-1 and 2-3 (see footnotes). All bottles/vials for these samples are labeled identically with regard to the sample location. For example, if 3 vials are needed for VOC analysis of a sample and MS/MSD analysis for that sample requires 4 additional vials, 7 vials will be shipped to the laboratory with the same sample nomenclature. The COC form will indicate 7 vials and the comments section will have a note reading "use extra vials for MS/MSD". The following footnote will be added to Table 2-2:

"Matrix spike (MS) and duplicate samples will be collected at a frequency of 1 per 20 samples. For inorganics, an MS and a sample duplicate will be collected, and for organics, an MS and a matrix spike duplicate (MSD) will be collected. MS/MSDs and sample duplicates are not applicable for field analyses (NA). See Table 2-3 for specific numbers of vials/bottles required."

Comment A7:

Health And Safety Plan Section 8.2: It is stated that site-specific training will include spill response procedures, while the documentation used (Figure 8-2) does not include this as part of the site-specific training elements. Please provide clarification and/or correction.

Response A7: Spill response procedures will be added to Figure 8-2.

Comment A8:

Health And Safety Plan: Sections 9.0, 9.6, 9.8, and 9.9 contain references to B&R Environmental. Please correct these references to reflect the name change to Tetra Tech NUS.

Response A8: The noted changes will be made to the text.

Comment A9:

Health And Safety Plan Section 10.3: This section shows the IDW container volumes for the truck mounted tank and the fixed tank to be 250 gallons and 2,500 gallons respectively. However, Section 2.6 of the Work Plan shows these volumes as 300 gallons and 2,100 gallons. Please revise the Work Plan to maintain consistency throughout.

Response A9: The Health and Safety Plan will be modified to match the Work Plan.

Comment A10:

Appendix C: In section 5.5 (of SA 1.1), which explains how field measurements of groundwater will be performed, pertinent details extracted from the manufacturer's instructions for operating the field devices should be inserted. For instance, what are the buffer solutions used to "calibrate" the pH meter? When or how is it known that the specific conductance meter is running acceptably on the basis of a QC check? What are the manufacturer's recommendations for calibration of the dissolved oxygen meter or for recalibrating the probe on an "as needed" basis? For the turbidity measurement, it appears as if the batteries and calibration should be "checked" before going into the field. However, the instructions go on to explain that the device should be calibrated on a daily use basis which does imply a field calibration. Procedures for conducting these checks should be stated in the QAPP or workplan.

Response A10: During a teleconference held on Tuesday July 6, 1999 with EPA Region 5, Crane, Southdiv, and TtNUS representatives, the following approach was agreed upon for resolving this comment. TtNUS will review the manufacturer's instruction manuals to determine if the procedures for calibration and use contain all of the required information needed to collect the required data, including QA/QC. Any additional instructions required for proper operation of

instrumentation or any operational procedures specific to the physical setting of the Base, or the SWMU specifically, will be hand-written into the appropriate section of the SOP.

Comment A11:

Section 5.6.2 of Appendix C: On page 17 of 27, the well stabilization techniques previously outlined should be mentioned & inserted after item no. 8. (Also see pp. 19 to 20 in this section.)

Response A11: During a teleconference held on Tuesday July 6, 1999 with EPA Region 5, Crane, Southdiv, and TtNUS representatives, the following approach was agreed upon for resolving this comment. The following text will be hand-written into the SOP after step 8:

"Stabilization is achieved and sampling can begin when three consecutive readings, taken at 5- to 10-minute intervals, are within the following limits:

- pH \pm 0.1 standard unit
- Specific conductance \pm 3 percent
- Temperature \pm 3 percent
- Turbidity less than 10 Nephelometric Turbidity Units"

Comment A12:

Appendix E: The instructions for use of the Hach testing device should be rewritten as a field SOP, incorporating all pertinent QC information.

Response A12: During a teleconference held on Tuesday July 6, 1999 with EPA Region 5, Crane, Southdiv, and TtNUS representatives, the following approach was agreed upon for resolving this comment. TtNUS will review the instructions to determine if the procedures for calibration and use contain all of the required site-specific information needed to collect the required data, including QA/QC. Any additional instructions required for proper operation of the Hach instrument will be hand-written on the attachment provided in Appendix E.

B. Quality Assurance Project Plan Comments

Comment B1:

Section 1.1.1: On page 1-1, the overall objective is stated where we learn that the primary objectives are to determine both the presence & absence as well as extent of groundwater contamination associated with operation of SWMU #30. However, in section 1.4.3 on page 1-9, the risk element creeps in to the objective discussion. If it is actually intended to perform a risk assessment on the basis of this proposed sampling strategy then it should be clearly stated as such. My impression is that it is not intended to conduct a formal risk assessment, and that the "action levels" proposed in table 1-1 will be used to define "contamination" (i.e. "presence or "extent).

Response B1: The commenter is correct in that the objective of this RFI Work Plan is not to gather data for risk assessment purposes. The objective is to gather data to perform 40 CFR 264 subpart F statistical comparisons (upgradient versus downgradient) for determining the potential contribution of contaminants to the groundwater from this SWMU. Risk-based target levels (RBTLs) were used primarily to ensure that adequate detection limits would be achieved for performing the statistical comparisons. Had these levels not been used for determining detection limits, the statistical comparisons could have been challenged (should nondetectable concentrations be found for certain parameters).

Comment B2:

Section 1.3.3: The term, "contamination" is used here, although it should also be precisely stated here what is considered as "contamination" on the basis of comparing analytical data sets to proposed action levels or other criteria.

Response B2: Agree. The text will be modified as follows,

"The Landfarm at NSW Crane is no longer used for sludge application. In 1995, U.S. EPA reviewed and modified the NSW Crane permit with the stipulation that an RFI be conducted at the Landfarm to determine if the application of sludges possibly contaminated with plating wastes have affected the shallow ground water regime. If statistically significant increases in contamination are found using 40 CFR 264 subpart F evaluation procedures outlined in the Work Plan, NSW Crane will be required to conduct a CMS."

Comment B3:

Section 1.4.1: There is really nothing in section 1.1 of the draft workplan that isn't already stated in section 1.1.1 of the QAPP. The difficulty is that in section 1.1.1 of the QAPP, the stated objectives are referred to as "overall project objectives", whereas in section 1.4.1 of the QAPP (i.e. section 1.1 of the workplan) they are referred to as "specific objectives". They can't serve as both. It would be appropriate to state the decision rules here or segue from the overall objectives to the decision rules to be applied to data sets such that the overall objectives (having something to do with defining "contamination" and extent) can be dealt with, each in turn. A decision tree flow chart would also serve the same purpose. I note also that there are apparently no associated risk assessment objectives.

Response B3:

Section 1.4.1: There is really nothing in section 1.1 of the draft workplan that isn't already stated in section 1.1.1 of the QAPP. The difficulty is that in section 1.1.1 of the QAPP, the stated objectives are referred to as "overall project objectives", whereas in section 1.4.1 of the QAPP (i.e. section 1.1 of the workplan) they are referred to as "specific objectives". They can't serve as both. Agreed. The text under Section 1.4.1 will be replaced with the following, "Specific objectives for this RFI are summarized in Table 1-1 of this QAPP".

It would be appropriate to state the decision rules here or segue from the overall objectives to the decision rules to be applied to data sets such that the overall objectives (having something to do with defining "contamination" and extent) can be dealt with, each in turn. A decision tree flow chart would also serve the same purpose. I note also that there are apparently no associated risk assessment objectives. During a teleconference held on Tuesday July 6, 1999 with EPA Region 5, Crane, Southdiv, and TtNUS representatives, the following approach was agreed upon for resolving this comment. Decision rules and associated logic are presented in the Work Plan in the "If – Then" table located at the top of page 1-14 in Section 1.4. The decision rules are basically those defined by 40 CFR 264 subpart F statistical comparison requirements. As noted in the comment, no risk assessment activities are proposed at this point in the RFI process. Risk-based target levels (RBTLs) were used primarily to ensure that adequate detection limits would be achieved for performing the statistical comparisons.

Comment B4:

Table 1-1: Referring to the right hand column, second row, if "detected", will risk comparisons be made? Also, what is the rationale and objective for measuring hexavalent chromium in the field but not in the laboratory? Referring to the last row entry in the right hand column, is "extent" based on "detection", or will all data be compared to upgradient well data? If it is the latter then the proposed reporting limits for all parameters measured in wells should, respectively & ideally, be less than the footnote 3 values. Also referring to the same entry, how is "presence" or "extent" defined while factoring in the values referred to in footnote 3. A set of decision rules would clarify matters considerably. Finally, referring to the Quarterly list of parameters, is the parameter identified as "cyanide" intended to mean "total cyanide"? If so, is it anticipated that sulfide concentrations may be encountered.

Response B4: During a teleconference held on Tuesday July 6, 1999 with EPA Region 5, Crane, Southdiv, and TtNUS representatives, the following approach was agreed upon for resolving these comments.

Referring to the right hand column, second row, if "detected", will risk comparisons be made? The determination whether further action will be necessary will be based on the subpart F statistical comparisons outlined in the Work Plan in Section 1.4 on pages 1-13 and 1-14. Risk-based target levels were used primarily to ensure that adequate detection limits would be achieved for performing the statistical comparisons. No risk assessment activities are proposed at this point in the RFI process.

Also, what is the rationale and objective for measuring hexavalent chromium in the field but not in the laboratory? The holding time for hexavalent chromium is 24 hours which is

extremely difficult to meet based on the location of Crane and overnight delivery service schedules. The risks of compromising sample quality by exceeding holding times outweigh any potential benefit of using a laboratory-based method over the field method proposed. The field method proposed has received EPA review and provides adequate detection limits. The following text will be added immediately before the last sentence in the third paragraph on page 1-13 of the Work Plan:

"Any exceedance of the hexavalent chromium RBTL specified in Table 1-2 of the QAPP will require a discussion with EPA Region 5 to determine if fixed-base laboratory analysis is required."

Referring to the last row entry in the right hand column, is "extent" based on "detection", or will all data be compared to upgradient well data? All data will be compared to upgradient concentrations as required in 40 CFR 264 subpart F statistical comparison procedures. As no samples have been collected to date from these wells, extent will only be defined if all results are nondetectable (extent is all within the SWMU), or are generally within the same range of values. If highly variable results are obtained, a determination regarding the need for further evaluation of the extent of contamination for a given contaminant will have to be made.

If it is the latter then the proposed reporting limits for all parameters measured in wells should, respectively & ideally, be less than the footnote 3 values. Agreed. If this is not the case or there is not a RBTL (e.g., 4-amino-2,6-dinitrotoluene), the statistical comparison will be made with the reporting limit specified by the lab. This comparison will determine if the SWMU is contributing excess contaminants downgradient compared to the water quality passing under the unit from the upgradient direction, regardless of whether or not there is an RBTL to compare it to.

Also referring to the same entry, how is "presence" or "extent" defined while factoring in the values referred to in footnote 3. "Presence" or "extent" will be defined by the reporting limits proposed by the lab. The determination whether further action will be necessary will be based on the subpart F statistical comparisons outlined in the Work Plan in Section 1.4 on pages 1-13 and 1-14. Risk-based target levels were used only as a benchmark primarily to ensure that adequate detection limits would be achieved for performing the statistical comparisons. No risk assessment activities are proposed at this point in the RFI process.

A set of decision rules would clarify matters considerably. Decision rules are presented in the Work Plan in the "If – Then" table located at the top of page 1-14 in Section 1.4. The decision rules are basically those defined by 40 CFR 264 subpart F statistical comparison requirements. The footnote for that table will be modified as follows:

"Because metals are the primary contaminants of concern associated with this SWMU, analyses for the metals listed will be conducted for all 5 rounds, even if nondetectable values are obtained in the first 2 rounds."

Finally, referring to the Quarterly list of parameters, is the parameter identified as "cyanide" intended to mean "total cyanide"? If so, is it anticipated that sulfide concentrations may be encountered. Yes, cyanide is intended to mean total cyanide. No, sulfides are not anticipated to be present.

Comment B5:

Section 1.4.2.2: The compound name "propionitrile" is spelled incorrectly. Note that the 5 rounds of sampling won't permit 4 seasons of sampling for all compounds. Certain compounds may be excluded from rounds 4 and 5 without benefit of 4 quarters of data to record seasonal variations. Should the risk-based levels be used as immediate comparisons and are they identical to footnote 3 levels (see table 1-1)?

Response B5: During a teleconference held on Tuesday July 6, 1999 with EPA Region 5, Crane, Southdiv, and TtNUS representatives, the following approach was agreed upon for resolving these comments.

Section 1.4.2.2: *The compound name "propionitrile" is spelled incorrectly.* Agreed, the typo will be corrected.

Note that the 5 rounds of sampling won't permit 4 seasons of sampling for all compounds. Certain compounds may be excluded from rounds 4 and 5 without benefit of 4 quarters of data to record seasonal variations. The strategy agreed to based on previous review of this Work Plan is described in the "If – Then" table located at the top of page 1-14 in Section 1.4. It was previously agreed that 2 rounds of sampling would be conducted, 40 CFR 264 subpart F statistical comparisons would be made and the decision logic would be followed as described in the table. One clarification will be made with regard to metals analyses which will provide for 4 full quarters of analyses - the footnote for that table will be modified as follows:

"Because metals are the primary contaminants of concern associated with this SWMU, analyses for the metals listed will be conducted for all 5 rounds, even if nondetectable values are obtained in the first 2 rounds."

Should the risk-based levels be used as immediate comparisons and are they identical to footnote 3 levels (see table 1-1)? The immediate comparison that will be made to determine whether further action will be necessary will be based on the 40 CFR 264 subpart F statistical comparisons outlined in the Work Plan in Section 1.4 on pages 1-13 and 1-14. The footnote 3 levels (risk-based target levels) were used primarily to ensure that adequate detection limits would be achieved for performing the statistical comparisons. No risk assessment activities are proposed at this point in the RFI process.

Comment B6:

Table 1-2: In cases where no "target levels" exist, some decision rules should be devised such that it will be clear what actions will be taken if the parameter is detected or not detected. Evidently, because a risk assessment will not be performed, there is no apparent need for laboratory generated hexavalent chromium data.

Response B6: If there is no risk-based target level (RBTL) for a particular compound (e.g., 4-amino-2,6-dinitrotoluene), the statistical comparison will be made with the reporting limit specified by the lab. This comparison will determine if the SWMU is contributing excess contaminants downgradient compared to the water quality passing under the unit from the

upgradient direction, regardless of whether or not there is a RBTL to compare it to.

With regard to hexavalent chromium, the holding time of 24 hours, which is extremely difficult to meet based on the location of Crane and overnight delivery service schedules, is the reason for selecting a field method over a fixed-base laboratory method. The risks of compromising sample quality by exceeding holding times outweigh any potential benefit of using a laboratory-based method over the field method proposed. The field method proposed has received EPA review and provides adequate detection limits. The following text will be added immediately before the last sentence in the third paragraph on page 1-13 of the Work Plan:

"Any exceedance of the hexavalent chromium RBTL specified in Table 1-2 of the QAPP will require a discussion with EPA Region 5 to determine if fixed-base laboratory analysis is required."

Comment B7:

Section 1.4.3, page 1-12: Referring to the final "bullet", will this statistical study be performed to define the presence of contamination? How will this data reduction and reporting effect the determination of contamination "extent"?

Response B7: Yes, the statistical study will determine presence of contamination at statistically significant levels downgradient compared to upgradient. The requirements of 40 CFR 264 subpart F (statistical comparisons) outlined in the Work Plan in Section 1.4 on pages 1-13 and 1-14 will be the determining factor for assessing releases of contamination from this SWMU. As no samples have been collected to date from these wells, extent will only be defined if all results are nondetectable (extent is all within the SWMU), or are generally within the same range of values. If exceedances are detected in the seven wells, the need to further clarify extent may be part of a Phase III investigation, if necessary.

Comment B8:

Section 2.0: This section is referred to section 1.5.1 of the Workplan. On page 1-15, Carol Witt-Smith's name should be replaced by Peter Ramanauskas. Please clarify the situation involving the State representative. In section 1.5.2 of the workplan, the individual who will perform internal field audits should be identified. Also the responsibilities of conducting independent data validation, deciding field corrective actions and performing data assessment should also be identified. In the 5th bullet under the TtNUS QA & QAM, note that from the EPA's perspective, the task of performing "external" audits is the Agency's. (And that task has already been fulfilled.) Change the word "external" to "internal".

Response B8:

Section 2.0: This section is referred to section 1.5.1 of the Workplan. On page 1-15, Carol Witt-Smith's name should be replaced by Peter Ramanauskas. The name will be changed as requested.

Please clarify the situation involving the State representative. Mr. Mike Sickels, Corrective Action Section Chief will be the State representative. The text will be changed accordingly.

In section 1.5.2 of the workplan, the individual who will perform internal field audits should be identified. Mr. Andy Kendrick will be responsible for conducting all internal field audits. The following text will be added as the last bullet of section 1.5.2:

“Mr. Andy Kendrick (TtNUS) will be responsible for conducting all internal field audits.”

Also the responsibilities of conducting independent data validation, deciding field corrective actions and performing data assessment should also be identified. TtNUS will perform the data validation independent of the analytical laboratory. Field corrective actions are identified in Section 13.1 of the QAPP. Data assessment is one of the responsibilities of the Task Order Manager. The following will be added as the last bullet under Task Order Manager on page 1-17:

“performs final data assessment with assistance from the data validation coordinator”

In the 5th bullet under the TtNUS QA & QAM, note that from the EPA's perspective, the task of performing “external” audits is the Agency's. (And that task has already been fulfilled.) Change the word “external” to “internal”. The requested change will be made.

Comment B9:

Table 3-3: There is a typo. The method # for mercury should be changed to 7470.

Response B9: “The method will be changed to 7470A”

Comment B10:

Section 3: How do the stated DQOs specifically link to any decision rules which can be formulated from overall objectives stated in section 1?

Response B10: Decision rules and associated logic are presented in the Work Plan in the “If – Then” table located at the top of page 1-14 in Section 1.4. The decision rules are those defined by 40 CFR 264 subpart F statistical comparison requirements. The DQOs define the target levels (low enough detection limits) to allow the statistical comparison to conclude whether contamination has been released from this SWMU. If statistically significant contamination is being released from the SWMU, is it at concentrations above appropriate target levels? If so, a CMS or other remedial actions may be warranted. If not, no further action may be warranted.

Comment B11:

Section 4: This portion of the QAPP is referred to section 2 of the workplan. In Table 2-2 of the workplan it is unclear how MS and MSD samples will be labeled for each sampling event. Referring to Table 2-3, for the parameter, Phosphorous (total and dissolved), a 24 hour holding time is recommended in EPA guidance (“Methods for Chemical Analysis of Water and Wastes”, EPA/600/4-79/020, March 1983). (This guidance may have been superceded by newer, modified guidance.

Response B11:

Section 4: This portion of the QAPP is referred to section 2 of the workplan. In Table 2-2 of the workplan it is unclear how MS and MSD samples will be labeled for each sampling event. For samples designated for matrix spike (MS), matrix spike duplicate (MSD), and/or sample duplicate analyses, extra volumes of sample are collected in accordance with Tables 2-1 and 2-3 (see footnotes). All bottles/vials for these samples are labeled identically with regard to the sample location. For example, if 3 vials are needed for VOC analysis of a sample and MS/MSD analysis for that sample requires 4 additional vials, 7 vials will be shipped to the laboratory with the same sample nomenclature. The COC form will indicate 7 vials and the comments section will have a note reading "use extra vials for MS/MSD". The following footnote will be added to Table 2-2:

"Matrix spike (MS) and duplicate samples will be collected at a frequency of 1 per 20 samples. For inorganics, an MS and a sample duplicate will be collected, and for organics, an MS and a matrix spike duplicate (MSD) will be collected. MS/MSDs and sample duplicates are not applicable for field analyses (NA). See Table 2-3 for specific numbers of vials/bottles required."

Referring to Table 2-3, for the parameter, Phosphorous (total and dissolved), a 24 hour holding time is recommended in EPA guidance ("Methods for Chemical Analysis of Water and Wastes", EPA/600/4-79/020, March 1983). (This guidance may have been superceded by newer, modified guidance. The current version (7-1-98 edition) of Federal Register Part 136 (Guidelines Establishing Test Procedures for the Analysis of Pollutants) specifies a holding time of 28 days for total phosphorous.

Comment B12:

Section 5.3: Details for the "Laboratory data deliverables" should be provided for the metals, organic and general water chemistry parameter groups.

Response B12: The first paragraph of Section 9.3.2 addresses laboratory data deliverables. This paragraph also references SOP LTL-4201 which provides additional details regarding laboratory deliverables.

Comment B13:

Section 8.2: In the first paragraph, it is stated that the identified subcontract laboratory is not yet under contract. If Laucks Testing laboratories isn't the laboratory cited in a proposed QAPP revision, then the entire QAPP will have to be modified accordingly, and another laboratory evaluation may be necessary depending on which laboratory is subcontracted for this project. In the second paragraph of this section, second sentence, page 8-1, change the word, "Several" to "All".

Response B13: Agreed. Laucks Laboratory will be under contract for this work. The Navy understands that if this is not the case, the QAPP will have to be resubmitted. The word "Several" will be replaced with "All" as requested.

Comment B14:

Page 8-3: It would be much preferable to include all parameters of interest on the LCS list.

Response B14: Based upon the history of the site, metals are the primary parameters of interest. All metals scheduled for analysis, as well as all explosives and all general chemistry parameters scheduled for analysis are included on the LCS list. A representative list of volatile organic compounds (VOCs) will be used for LCS analysis for VOCs. However, VOCs are not expected to be contaminants of concern at the site.

Comment B15:

Section 9.2.2, page 9-3: Is the data validation coordinator a Laucks employee, or someone who works independently of Laucks? This particular responsibility and title should be mentioned in the Project organization section of this QAPP.

Response B15: As specified in Section 9.2.2, validation will be completed by the TtNUS Chemistry Department. The Data Validation Coordinator mentioned in the first paragraph is a TtNUS employee, Joe Samchuck. His function ("Chemists") is already shown under support staff on Figure 1-5 "Project Organization Chart" provided in the Work Plan. The acronym "TtNUS" will be inserted before "Data Validation Coordinator" in the last sentence of the first paragraph in Section 9.2.2.

Comment B16:

Section 9.2.2, pp. 9-3 to 9-4: Note that validation methods for explosives are not included in the referenced documents. Please define how validation will be conducted for non-CLP parameters. Also, referring to the last sentence of this section, note that on page 9-2 it is stated that a "Z" flag qualifier will be indicated for this condition (instead of a "JN" flag). Which will it be?

Response B16: *Section 9.2.2, pp. 9-3 to 9-4: Note that validation methods for explosives are not included in the referenced documents. Please define how validation will be conducted for non-CLP parameters.* As described in Section 9.2.2, all analytical results will be validated versus the applicable analytical methods, the analytical SOPs included in Appendix A of the QAPP, and the requirements of the QAPP based on the guidelines provided in the Region 5 Standard Operating Procedures for Validation of CLP Organic and Inorganic Data and the National Functional Guidelines for Organic and Inorganic Data Review. This means that the same logic and direction provided in the Region 5 and National guidelines will be applied to all methods based upon the requirements of the method. For example, qualification for explosive surrogate recoveries that exceed the control limits specified in Section 3 of the QAPP will be applied based upon the direction provided for qualifying data based on surrogate recoveries in the Region 5 and National guidelines for other organic chromatographic methods.

Also, referring to the last sentence of this section, note that on page 9-2 it is stated that a "Z" flag qualifier will be indicated for this condition (instead of a "JN" flag). Which will it be? Qualification of data based upon the potential for coelution of peaks is not addressed for any method in the Region 5 or National data validation documents previously noted. Because the potential for coelution exists for some of the explosive compounds associated with this project, qualification of the data by both the laboratory during data reduction and by TtNUS

during data validation has been addressed in the QAPP. The second paragraph of Section 9.1.2 (page 9-2) addresses laboratory data reduction and describes action that the laboratory will take in reporting the data if coelution occurs. The "Z" code will be applied by the laboratory to alert the data validators that coelution has occurred and has impacted the data. The third paragraph of Section 9.2.2 addresses data validation (performed by TtNUS) and describes action that will take place during data validation if coelution has impacted the sample results. The qualifier codes used during data validation differ from those used by the laboratory during data reduction.

In order to provide clarification and because the potential list of coeluting compounds could vary over time as new columns are installed or as column affinities change over time, the text of Sections 9.1.2 and 9.2.2 will be revised as follows.

The second paragraph of Section 9.1.2 will be replaced by the following text:

It should be noted that the potential for coelution exists for some of the explosive compounds. The list of explosive compounds that coelute may vary over time as new columns are installed or as column affinities change over time. [The use of a liquid phase as an eluent for high-performance liquid chromatography (HPLC) provides a likely chance for chemical changes to occur in the column substrate and/or active sites.]

SW-846 Method 8330 specifies that quantitation for explosive compounds be performed using the primary column. However, if the peaks for two compounds are observed to coelute on the primary column but the peaks for these same two compounds do not coelute on the confirmation column, results for these compounds will be quantitated and reported from the confirmation column. The laboratory will document this in the case narrative.

If two compounds coelute on the confirmation column, but the same two compounds do not coelute on the primary column, two scenarios could result. Quantitation will be performed using the primary column. Therefore, if only one of the coeluting compounds is detected on the primary column [and not the compound(s) it coelutes with], coelution on the confirmation column has no impact. The only potential for uncertainty is in the unlikely case that more than one of the coeluting compounds is detected on the primary column and a peak is also present in the expected retention time window on the confirmation column. In this case, it would not be possible to determine which compound(s) were actually present. Therefore, as a conservative measure, both compounds will be assumed to be present, and both will be quantitated and reported from the primary column. If this occurs, the results for these compounds will be reported by the laboratory with a "Z" flag to indicate coelution has occurred on the confirmation column and that quantitative confirmation is not possible.

The third paragraph of Section 9.2.2 will be revised to read as follows:

As presented in Section 9.1.2 of the QAPP, the potential for coelution exists for some explosive compounds. Section 9.1.2 indicated that if more than one of the coeluting compounds is detected on the primary column and a peak is also present in the expected retention time window on the confirmation column, as a conservative measure, both compounds will be quantitated and reported by the laboratory from the primary

column, and that the laboratory will qualify the results with a "Z" flag. If this occurs, the results for these compounds will be qualified as presumptively present at an estimated concentration ("JN") during data validation (replacing the "Z" flag applied by the laboratory).

Comment B17:

Section 9.3.1: In the first paragraph, please also include a reference to hexavalent chromium and also insert the word, "oxygen" following "dissolved".

Response B17: The paragraph will be modified as follows, "Field data will be reported in the units discussed in Section 9.1.1. The SWMU 30 Ground Water Assessment Report will include a comprehensive database including all field measurements (hexavalent chromium, pH, specific conductivity, temperature, dissolved oxygen, and turbidity). Field measurements will be"

Comment B18:

Section 10.1.1.3: In the first bullet note that the Appendix B should be modified to reflect the proposed sampling activity. After reviewing the audit checklist, it appears not well focused for this particular study.

Response B18: A revised checklist is attached to this NOD.

Comment B19:

Section 10.2.2.1: It can be mentioned here that the U.S. EPA Region 5 has recently audited the Laucks Testing Laboratory for another related U.S. Navy Crane project, and that there was a favorable outcome.

Response B19: The following will be added to the end of this section, "U.S. EPA Region 5 has recently audited Laucks Testing Laboratories, Inc., for another related U.S. Navy Crane project and the outcome was favorable."

Comment B20:

Section 11.1: This section is deficient in that a table of available spare parts for sampling equipment and frequency of maintaining them should be presented.

Response B20: Sampling equipment is maintained at the TtNUS warehouse as indicated in the Work Plan. Project-specific equipment (i.e. Hach kits) is rented or purchased from reputable environmental equipment vendors. A stockpile of spare parts is not maintained per se. When equipment fails in the field, backup or rental equipment is provided to continue the work.

Comment B21:

Section 13.3: Add the word, "resampling" after the word, "rework".

Response B21: The requested change will be made.

Tetra Tech NUS, Inc.
SOUTHDIV CLEAN Field Quality Assurance Audit
CTO 19 – Crane Landfarm

Site: _____
Location: _____
Audit Date(s): _____
Auditor: _____
Task Order Manager: _____
Field Operation Leader: _____
Site Safety Office: _____

Other TtNUS persons present on site:

Subcontract personnel present on site:

Project Description: Redevelop and sample the 7 wells that were installed at this SWMU for volatile organics, mercury (total and dissolved), Appendix 9 metals (total and dissolved), cyanide, nitrate/nitrite, hexavalent chromium, ammonia, phosphorous, and total kjeldahl nitrogen. Sampling is to be conducted for 5 rounds. Information is required to complete the Phase II Groundwater RFI for this unit.

FIELD DATA FILE REVIEW:

Project Planning Documents: Work Plan and QAPP

Current Field Forms: _____

Subcontract Specifications: _____

SAMPLING & ANALYSIS REVIEW:

Secure Sample Storage: _____

Task Modification Field Records Utilized: _____

Sample Custody: _____

Instrument Calibration: Check Hach Test Kits for hexavalent chromium analysis _____

Decontamination Fluids: _____

General Cleanliness: _____

Field Preservation: _____

Field/Site Log Book Review: _____

OTHER FIELD INVESTIGATION ACTIVITIES:

(Surveying, GPS, lab analysis, field screening, aquifer testing, etc.): _____

FIELD EQUIPMENT CONDITION:

(safety switches, ropes, cables, surveying, field analysis, screening, etc.):

IDW MANAGEMENT:

(Management, cleanliness, security, location, etc.): _____

DECONTAMINATION:

Solutions (solvents, acids, soap, water, etc.): _____

Sampling Equipment: _____

Decon Area: _____

Other: _____

FINAL COMMENTS
Dated July 30, 1999 and August 25, 1999
Revised Draft Work Plan & Revised Draft Quality Assurance Project Plan NOD Response
For Solid Waste Management Unit 30 (Landfarm)
Naval Surface Warfare Center
Crane, Indiana

1. Quality Assurance Project Plan Comments

Comment 3:

OK, but please reference Section 1.4 of the Work Plan in this section of the QAPP.

Response 3:

The following was added as the last sentence of Section 1.4.1 of the QAPP, "Decision rules are also provided in section 1.4 of the Work Plan.

Comment 4:

OK, but also mention that additional testing of Chromium VI using an accepted laboratory procedure (other than the field procedure) may be required if Chromium VI results from the field test are in the range of 100 to 180 ug/L and the lab results for Total Chromium are less than the field result.

Response 4:

The following was added as the last sentence of the NOD response for Comment B4: "Also, additional testing of hexavalent chromium using an accepted fixed-base laboratory analytical procedure may be required if hexavalent chromium results are in the range of 100 to 180 µg/L and the total chromium results are less than the field result."

Comment 6:

Comment related to B4.

Response 6:

Same issue as Comment 4: The following was added as the last sentence of the NOD response for Comment B6: "Also, additional testing of hexavalent chromium using an accepted fixed-base laboratory analytical procedure may be required if hexavalent chromium results are in the range of 100 to 180 µg/L and the total chromium results are less than the field result."

Comment 12:

Please reference these sections in Section 5.3 of the QAPP.

Response 12:

The following was added as the last sentence of Section 5.3 in the QAPP: "Section 9.3.2 provides additional details regarding laboratory data deliverables and reporting."

Comment 1 from Peter Ramanauskas' email of 8/25/99:

Section 8.2 - Is the subcontract laboratory Laucks? If so, revise this section to state so.

Response 1 from Peter Ramanauskas' email of 8/25/99:

The Section was revised to make the requested change.

Comment 2 from Peter Ramanauskas' email of 8/25/99:

Section 9.3.1 - Insert "oxygen" after dissolved in the third line of this section.

Response 2 from Peter Ramanauskas' email of 8/25/99:

The sentence has been modified as requested.

**Insert the Attached Page (Sign-Off Sheet)
in the
QAPP
and discard the old page**

**Insert the Attached Pages (8-1 and 8-2)
in the
QAPP
and discard the old pages**

**Insert the Attached Pages (9-3 and 9-4)
in the
QAPP
and discard the old pages**

5090
Ser 095/9194

13 OCT 1999

The letter Ser 095/9194 was for the
submittal of response to comments and
replacement pages for the RFI Phase II
Landfarm Ground Water QAPP. The
replacement pages have been incorporated
into the previously submitted QAPP on
05/12/99.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

James Hensche
SIGNATURE

Env. Protection Dept. Mgr.
TITLE

10/13/99
DATE

Enclosure (3)