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TO: DISTRIBUTION

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order No. 0003

Subject: Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota
OU3 Remedial Investigation, Feasibility Study, Proposed Plan, and Record of Decision
October 22, 1996 Meeting Minutes

As directed by the Navy, per reference contract, attached are minutes from the October 22, 1996 meeting to discuss the Navy responses to regulatory comments on the OU3 RI/FS Draft Work Plan and reach a consensus on comment resolution.

Please contact me at (412) 921-7217 if you have any questions or comments.

Very truly yours,

Mark T. Perry

Mark T. Perry, P.E.
Task Order Manager

MTP/dt

Enclosures

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John Betcher, MPCA
Luke Charpentier, MPCA
Helen Goeden, MPCA
Mark Ferrey, MPCA
Paul Estuesta, MPCA
File

MEETING MINUTES

Naval Industrial Reserve Ordnance Plant (NIROP) Fridley
Operable Unit 3 (OU3)
Remedial Investigation/Feasibility Study (RI/FS)

Meeting Topics

- Resolution of Minnesota Pollution Control Agency (MPCA) and United States Environmental Protection Agency (EPA) comments on the OU3 RI/FS Draft Work Plan.

Meeting Date and Time

October 22, 1996 from 9:00 to 5:30.

Meeting Location

NIROP Fridley, Fridley, Minnesota.

Meeting Attendees

See Attachment 1

Summary

The discussions were based on the Regulatory Comment Response Summary (see Attachment 2) prepared by the Navy and provided to the MPCA and EPA prior to the meeting.

The consensus reached during the meeting is provided in Attachment 3.

The MPCA distributed a draft letter dated October 18, 1996 regarding modifications to the Facility Resource Conservation and Recovery Act (RCRA) Permit (see Attachment 4). See MPCA comment I.33 in Attachment 2 for the consensus that was reached regarding this issue.

The action items identified during the meeting are listed in Attachment 3. The most significant actions which must be completed prior to resubmittal of the Work Plan are highlighted below:

- The Navy must identify which contaminants of potential concern (COPCs) do not have Maximum Contaminant Level (MCL) or Health Risk Level (HRL) and request that the MPCA develop Health Based Values (HBVs) for these contaminants. Subsequently, the State must provide the Navy with the HBVs.

- The MPCA must develop, through modeling, COPC concentrations that are protective of groundwater and submit the concentrations to the Navy. The Navy will compare the concentrations developed by the MPCA with concentrations developed using ECTrans. The Navy, MPCA and EPA will then discuss the results and agree upon the levels to be used.

- The Navy will consider MPCA exposure methodology and target risk levels for use in the risk assessment and development of preliminary remediation goals. Further discussions will be held with the MPCA and EPA if the Navy feels the MPCA's methods and/or values are not appropriate for the planned investigation.

ATTACHMENT 1

Attendance List

NIROP FRIDLEY
OCTOBER 22, 1996
DRAFT OU3 WORK PLAN COMMENT RESPONSE MTG.

NAME	COMPANY	PHONE NUMBER
MARK PERRY	BROWN & ROOT ENVIRONMENTAL	412-921-7217
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LEE ANN SINAGOGA	BROWN & ROOT ENVIRONMENTAL	412-921-8887
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ATTACHMENT 2

Regulatory Comment Response Summary

NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT (NIROP) FRIDLEY
OPERABLE UNIT NO. 3 (OU3)
REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) WORK PLAN
REGULATORY COMMENT RESPONSE SUMMARY
MPCA COMMENTS RECEIVED 7/26 AND EPA COMMENTS RECEIVED 9/26

Regulatory Comment No.	Regulatory Comment	Work Plan Volume and Section	Resolution	Comment
MPCA I.1 (1)	a) The Navy shall add the goals of the Operable Unit 3 (OU3) Remedial Investigation/Feasibility Study (RI/FS) Work Plan (Work Plan) identified in Part IV.2 of Attachment A to the FFA to the Work Plan. b) It is unclear how the Navy has incorporated these goals into the Work Plan. For example, pursuant to Part IV.2(3) of Attachment A to the FFA, the RI/FS "...shall produce data of sufficient quality and adequate technical content to assess possible alternative response actions...". This goal for the OU3 RI/FS is exemplified by the Minnesota Pollution Control Agency (MPCA) staff in Attachment 3 to the staff letter to the Navy, dated August 30, 1995. This letter is not cited in the Work Plan references (Section 8), nor are related letters such as the MPCA staff letter of July 20, 1995. Was the decision statement in Section 4.2, Groundwater Protection, designed to address the MPCA staff's concern about what to do in the event that dense nonaqueous phase liquids (DNAPLs) are found in OU3? The Navy shall explain how it responded to the MPCA staff letters of August 30, 1995, and July 20, 1995, in the production of the Work Plan in a letter to be included as an attachment to the Work Plan.	Volume I of IV, Work Plan (WP), Section 1.3	a) Agree? b) Need clarification.	a) Will add additional goals but they are a repeat of goals already included from FFA. Are there any other specific issues/concerns that are not reflected in the state's comments? b) The Navy responded to the MPCA staff letters in a letter dated January 10, 1996. The Work Plan was designed to address all MPCA concerns identified in reference letters and as discussed at the meeting on Tuesday, April 4 to discuss the data acquisition strategy. The Draft Work Plan is responsive to all issues and concerns identified by MPCA. The Navy requests the MPCA to identify any remaining technical inadequacies.
MPCA I.2	It is the MPCA staff's understanding that the Navy intends to add relevant findings of the Operable Unit 2 (OU2) RI to the OU3 RI. The MPCA staff has agreed that these findings may be added by reference where appropriate.	WP, Section 1.3	Agree	As already stated in WP, Section 5.3.1.3 and FSP, Section 2.2. No change necessary.
MPCA I.3	The Navy shall delete the statement that NIROP is potentially downgradient of the Twin Cities Army Ammunition Plant (TCAAP) site. The contaminant plume from TCAAP is well characterized and does not affect areas close to the Naval Industrial Ordnance Plant (NIROP) site.	WP, Section 2.3, p. 4, para. 4	Agree	Based on information obtained during meetings with Savannah River site and TCAAP representatives.
MPCA I.4	a) The Navy shall indicate that the NIROP Fridley NPDES permit has been issued. b) The Navy shall identify any NPDES permit issues affecting the OU3 RI/FS in the Work Plan.	WP, Section 2.6, p. 18	a) Agree b) Need clarification	a) Text will be changed to indicate that the permit has been issued. b) the Navy would like further explanation of the second sentence.
MPCA I.5	The Navy shall include the interoffice memorandum from Eric Lindahl as an attachment to the Work Plan.	WP, Section 3.1	Disagree	The Navy does not believe it is necessary to attach this reference. The Navy will provide a copy separately.
MPCA I.6	The statements that appear here and elsewhere in the Work Plan concerning the catch basins within the plant draining to the storm sewers are at odds with previous statements from Navy that this is no longer a potential source of contamination to the Mississippi River. The Navy shall resolve this issue by providing documentation that these potential sources of contamination to the river have been removed.	WP, Section 3.1, p. 3, para. 1	Agree	Clarification will be provided.

MPCA I.7	If DNAPLs are found in OU3, the Navy shall add the following pathways to the Work Plan: 1) a pathway for human consumers of groundwater; 2) a pathway for human consumers of surface waters (Mississippi River water taken in to the Minneapolis drinking water supply system); and 3) a pathway to flora and fauna in the Mississippi River. The Navy may use the existing risk assessment for OU1 by reference as long as it evaluates all of the pathways and meets current risk assessment criteria.	WP, Section 3.2	Disagree	OU1 addressed groundwater contamination and its associated pathways and is therefore not included in the OU3 RI/FS. The scope of the OU3 RI/FS is the identification of sources (DNAPL or otherwise) and the mitigation thereof. See key assumption number 1 in FSP, Section 2.2 and WP, Section 3.2.
MPCA I.8	Does protection of construction workers and utility workers apply only to the soil under the main NIROP building's footprint? If so does the Navy intend to add the former OU2 risk assessment to the risk assessment of OU3 in the OU3 Risk Assessment?	WP, Section 3.4	Agree	Yes, the Navy will include the conclusions from the OU2 risk assessment. This assumption is that the OU2 RI is complete and agreed upon by all parties. See WP, Section 5.3.1.3 and FSP, Section 2.2.
MPCA I.9	The Navy shall add an objective to evaluate whether or not DNAPL remedies are feasible for OU3.	WP, Section 3.4	Disagree	Not necessary since the second bullet covers this.
MPCA I.10	Then Navy shall re-evaluate this list of response objectives and remedial action alternatives during the RI after the magnitude and extent of soil and groundwater contamination is known.	WP, Section 3.4	Agree	This is a preliminary identification as the text already states. No change necessary.
MPCA I.11	It is premature to propose focusing the risk assessment evaluation. The focus of the Work Plan is characterization of the extent and magnitude of the contaminated areas and to gather data which can be utilized to estimate potential exposure concentration(s). The risk evaluation shall be conducted subsequent to the collection of this data.	WP, Section 4.1	Disagree	A discussion of Risk Assessment is needed to focus data collection efforts and is fundamental to the DQO process as discussed at the April 4 meeting.
MPCA I.12	The proposed utilization of the Environmental Protection Agency (EPA) Region IX's preliminary remediation goals (PRGs) is not acceptable for a variety of reasons including: volatilization and subsequent inhalation is not included in the soil PRGs and the exposure level of industrial workers is significantly lower than the exposure level for construction/utility workers. The risk evaluation, to be conducted in the next phase of the process, shall at a minimum utilize MPCA staff recommended exposure methodology and target risk levels. Another alternative may be to utilize MPCA staff generic soil reference values to assess the need for a formal risk assessment. The generic values could easily by modified to incorporate appropriate site specific information (e.g., area of contamination, soil moisture, etc.).	WP, Section 4.1	Disagree	The rationale for not accepting Region IX PRGs is not entirely valid. First, inhalation exposure is, in fact, considered in these PRGs. Additionally, USEPA Region V typically requests the use of USEPA Region IX PRGs as screening values in human health risk assessment. Also, given the widespread understanding that VOC contamination exists under the site, it is unlikely that subsurface intrusion would occur without proper health and safety measures. However, it is agreed that MPCA exposure methodology and target risk levels should be considered/evaluated for use in the risk assessment along with EPA guidance. Documents containing MPCA guidance will be evaluated to confirm whether the methods and values are appropriate for the planned investigation. Please forward the referenced methodology and MPCA staff generic soil reference values.

MPCA I.13	The construction/utility worker scenario is adequate to address current site exposure potential but it does not furnish information sufficient to determine the level of restrictions required. A Reasonable Maximum Exposure (RME) evaluation of an industrial worker shall be included in the future risk evaluation to assist in determining the level of land use restriction required. For example, if contaminant levels are below levels of health concern for construction/utility workers but greater than levels of health concern for industrial workers restrictions would be required to control access to contaminated soils. If, on the other hand, levels were below levels of concern for the industrial worker as well as the construction/utility worker all that may be required is a zoning restriction and a deed notification. (Note, other restrictions may be required as a result of ground water impacts.)	WP, Section 4.1	Disagree	Under the current and projected future use of the site, exposure to contaminated soil beneath the building is extremely unlikely for any receptor except the construction worker. Given the floor structure currently in place and anticipated to remain in place, direct contact exposure to soils underlying the building is not anticipated for the typical industrial worker at the facility. Moreover, the anticipated health and safety requirements for a construction worker, his/her exposure is also likely to be very limited. Any excavation is expected to be infrequent, of limited duration, and is unlikely to involve the same personnel over an extended time period (a 25 year working lifetime was assumed in the Work Plan, although subcontracted construction with varying workers is more likely). Information about previous construction activities are being gathered to determine historic frequency, duration, and worker involvement. Please note that the concern presented in MPCA I.13 is opposite the concern presented in MPCA I.12: MPCA I.12 states/implies, in summary, that the exposure level of the industrial worker is anticipated to be significantly lower than the exposure level anticipated for the construction worker. Therefore, by implication, the Region IX PRGs established for the industrial worker are inadequate for the risk assessment of the construction worker scenario. MPCA I.13 is concerned "...if contaminant levels are below levels of health concern for construction/utility workers but greater than levels of health concern for industrial workers...". This implies that exposure/risk to the industrial worker is greater than that for the construction worker.

MPCA I.14	a)The Work Plan shall be further modified such that this section addresses identification of potential exposure areas and includes calculations of representative exposure concentrations. See specific comments for further details. b) The selection of specific input factors (e.g., type of receptor exposed, incidental ingestion rate, etc.) shall be determined at a future date under MPCA staff guidance.	WP, Section 4.1	Disagree	a) The Work Plan reflects previous discussion regarding exposure assessment. The plan for exposure assessment had been to consider, at least initially, the entire Navy "footprint" of the building as the exposure area. This assumes that a construction worker performs excavations (of rather limited duration [e.g., 10 days]) throughout the building. A second plausible scenario would assume that a major construction job (perhaps 1 year in duration) occurs at a sizable location within the building. If distinct contaminant areas are identified as a result of the environmental sampling and analysis, those areas will be evaluated. Given that environmental sampling and analysis has yet to occur, the identification of contaminated areas (and the size of such areas) is not possible at this time. The calculation of the representative concentration will consider the EPA guidelines referenced by the reviewer. Because these guidelines do not cover all cases which may be encountered in the calculation of the representative concentration [e.g., the guidance does not specifically cover the undefined distribution], the Navy will review with the MPCA the specifics of the calculation of the representative concentration once data has been received, validated, and plotted for visual inspection. (Any time or area weighting strategies used to evaluate risk will be reviewed with the Navy at that time.) b) The selection of input factors and land use scenarios is not dependent on the availability of analytical data. Thus, input factors for the exposure assessment can be and should be established at the Work Plan stage of an RI. MPCA guidance will be reviewed to determine whether these factors are available from the State and are acceptable to the Navy. Exposure input factors will be based on EPA guidance, MPCA guidance, and professional judgment, and will be included in the Work Plan. Such factors will be used to determine PRGs, RBCs. PRGs/RBCs for a site are often used to guide environmental investigation (e.g., establish analytical detection limits needed for an investigation) and feasibility study efforts.
MPCA I.15	The risk evaluation shall also address the potential health impacts of non-containment of the groundwater plume, including the potential health impacts of the current plume as a source of contamination for deeper aquifers.	WP, Section 4.1	Disagree	See response to MPCA I.7.
MPCA I.16	If DNAPLs are found in OU3, the Navy shall add the following decision statement: "If DNAPLs exist in the saturated soils at concentrations that could pose a health risk to people drinking the water (under an unrestricted land use scenario that is in place for OU1), then consider the feasibility of implementing appropriate remedies including the existing groundwater pump and treatment system for OU1."	WP, Section 4.1	Disagree	See response to MPCA I.7.
MPCA I.17	If DNAPLs are found in OU3, the Navy shall develop additional decision rules for this decision statement and other work described in this section, e.g., appropriate modifications of the Field Sampling Plan, etc.	WP, Section 4.1	Disagree	DNAPLs are considered a chemical source and is addressed in the decision rule on page 4-9.

	The rationale for this modification is related to issues raised in the MPCA staff letter of August 30, 1995, i.e., accelerating the cleanup of DNAPLs, if technically feasible, may not only reduce cleanup costs but may also reduce risks to public health and the environment.			
MPCA I.18	Is it not reasonable to assume the East Plating Shop and NIROP main building have the same chemicals of potential concern (COPCs). No polychlorinated biphenyl (PCBs) and only one polyaromatic hydrocarbons (PAH) is listed. The Navy shall delete all narrative related to this false assumption.	WP, Section 4.1	Disagree	Assumption is not solely based on results from the East Plating Shop. Also based on OU1 and OU2. PCBs were not determined to be a COC in OU2. Does the MPCA have a specific list of cPAHs which have been included as COCs for OU2? If there are additional cPAHs, then they will be added. It is a reasonable assumption since it is known that materials used inside the plant were at times disposed of outside the plant (in OU2). Note that the text states on page 3 of Section 4 that the COPC list is not expected to be all inclusive, but is sufficient for preliminary planning purposes.
MPCA I.19	Navy shall discuss data collection as appropriate in this section.	WP, Section 4.1	Need clarification	Data needs are discussed on page 2 and 6 of 9. The data acquisition strategy is discussed in FSP, Section 2.
MPCA I.20	No discussion of the Data Quality Objectives process is included in this section. EPA QA/G-4 guidance shall be referenced with all steps reviewed for the data. The conclusions reached in this section do not follow from this guidance and shall therefore be rewritten. (See page two of QA/G-4 for the list of the steps that must be discussed in this section.) Only the five old DQO levels need be referenced for types of data that will be produced by the laboratory.	WP, Section 4.1	Disagree	EPA QA/G-4 is referenced. General consensus for the Work Plan Rationale was achieved during the April 7, 1996 meeting. The commentor's concerns are not clear and require further clarification. The data package that will be supplied by the laboratory is stated in the QAPP, Section 9.3.2.
MPCA I.21	The EPA 1992 Office of Solid Waste and Emergency Response guidance shall be utilized to calculated representative exposure concentrations. See attached guidance.	WP, Section 4.1, p.2, para. 2	Agree	The OSWER guidance is well known to Navy and Brown & Root Environmental risk assessment staff and will consulted in determining exposure concentrations. See response to MPCA I.14.
MPCA I.22	For the purposes of screening contaminants at the site, the 95 percent confidence interval for the mean is required as the upper cutoff, not a weighted average. The Navy shall rewrite this section accordingly.	WP, Section 4.1, p.2, para. 2	Disagree	See response to MPCA I.14.
MPCA I.23	The Navy shall remove discussion of EPA Region IX's PRGs. These PRGs are not acceptable as discussed above.	WP, Section 4.1, p.2, para. 3	Disagree	See response to MPCA I.12.
MPCA I.24	Use of EPA Region IX's PRGs will not be allowed. Note that many of the PRGs listed in this table may exceed the soil saturation level. Region IX guidance states that when the soil saturation level is lower than the calculated PRG the PRG should be set equal to the soil saturation level.	WP, Section 4.1, p.4, Table	Disagree	See response to MPCA I.12. It is agreed that the PRGs should not exceed the soil saturation level. The final list of PRGs will be reviewed and corrected as necessary.
MPCA I.25	The target risk levels utilized shall be a cumulative excess cancer risk of 1E-5, an individual hazard quotient of 0.2 for noncarcinogenic endpoints and a cumulative hazard index of 1 for similar noncarcinogenic endpoints.	WP, Section 4.1, p.4, para. 1 and p.5, paras. (1a) and (1b)	Disagree	PRGs for carcinogens will be established at the $1x10^{-6}$ cancer risk level. PRGs for noncarcinogens will be established at a HI=1.0. Target risk levels for decision statements will be established at 10^{-5} and HI=1 for cumulative carcinogens and noncarcinogenic risk respectively. The Navy requests MPCA provide a technical basis for the use of the hazard quotient of 0.2 for nancarcinogenic endpoint.
MPCA I.26	Given that containment of the groundwater plume may not be complete, the future risk evaluation shall include an evaluation of health impacts as a result of non-containment.	WP, Section 4.2	Disagree	See response to MPCA I.7.
MPCA I.27	The future risk evaluation shall also evaluate the potential impacts on deeper aquifers.	WP, Section 4.2	Disgree	See response to MPCA I.7.

MPCA I.28	The decision statement that an evaluation of alternatives will be made "...would result is a cost-beneficial reduction in the overall time for groundwater restoration" is presumptive. The MPCA staff and the Navy have discussed this at length. While the MPCA staff recognizes the validity of including a cost-benefit analysis in the selection of the remedy, the nine criteria in the feasibility study guidance already provides for this consideration. However, cost-benefit is only one of the criteria (one of the balancing criteria and not a threshold criteria) needed to properly evaluate the list of potential remedies. Thus, Navy shall remove the term "cost-beneficial" from this sentence.	WP, Section 4.2, p.6, para. 4	Agree	The decision statement will be changed to "...result in a beneficial reduction in the overall time for groundwater restoration as measured by the nine criterion."
MPCA I.29	The preference hierarchy for groundwater criteria is the Health Risk Levels (HRLs), Health Based Values (HBVs) and lastly the Maximum Contaminant Levels (MCLs). The HRLs and HBVs are risk-based concentrations. MCLs are not strictly health based values, particularly for carcinogens, but incorporate cost and level of technical feasibility.	WP, Section 4.2, p.7, paras. 5 and 9	Disagree	The State HRLs and HBVs, which are risk-based, will be considered/evaluated as benchmarks in the development of action levels for the protection of groundwater. However, it should be noted that the ROD for OU1 (groundwater evaluation) established MCLs as the critical levels. A comparison will be made of the HRLs, HBVs, and the MCLs as applied to the selected contaminants to determine which would be the most conservative criteria. (B&RE to prepare table comparing vales to see impact of MCLs versus HRLs versus HBVs.)
MPCA I.30	Delete the sections pertaining to the discussion of the MPCA soil leaching number. The MPCA staff is re-evaluating the approach to evaluating the risk to groundwater through leaching processes, and has adopted an alternative approach that relies largely on the SESOIL modeling software. The MPCA staff welcomes suggestions regarding the use of other modeling approaches and is open to re-evaluating the leaching numbers set for the OU2 soils if the Navy wishes to revisit this matter. The calculation of leaching numbers shall be deferred until after site data is collected and reviewed. The Work Plan may, however, refer to this modification in place of the discussion that currently appears on page 8.	WP, Section 4.2, p.8	Agree	Alternative modeling approaches will be discussed. ECTran will be proposed.
MPCA I.31	Section IV.2.a of Attachment A to the FFA refers to a process to identify hazardous substances, pollutants or contaminants. While the studies referenced in this section are directed to this end, the characterization is not yet complete. (See MPCA staff's response to Section 5.2.3). A complete source investigation may find additional hazardous substances, pollutants or contaminants. The Navy shall modify this section accordingly.	WP, Section 5.2.2	Agree	Text will be modified. Any outstanding AOCs will be included in the Final Work Plan. The RI will finalize the characterization of site contamination.
MPCA I.32	As documented in the Hazardous Waste Storage Facility (RCRA) Permit for the NIROP facility, EPA Identification Number MN3 170 022 914, dated March 1, 1996, closed solid waste management units (SWMUs) exist on both the Navy portion and the United Defense L.P. (UDLP) portion of the main NIROP building (see Item 30, "Process distillation systems (closed)" on page 26 and Item 10, "Process distillation systems (closed)," on page 28 of the permit) that may pose a threat to public health and the environment and/or may be contributing to soil and groundwater contamination under the main NIROP building. There is no information in the Work Plan to indicate that these SWMUs were considered as areas of concern (AOCs) in the Work Plan (or in the site evaluation report). Therefore, the Navy shall modify the Work Plan to include the closed solid waste management units identified above as areas of concern (AOCs) or document that they were considered in developing the list of AOCs. If these SWMUs were considered and deleted from the list of AOCs, the Navy shall indicate why they were deleted.	WP, Section 5.2.3	Disagree	The Navy has taken reasonable efforts to identify operations that could have contributed to releases beneath the building. The Navy recognizes that there is some degree of uncertainty, however the proposed sampling strategy is expected to provide aerial coverage of the building in order to characterize any contamination.

MPCA I.33	As the Navy is aware, the MPCA staff has requested and the Navy has rejected investigating under the UDLP portion of the main NIROP building in the Navy's letter of December 20, 1995 responding to the MPCA staff letter of November 7, 1995; at the NIROP Site technical meeting of January 11, 1996; at the Restoration Advisory board meeting of January 11, 1996; and in the Navy's May 14, 1996, letter responding to the MPCA staff letter of March 28, 1996. The MPCA staff has reviewed the rationale in all of these responses and find that the responses are not in compliance with the FFA; therefore, the Navy shall also investigate under the UDLP portion of the main NIROP building and shall modify the Work Plan accordingly. Please see Attachment III for more specifics about the requested investigation.	WP, Section 5.2.3	Disagree	The Navy response was provided in a letter to MPCA dated 8/16/96.
MPCA I.34	With respect to the sewer lines, the discussion with Drs. Terry Hazen and Brian Looney from Savannah River site revealed that caustic solutions may have dissolved clay tile sewer line segments if they were used at the site and disposed through clay sewers. The disposal of caustic solutions in the main NIROP plant sewers shall be investigated to determine if such solutions were used and, if so, which sewers were used for disposal.	WP, Section 5.2.3	Disagree	Annual inspections do not indicate exfiltration issues with sewer systems. The sampling strategy is designed to provide areal coverage of the building to characterize any contamination.
MPCA I.35	While it is true that the OU2 RI was completed before OU2 and OU3 were combined, the Navy is currently completing a barrel removal project in the "North 40" area. The Navy shall report the results of this investigation and cleanup in the OU3 RI Report. The Navy shall change this section accordingly.	WP, Section 5.2.5	Agree	No comment.
MPCA I.36	The staff from the Savannah River site has indicated that it is necessary to use high resolution, vertical distribution technologies in the investigation of DNAPL releases. The Navy shall use technology consistent with recommendations made by Dr. Bryan Looney (at the Savannah River Site consultation at the offices of the MPCA) to obtain vertically discrete samples at every lithologic change. The technology shall be consistent with field screening methods to evaluate the vertical distribution of contaminated soil during drilling to supplement the analytical sampling regime. Field screening methods shall be used to take measurements at every lithologic change. Head space readings with gas chromatograph analysis is recommended. In addition, the Navy shall test representative soil samples for total organic carbon (TOC) to evaluate the availability of carbon sources for bioremediation options.	WP, Section 5.2.5	Agree	No changes will be made to this section as the referenced material is not applicable. However, the subject matter will be addressed in Section 7.3 of the FSP. Samples will be collected at every lithologic change and field screened with a FID. Representative soils samples will be analyzed for TOC.
MPCA I.37	In this section the Navy indicates that water from storm sewers discharge into the Mississippi River. This narrative contradicts statements made by the Navy and by Tim Ruda of UDLP that storm water no longer discharges into the Mississippi Rive. The Navy shall clarify this matter by documenting the status of all storm sewers in OU3 in the OU3 RI Report. The Navy shall change this section accordingly.	WP, Section 5.2.6	Need clarification	No comment
MPCA I.38	The Navy shall postpone a final decision on the installation of monitoring wells in the bedrock aquifer until the results of Phase II of the hydrologic investigation are evaluated by the MPCA staff. The Minnesota Department of Health well code includes construction requirements that are effective in preventing contaminant transport between aquifers.	WP, Section 5.3.1.1	Agree	Monitoring of existing bedrock wells has not shown the exceedance of any criteria. Decision, however, will be deferred.
MPCA I.39	The Navy shall measure dissolved oxygen and oxidation/reduction in groundwater to determine redox conditions as was recommended in the Savannah River site consultation.	WP, Section 5.3.1.1	Agree	Geochemistry parameters will be added.

MPCA I.40	The Navy shall add to the list of areas of concern (AOCs) the sump below the vertical boring machine located at 26 1/2 Southwest and Seventh Avenue in the main NIROP building. On July 17, 1996, Doug Hildre of United Defense LP (UDLP) informed David Douglas that a oily materials had been disposed of via a formed hole at the bottom of this sump. According to Tim Ruda of UDLP, there are three similar sumps below similar machines to the east of this sump. These and all other similar sumps shall be added to the list of AOCs.	WP, Section 5.3.1.2	Agree	United Defense states that they did not intentionally dispose oily materials throughout the sump. Any discharge would be as a result of transient leakage over time. This sump will be added as an AOC. United Defense has stated, after checking drawings and field verification, that the three other machines do not have sumps. This does not affect the proposed sampling strategy.
MPCA I.41	While Part V, Task B of Attachment A of the FFA states that "[f]ollowing finalization of the RI Report and prior to completion of an FS Report, the Navy shall develop and submit to the U.S. EPA and MPCA any appropriate Treatability Studies," in order to accelerate the FS and reduce redundant field sampling and related work, the Navy shall identify any treatability studies it has decided to conduct at the present time in the Work Plan.	WP, Section 5.3.2.2	Disagree	No treatability studies are planned at the present time. However, parameters will be collected to evaluate intrinsic bioremediation.
MPCA I.42	During the RI, the Navy shall collect all relevant site data that the Navy intends to use in treatability studies it currently intends to conduct, as opposed to recollecting this data after the RI. This is particularly important for carcinogenic polyaromatic hydrocarbons (cPAHs) in soils in what was formerly known as "OU2." The Navy is on record as stating that cPAHs can be naturally degraded, but has provided no evidence to support this position to date. If the Navy currently believes that cPAHs in the soils of "OU2" can be naturally degraded, the Navy shall begin this treatability study as soon as possible and no later than the beginning of the OU3 RI.	WP, Section 5.3.2.2	Disagree	No treatabilties studies are planned at the present time.
MPCA I.43	The Navy shall begin collecting site data to evaluate bioremediation of trichloroethylene as an OU3 remedy during the RI as this remedy is highly likely to be evaluated during the FS. The MPCA staff acknowledges that the Navy is partially fulfilling this requirement in the Work Plan. As stated in the MPCA staff letter to the Navy, dated April 18, 1996, "[f]uture claims of the intrinsic bioremediation of site contaminants shall be supported by site-specific data." The MPCA staff commits to working with the Navy to plan for treatability studies at the present time. The Navy shall modify this section accordingly.	WP, Section 5.3.2.2	Agree	Information required to evaluate intrinsic biodegredation, as specified by the USGS, will be added.
MPCA I.44	The schedule is not in compliance with the FFA. The Navy shall rewrite the schedule to comply with section XXXII of the FFA, beginning with the approval of the RI/FS Work Plan and its associated documents and concluding with the Record of Decision. For instance, the schedule shall indicate that the RI Report and its associated documents are due 365 days from the date of approval of the RI/FS Work Plan and its associated documents. Once the RI is underway, the MPCA staff is open to consideration of schedule revisions under the provisions of the FFA.	WP, Section 6.0	Agree	Will review schedule to ensure compliance with FFA.
MPCA I.45	No provision is made for the inclusion of treatability studies. This figure shall be updated in compliance with modifications regarding treatability studies cited above.	WP, Figure 6-1	Disagree	No treatability studies are planned at this point. The schedule will be revised if treatability studies are identified.
MPCA I.46	The State Project Manager (based on Section 7.2, presumably the Navy is referring to David Douglas) does not direct B&R Environmental on this or any other project nor is there any direct contractual relationship between David Douglas and any contractor of the Navy. This section shall be rewritten accordingly.	WP, Figure 7-1	Agree	No comment.
MPCA I.47	The FFA describes the roles and responsibilities of the project manager. The Navy may reiterate them in the Work Plan if the Navy believes that this would be helpful to the Navy. David Douglas has no direct responsibilities for the conduct of the RI/FS as implied in this section, but is willing to help the Navy in any way possible for work described in this Work Plan. Tom Bloom has no oversight role with regard to David Douglas. The Navy shall rewrite this section accordingly.	WP, Section 7.2	Agree	No comment.

MPCA I.48	The Navy shall describe the relationship between Scott Glass and those persons that Mr. Glass oversees for this project in this or another section.	WP, Section 7.2	Agree	No comment
MPCA I.49	The laboratory shall be identified in this section with reference to their Quality Assurance Manual.	WP, Section 7.4	Agree	The laboratory will be identified in this section. The laboratory Quality Assurance Manual will be provided under separate cover.
MPCA I.50	The Navy shall list the hydrogeologist for MPCA and Brown and Root on the chart.	WP, Section 7.4	Need clarification	MPCA requested to provide marked up chart.
MPCA I.51	The Navy shall include information on the data validator, audits, communication between the different parties involved on site, and who has ultimate control on the site.	WP, Section 7.4	Disagree	Information is already provided. See WP, Sections 7.1, 7.3 and 7.5.
MPCA II.1 (2)	The "Recommendations" section of the "Work Plan Addendum to Revision B Morrison Knudson Corporation, dated February 21, 1996, states that "...the Navy, the Minnesota Pollution Control Agency (MPCA) staff and the U.S. Environmental Protection Agency (U.E. EPA) shall review the information gathered in the field and determine how to proceed with investigation of the remaining small anomalies." The Navy shall indicate how this matter will be addressed in the Work Plan.	Volume II of IV, Field Sampling Plan (FSP), Section 2.2, Item 2	Agree	The North 40 Barrel Removal Project report is not yet available. The report conclusions will be considered in the Work Plan.
MPCA II.2	In the recently completed North 40 Barrel Removal Project, the Navy excavated nine primary and five secondary anomalies. Although drums were removed form several primary anomalies, the drums of highest concern were found outside of the perimeter of the primary anomaly A-3. The reason for the expanded excavation of A-3 was due to stained soils and the presence of other drums within the excavation zone. The rationale for selecting the primary vs. secondary anomalies was the strength of the electromagnetic signal. In retrospect, this screening strategy may or may not have been the most appropriate one. The Navy shall address this concern in the North 40 Barrel Removal Project report and in the Work Plan.	FSP, Section 2.2, Item 2	Agree	The North 40 Barrel Removal Project report is not yet available. The report conclusions will be considered in the Work Plan.
MPCA II.3	The MPCA staff does not believe that groundwater contamination in the North 40 can be sufficiently characterized with existing monitoring wells. In addition, it is difficult to determine if the United States Geological Survey (USGS) seismic study will be sufficient to evaluate contaminants in the saturated zone outside the building. Moreover, the MPCA staff has not received any of the final results of the seismic test. Furthermore, the soil sampling results from the North 40 barrel removal action excavations are not available.	FSP, Section 2.2, Item 3, p. 5	Disagree	The Navy believes that groundwater contamination in the North 40 is sufficiently characterized by the 19 existing monitoring wells (8 shallow, 3 intermediate, 6 deep and 2 bedrock) located in the North 40.
MPCA II.4	The MPCA staff is concerned about potential contamination in the saturated zone in the North 40 because capture of intermediate and deep groundwater is not achieved with the present groundwater system. Groundwater flow from this area is to the west towards the Mississippi River. A monitoring well gap of over 1,000 feet exists along the compliance boundary downgradient of the North 40. Therefore, to address the above-cited uncertainties, in the Work Plan, the Navy shall propose installation of two additional monitoring well nests along the western compliance boundary downgradient of the North 40.	FSP, Section 2.2, Item 3, p. 5	Disagree	The final Evaluation of Groundwater Containment System Effectiveness Report dated July 1996 states that capture of deep groundwater has been achieved (99% capture overall) and does not recommend the addition of monitoring wells. The Navy believes groundwater contamination has been adequately characterized in this area.
MPCA II.5	Because of the lack of capture in the intermediate and deep zones in the North 40 and under the northwestern portion of the building it is important to characterize potential source areas in this portion of the building. The Navy shall give this area priority in the investigation of potential source areas in the Work Plan.	FSP, Section 2.2, Item 3, p. 5	Disagree	As stated above, capture in the deep zone has been achieved. In the intermediate zone, where capture is not complete, the TCE concentrations are approximately at or below the acceptable levels of 5 ppb and they have been decreasing over time. This area has not received lessor or greater attention than any other area.

MPCA II.6	The Navy shall investigate and remediate, where appropriate, all of the solid waste management units (SWMUs) listed in Part IX, "Corrective Action For Solid Waste Management Units," of the Naval Industrial Ordnance Plant (NIROP) Hazardous Waste Storage Facility Permit, MN3 170 022 914, dated March 1, 1996, that have released and have threatened to release hazardous substances, pollutants, or contaminants into the soil or groundwater of the NIROP Site. The list of SWMUs to be investigated shall include those listed on page 28, attributable to United Defense L.P. These areas shall be listed as Areas of Concern (AOCs) in the Operable Unit 3 RI/FS Work Plan.	FSP, Section 2.2, Item 5, p. 5	Agree	We are comparing the list to currently defined AOCs. SWMUs on the United Defense property will not be included as AOCs. Need for additional sampling will be based on analytical results and characterization from the currently proposed investigation.
MPCA II.7	The MPCA staff is uncertain that the field test proposed for identifying the presence of dense nonaqueous phase liquids (DNAPLs) (>100 ppm flame ionization detection and a visual inspection with ultraviolet light) is appropriate. The Navy shall provide documentation of the method and Standard Operating Procedures (SOPs) for this method.	FSP, Section 2.2, Item 9, p. 6	Disagree	The text will be revised such that field screen samples are collected at each change in lithology. A reference will be provided qualifying the use of an ultraviolet light to check for DNAPL.
MPCA II.8	The current direct-push sample collection calls for a soil sample at two feet, a sample at 12 feet and a groundwater sample five feet into the water table. For the investigation of DNAPL distribution, the first confining layer encountered is important in determining where DNAPL may accumulate. The Navy shall use the direct-push method to determine the depth of the first confining unit and to collect a sample at that interval to determine if DNAPL is being confined by this upper confining layer. The distribution of the upper confining layer can be determined utilizing this sample.	FSP, Section 2.3, p. 7	Agree	Agree to the extent that the confining layer is within 5 feet of the water table, which is the extent of the DPT investigation.
MPCA II.9	The Navy has indicated in past discussions that all drywells would be sampled. The table, however, specifies that the drywell AOC 45 is not to be sampled. The Navy shall sample this AOC in keeping with this understanding.	FSP, Section 2.3, Table 2-1	Disagree	This was only used as a starting point in an iterative process. Rationale for not selecting AOC 45 is explained in text and table.
MPCA II.10	The table is inconsistent with the map and Table 2-2, which indicate that AOC 53 shall be sampled. The Navy shall modify the table accordingly.	FSP, Section 2.3, Table 2-1	Agree	Table and drawing are incorrect. AOC 53 will not be sampled.
MPCA II.11	The areas in the building around AOCs 23 and 16 will be left uncharacterized as part of the sampling plan. The Navy shall include one sampling point in this area as well.	FSP, Section 2.3, Table 2-1	Disagree	Need for additional sampling will be based on analytical results and characterization from the currently proposed investigation.
MPCA II.12	Although the sampling plan appears to give adequate coverage for the Phase I effort, the Navy shall ensure that the AOCs presented in the Work Plan reflect the locations identified in the interviews with employees. Of particular interest is the large solvent tanks mentioned as present in the area of 21st Avenue and Broadway, the paint shop area, and the area at location 10E to Sixth and Fifth Avenues. Also the reference to the current wet wells and sump at 6NW Sixth Avenue and 12 NE Sixth Avenue. If the current AOCs do not specifically relate to these areas. the Navy shall add these areas to the sampling plan.	FSP, Section 2.3, Table 2-1	Agree	Will compare and identify on drawing. Need for additional sampling will be based on analytical results and characterization from the currently proposed investigation.
MPCA II.13	The statement that alternative samples would be taken downgradient of areas where high concentrations were detected is confusing. Taking samples at upgradient locations would seem more informative so that the source area of the contamination could be narrowed. The Navy shall re-evaluate the rationale for taking alternative samples downgradient of areas where high concentration are detected.	FSP, Section 2.3, p. 16, para. 3	Disagree	Will clarify text. Supplementary points are intended to provide data on extent from source point.
MPCA II.14	The reference to AOC 33 is confusing, since it is not close to locations on 21st Avenue.	FSP, Section 2.3, p. 16	Agree	Text will be corrected to 14th rather than 21st Avenue.
MPCA II.15	This paragraph states, "[a]s data return from the analytical laboratory, the utility of collecting samples at the supplementary sampling locations will be evaluated by the FOL [Field Operations Leader], the B&R Environmental Task Order Manager, and if appropriate the MPCA field inspector, the Navy, and the U.S. EPA." The Navy shall identify the conditions that would result in the exclusions of the MPCA, Navy and the EPA staff from this decision making process.	FSP, Section 2.3, p. 16	Agree	Text will be revised to include all parties in the decision making process.

MPCA II.16	AOC 46 is missing from the table. The Navy shall add this AOC to the table. Also the Navy shall sample for nitrates/nitrites/ammonia, methane, chloride, and phosphorous in each sample. The MPCA staff can furnish EPA's methodology for this analysis if required. The Navy shall amend the list on page 26 accordingly.	FSP, Section 2.5, Table 2-2	Agree	AOC 46 will be added to the Table and drawing. Analysis for parameters to evaluate bioremediation will be included.
MPCA II.17	The Navy shall present the Phase I preliminary findings to the MPCA staff at a meeting at the MPCA offices before beginning Phase II. The information collected may be valuable in determining the depths and locations of monitoring well nests. A better understanding of the potential source areas and the geologic controls on DNAPL accumulation and migration should be better understood after the Phase I work is complete. Adjustments may be made in the well locations and depths based on Phase I information. The MPCA staff shall review and approve the preliminary Phase I findings before installation of the well nest locations.	FSP, Section 2.4, p. 17	Disagree	The Phase II well cluster locations will be determined by accessibility of a drill rig. Although the temporary well points may indicate a hot spot, it may be highly likely that a permanent well could not be installed due to physical structures within the building. The project schedule could be accelerated by performing the direct push and rotosonic work simultaneously.
MPCA II.18	In addition there are no shallow monitoring wells proposed in the plan. The highest groundwater concentrations have been observed in the shallow plume maps. The Navy shall install permanent monitoring wells to monitor the shallow zone if the Phase I work indicates there is significant contamination located in shallow groundwater. These wells could become part of the monitoring network to evaluate the effectiveness of the remedy.	FSP, Section 2.4, p. 17	Agree	The temporary well points will adequately define the groundwater contamination beneath the building. However, a permanent shallow monitoring well will be installed at each intermediate/deep well cluster. The location of these clusters is based upon accessibility with a drill rig. A rig will not be able to get to the majority of the temporary well locations. The six permanent well clusters (shallow, intermediate, deep wells) will be sufficient in determining the groundwater quality beneath the building.
MPCA II.19	The Navy shall not use gasoline and diesel range organics (GRO/DRO) analyses at these methods are not useful tests with which to evaluate risk from petroleum contaminated soil and or groundwater. It is more useful to evaluate petroleum contamination for gasoline by using a BTEX type of analysis.	FSP, Section 2.5, Table 2-3	Agree	GRO/DRO analyses will be deleted.
MPCA II.20	The Navy shall identify who maintains the Master Site Logbook and how the logbooks are traced and maintained.	FSP, Section 5.0	Agree	No comment.
MPCA II.21	The laboratory shall record the temperature of the cooler upon arrival at the laboratory. Chemical preservation of VOAs can be checked after the analyses have been done.	FSP, Section 5.2	Agree	(Note: Believe comments MPCA II.21 through 26 are referring to Section 5.2 of the QAPP, not the FSP.) The second and third sentences of Section 5.2 of the QAPP state that the laboratory shall measure and record the temperature of the cooler upon receipt. A statement will be added to Section 5.2 to indicate that the pH of VOA samples will be checked after analysis.
MPCA II.22	The Navy shall use EPA sample check-in sheet for samples.	FSP, Section 5.2	Need clarification	Is this comment referring to the CLP Form DC-1? If so this form could be used by the laboratory.
MPCA II.23	The standard operating procedure (SOP) "Storage and Security SOP-004" shall be resubmitted as the copy is not readable.	FSP, Section 5.2	Agree	No comment.
MPCA II.24	The Navy shall define the Ceimic system. Is this a LIMS or a paper tracking system?	FSP, APP. B, SOP005	Agree	The laboratory uses a PC-based data management system. This will be stated in Section 5.2 of the QAPP.
MPCA II.25	The Navy shall include reference to instrument set up, include a Quality Assurance Section, and include information regarding spikes and duplicates. In addition, the surrogate recovery window is too large. The Navy shall rewrite this SOP or use the Wisconsin GRO method.	FSP, APP. B, SOP 8015 GRO	Disagree	GRO analysis will not be performed per MPCA's request in comment above.
MPCA II.26	The Navy shall rewrite this SOP to indicate that large losses of volatiles can occur if a sonication horn is used for the gas range compounds. In addition, Section 12.5 of the DRO method specifies that the CCVS is injection number 16, not 10.	FSP, APP. B, SOP 8015B DRO	Disagree	DRO analysis will not be performed per MPCA's request in comment above.

MPCA III.1 (3)	The Navy shall discuss safety monitoring.	Volume III of IV, Quality Assurance Project Plan (QAPP), Section 1.4.2.1	Agree	The second sentence in the second paragraph on page 1-6 of the QAPP, regarding field measurements of total volatile organics using a PID, will be modified as follows: "These measurements will be used to determine appropriate subsurface sample horizons to be submitted for laboratory analysis and in safety monitoring to determine breathing zone conditions for site workers."
MPCA III.2	The Navy shall add data quality objective (DQO) information here.	QAPP, Section 1.4.3.1	Disagree	The DQO information provided in the Work Plan and Field Sampling Plan will be referenced.
MPCA III.3	The reference to Section 4.1 of the Work Plan is incorrect. The Navy shall refer to the correct section in the text. No sample network design is given in Section 4.1 of the Work Plan. The Navy shall refer to the correct section.	QAPP, Section 1.5	Agree	The reference to the Work Plan will be removed. Only Section 2 of the FSP will be referenced here.
MPCA III.4	The Navy shall identify the method being used to generate these method detection limits and give the reporting limits that meet criteria established by Minnesota Pollution Control Agency (MPCA).	QAPP, Tables 1-1 - 1-3	Disagree	The method used to generate MDLs is discussed in Section 7.2.1 of the QAPP. A sentence will be added to the end of Section 1.4.2.2 (p. 1-6 of QAPP) which references Section 7.2.1. The FFA/OU1 ROD specifies the use of MCLs, therefore the Navy proposes the use of MCLs for consistency. A table showing a comparison of the MCLs and the proposed reporting limits for the chemicals of potential concern listed on page 3 of Section 4 in the Work Plan will be added. In addition, a table showing a comparison of the modified Region IX PRGs in the soils and the proposed reporting limits for soils will be added.
MPCA III.5	The contract required quality limits (CRQLs) listed do not meet many of the limits required.	QAPP, Tables 1-1 - 1-3	Disagree	CRQL represents Contract Required Quantitation Limits not "Quality Limits". As discussed in the previous comment response, the MCLs will serve as the criteria. although the CRQLs for 5 of the 14 COPCs exceed the MCL, in each case the laboratory's MDL is less than the MCL. Based on CLP reporting protocol, values less than the CRQL but greater than the MDL would be reported as estimated values.
MPCA III.6	The Navy may drop the methanotrophic bacteria quantification as per discussions with the Savannah River site staff.	QAPP, Tables 1-1 - 1-3	Agree	Based on information obtained during meeting with Savannah River site representatives.

MPCA III.7	This section refers to Section 7.0 of the Work Plan. The Navy shall identify all subcontractors. The laboratory shall submit a staffing chart. (This would be in their Quality Assurance Manual (QAM), which must be submitted and referenced.) The Navy shall identify who is in charge of overall quality assurance. The Brown and Root chemistry section discussed later in the text is not shown on this chart. Is J. Samchuck in charge of this section?	QAPP, Section 2.0	Agree	The organization chart in Section 7.0 of the Work Plan will be revised to indicate subcontractors, where possible. (Some may not be known at this time.) A copy of the laboratory's Quality Assurance Plan will be provided to MPCA under separate cover. However, the laboratory Quality Assurance Plan will not be included as an attachment to the QAPP and will not be referenced in the QAPP since this would be in conflict with U.S. EPA Region V requirements for preparing a QAPP. The B&R Environmental Quality Assurance Manager (QAM) is responsible for overall quality assurance. A statement will be added to Section 7.3 of the Work Plan to clarify this. The B&R Environmental Chemistry Department is represented on the organization chart as chemists under the support staff heading. J. Samchuck is the Data Validation Coordinator and as currently shown on the organization chart.
MPCA III.8	The duplicate rate and MS/MSD rate shall be a ten percent effort (regardless of the CLP methods, ten percent shall be used).	QAPP, Section 3.0	Disagree	A duplicate and MS/MSD frequency of 10% is not necessary to meet the data quality objectives of this project. A frequency of 20% meets all EPA and CLP requirements and will provide data of sufficient quality to meet the project objectives. It is assumed that duplicate, as it is used in this comment, refers to laboratory duplicates, not field duplicates which are proposed to be collected at a 10% frequency.
MPCA III.9	The Navy shall identify the limits for the relative percent difference (RPD) for the SOPs.	QAPP, Section 3.0	Disagree	The limits for RPD are provided in Tables 3-1 through 3-4 of the QAPP.
MPCA III.10	Discussion regarding method selection shall be included in Section 7.0 of the QAPP.	QAPP, Section 3.0	Disagree	Discussion regarding method selection is provided in the last two paragraphs on page 7-1 and the first paragraph on page 7-2 of the QAPP.
MPCA III.11	Laboratory Control Samples (LCS) for mercury shall also be done.	QAPP, Section 3.8	Agree	Although not required by CLP protocol, LCS analysis for mercury will be performed. Table 3-8 will be revised accordingly.
MPCA III.12	The accuracy window for DRO of 5 - 180 percent is unacceptably wide, as is 19 - 146 percent and 10 - 126 percent referenced in the TPH table. These limits shall be changed to a maximum range of 50 - 150 percent.	QAPP, Table 3-9	Disagree	GRO/DRO analysis will not be performed per MPCA's request in comment above.
MPCA III.13	The Navy shall supply the completeness equation or reference it. The completeness of data will be reported on a quarterly/annual basis.	QAPP, Section 3.3.1	Agree	The references to the completeness equation will be removed from Section 3.3.2 and 3.3.3 and added to Section 3.3.1. It is anticipated that all OU3 RI samples will be collected within a four-month period. Therefore, completeness will be calculated for the project as a whole.
MPCA III.14	One hundred percent completeness of field data is not realistic. Broken samples or overfilled samples will lower the completeness percentage. The Navy shall rewrite this section accordingly.	QAPP, Section 3.3.2	Agree	The field data completeness goal will be changed to greater than 90%.

MPCA III.15	Are samples to be homogenized? Which ones? The Navy shall fully describe the SOP for this process.	QAPP, Section 3.6	Agree	The third paragraph in Section 3.6 of the QAPP indicates that field duplicates, with the exception of VOA samples, are homogenized. The third paragraph on page 2 of Section 8 indicates that laboratory duplicates and matrix spike duplicates, with the exception of VOA samples are homogenized. The actual process for homogenization be provided in FSP.
MPCA III.16	On page 19, the Navy shall specify that samplers must take triple volume for MS/MSD samples for all organic parameters.	QAPP, Section 3.6	Agree	The text will be changed to state that aqueous MS/MSD samples must be collected at triple the volume for VOCs and extractable organics.
MPCA III.17	The Navy shall select and identify a biological laboratory.	QAPP, Section 7.0	Disagree	Methanotropic bacteria quantification will not be performed per MPCA's statement in comment above.
MPCA III.18	With the use of CLP methods, the reporting limits must be adjusted to meet requirements of the MPCA.	QAPP, Section 7.0	Disagree	See response to MPCA III.4 and 5.
MPCA III.19	The Navy shall include the calibration procedure for the Sensidyne flame ionization detector (FID).	QAPP, Section 7.0	Disagree	Calibration of instruments, as noted in Section 7.1 of the QAPP, is discussed in Section 6 of the QAPP. Section 6.1 of the QAPP specifically addresses field instrument calibration and refers to Section 9.1 (Field Instrument Calibration) of the FSP. Section 9.1 of the FSP provides an overview of field calibration procedures and refers to SOP ME-13 (in an appendix to the FSP) for specific details regarding calibration of the FID.
MPCA III.20	The Navy shall specify the requirements of the field QC (e.g., relative percent difference (RPD) allowable for field duplicates, duplicate pH readings, etc.). The Navy shall conduct field audits and management review of field books and modify this section accordingly.	QAPP, Section 8.0	Agree	The following sentence will be added to Section 8.1: "Quality Control limits for field-related Quality Control checks were provided in Section 3.0 of this QAPP." Field audits and management review of field books is discussed in Section 10.0 of the QAPP.
MPCA III.21	The Navy shall submit the Ceimic corporation QAM and reference it for laboratory internal quality control, define control charting, performance evaluation samples, internal blind samples, training, standard verification, solvent testing, laboratory water purity checks, reagent storage, etc.. This includes anything a laboratory does beyond a method QA.	QAPP, Section 8.2	Agree	As noted previously, inclusion of the laboratory QA Plan as part of the QAPP conflicts with U.S. EPA Region V requirements. A copy of Ceimic's QA Plan will be provided to MPCA under separate cover.
MPCA III.22	What is meant by "[n]o manipulation of these results for reporting purposes will be necessary once the results are received by the laboratory"?	QAPP, Section 9.1.2	Agree	The statement in question was meant to indicate that results will be used as received by the laboratory. The sentence will be re-written as such: "Analytical results will be presented in summary tables in the RI Report. these results will be reported as received by the laboratory with the possible exception of the elimination of false positives as a result of data validation (as discussed in Section 9.2)."

MPCA III.23	The Navy shall explain the uses of the "upper 95 percent confidence limits on the geometric/arithmetic mean". The data being discussed are duplicates; entire data sets are required for statistical manipulations.	QAPP, Section 9.1.2	Agree	Upper 95% confidence levels are descriptive statistical values. Based on the analytical data, these values may be calculated and reported in summary tables in the RI Report to be used in describing the nature and extent of contamination as well as in risk assessment. The mention of these levels in the bulleted items on page 3 of Section 9 was not meant to indicate that upper 95% confidence levels are associated with duplicates. The bulleted items were meant to introduce the text on pages 8 and 9 of Section 9 which provides further detail regarding the calculation of averages for field duplicates and both types of upper 95% confidence levels. The text will be more clearly written and will indicate that these statistics may be used for purposes other than risk assessment.
MPCA III.24	The second equation on page 4 does not make sense; the third and fourth equations are skewed low; and the terms of the fourth equation are not internally consistent (if the detection limit/2>reported value).	QAPP, Section 9.1.2	Agree	These "equations" indicate the methods to be used in reporting results for field duplicates in the summary tables within the RI Report. (As noted in the text, the individual result for both samples will be included in an Appendix to the RI Report.) The first equation indicates that, when both samples have positive results, the average reported will be calculated as the arithmetic mean. However, there may be instances when the result for one or both samples is a nondetect. As noted in the text, the typical procedure in the handling of nondetects in calculations is to use one-half the detection limit as the result for the nondetect. The next three equations provide calculations for the three possible instances. The second equation shows the calculation for two samples which are both nondetects. The average of one-half of each detection limit would be the sum of the detection limits divided by 4. The equation will be revised, as follows, so it will be more clear: Average = [(Original Dectection Limit/2) + (Duplicate Detection Limit/2)]/2 For further clarification of the third and fourth equations, it should be noted that it is possible that one-half the detection limit of one sample may be greater than a positive result for its duplicate sample. (For example, if Sample A has a positive result of 2 ug/L and the duplicate of Sample A is a nondetect with a detection limit of 10 ug/L, one-half the detection limit of the duplicate (5 ug/L) would be greater than the positive result reported for Sample A.)
MPCA III.25	The Navy shall remove the two equations on page 5 used for risk assessment because these do not belong in this section of the QAPP. Furthermore, this entire discussion must be reviewed by a qualified risk assessor (or scientist who understands what the equations are used for) and rewritten in a document dealing strictly with risk assessment.	QAPP, Section 9.1.2	Disagree	The text does currently state that the calculations of upper 95% confidence limit would be used only for risk assessment purposes. This, however, is inaccurate. Based on the analytical data collected, these descriptive statistics may also be used to summarize data within the text of the RI Report to evaluate the nature and extent of contamination. The text will be revised to clarify this.
MPCA III.26	The Navy shall describe the internal audits done by "[a] US Navy Contractor."	QAPP, Section 10.0	Agree	This information will be provided to the MPCA under separate cover.

MPCA III.27	The Navy shall submit the audit checklist.	QAPP, Section 10.1.1	Agree	The field audit checklist is currently in a state of revision. The checklist will be submitted upon completion.
MPCA III.28	The Navy shall define the terms, "formal quality notices" and "docketing protocol."	QAPP, Section 10.1.3	Agree	Upon re-evaluation, it has been determined that the terms "docketing protocol" and "Quality Notices" were inappropriately used. The second, fourth, and sixth bulleted items on page 3 of Section 10 will be modified as follows: "File audits will consist of reviewing required project records for completeness, organization, and ease of retrieval." "The audit checklist will be used to record observations including any noted nonconformances." "The auditor will generate a formal audit report which will address corrective actions."
MPCA III.29	Navy shall submit a copy of the last audit conducted by the Navy on Ceimic. This shall include an audit of the laboratory by Brown and Root Environmental if Brown and Root Environmental contracted with them. Otherwise, it is the responsibility of the Navy to audit the laboratory. The Navy shall identify appropriate audit documentation. This section shall be changed accordingly.	QAPP, Section 10.2.1.1	Agree	This information will be provided to the MPCA under separate cover.
MPCA III.30	The discussion shall detail the internal audits that Ceimic performs. This shall include what is audited, by whom, how often, and how the results of this audit are used to improve the laboratory quality. The audit reports shall appear in the annual reports.	QAPP, Section 10.2.1.2	Need clarification	Section 10.2.1.3 of the QAPP discusses internal audit procedures and refers to Appendix C of the QAPP for Ceimic's specific procedures. The text in Appendix C provides the requested information. Please provide clarification on what annual reports are being referenced.
MPCA III.31	The Navy shall submit the quality assurance manual (QAM) from Ceimic and reference the proper laboratory section.	QAPP, Section 11.0	Disagree	As required by the U.S. EPA Region V, Ceimic's preventive maintenance procedures for key instruments specific to this project are described in Section 11.2 of the QAPP.
MPCA III.32	The Navy shall conduct a ten percent effort on all MS/MSD for all work from NIROP. The Navy shall reference Tables 3-1 through 3-11 for limits.	QAPP, Section 12.0	Disagree	See comment MPCA III.8 regarding 10% MS/MSD frequency. Specific mention of Tables 3-1 through 3-11 will be added to the first sentence in Section 12.0 to further define the reference to Section 3.0.
MPCA III.33	The Navy shall restate the completeness goal (of 90 percent).	QAPP, Section 12.3	Agree	The following sentence will be added to the end of Section 12.3: "Field and laboratory completeness objectives for this project are 90 percent and 95 percent, respectively."
MPCA III.34	The Navy shall specify the person responsible for final sign-off authority on all Corrective Action (CA). For minor CA, the FOL is assumed to sign-off. The Field Task Modification Form (FTMF) has a sign-off line for a project manager. The appropriate project manager shall be identified in Section 2.0 of the QAPP.	QAPP, Section 13.0	Disagree	As specified in Section 13.1, all project parties will approve any significant change in the approved Project Plan. Section of the QAPP references Section 7 of the Work Plan which identifies the project manager
MPCA III.35	The Navy shall clarify the relationship between the CA form and the CA logbook discussed in the text. Is the form a part of the logbook? How are they used together?	QAPP, Section 13.2	Agree	The laboratory QA/QC Officer was contacted and indicated that the corrective action log or logbook is no longer used by the laboratory. All references will be changed as appropriate to Corrective Action Form.
MPCA III.36	The Navy shall submit the laboratory QAM and reference the appropriate section.	QAPP, Section 13.3	Disagree	As defined in Section 10.1.1.1 of the QAPP and in the List of Acronyms provided at the beginning of the QAPP, "QAM", as used in the QAPP, is an acronym for Quality Assurance Manager. Therefore, the reference to the QAM in Section 13.3 refers to B&R Environmental's Quality Assurance Manager, not the laboratory's Quality Assurance Plan.
MPCA III.37	The Navy shall specify the project manager.	QAPP, Section 14.1	Agree	All text referring to project manager in Section 14 will be changed to read Task Order Manager. The Task Order Manager is identified in Section 7 of the Work Plan.

MPCA III.38	The Navy shall use the QA reports previously discussed for changes to the QAPjP and any other staff changes that affect the project.	QAPP, Section 14.1	Agree	This information will be provided in the monthly reports.
EPA I.1 (4)	Discuss further statements that refer to the correlation of groundwater plumes from the Twin Cities Army Ammunition Plant (TCAAP), Kurt Manufacturing, and Dealer's Manufacturing Superfund sites and groundwater on the Naval Industrial Reserve Ordnance Plant (NIROP).	Volume I of IV, Work Plan (WP), Section 2.3, p. 4, para. 2 & 3	Agree	Reference to the TCAAP plume will be removed based on information provided by TCAAP. Will look at OU1 results to determine if these sources were substantiated.
EPA I.2	Correct reference to pending NPDES permit.	WP, Section 2.6, p. 18, para. 2	Agree	Text will be changed to indicate the permit has been issued.
EPA I.3	See review comment EPA I.1 regarding correlation of potential off-site sources.	WP, Section 3.1.2, p. 6	Agree	No comment
EPA I.4	Please revise the decision statement. If contamination exists in the unsaturated soils at unacceptable risk levels to the target receptors under an industrial land use scenario, implementing a remedy is certain. The appropriateness of the remedy will be discussed in the FS.	WP, Section 4.1, p. 1, Decision Statement	Disagree	Decision statement is consistent with process to conduct a feasibility study if a risk is identified.
EPA I.5	Discuss further in this section how the U.S. EPA Region IX industrial land use preliminary remediation goals (PRGs) were modified to account for site specific conditions. Verify how the modified PRGs, that are indicated as 25 times higher than Region IX industrial land values, are protective of construction/utility workers.	WP, Section 4, p. 2, para. 4	Agree	As noted for the MPCA comments, State guidance will be consulted and, as appropriate, be considered to establish PRGs. The Region IX PRGs are based on 250 days/year of exposure over a 25 year working lifetime which is highly unlikely for this site. Instead, the Region IX PRGs were adjusted to reflect a 10 days/year of exposure over a 25 year working lifetime which was considered to be much more realistic for the site-specific excavation.
EPA I.6	Groundwater protection criteria based on the MPCA soil-leaching model may be re-evaluated. Please consult with MPCA regarding the approach to evaluating the risk to groundwater from overlying sources, and include a discussion of the result in this section.	WP, Section 4.2, p. 7, para. 3	Agree	Discussions with the MPCA have been initiated. The outcome will be discussed in the section.
EPA I.7	Discussions of tasks required as part of an RI Report, FS and Alternatives Report do not appear to reflect discussions of tasks required as part of an RI Report, FS, and Alternatives Array Report presented in U.S. EPA guidance documents.	WP, Section 5.3, p. 10.	Need clarification.	
EPA I.8	General discussions of the U.S. EPA Remedial Project Manger/State Project Manager responsibilities are not correct. Please refer to the Federal Facilities Agreement (FFA), between U.S. EPA, MPCA, and U.S. Navy for correct descriptions of responsibilities.	WP, Section 7.0, p. 1	Agree	The text will be compared to the FFA and corrected, as needed.
EPA I.9	Verify that the Minnesota Department of Health should not be shown on this chart. Consideration should be given to showing their role in the permitting and approval process for well installations and soil probes, particularly for soil probes that are used to collect both soil and groundwater samples for contaminant characterizations.	WP, Section 7, Figure 7-1	Need clarification	Need to discuss at October 22 meeting.
EPA I.10	For the Date **May 1995**, 1.1.1-tetrachloroethane, should be, **1,1,1-trichloroethane.**	WP, Table 2-1, p 12/23	Agree	No comment.
EPA I.11	The group (6) plating, should be, (7) plating.	WP, Section 3.1.1, p 5/9, 1st bullet	Agree	No comment.
EPA I.12	Clarify the references to RMT Figure 1 and RMT Figure 2. These figures are not included in the WP.	WP, Section 5.2.5, p 3/12 and 8/12	Agree	Figures were not intended to be included. No work is proposed in this area. The OU2 conclusions (including these figures) will be included in the OU3 RI Report.
EPA I.13	In the box **U.S. EPA Region V**, delete I. Levine, QA Manager, and replace with **Superfund QA Reviewer**.	WP, Figure 7-1, p 2/7	Agree	No comment.

EPA I.14	U.S. EPA Region V Quality Assurance Manger 1) In the subtitle delete Quality Assurance Manager, replace with **Superfund Quality Assurance Reviewer.** 2) In the text delete Quality Assurance Manager, Ida Levine, replace with **Superfund Quality Assurance Reviewer.**	WP, Section 7.3	Agree	No comment.
EPA II.1 (5)	This sentence indicates that sample results from areas of possible product releases will be compared to sample results from areas where there are no suspected releases. Discuss further if background concentrations, mainly for inorganics in soil, will be determined and if this data will be used in the comparisons.	Volume II of IV, Field Sampling Plan (FSP), Section 2, p. 5, item 5, last sentence	Disagree	Background concentrations from the OU2 RI.
EPA II.2	a) The first paragraph in this section indicates that soil samples from only two intervals will be collected. Verify that the human health assumptions that serve as the basis for the soil PRGs for construction/utility workers, will remain valid if high contamination levels are encountered or suspected between the proposed sample intervals, and samples are not collected at these intermediate intervals. b) Verify that additional samples should not be collected between these proposed intervals if high contamination levels are suspected based on field screening of visual results.	FSP, Section 2, p. 7, subsection 2.3	a) Agree b) Agree	a) This will be verified. b) This will be verified.
EPA II.3	The left column in this table describes that rationale for sampling point selection. The description "not selected preagonal" is confusing and it is unclear why this description is necessary.	FSP, Section 2, Table 2-1	Need clarification	Wording not found
EPA II.4	Verify that the requirements for direct push technology (DPT) drilling and Rotosonic drilling procedures comply with Minnesota Department of Health (MDH) regulations for wells and borings (Minnesota final regulations, Chapter 4725). Past experience with the MDH has required compliance with their regulations regarding permitting for wells and DPT boring (DPT boreholes used to collect water samples are considered temporary wells by MDH):	FSP, Section 7.2, p. 2	Agree	Rotosonic drilling was developed in Minnesota. Boart Longear (our potential driller) installs monitoring wells via rotosonic drilling in Minnesota frequently. Therefore, I don't foresee any conflicts. As for the DPT drilling, we agree that they are temporary well points. Section 4725.0475, Subpart 2, Part A states that as long as the sampling device is removed from the hole immediately after sample collection (temporary well point), there will be an exception to license or registration. Since the DPT drilling will be installing temporary well points, we should be exempt from the state for applying for a permit.
EPA II.5	This section indicates that the DPT borings will be advanced to the top of the water table which is estimated to be approximately 25 feet below ground surface. Because one of the objectives of the soil sampling program is to evaluate the impact that contamination in the unsaturated zone may have on groundwater, clarify why soil samples for chemical analysis are not proposed to be collected below 12 feet. Although it was stated in the work plan that soil samples collected in support of the human health assessment would be adequate for evaluation of the impact to groundwater, consideration should be given to collecting potentially impacted soil samples below 12 feet, especially if there is a reason to suspect that there is contamination in this zone. If conclusion is to stay with the discussion be included to clarify that a potential lack of data from the unsaturated zone below 12 feet will not require additional sampling.	FSP, Section 7.3, p. 4	Agree	Soil samples below 12 feet are proposed at confining layers or changes in lithology.

EPA II.6	The last two sentences in this paragraph describe that sealing/abandonment procedure for the DPT boreholes. Verify that the sealing procedures outlined in chapter 4725.3850 of the Minnesota regulations are not required.	FSP, Section 7.3, p. 5, para. 2	Agree	Section 4725.3050, Subpart 1, Part D of the MDH regs. states that granular bentonite is allowed as a grout material when used in unconsolidated material. Section 4725.3850 (as referenced by the EPA) Subpart 4, Part A states that a boring in unconsolidated material must be filled with bentonite grout. Based on the referenced section above, bentonite pellets or hole plug should be sufficient for backfill.
EPA II.7	This paragraph indicates that purging of temporary wells is not necessary. It is suggested that consideration be given to purging at least 3 volumes of water from the sampling system (tubing, pump, etc.) to ensure that any residuals in the sample equipment do not impact the sample.	FSP, Section 7.5.1, p. 12, top paragraph	Disagree	Concerned that we may not produce enough groundwater in the temporary well points to fulfill the bottle requirements for sampling.
EPA II.8	Indicate in the table that the Analysis of **Reduced Iron** will be done in the field.	FSP, Table 2-4	Agree	No comment
EPA II.9	Delete last sentence. Filtered samples are not being collected.	FSP, Section 4.1, 1st paragraph, last sentence	Disagree	Filtered samples will be collected to evaluate intrinsic biodegradation.
EPA II.10	For the Parameter **Reduced Iron (Fe^{2+})** the Maximum Holding Time of **48 hours** is in disparity with Section 4.c. of the method. Please resolve.	FSP, Table 4-1, p. 2/3	Agree	Reduced iron will be analyzed in the field.
EPA II.11	Designate how samples collected for MS/MSD will be identified.	FSP, Section 5.2	Agree	Text will be added.
EPA II.12	The sample containers should meet the requirements given in, *Specifications and Guidance for Contaminant-Free Sample Containers*, EPA 540/R-93/051.	FSP, Section 6.4	Agree	Specific requirement will be added.
EPA II.13	Delete references to dissolved metals and filtration.	FSP, Section 7.5.1	Disagree	Dissolved metals will be analyzed to evaluate intrinsic biodegredation.
EPA II.14	Bailers are allowed, but not recommended, for sample collection.	FSP, Section 7.5.1	Disagree	No comment.
EPA II.15	Amend typo, pg 13/16, Table 2-5, should be Table 2-4.	FSP, Section 7.5.1	Agree	Text will be revised.
EPA II.16	If nonaqueous-phase liquids (**DNAPL** or **LNAPL**) are detected, samples should be collected for chemical analysis.	FSP, Section 7.5.1, pg 12/16, para. 3	Agree	No comment.
EPA II.17	The SOP **SA-2.2 (Air and Gas Sampling Methods)** was not included in Appendix B. Please provide.	FSP, Section 9.3	Agree	The SOP will be included in Appendix B.
EPA II.18	Denote the concentration of the calibration gas.	FSP, **SOP ME-15**, Section 5.2	Agree	The concentration of the calibration gas will be provided in the text.
EPA II.19	Bailers are allowed, but not recommended, for sampling.	FSP, **SOP SA-1.1**, Section 5.1	Disagree	No comment.
EPA II.20	The SOP **SA-6.2** was not included. If this SOP is relevant to the project, it should be attached to Appendix B.	FSP, **SOP SA-1.1**, Section 5.6.2, items 12 & 14	Agree	Reference to SOP SA-6.2 will be removed.
EPA II.21	Clarify the reference to Section 5.3.3. The SOP does not have this section.	FSP, **SOP SA-1.3**, Section 5.6, item 5, p.8/20	Agree	The reference is to Section 5.3 which is present but crossed out because surface soil sampling is proposed. Section 5.3 will not be crossed out since it is referenced by another section that is applicable.
EPA II.22	This section on Field Filtration can be deleted.	FSP, **SOP SA-6.1**, Section 5.3, p 6/23	Disagree	Dissolved metals will be analyzed to evaluate intrinsic biodegredation.
EPA III.1 [6]	On this page delete **IDA LEVINE**, replace with **SUPERFUND**.	Volume III of IV, Quality Assurance Project Plan (QAPP), Section I, Title/Signature Page	Agree	IDA LEVINE will be replaced with SUPERFUND on the title/signature page.
EPA III.2	Specify that groundwater samples will be collected unfiltered.	QAPP, Section II, Section 1.1.1	Disagree	Dissolved Ca, Mg, Na, and K are needed to evaluate natural attenuation of chlorinated solvents. Both filtered and unfiltered samples will be collected.
EPA III.3	In item (2) delete the matrix Surface Water. Surface water samples are not being collected and analyzed.	QAPP, Section II, Section 1.1.1	Agree	The reference to surface water will be deleted.

EPA III.4	Include the determination of the parameter **Reduced Iron**. See APPENDIX A Comment EPA III.14 below.	QAPP, Section II, Section 1.4.2.1	Agree	Reduced iron will be included in the discussion of field parameters.
EPA III.5	The compound **Pyridine** should be included in the list of Semivolatile Organic Compounds. See WP Section 3.1, pg 4/9, and Areas of Concern 63 & 64.	QAPP, Section II, Section 1.4.2.2 and Table 1-1	Agree	Pyridine will be added to the semivolatile organic compound list.
EPA III.6	The Biological Laboratory selected to perform the **Methantropic Bacteria** test should be identified, and they should provide their SOP for conducting this test.	QAPP, Section III, Analytical and Measurement Procedures	Disagree	Methantropic bacteria will be removed from the parameter list. This comment is, therefore, no longer applicable.
EPA III.7	Include the following SOPs: **WC.34**, **WC.21**, **WC.02**, **WC.46**.	QAPP, Appendix A, Table of Contents	Agree	The Table of contencts for Appendix A will be revised to include all SOPs.
EPA III.8	GRO ANALYSIS BY MODIFIED SW846 METHOD 8015B No. 8015BGRO A. Provide Retention Times (RTs) and Detection Limits (DLs) for GROs of interest in this project, and perhaps, an example chromatogram. B. It is recommended to prepare the calibration curve with 5 standards, rather than 3 standards. C. Provide the preparation procedures for Soil and Water samples, or the purge and trap procedures. D. Specify the components and concentration of the Matrix Spike solution. See QAPP table 3-9.	QAPP, Appendix A, A. Section 1.0 B. Section 7.2 C. Section 7.5 D. Table 3-9	Disagree	GRO analysis will no longer be performed. This comment, therefore, is not applicable.
EPA III.9	Provide Retention Times (RTs) and Detection Limits (DLs) for DROs of interest in this project, and perhaps, an example chromatogram.	QAPP, Appendix A, TPH No. 8015BDRO, Section 1.0	Disagree	DRO analysis will no longer be performed. This comment, therefore, is no longer applicable.
EPA III.10	SULFATE BY EPA METHOD 375.4 No. WC.34 A. Stipulate concentration of the calibration standards, and include a calibration blank. B. A calibration verification standard should be tested after every 10 samples and at the end of the analysis. C. Indicate the concentration of the Matrix Spike.	QAPP, Appendix A, A. Section 12.1 B. Section 12.2 C. Section 14.4	Agree	A. The concentration of the calibration standards is 0.0 mg/L, 10.0 mg/L, 20.0 mg/L, 25.0 mg/L, 30.0 mg/L, and 40.0 mg/L. B. A calibration verification standard at 20.0 mg/L is analyzed after every 10 samples and at the end of the run. C. The Matrix Spike concentration is 20.0 mg/L.
EPA III.11	Hardness (EDTA Titrimetric Method) by A Method 130.2 No. WC.21 A. Indicate the range of this method. The RL is 2 mg/L. B. A Titrant Check, or LCS, should be included. Specify the frequency, such as, after every 10 samples, and at the end of the run. C. Include an MS, its concentration, QC criteria, and calculation.	QAPP, Appendix A, A. Section 4.0 B. Section 6.0 C. Section 6.0	Agree	A. The range of this method is 2 - 2000 mg/L $CaCO_3$. B. A titrant check (CCV) is analyzed every 10 samples and at the end of the analysis at a level of 318 mg/L. C. An MS is analyzed at a concentration of 318 mg/L. The QC limits are 75% - 125% recovery. The spike recovery is calculated as follows: % Recovery = $\frac{\text{Spikedsampleresult-SampleResult}}{\text{AmountSpiked}} \times 100\%$

EPA III.12	ALKALINITY, TOTAL (TITRIMETRIC, PH 4,5) No. WC.02 Include calculations for the MS Recovery and Duplicate % RPD.	QAPP, Appendix A, Section 13	Agree	The QC criteria is 75 - 125% recovery of the spike and 20% RPD of the duplicate. The calculations are as follows: % Recovery = Spikedsampleresult-SampleResult x 100% AmountSpiked $\%RPD = \frac{X_1-X_2}{(X_1+X_2)/2} \times 100\%$
EPA III.13	Total Suspended Solids dried at 103 - 105° C No. WC.46 An MS/MSD is not usually performed with this method.	QAPP, Appendix A, Section 6.4	Agree	This SOP has been updated to remove the requirement for an MS/MSD.
EPA III.14	3500-Fe D. Phenanthroline Method As indicated in Section 4.c **Ferrous iron** should be determined at the sampling site immediately after sample collection, because the ferrous-ferric ratio can change in acid solution. This should be considered a field parameter, and be performed by a Chemist. Prepare a Field SOP for this method. Indicate if **Total Iron** and **Ferric Iron** are going to be project desired parameters.	QAPP, Appendix A, Section 4.c	Agree	A methodology for Ferrous Iron will be included in the FSP. Total iron is included in the analyte. Ferric iron is not included.
EPA III.15	9215 HETEROTROPHIC PLATE COUNT The selected biological laboratory should provide their SOP for determining **Methantropic Bacteria** and the project should denote some QA/QC acceptance criteria for this method.	QAPP, Appendix A,	Disagree	Methanotropic bacteria will be removed from the parameter list. This comment is, therefore, no longer applicable.
EPA IV.1 [7]	Add a statement explaining who has the authority to stop site operations for Health and Safety reasons.	Volume IV of IV, Site Security and Health and Safety Plan (SS/HSP), Section 1.1, p.1	Agree	In the event of an imminent danger or other perceived life-threatening situation, the FOL or SSO shall have the authority to stop site operations. All personnel must immediately notify the FOL or SSO of conditions which may warrant termination of operations. Should the FOL and SSO be unavailable, any employee or project-related personnel has the authority to terminate operations for health and safety reasons.

[1] MPCA I.1 represents the first comment from the Minnesota Pollution Control Agency's (MPCA's) Attachment I (Modifications to the Draft Work Plan) to the MPCA's letter dated 7/26/96.

[2] MPCA II.1 represents the first comment from the Minnesota Pollution Control Agency's (MPCA's) Attachment II (Modifications to the Draft Field Sampling Plan) to the MPCA's letter dated 7/26/96.

[3] MPCA III.1 represents the first comment from the Minnesota Pollution Control Agency's (MPCA's) Attachment III (Modifications to the Draft Quality Assurance Project Plan) to the MPCA's letter dated 7/26/96.

[4] EPA I.1 represents the first comment from the United States Environmental Protection Agency's (EPA's) Attachment I (Modifications to the Draft Work Plan) to the EPA's letter dated 9/26/96.

[5] EPA II.1 represents the first comment from the United States Environmental Protection Agency's (EPA's) Attachment II (Modifications to the Draft Field Sampling Plan) to the EPA's letter dated 9/26/96.

[6] EPA III.1 represents the first comment from the United States Environmental Protection Agency's (EPA's) Attachment III (Modifications to the Draft Quality Assurance Project Plan) to the EPA's letter dated 9/26/96.

[7] EPA IV.1 represents the first comment from the United States Environmental Protection Agency's (EPA's) Attachment IV (Modifications to the Draft Site Security and Health and Safety Plan) to the EPA's letter dated 9/26/96.

ATTACHMENT 3

Regulatory Comment Resolution Summary

NAVAL INDUSTRIAL RESERVE ORDNANCE PLANT (NIROP) FRIDLEY
OPERABLE UNIT NO. 3 (OU3)
REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) DRAFT WORK PLAN
REGULATORY COMMENT RESOLUTION SUMMARY

Regulatory Comment No.	Regulatory Comment	Work Plan Volume and Section	Consensus Reached	Comment/Action to be Taken
MPCA I.1 (1)	a) The Navy shall add the goals of the Operable Unit 3 (OU3) Remedial Investigation/Feasibility Study (RI/FS) Work Plan (Work Plan) identified in Part IV.2 of Attachment A to the FFA to the Work Plan. b) It is unclear how the Navy has incorporated these goals into the Work Plan. For example, pursuant to Part IV.2(3) of Attachment A to the FFA, the RI/FS "...shall produce data of sufficient quality and adequate technical content to assess possible alternative response actions...". This goal for the OU3 RI/FS is exemplified by the Minnesota Pollution Control Agency (MPCA) staff in Attachment 3 to the staff letter to the Navy, dated August 30, 1995. This letter is not cited in the Work Plan references (Section 8), nor are related letters such as the MPCA staff letter of July 20, 1995. Was the decision statement in Section 4.2, Groundwater Protection, designed to address the MPCA staff's concern about what to do in the event that dense nonaqueous phase liquids (DNAPLs) are found in OU3? The Navy shall explain how it responded to the MPCA staff letters of August 30, 1995, and July 20, 1995, in the production of the Work Plan in a letter to be included as an attachment to the Work Plan.	Volume I of IV, Work Plan (WP), Section 1.3	a) *Yes* * b) *Yes*	*Project team agreed that goals are already stated in the Work Plan. No change necessary.*
MPCA I.2	It is the MPCA staff's understanding that the Navy intends to add relevant findings of the Operable Unit 2 (OU2) RI to the OU3 RI. The MPCA staff has agreed that these findings may be added by reference where appropriate.	WP, Section 1.3	Yes	As already stated in WP, Section 5.3.1.3 and FSP, Section 2.2. No change necessary. *Test will be changed accordingly.*
MPCA I.3	The Navy shall delete the statement that NIROP is potentially downgradient of the Twin Cities Army Ammunition Plant (TCAAP) site. The contaminant plume from TCAAP is well characterized and does not affect areas close to the Naval Industrial Ordnance Plant (NIROP) site.	WP, Section 2.3, p. 4, para. 4	Yes	Based on information obtained during meetings with Savannah River site and TCAAP representatives.
MPCA I.4	a) The Navy shall indicate that the NIROP Fridley NPDES permit has been issued. b) The Navy shall identify any NPDES permit issues affecting the OU3 RI/FS in the Work Plan.	WP, Section 2.6, p. 18	a) Yes b) *Yes*	a) Text will be changed to indicate that the permit has been issued. b) *State requested that Navy evaluate NPDES requirements. Discharge of treated groundwater from the OU1 extraction system does not pertain to OU3. No change necessary.*
MPCA I.5	The Navy shall include the interoffice memorandum from Eric Lindahl as an attachment to the Work Plan.	WP, Section 3.1	*Yes*	*The Navy agreed to provide a copy under separate cover.*
MPCA I.6	The statements that appear here and elsewhere in the Work Plan concerning the catch basins within the plant draining to the storm sewers are at odds with previous statements from Navy that this is no longer a potential source of contamination to the Mississippi River. The Navy shall resolve this issue by providing documentation that these potential sources of contamination to the river have been removed.	WP, Section 3.1, p. 3, para. 1	*Yes*	*The project team agreed that this is a legitimate concern although it was considered to be a compliance/SPCC rather than an OU3 issue. The Navy will attempt to assist the State in obtaining the requested documentation. No Work Plan change necessary.*

MPCA I.7	If DNAPLs are found in OU3, the Navy shall add the following pathways to the Work Plan: 1) a pathway for human consumers of groundwater; 2) a pathway for human consumers of surface waters (Mississippi River water taken in to the Minneapolis drinking water supply system); and 3) a pathway to flora and fauna in the Mississippi River. The Navy may use the existing risk assessment for OU1 by reference as long as it evaluates all of the pathways and meets current risk assessment criteria.	WP, Section 3.2	*Yes*	OU1 addressed groundwater contamination and its associated pathways and is therefore not included in the OU3 RI/FS. The scope of the OU3 RI/FS is the identification of sources (DNAPL or otherwise) and the mitigation thereof. See key assumption number 1 in FSP, Section 2.2 and WP, Section 3.2. *The MPCA agreed. No change necessary.*
MPCA I.8	Does protection of construction workers and utility workers apply only to the soil under the main NIROP building's footprint? If so does the Navy intend to add the former OU2 risk assessment to the risk assessment of OU3 in the OU3 Risk Assessment?	WP, Section 3.4	Yes	Yes, the Navy will include the conclusions from the OU2 risk assessment. This assumption is that the OU2 RI is complete and agreed upon by all parties. See WP, Section 5.3.1.3 and FSP, Section 2.2.
MPCA I.9	The Navy shall add an objective to evaluate whether or not DNAPL remedies are feasible for OU3.	WP, Section 3.4	*Yes*	Not necessary since the second bullet covers this. *The MPCA agreed.*
MPCA I.10	Then Navy shall re-evaluate this list of response objectives and remedial action alternatives during the RI after the magnitude and extent of soil and groundwater contamination is known.	WP, Section 3.4	Yes	This is a <u>preliminary</u> identification as the text already states. No change necessary.
MPCA I.11	It is premature to propose focusing the risk assessment evaluation. The focus of the Work Plan is characterization of the extent and magnitude of the contaminated areas and to gather data which can be utilized to estimate potential exposure concentration(s). The risk evaluation shall be conducted subsequent to the collection of this data.	WP, Section 4.1	*Yes*	A discussion of Risk Assessment is needed to focus data collection efforts and is fundamental to the DQO process as discussed at the April 4 meeting. *The MPCA agreed.*
MPCA I.12	The proposed utilization of the Environmental Protection Agency (EPA) Region IX's preliminary remediation goals (PRGs) is not acceptable for a variety of reasons including: volatilization and subsequent inhalation is not included in the soil PRGs and the exposure level of industrial workers is significantly lower than the exposure level for construction/utility workers. The risk evaluation, to be conducted in the next phase of the process, shall at a minimum utilize MPCA staff recommended exposure methodology and target risk levels. Another alternative may be to utilize MPCA staff generic soil reference values to assess the need for a formal risk assessment. The generic values could easily by modified to incorporate appropriate site specific information (e.g., area of contamination, soil moisture, etc.).	WP, Section 4.1	*Yes*	The rationale for not accepting Region IX PRGs is not entirely valid. First, inhalation exposure is, in fact, considered in these PRGs. Additionally, USEPA Region V typically requests the use of USEPA Region IX PRGs as screening values in human health risk assessment. Also, given the widespread understanding that VOC contamination exists under the site, it is unlikely that subsurface intrusion would occur without proper health and safety measures. However, it is agreed that MPCA exposure methodology and target risk levels should be considered/evaluated for use in the risk assessment along with EPA guidance. Documents containing MPCA guidance will be evaluated to confirm whether the methods and values are appropriate for the planned investigation. *Further discussions will be held if the Navy feels the methods and/or values are not appropriate for the planned investigation. Text will be revised if needed. The MPCA agreed and provided documents containing MPCA guidance.* *The MPCA also stated that chrome should be speciated at three samples from each source type plus background.*

MPCA I.13	The construction/utility worker scenario is adequate to address current site exposure potential but it does not furnish information sufficient to determine the level of restrictions required. A Reasonable Maximum Exposure (RME) evaluation of an industrial worker shall be included in the future risk evaluation to assist in determining the level of land use restriction required. For example, if contaminant levels are below levels of health concern for construction/utility workers but greater than levels of health concern for industrial workers restrictions would be required to control access to contaminated soils. If, on the other hand, levels were below levels of concern for the industrial worker as well as the construction/utility worker all that may be required is a zoning restriction and a deed notification. (Note, other restrictions may be required as a result of ground water impacts.)	WP, Section 4.1	*Yes*	*An industrial worker scenario will be developed. However it was agreed that the values will be used for the potential development of deed restrictions, not clean up values.*

MPCA I.14	a)The Work Plan shall be further modified such that this section addresses identification of potential exposure areas and includes calculations of representative exposure concentrations. See specific comments for further details. b) The selection of specific input factors (e.g., type of receptor exposed, incidental ingestion rate, etc.) shall be determined at a future date under MPCA staff guidance.	WP, Section 4.1	*Yes*	a) The Work Plan reflects previous discussion regarding exposure assessment. The plan for exposure assessment had been to consider, at least initially, the entire Navy "footprint" of the building as the exposure area. This assumes that a construction worker performs excavations (of rather limited duration [e.g., 10 days]) throughout the building. A second plausible scenario would assume that a major construction job (perhaps 1 year in duration) occurs at a sizable location within the building. If distinct contaminant areas are identified as a result of the environmental sampling and analysis, those areas will be evaluated. Given that environmental sampling and analysis has yet to occur, the identification of contaminated areas (and the size of such areas) is not possible at this time. The calculation of the representative concentration will consider the EPA guidelines referenced by the reviewer. Because these guidelines do not cover all cases which may be encountered in the calculation of the representative concentration [e.g., the guidance does not specifically cover the undefined distribution], the Navy will review with the MPCA the specifics of the calculation of the representative concentration once data has been received, validated, and plotted for visual inspection. (Any time or area weighting strategies used to evaluate risk will be reviewed with the *MPCA* at that time.) *The MPCA agreed.* b) The selection of input factors and land use scenarios is not dependent on the availability of analytical data. Thus, input factors for the exposure assessment can be and should be established at the Work Plan stage of an RI. MPCA guidance will be reviewed to determine whether these factors are available from the State and are acceptable to the Navy. Exposure input factors will be based on EPA guidance, MPCA guidance, and professional judgment, and will be included in the Work Plan. Such factors will be used to determine PRGs, RBCs. PRGs/RBCs for a site are often used to guide environmental investigation (e.g., establish analytical detection limits needed for an investigation) and feasibility study efforts. *Text will be revised if needed. The MPCA agreed.*
MPCA I.15	The risk evaluation shall also address the potential health impacts of non-containment of the groundwater plume, including the potential health impacts of the current plume as a source of contamination for deeper aquifers.	WP, Section 4.1	*Yes*	See response to MPCA I.7. *The MPCA agreed.*

MPCA I.16	If DNAPLs are found in OU3, the Navy shall add the following decision statement: "If DNAPLs exist in the saturated soils at concentrations that could pose a health risk to people drinking the water (under an unrestricted land use scenario that is in place for OU1), then consider the feasibility of implementing appropriate remedies including the existing groundwater pump and treatment system for OU1."	WP, Section 4.1	*Yes*	See response to MPCA I.7. *The MPCA agreed.*
MPCA I.17	If DNAPLs are found in OU3, the Navy shall develop additional decision rules for this decision statement and other work described in this section, e.g., appropriate modifications of the Field Sampling Plan, etc. The rationale for this modification is related to issues raised in the MPCA staff letter of August 30, 1995, i.e., accelerating the cleanup of DNAPLs, if technically feasible, may not only reduce cleanup costs but may also reduce risks to public health and the environment.	WP, Section 4.1	*Yes*	DNAPLs are considered a chemical source and is addressed in the decision rule on page 4-9. *The MPCA agreed. No change necessary.*
MPCA I.18	Is it not reasonable to assume the East Plating Shop and NIROP main building have the same chemicals of potential concern (COPCs). No polychlorinated biphenyl (PCBs) and only one polyaromatic hydrocarbons (PAH) is listed. The Navy shall delete all narrative related to this false assumption.	WP, Section 4.1	*Yes*	Assumption is not solely based on results from the East Plating Shop. Also based on OU1 and OU2. PCBs were not determined to be a COC in OU2. It is a reasonable assumption since it is known that materials used inside the plant were at times disposed of outside the plant (in OU2). Note that the text states on page 3 of Section 4 that the COPC list is not expected to be all inclusive, but is sufficient for preliminary planning purposes. *The MPCA had no specific list of cPAHs to be added. The MPCA agreed. No change necessary.*
MPCA I.19	Navy shall discuss data collection as appropriate in this section.	WP, Section 4.1	*Yes*	Data needs are discussed on page 2 and 6 of 9. The data acquisition strategy is discussed in FSP, Section 2. *The MPCA agreed. No change necessary.*
MPCA I.20	No discussion of the Data Quality Objectives process is included in this section. EPA QA/G-4 guidance shall be referenced with all steps reviewed for the data. The conclusions reached in this section do not follow from this guidance and shall therefore be rewritten. (See page two of QA/G-4 for the list of the steps that must be discussed in this section.) Only the five old DQO levels need be referenced for types of data that will be produced by the laboratory.	WP, Section 4.1	*Yes*	*The project team agreed that this section is adequate as written. No change necessary.*
MPCA I.21	The EPA 1992 Office of Solid Waste and Emergency Response guidance shall be utilized to calculated representative exposure concentrations. See attached guidance.	WP, Section 4.1, p.2, para. 2	Yes	The OSWER guidance is well known to Navy and Brown & Root Environmental risk assessment staff and is utlized to determine exposure concentrations. See response to MPCA I.14. *No change necessary.*
MPCA I.22	For the purposes of screening contaminants at the site, the 95 percent confidence interval for the mean is required as the upper cutoff, not a weighted average. The Navy shall rewrite this section accordingly.	WP, Section 4.1, p.2, para. 2	*Yes*	*Agree to rewrite section to indicate that inorganics will be screened against background values. However, the use of a weighted average approach or 95 percent confidence interval for the purpose of determining representative exposure concentrations will be evaluated once data has been received, validated, and plotted for visual inspection.*
MPCA I.23	The Navy shall remove discussion of EPA Region IX's PRGs. These PRGs are not acceptable as discussed above.	WP, Section 4.1, p.2, para. 3	*Yes*	See response to MPCA I.12. *The MPCA agreed.*
MPCA I.24	Use of EPA Region IX's PRGs will not be allowed. Note that many of the PRGs listed in this table may exceed the soil saturation level. Region IX guidance states that when the soil saturation level is lower than the calculated PRG the PRG should be set equal to the soil saturation level.	WP, Section 4.1, p.4, Table	*Yes*	See response to MPCA I.12. It is agreed that the PRGs should not exceed the soil saturation level. The final list of PRGs will be reviewed and corrected as necessary. The MPCA agreed.

MPCA I.25	The target risk levels utilized shall be a cumulative excess cancer risk of 1E-5, an individual hazard quotient of 0.2 for noncarcinogenic endpoints and a cumulative hazard index of 1 for similar noncarcinogenic endpoints.	WP, Section 4.1, p.4, para. 1 and p.5, paras. (1a) and (1b)	*Yes*	*However, it was agreed that these values would be used to trigger discussions with the Project Team regarding the need for an FS, not necessarily used to establish clean up goals.*
MPCA I.26	Given that containment of the groundwater plume may not be complete, the future risk evaluation shall include an evaluation of health impacts as a result of non-containment.	WP, Section 4.2	*Yes*	See response to MPCA I.7. *The MPCA agreed.*
MPCA I.27	The future risk evaluation shall also evaluate the potential impacts on deeper aquifers.	WP, Section 4.2	*Yes*	*This evaluation will be performed if concentrations found in the deep aquifer indicate the presence of DNAPL.*
MPCA I.28	The decision statement that an evaluation of alternatives will be made "...would result is a cost-beneficial reduction in the overall time for groundwater restoration" is presumptive. The MPCA staff and the Navy have discussed this at length. While the MPCA staff recognizes the validity of including a cost-benefit analysis in the selection of the remedy, the nine criteria in the feasibility study guidance already provides for this consideration. However, cost-benefit is only one of the criteria (one of the balancing criteria and not a threshold criteria) needed to properly evaluate the list of potential remedies. Thus, Navy shall remove the term "cost-beneficial" from this sentence.	WP, Section 4.2, p.6, para. 4	Yes	The decision statement will be changed to "...result in a beneficial reduction in the overall time for groundwater restoration as measured by the nine criterion."
MPCA I.29	The preference hierarchy for groundwater criteria is the Health Risk Levels (HRLs), Health Based Values (HBVs) and lastly the Maximum Contaminant Levels (MCLs). The HRLs and HBVs are risk-based concentrations. MCLs are not strictly health based values, particularly for carcinogens, but incorporate cost and level of technical feasibility.	WP, Section 4.2, p.7, paras. 5 and 9	*Yes*	*It was agreed that MCLs and HRLs will be compared and the more conservative value used. If no MCL or HRL exists, the State was asked to develop an HBV for the parameter in question and they agreed to do so.*
MPCA I.30	Delete the sections pertaining to the discussion of the MPCA soil leaching number. The MPCA staff is re-evaluating the approach to evaluating the risk to groundwater through leaching processes, and has adopted an alternative approach that relies largely on the SESOIL modeling software. The MPCA staff welcomes suggestions regarding the use of other modeling approaches and is open to re-evaluating the leaching numbers set for the OU2 soils if the Navy wishes to revisit this matter. The calculation of leaching numbers shall be deferred until after site data is collected and reviewed. The Work Plan may, however, refer to this modification in place of the discussion that currently appears on page 8.	WP, Section 4.2, p.8	Yes	*The soil leaching model will not be pursued.* Alternative modeling approaches *are being* discussed.
MPCA I.31	Section IV.2.a of Attachment A to the FFA refers to a process to identify hazardous substances, pollutants or contaminants. While the studies referenced in this section are directed to this end, the characterization is not yet complete. (See MPCA staff's response to Section 5.2.3). A complete source investigation may find additional hazardous substances, pollutants or contaminants. The Navy shall modify this section accordingly.	WP, Section 5.2.2	Yes	Text will be modified. Any outstanding AOCs will be included in the Final Work Plan. The RI will finalize the characterization of site contamination.

MPCA I.32	As documented in the Hazardous Waste Storage Facility (RCRA) Permit for the NIROP facility, EPA Identification Number MN3 170 022 914, dated March 1, 1996, closed solid waste management units (SWMUs) exist on both the Navy portion and the United Defense L.P. (UDLP) portion of the main NIROP building (see Item 30, "Process distillation systems (closed)" on page 26 and Item 10, "Process distillation systems (closed)," on page 28 of the permit) that may pose a threat to public health and the environment and/or may be contributing to soil and groundwater contamination under the main NIROP building. There is no information in the Work Plan to indicate that these SWMUs were considered as areas of concern (AOCs) in the Work Plan (or in the site evaluation report). Therefore, the Navy shall modify the Work Plan to include the closed solid waste management units identified above as areas of concern (AOCs) or document that they were considered in developing the list of AOCs. If these SWMUs were considered and deleted from the list of AOCs, the Navy shall indicate why they were deleted.	WP, Section 5.2.3	*Yes*	The Navy has taken reasonable efforts to identify operations that could have contributed to releases beneath the building. The Navy recognizes that there is some degree of uncertainty, however the proposed sampling strategy is expected to provide aerial coverage of the building in order to characterize any contamination. *The Navy will compare the SWMU for the Navy property to the currently identified AOCs. Any outstanding AOCs will be included in the Final Work Plan.*
MPCA I.33	As the Navy is aware, the MPCA staff has requested and the Navy has rejected investigating under the UDLP portion of the main NIROP building in the Navy's letter of December 20, 1995 responding to the MPCA staff letter of November 7, 1995; at the NIROP Site technical meeting of January 11, 1996; at the Restoration Advisory board meeting of January 11, 1996; and in the Navy's May 14, 1996, letter responding to the MPCA staff letter of March 28, 1996. The MPCA staff has reviewed the rationale in all of these responses and find that the responses are not in compliance with the FFA; therefore, the Navy shall also investigate under the UDLP portion of the main NIROP building and shall modify the Work Plan accordingly. Please see Attachment III for more specifics about the requested investigation.	WP, Section 5.2.3	Yes	The Navy response was provided in a letter to MPCA dated 8/16/96. *The MPCA has agreed to put this agreement aside and is pursuing investigation of the UDLP property via modification to the RCRA permit. The Navy and UDLP are expected to ask for an extension on responding to the MPCA letter regarding this issue.*
MPCA I.34	With respect to the sewer lines, the discussion with Drs. Terry Hazen and Brian Looney from Savannah River site revealed that caustic solutions may have dissolved clay tile sewer line segments if they were used at the site and disposed through clay sewers. The disposal of caustic solutions in the main NIROP plant sewers shall be investigated to determine if such solutions were used and, if so, which sewers were used for disposal.	WP, Section 5.2.3	*Yes*	Annual inspections do not indicate exfiltration issues with sewer systems. The sampling strategy is designed to provide areal coverage of the building to characterize any contamination. *The need for additional sampling will be evaluated after the results from Phase I are received. The MPCA agreed.*
MPCA I.35	While it is true that the OU2 RI was completed before OU2 and OU3 were combined, the Navy is currently completing a barrel removal project in the "North 40" area. The Navy shall report the results of this investigation and cleanup in the OU3 RI Report. The Navy shall change this section accordingly.	WP, Section 5.2.5	Yes	No comment.

MPCA I.36	The staff from the Savannah River site has indicated that it is necessary to use high resolution, vertical distribution technologies in the investigation of DNAPL releases. The Navy shall use technology consistent with recommendations made by Dr. Bryan Looney (at the Savannah River Site consultation at the offices of the MPCA) to obtain vertically discrete samples at every lithologic change. The technology shall be consistent with field screening methods to evaluate the vertical distribution of contaminated soil during drilling to supplement the analytical sampling regime. Field screening methods shall be used to take measurements at every lithologic change. Head space readings with gas chromatograph analysis is recommended. In addition, the Navy shall test representative soil samples for total organic carbon (TOC) to evaluate the availability of carbon sources for bioremediation options.	WP, Section 5.2.5	Yes	No changes will be made to this section as the referenced material is not applicable. However, the subject matter will be addressed in Section 7.3 of the FSP. Samples will be collected at every lithologic change and field screened with a *field gas chromatograph*. Representative soils samples will be analyzed for TOC. The MPCA recommended that Dr. Bryan Looney be contacted regarding high resolution, vertical distribution technologies.
MPCA I.37	In this section the Navy indicates that water from storm sewers discharge into the Mississippi River. This narrative contradicts statements made by the Navy and by Tim Ruda of UDLP that storm water no longer discharges into the Mississippi Rive. The Navy shall clarify this matter by documenting the status of all storm sewers in OU3 in the OU3 RI Report. The Navy shall change this section accordingly.	WP, Section 5.2.6	*Yes*	*See response to MPCA I.6.*
MPCA I.38	The Navy shall postpone a final decision on the installation of monitoring wells in the bedrock aquifer until the results of Phase II of the hydrologic investigation are evaluated by the MPCA staff. The Minnesota Department of Health well code includes construction requirements that are effective in preventing contaminant transport between aquifers.	WP, Section 5.3.1.1	Yes	Monitoring of existing bedrock wells has not shown the exceedance of any criteria. Decision, however, will be deferred.
MPCA I.39	The Navy shall measure dissolved oxygen and oxidation/reduction in groundwater to determine redox conditions as was recommended in the Savannah River site consultation.	WP, Section 5.3.1.1	Yes	Geochemistry parameters will be added.
MPCA I.40	The Navy shall add to the list of areas of concern (AOCs) the sump below the vertical boring machine located at 26 1/2 Southwest and Seventh Avenue in the main NIROP building. On July 17, 1996, Doug Hildre of United Defense LP (UDLP) informed David Douglas that a oily materials had been disposed of via a formed hole at the bottom of this sump. According to Tim Ruda of UDLP, there are three similar sumps below similar machines to the east of this sump. These and all other similar sumps shall be added to the list of AOCs.	WP, Section 5.3.1.2	Yes	United Defense states that they did not intentionally dispose oily materials throughout the sump. Any discharge would be as a result of transient leakage over time. This sump will be added as an AOC. United Defense has stated, after checking drawings and field verification, that the three other machines do not have sumps. This does not affect the proposed sampling strategy.
MPCA I.41	While Part V, Task B of Attachment A of the FFA states that "[f]ollowing finalization of the RI Report and prior to completion of an FS Report, the Navy shall develop and submit to the U.S. EPA and MPCA any appropriate Treatability Studies," in order to accelerate the FS and reduce redundant field sampling and related work, the Navy shall identify any treatability studies it has decided to conduct at the present time in the Work Plan.	WP, Section 5.3.2.2	*Yes*	No treatability studies are planned at the present time. However, parameters will be collected to evaluate *natural attenuation. The MPCA agreed.* *It was clarified that natural attenuation parameters were being collected to evaluate chlorinated ethenes.*
MPCA I.42	During the RI, the Navy shall collect all relevant site data that the Navy intends to use in treatability studies it currently intends to conduct, as opposed to recollecting this data after the RI. This is particularly important for carcinogenic polyaromatic hydrocarbons (cPAHs) in soils in what was formerly known as "OU2." The Navy is on record as stating that cPAHs can be naturally degraded, but has provided no evidence to support this position to date. If the Navy currently believes that cPAHs in the soils of "OU2" can be naturally degraded, the Navy shall begin this treatability study as soon as possible and no later than the beginning of the OU3 RI.	WP, Section 5.3.2.2	*Yes*	No treatabilties studies are planned at the present time. *The Navy will follow-up on the cPAH degradation issue to see if it warrants further evaluation. The MPCA suggested that the Navy contact Ron Sims at Utah State University to discuss and look at information from the following sites: Libby Site in Montana and St. Louis Park Site in Minnesota (contact Miriam Horneff at MPCA).*

MPCA I.43	The Navy shall begin collecting site data to evaluate bioremediation of trichloroethylene as an OU3 remedy during the RI as this remedy is highly likely to be evaluated during the FS. The MPCA staff acknowledges that the Navy is partially fulfilling this requirement in the Work Plan. As stated in the MPCA staff letter to the Navy, dated April 18, 1996, "[f]uture claims of the intrinsic bioremediation of site contaminants shall be supported by site-specific data." The MPCA staff commits to working with the Navy to plan for treatability studies at the present time. The Navy shall modify this section accordingly.	WP, Section 5.3.2.2	Yes	Information required to evaluate natural attenuation, as specified by the USGS, will be added.
MPCA I.44	The schedule is not in compliance with the FFA. The Navy shall rewrite the schedule to comply with section XXXII of the FFA, beginning with the approval of the RI/FS Work Plan and its associated documents and concluding with the Record of Decision. For instance, the schedule shall indicate that the RI Report and its associated documents are due 365 days from the date of approval of the RI/FS Work Plan and its associated documents. Once the RI is underway, the MPCA staff is open to consideration of schedule revisions under the provisions of the FFA.	WP, Section 6.0	Yes	Will review schedule to ensure compliance with FFA.
MPCA I.45	No provision is made for the inclusion of treatability studies. This figure shall be updated in compliance with modifications regarding treatability studies cited above.	WP, Figure 6-1	*Yes*	No treatability studies are planned at this point. The schedule will be revised if treatability studies are identified. *The MPCA agreed.*
MPCA I.46	The State Project Manager (based on Section 7.2, presumably the Navy is referring to David Douglas) does not direct B&R Environmental on this or any other project nor is there any direct contractual relationship between David Douglas and any contractor of the Navy. This section shall be rewritten accordingly.	WP, Figure 7-1	Yes	*Text will be changed accordingly.*
MPCA I.47	The FFA describes the roles and responsibilities of the project manager. The Navy may reiterate them in the Work Plan if the Navy believes that this would be helpful to the Navy. David Douglas has no direct responsibilities for the conduct of the RI/FS as implied in this section, but is willing to help the Navy in any way possible for work described in this Work Plan. Tom Bloom has no oversight role with regard to David Douglas. The Navy shall rewrite this section accordingly.	WP, Section 7.2	Yes	*Text will be changed accordingly.*
MPCA I.48	The Navy shall describe the relationship between Scott Glass and those persons that Mr. Glass oversees for this project in this or another section.	WP, Section 7.2	Yes	*Text will be changed accordingly.*
MPCA I.49	The laboratory shall be identified in this section with reference to their Quality Assurance Manual.	WP, Section 7.4	Yes	The laboratory will be identified in this section. The laboratory Quality Assurance Manual will be provided under separate cover.
MPCA I.50	The Navy shall list the hydrogeologist for MPCA and Brown and Root on the chart.	WP, Section 7.4	*Yes*	MPCA *will* provide marked up chart.
MPCA I.51	The Navy shall include information on the data validator, audits, communication between the different parties involved on site, and who has ultimate control on the site.	WP, Section 7.4	*Yes*	Information is already provided. See WP, Sections 7.1, 7.3 and 7.5. *The MPCA agreed.*
MPCA II.1 (2)	The "Recommendations" section of the "Work Plan Addendum to Revision B Morrison Knudson Corporation, dated February 21, 1996, states that "...the Navy, the Minnesota Pollution Control Agency (MPCA) staff and the U.S. Environmental Protection Agency (U.E. EPA) shall review the information gathered in the field and determine how to proceed with investigation of the remaining small anomalies." The Navy shall indicate how this matter will be addressed in the Work Plan.	Volume II of IV, Field Sampling Plan (FSP), Section 2.2, Item 2	Yes	The North 40 Barrel Removal Project report is not yet available. The report conclusions will be considered in the *OU3 RI Report.*

MPCA II.2	In the recently completed North 40 Barrel Removal Project, the Navy excavated nine primary and five secondary anomalies. Although drums were removed form several primary anomalies, the drums of highest concern were found outside of the perimeter of the primary anomaly A-3. The reason for the expanded excavation of A-3 was due to stained soils and the presence of other drums within the excavation zone. The rationale for selecting the primary vs. secondary anomalies was the strength of the electromagnetic signal. In retrospect, this screening strategy may or may not have been the most appropriate one. The Navy shall address this concern in the North 40 Barrel Removal Project report and in the Work Plan.	FSP, Section 2.2, Item 2	Yes	The North 40 Barrel Removal Project report is not yet available. The report conclusions will be considered in the *OU3 RI Report.*
MPCA II.3	The MPCA staff does not believe that groundwater contamination in the North 40 can be sufficiently characterized with existing monitoring wells. In addition, it is difficult to determine if the United States Geological Survey (USGS) seismic study will be sufficient to evaluate contaminants in the saturated zone outside the building. Moreover, the MPCA staff has not received any of the final results of the seismic test. Furthermore, the soil sampling results from the North 40 barrel removal action excavations are not available.	FSP, Section 2.2, Item 3, p. 5	*Yes*	The Navy believes that groundwater contamination in the North 40 is sufficiently characterized by the 19 existing monitoring wells (8 shallow, 3 intermediate, 6 deep and 2 bedrock) located in the North 40. *This issue will be handled under OU1. No change necessary.*
MPCA II.4	The MPCA staff is concerned about potential contamination in the saturated zone in the North 40 because capture of intermediate and deep groundwater is not achieved with the present groundwater system. Groundwater flow from this area is to the west towards the Mississippi River. A monitoring well gap of over 1,000 feet exists along the compliance boundary downgradient of the North 40. Therefore, to address the above-cited uncertainties, in the Work Plan, the Navy shall propose installation of two additional monitoring well nests along the western compliance boundary downgradient of the North 40.	FSP, Section 2.2, Item 3, p. 5	*Yes*	The final Evaluation of Groundwater Containment System Effectiveness Report dated July 1996 states that capture of deep groundwater has been achieved (99% capture overall) and does not recommend the addition of monitoring wells. The Navy believes groundwater contamination has been adequately characterized in this area. *This issue will be handled under OU1. No change necessary.*
MPCA II.5	Because of the lack of capture in the intermediate and deep zones in the North 40 and under the northwestern portion of the building it is important to characterize potential source areas in this portion of the building. The Navy shall give this area priority in the investigation of potential source areas in the Work Plan.	FSP, Section 2.2, Item 3, p. 5	*Yes*	As stated above, capture in the deep zone has been achieved. In the intermediate zone, where capture is not complete, the TCE concentrations are approximately at or below the acceptable levels of 5 ppb and they have been decreasing over time. This area has not received lessor or greater attention than any other area. *This issue will be handled under OU1. No change necessary.*
MPCA II.6	The Navy shall investigate and remediate, where appropriate, all of the solid waste management units (SWMUs) listed in Part IX, "Corrective Action For Solid Waste Management Units," of the Naval Industrial Ordnance Plant (NIROP) Hazardous Waste Storage Facility Permit, MN3 170 022 914, dated March 1, 1996, that have released and have threatened to release hazardous substances, pollutants, or contaminants into the soil or groundwater of the NIROP Site. The list of SWMUs to be investigated shall include those listed on page 28, attributable to United Defense L.P. These areas shall be listed as Areas of Concern (AOCs) in the Operable Unit 3 RI/FS Work Plan.	FSP, Section 2.2, Item 5, p. 5	Yes	We are comparing the list to currently defined AOCs. SWMUs on the United Defense property will not be included as AOCs. Need for additional sampling will be based on analytical results and characterization from the currently proposed investigation. *The MPCA agreed.*

Action Items

Put comparison in the work plan.

MPCA II.7	The MPCA staff is uncertain that the field test proposed for identifying the presence of dense nonaqueous phase liquids (DNAPLs) (>100 ppm flame ionization detection and a visual inspection with ultraviolet light) is appropriate. The Navy shall provide documentation of the method and Standard Operating Procedures (SOPs) for this method.	FSP, Section 2.2, Item 9, p. 6	*Yes*	The text will be revised such that field screen samples are collected at each change in lithology. A reference will be provided qualifying the use of an ultraviolet light to check for DNAPL. *The MPCA agreed.*
MPCA II.8	The current direct-push sample collection calls for a soil sample at two feet, a sample at 12 feet and a groundwater sample five feet into the water table. For the investigation of DNAPL distribution, the first confining layer encountered is important in determining where DNAPL may accumulate. The Navy shall use the direct-push method to determine the depth of the first confining unit and to collect a sample at that interval to determine if DNAPL is being confined by this upper confining layer. The distribution of the upper confining layer can be determined utilizing this sample.	FSP, Section 2.3, p. 7	Yes	*A field GC will be used to screen samples. The sample with the highest field GC result in the interval of 2 to 12 feet will be collected for analysis at a fixed base laboratory along with the sample from the 0 to 2 foot interval. Field GC results will be used for evaluating protectiveness of groundwater.* *Will go as deep as practicle using the direct-push technique. If the first confining layer is reached, then a sample will be collected and analyzed with the field GC.*
MPCA II.9	The Navy has indicated in past discussions that all drywells would be sampled. The table, however, specifies that the drywell AOC 45 is not to be sampled. The Navy shall sample this AOC in keeping with this understanding.	FSP, Section 2.3, Table 2-1	*Yes*	This was only used as a starting point in an iterative process. Rationale for not selecting AOC 45 is explanined in text and table. *AOCs 45 and 46 are within 20 feet of each other. AOC 46 will be sampled rather than AOC 45.*
MPCA II.10	The table is inconsistent with the map and Table 2-2, which indicate that AOC 53 shall be sampled. The Navy shall modify the table accordingly.	FSP, Section 2.3, Table 2-1	Yes	Table and drawing are incorrect. AOC 53 will not be sampled. *The MPCA agreed.*
MPCA II.11	The areas in the building around AOCs 23 and 16 will be left uncharacterized as part of the sampling plan. The Navy shall include one sampling point in this area as well.	FSP, Section 2.3, Table 2-1	*Yes*	Need for additional sampling will be based on analytical results and characterization from the currently proposed investigation. *The MPCA agreed.*
MPCA II.12	Although the sampling plan appears to give adequate coverage for the Phase I effort, the Navy shall ensure that the AOCs presented in the Work Plan reflect the locations identified in the interviews with employees. Of particular interest is the large solvent tanks mentioned as present in the area of 21st Avenue and Broadway, the paint shop area, and the area at location 10E to Sixth and Fifth Avenues. Also the reference to the current wet wells and sump at 6NW Sixth Avenue and 12 NE Sixth Avenue. If the current AOCs do not specifically relate to these areas. the Navy shall add these areas to the sampling plan.	FSP, Section 2.3, Table 2-1	Yes	Will compare and identify on drawing. Need for additional sampling will be based on analytical results and characterization from the currently proposed investigation.
MPCA II.13	The statement that alternative samples would be taken downgradient of areas where high concentrations were detected is confusing. Taking samples at upgradient locations would seem more informative so that the source area of the contamination could be narrowed. The Navy shall re-evaluate the rationale for taking alternative samples downgradient of areas where high concentration are detected.	FSP, Section 2.3, p. 16, para. 3	Yes	Will clarify text. Supplementary points are intended to provide data on extent from source point. *The MPCA agreed.*
MPCA II.14	The reference to AOC 33 is confusing, since it is not close to locations on 21st Avenue.	FSP, Section 2.3, p. 16	Yes	Text will be corrected to 14th rather than 21st Avenue.
MPCA II.15	This paragraph states, "[a]s data return from the analytical laboratory, the utility of collecting samples at the supplementary sampling locations will be evaluated by the FOL [Field Operations Leader], the B&R Environmental Task Order Manager, and if appropriate the MPCA field inspector, the Navy, and the U.S. EPA." The Navy shall identify the conditions that would result in the exclusions of the MPCA, Navy and the EPA staff from this decision making process.	FSP, Section 2.3, p. 16	Yes	Text will be revised to include all parties in the decision making process. *The MPCA and EPA will provide clarification on roles and responsibilities.*

MPCA II.16	AOC 46 is missing from the table. The Navy shall add this AOC to the table. Also the Navy shall sample for nitrates/nitrites/ammonia, methane, chloride, and phosphorous in each sample. The MPCA staff can furnish EPA's methodology for this analysis if required. The Navy shall amend the list on page 26 accordingly.	FSP, Section 2.5, Table 2-2	Yes	AOC 46 will be added to the Table and drawing. Analysis for parameters to evaluate bioremediation will be included. *Wells will be stainless steel, therefore hydrogen analysis will not be possible.*
MPCA II.17	The Navy shall present the Phase I preliminary findings to the MPCA staff at a meeting at the MPCA offices before beginning Phase II. The information collected may be valuable in determining the depths and locations of monitoring well nests. A better understanding of the potential source areas and the geologic controls on DNAPL accumulation and migration should be better understood after the Phase I work is complete. Adjustments may be made in the well locations and depths based on Phase I information. The MPCA staff shall review and approve the preliminary Phase I findings before installation of the well nest locations.	FSP, Section 2.4, p. 17	*Yes*	*A meeting will be held prior to placing monitoring well nests.*
MPCA II.18	In addition there are no shallow monitoring wells proposed in the plan. The highest groundwater concentrations have been observed in the shallow plume maps. The Navy shall install permanent monitoring wells to monitor the shallow zone if the Phase I work indicates there is significant contamination located in shallow groundwater. These wells could become part of the monitoring network to evaluate the effectiveness of the remedy.	FSP, Section 2.4, p. 17	Yes	The temporary well points will adequately define the groundwater contamination beneath the building. However, a permanent shallow monitoring well will be installed at each intermediate/deep well cluster. The location of these clusters is based upon accessibility with a drill rig. A rig will not be able to get to the majority of the temporary well locations. The six permanent well clusters (shallow, intermediate, deep wells) will be sufficient in determining the groundwater quality beneath the building.
MPCA II.19	The Navy shall not use gasoline and diesel range organics (GRO/DRO) analyses at these methods are not useful tests with which to evaluate risk from petroleum contaminated soil and or groundwater. It is more useful to evaluate petroleum contamination for gasoline by using a BTEX type of analysis.	FSP, Section 2.5, Table 2-3	Yes	GRO/DRO analyses will be deleted. *The laboratory will be asked to flag any GRO/DRO type compounds identified during the volatile and semi-volatile analyses.*
MPCA II.20	The Navy shall identify who maintains the Master Site Logbook and how the logbooks are traced and maintained.	FSP, Section 5.0	Yes	*Text will be changed accordingly.*
MPCA II.21	The laboratory shall record the temperature of the cooler upon arrival at the laboratory. Chemical preservation of VOAs can be checked after the analyses have been done.	FSP, Section 5.2	Yes	(Note: Believe comments MPCA II.21 through 26 are referring to Section 5.2 *and Appendix B* of the QAPP, not the FSP.) The second and third sentences of Section 5.2 of the QAPP state that the laboratory shall measure and record the temperature of the cooler upon receipt. A statement will be added to Section 5.2 to indicate that the pH of VOA samples will be checked after analysis.
MPCA II.22	The Navy shall use EPA sample check-in sheet for samples.	FSP, Section 5.2	*Yes*	*CLP Form DC-1 will be used by the laboratory unless the laboratory has its own form which contains all of the necessary information. An example of the form that will be used will be included in the QAPP.*
MPCA II.23	The standard operating procedure (SOP) "Storage and Security SOP-004" shall be resubmitted as the copy is not readable.	FSP, Section 5.2	Yes	No comment.
MPCA II.24	The Navy shall define the Ceimic system. Is this a LIMS or a paper tracking system?	FSP, APP. B, SOP005	Yes	The laboratory uses a PC-based data management system. This will be stated in Section 5.2 of the QAPP.
MPCA II.25	The Navy shall include reference to instrument set up, include a Quality Assurance Section, and include information regarding spikes and duplicates. In addition, the surrogate recovery window is too large. The Navy shall rewrite this SOP or use the Wisconsin GRO method.	FSP, APP. B, SOP 8015 GRO	*Yes*	GRO analysis will not be performed per MPCA's request in comment above. *The MPCA agreed.*

MPCA II.26	The Navy shall rewrite this SOP to indicate that large losses of volatiles can occur if a sonication horn is used for the gas range compounds. In addition, Section 12.5 of the DRO method specifies that the CCVS is injection number 16, not 10.	FSP, APP. B, SOP 8015B DRO	*Yes*	DRO analysis will not be performed per MPCA's request in comment above. *The MPCA agreed.*
MPCA III.1 [3]	The Navy shall discuss safety monitoring.	Volume III of IV, Quality Assurance Project Plan (QAPP), Section 1.4.2.1	Yes	The second sentence in the second paragraph on page 1-6 of the QAPP, regarding field measurements of total volatile organics using a PID, will be modified as follows: "These measurements will be used to determine appropriate subsurface sample horizons to be submitted for laboratory analysis and in safety monitoring to determine breathing zone conditions for site workers."
MPCA III.2	The Navy shall add data quality objective (DQO) information here.	QAPP, Section 1.4.3	*Yes*	*The DQO information in the Work Plan is currently referenced.* Additional DQO information provided in the Work Plan and Field Sampling Plan will be referenced. *The MPCA agreed.*
MPCA III.3	The reference to Section 4.1 of the Work Plan is incorrect. The Navy shall refer to the correct section in the text. No sample network design is given in Section 4.1 of the Work Plan. The Navy shall refer to the correct section.	QAPP, Section 1.5	Yes	The reference to the Work Plan will be removed. Only Section 2 of the FSP will be referenced here.
MPCA III.4	The Navy shall identify the method being used to generate these method detection limits and give the reporting limits that meet criteria established by Minnesota Pollution Control Agency (MPCA).	QAPP, Tables 1-1 - 1-3	*Yes*	*The reporting limit will be the lowest of the MCL and HRL values for COPCs. If no MCL or HRL is availble, then the State will develop an HBV. The Navy will determine which COPCs do not have an MCL or HRL and submit a letter to the MPCA requesting that HBVs be developed. The MCL, HRL or HBV will be used to develop concentrations which are protective of groundwater. The laboratory will be required to report to the concentrations. If there is no method that can reach the established level, then best available technology will be used . The laboratory SOP for Method Detection Limit studies will be submitted.*
MPCA III.5	The contract required quality limits (CRQLs) listed do not meet many of the limits required.	QAPP, Tables 1-1 - 1-3	*Yes*	CRQL represents Contract Required Quantitation Limits not "Quality Limits". *See Response to MPCA III.4.*
MPCA III.6	The Navy may drop the methanotrophic bacteria quantification as per discussions with the Savannah River site staff.	QAPP, Tables 1-1 - 1-3	Yes	Based on information obtained during meeting with Savannah River site representatives.

MPCA III.7	This section refers to Section 7.0 of the Work Plan. The Navy shall identify all subcontractors. The laboratory shall submit a staffing chart. (This would be in their Quality Assurance Manual (QAM), which must be submitted and referenced.) The Navy shall identify who is in charge of overall quality assurance. The Brown and Root chemistry section discussed later in the text is not shown on this chart. Is J. Samchuck in charge of this section?	QAPP, Section 2.0	Yes	The organization chart in Section 7.0 of the Work Plan will be revised to indicate subcontractors, where possible. (Some may not be known at this time.) A copy of the laboratory's Quality Assurance Plan will be provided to MPCA under separate cover. *The Navy will also provide the additional laboratory information requested by the MPCA via a reference to the appropriate laboratory Quality Assurance Plan section.* The B&R Environmental Quality Assurance Manager (QAM) is responsible for overall quality assurance. A statement will be added to Section 7.3 of the Work Plan to clarify this. The B&R Environmental Chemistry Department is represented on the organization chart as chemists under the support staff heading. J. Samchuck is the Data Validation Coordinator and as currently shown on the organization chart.
MPCA III.8	The duplicate rate and MS/MSD rate shall be a ten percent effort (regardless of the CLP methods, ten percent shall be used).	QAPP, Section 3.0	*Yes*	*The duplicate rate for inorganics will be 10%. The MS/MSD rate for organics will be 5% provided CLP requirements for analysis of surrogates are met.*
MPCA III.9	The Navy shall identify the limits for the relative percent difference (RPD) for the SOPs.	QAPP, Section 3.0	*Yes*	The limits for RPD are provided in Tables 3-1 through 3-4 of the QAPP. *The MPCA agreed.*
MPCA III.10	Discussion regarding method selection shall be included in Section 7.0 of the QAPP.	QAPP, Section 3.0	*Yes*	Discussion regarding method selection is provided in the last two paragraphs on page 7-1 and the first paragraph on page 7-2 of the QAPP. *A sentence will be added stating that standard CLP or EPA accepted analytical methods were chosen due to the expected concentrations of analytes.*
MPCA III.11	Laboratory Control Samples (LCS) for mercury shall also be done.	QAPP, Section 3.8	Yes	Although not required by CLP protocol, LCS analysis for mercury will be performed. Table 3-8 will be revised accordingly.
MPCA III.12	The accuracy window for DRO of 5 - 180 percent is unacceptably wide, as is 19 - 146 percent and 10 - 126 percent referenced in the TPH table. These limits shall be changed to a maximum range of 50 - 150 percent.	QAPP, Table 3-9	*Yes*	GRO/DRO analysis will not be performed per MPCA's request in comment above. *The MPCA agreed.*
MPCA III.13	The Navy shall supply the completeness equation or reference it. The completeness of data will be reported on a quarterly/annual basis.	QAPP, Section 3.3.1	Yes	The references to the completeness equation will be removed from Section 3.3.2 and 3.3.3 and added to Section 3.3.1. It is anticipated that all OU3 RI samples will be collected within a four-month period. Therefore, completeness will be calculated for the project as a whole. *The MPCA agreed.*
MPCA III.14	One hundred percent completeness of field data is not realistic. Broken samples or overfilled samples will lower the completeness percentage. The Navy shall rewrite this section accordingly.	QAPP, Section 3.3.2	Yes	The field data completeness goal will be changed to greater than 90%. *The MPCA agreed.*

MPCA III.15	Are samples to be homogenized? Which ones? The Navy shall fully describe the SOP for this process.	QAPP, Section 3.6	Yes	The third paragraph in Section 3.6 of the QAPP indicates that field duplicates, with the exception of VOA samples, are homogenized. The third paragraph on page 2 of Section 8 indicates that laboratory duplicates and matrix spike duplicates, with the exception of VOA samples are homogenized. The actual process for homogenization will be provided in FSP. *The MPCA agreed.*
MPCA III.16	On page 19, the Navy shall specify that samplers must take triple volume for MS/MSD samples for all organic parameters.	QAPP, Section 3.6	Yes	The text will be changed to state that aqueous MS/MSD samples must be collected at triple the volume for VOCs and extractable organics.
MPCA III.17	The Navy shall select and identify a biological laboratory.	QAPP, Section 7.0	*Yes*	Methanotropic bacteria quantification will not be performed per MPCA's statement in comment above. *The MPCA agreed.*
MPCA III.18	With the use of CLP methods, the reporting limits must be adjusted to meet requirements of the MPCA.	QAPP, Section 7.0	*Yes*	See response to MPCA III.4 and 5.
MPCA III.19	The Navy shall include the calibration procedure for the Sensidyne flame ionization detector (FID).	QAPP, Section 7.0	*Yes*	Calibration of instruments, as noted in Section 7.1 of the QAPP, is discussed in Section 6 of the QAPP. Section 6.1 of the QAPP specifically addresses field instrument calibration and refers to Section 9.1 (Field Instrument Calibration) of the FSP. Section 9.1 of the FSP provides an overview of field calibration procedures and refers to SOP ME-13 (in an appendix to the FSP) for specific details regarding calibration of the FID. *The MPCA agreed.*
MPCA III.20	The Navy shall specify the requirements of the field QC (e.g., relative percent difference (RPD) allowable for field duplicates, duplicate pH readings, etc.). The Navy shall conduct field audits and management review of field books and modify this section accordingly.	QAPP, Section 8.0	Yes	The following sentence will be added to Section 8.1: "Quality Control limits for field-related Quality Control checks were provided in Section 3.0 of this QAPP." Field audits and management review of field books is discussed in Section 10.0 of the QAPP. *The MPCA agreed.*
MPCA III.21	The Navy shall submit the Ceimic corporation QAM and reference it for laboratory internal quality control, define control charting, performance evaluation samples, internal blind samples, training, standard verification, solvent testing, laboratory water purity checks, reagent storage, etc.. This includes anything a laboratory does beyond a method QA.	QAPP, Section 8.2	Yes	A copy of Ceimic's QA Plan will be provided to MPCA under separate cover. *The QA Plan will be referenced for the additional information that the MPCA has requested.*
MPCA III.22	What is meant by "[n]o manipulation of these results for reporting purposes will be necessary once the results are received by the laboratory"?	QAPP, Section 9.1.2	Yes	The statement in question was meant to indicate that results will be used as received by the laboratory. The sentence will be re-written as such: "Analytical results will be presented in summary tables in the RI Report. these results will be reported as received by the laboratory with the possible exception of the elimination of false positives as a result of data validation (as discussed in Section 9.2)." *The MPCA agreed.*

MPCA III.23	The Navy shall explain the uses of the "upper 95 percent confidence limits on the geometric/arithmetic mean". The data being discussed are duplicates; entire data sets are required for statistical manipulations.	QAPP, Section 9.1.2	Yes	Upper 95% confidence levels are descriptive statistical values. Based on the analytical data, these values may be calculated and reported in summary tables in the RI Report to be used in describing the nature and extent of contamination as well as in risk assessment. The mention of these levels in the bulleted items on page 3 of Section 9 was not meant to indicate that upper 95% confidence levels are associated with duplicates. The bulleted items were meant to introduce the text on pages 8 and 9 of Section 9 which provides further detail regarding the calculation of averages for field duplicates and both types of upper 95% confidence levels. The text will be more clearly written and will indicate that these statistics may be used for purposes other than risk assessment. *The MPCA agreed.*
MPCA III.24	The second equation on page 4 does not make sense; the third and fourth equations are skewed low; and the terms of the fourth equation are not internally consistent (if the detection limit/2>reported value).	QAPP, Section 9.1.2	Yes	These "equations" indicate the methods to be used in reporting results for field duplicates in the summary tables within the RI Report. (As noted in the text, the individual result for both samples will be included in an Appendix to the RI Report.) The first equation indicates that, when both samples have positive results, the average reported will be calculated as the arithmetic mean. However, there may be instances when the result for one or both samples is a nondetect. As noted in the text, the typical procedure in the handling of nondetects in calculations is to use one-half the detection limit as the result for the nondetect. The next three equations provide calculations for the three possible instances. The second equation shows the calculation for two samples which are both nondetects. The average of one-half of each detection limit would be the sum of the detection limits divided by 4. The equation will be revised, as follows, so it will be more clear: Average = [(Original Dectection Limit/2) + (Duplicate Detection Limit/2)]/2 For further clarification of the third and fourth equations, it should be noted that it is possible that one-half the detection limit of one sample may be greater than a positive result for its duplicate sample. (For example, if Sample A has a positive result of 2 ug/L and the duplicate of Sample A is a nondetect with a detection limit of 10 ug/L, one-half the detection limit of the duplicate (5 ug/L) would be greater than the positive result reported for Sample A.) *The text will be revised to more clearly define which limits are being used in the calculations. The MPCA agreed.*

MPCA III.25	The Navy shall remove the two equations on page 5 used for risk assessment because these do not belong in this section of the QAPP. Furthermore, this entire discussion must be reviewed by a qualified risk assessor (or scientist who understands what the equations are used for) and rewritten in a document dealing strictly with risk assessment.	QAPP, Section 9.1.2	*Yes*	The text does currently state that the calculations of upper 95% confidence limit would be used only for risk assessment purposes. This, however, is inaccurate. Based on the analytical data collected, these descriptive statistics may also be used to summarize data within the text of the RI Report to evaluate the nature and extent of contamination. The text will be revised to clarify this. *The MPCA agreed.*
MPCA III.26	The Navy shall describe the internal audits done by "[a] US Navy Contractor."	QAPP, Section 10.0	Yes	This information will be provided to the MPCA under separate cover. *The MPCA agreed.*
MPCA III.27	The Navy shall submit the audit checklist.	QAPP, Section 10.1.1	Yes	The field audit checklist is currently in a state of revision. The checklist will be submitted upon completion. *The MPCA agreed.*
MPCA III.28	The Navy shall define the terms, "formal quality notices" and "docketing protocol."	QAPP, Section 10.1.3	Yes	Upon re-evaluation, it has been determined that the terms "docketing protocol" and "Quality Notices" were inappropriately used. The second, fourth, and sixth bulleted items on page 3 of Section 10 will be modified as follows: "File audits will consist of reviewing required project records for completeness, organization, and ease of retrieval." "The audit checklist will be used to record observations including any noted nonconformances." "The auditor will generate a formal audit report which will address corrective actions." *The MPCA agreed.*
MPCA III.29	Navy shall submit a copy of the last audit conducted by the Navy on Ceimic. This shall include an audit of the laboratory by Brown and Root Environmental if Brown and Root Environmental contracted with them. Otherwise, it is the responsibility of the Navy to audit the laboratory. The Navy shall identify appropriate audit documentation. This section shall be changed accordingly.	QAPP, Section 10.2.1.1	Yes	This information will be provided to the MPCA under separate cover. *The MPCA agreed.*
MPCA III.30	The discussion shall detail the internal audits that Ceimic performs. This shall include what is audited, by whom, how often, and how the results of this audit are used to improve the laboratory quality. The audit reports shall appear in the annual reports.	QAPP, Section 10.2.1.2	*Yes*	Section 10.2.1.3 of the QAPP discusses internal audit procedures and refers to Appendix C of the QAPP for Ceimic's specific procedures. The text in Appendix C provides the requested information. *More detail regarding the laboratory's internal audit procedures (e.g., a schedule of what departments are audited and when, what procedures are used, etc.) will be provided in the QAPP.* *Performance of laboratory internal audits conducted while samples from this investigation are being analyzed will be noted in the RI Report. If significant problems are identified during the audit, then these issues will be described as well as any corrective action taken.*

MPCA III.31	The Navy shall submit the quality assurance manual (QAM) from Ceimic and reference the proper laboratory section.	QAPP, Section 11.0	*Yes*	As required by the U.S. EPA Region V, Ceimic's preventive maintenance procedures for key instruments specific to this project are described in Section 11.2 of the QAPP. *The MPCA agreed.*
MPCA III.32	The Navy shall conduct a ten percent effort on all MS/MSD for all work from NIROP. The Navy shall reference Tables 3-1 through 3-11 for limits.	QAPP, Section 12.0	*Yes*	See comment MPCA III.8 regarding 10% MS/MSD frequency. Specific mention of Tables 3-1 through 3-11 will be added to the first sentence in Section 12.0 to further define the reference to Section 3.0.
MPCA III.33	The Navy shall restate the completeness goal (of 90 percent).	QAPP, Section 12.3	Yes	The following sentence will be added to the end of Section 12.3: "Field and laboratory completeness objectives for this project are 90 percent and 95 percent, respectively." *The MPCA agreed.*
MPCA III.34	The Navy shall specify the person responsible for final sign-off authority on all Corrective Action (CA). For minor CA, the FOL is assumed to sign-off. The Field Task Modification Form (FTMF) has a sign-off line for a project manager. The appropriate project manager shall be identified in Section 2.0 of the QAPP.	QAPP, Section 13.0	Yes	As specified in Section 13.1, all project parties will approve any significant change in the approved Project Plan. Section of the QAPP references Section 7 of the Work Plan which identifies the project manager. *The MPCA agreed.*
MPCA III.35	The Navy shall clarify the relationship between the CA form and the CA logbook discussed in the text. Is the form a part of the logbook? How are they used together?	QAPP, Section 13.2	Yes	The laboratory QA/QC Officer was contacted and indicated that the corrective action log or logbook is no longer used by the laboratory. All references will be changed as appropriate to Corrective Action Form.
MPCA III.36	The Navy shall submit the laboratory QAM and reference the appropriate section.	QAPP, Section 13.3	*Yes*	As defined in Section 10.1.1.1 of the QAPP and in the List of Acronyms provided at the beginning of the QAPP, "QAM", as used in the QAPP, is an acronym for Quality Assurance Manager. Therefore, the reference to the QAM in Section 13.3 refers to B&R Environmental's Quality Assurance Manager, not the laboratory's Quality Assurance Plan. *The MPCA agreed.*
MPCA III.37	The Navy shall specify the project manager.	QAPP, Section 14.1	Yes	All text referring to project manager in Section 14 will be changed to read Task Order Manager. The Task Order Manager is identified in Section 7 of the Work Plan. *The MPCA agreed.*
MPCA III.38	The Navy shall use the QA reports previously discussed for changes to the QAPjP and any other staff changes that affect the project.	QAPP, Section 14.1	Yes	*Any changes to the QAPP and any staff changes that affect the project during the field work will be noted in the RI Report.*
EPA I.1 (4)	Discuss further statements that refer to the correlation of groundwater plumes from the Twin Cities Army Ammunition Plant (TCAAP), Kurt Manufacturing, and Dealer's Manufacturing Superfund sites and groundwater on the Naval Industrial Reserve Ordnance Plant (NIROP).	Volume I of IV, Work Plan (WP), Section 2.3, p. 4, para. 2 & 3	Yes	Reference to the TCAAP plume will be removed based on information provided by TCAAP. Will look at OU1 results to determine if these sources were substantiated.
EPA I.2	Correct reference to pending NPDES permit.	WP, Section 2.6, p. 18, para. 2	Yes	Text will be changed to indicate the permit has been issued.
EPA I.3	See review comment EPA I.1 regarding correlation of potential off-site sources.	WP, Section 3.1.2, p. 6	Yes	See response to EPA I.2.
EPA I.4	Please revise the decision statement. If contamination exists in the unsaturated soils at unacceptable risk levels to the target receptors under an industrial land use scenario, implementing a remedy is certain. The appropriateness of the remedy will be discussed in the FS.	WP, Section 4.1, p. 1, Decision Statement	*Yes*	Decision statement is consistent with process to conduct a feasibility study if a risk is identified. *The EPA agreed. No change necessary.*

EPA I.5	Discuss further in this section how the U.S. EPA Region IX industrial land use preliminary remediation goals (PRGs) were modified to account for site specific conditions. Verify how the modified PRGs, that are indicated as 25 times higher than Region IX industrial land values, are protective of construction/utility workers.	WP, Section 4, p. 2, para. 4	Yes	As noted for the MPCA comments, State guidance will be consulted and, as appropriate, be considered to establish PRGs. The Region IX PRGs are based on 250 days/year of exposure over a 25 year working lifetime which is highly unlikely for this site. Instead, the Region IX PRGs were adjusted to reflect a 10 days/year of exposure over a 25 year working lifetime which was considered to be much more realistic for the site-specific excavation.
EPA I.6	Groundwater protection criteria based on the MPCA soil-leaching model may be re-evaluated. Please consult with MPCA regarding the approach to evaluating the risk to groundwater from overlying sources, and include a discussion of the result in this section.	WP, Section 4.2, p. 7, para. 3	Yes	Discussions with the MPCA have been initiated. The outcome will be discussed in the section.
EPA I.7	Discussions of tasks required as part of an RI Report, FS and Alternatives Report do not appear to reflect discussions of tasks required as part of an RI Report, FS, and Alternatives Array Report presented in U.S. EPA guidance documents.	WP, Section 5.3, p. 10.	*Yes*	*Language was taken from the FFA. The FFA is incorrect. The MPCA and EPA agreed. EPA guidance will be followed.*
EPA I.8	General discussions of the U.S. EPA Remedial Project Manger/State Project Manager responsibilities are not correct. Please refer to the Federal Facilities Agreement (FFA), between U.S. EPA, MPCA, and U.S. Navy for correct descriptions of responsibilities.	WP, Section 7.0, p. 1	Yes	The text will be compared to the FFA and corrected, as needed.
EPA I.9	Verify that the Minnesota Department of Health should not be shown on this chart. Consideration should be given to showing their role in the permitting and approval process for well installations and soil probes, particularly for soil probes that are used to collect both soil and groundwater samples for contaminant characterizations.	WP, Section 7, Figure 7-1	*Yes*	*Permit requirements will be acknowledged in FSP. Text will be changed accordingly.*
EPA I.10	For the Date **May 1995**, 1.1.1-tetrachloroethane, should be, **1,1,1-trichloroethane**.	WP, Table 2-1, p 12/23	Yes	*Text will be changed accordingly.*
EPA I.11	The group (6) plating, should be, (7) plating.	WP, Section 3.1.1, p 5/9, 1st bullet	Yes	*Text will be changed accordingly.*
EPA I.12	Clarify the references to RMT Figure 1 and RMT Figure 2. These figures are not included in the WP.	WP, Section 5.2.5, p 3/12 and 8/12	Yes	Figures were not intended to be included. No work is proposed in this area. The OU2 conclusions (including these figures) will be included in the OU3 RI Report.
EPA I.13	In the box **U.S. EPA Region V**, delete I. Levine, QA Manager, and replace with **Superfund QA Reviewer**.	WP, Figure 7-1, p 2/7	Yes	*Text will be changed accordingly.*
EPA I.14	U.S. EPA Region V Quality Assurance Manger 1) In the subtitle delete Quality Assurance Manager, replace with **Superfund Quality Assurance Reviewer**. 2) In the text delete Quality Assurance Manager, Ida Levine, replace with **Superfund Quality Assurance Reviewer**.	WP, Section 7.3	Yes	*Text will be changed accordingly.*
EPA II.1 [5]	This sentence indicates that sample results from areas of possible product releases will be compared to sample results from areas where there are no suspected releases. Discuss further if background concentrations, mainly for inorganics in soil, will be determined and if this data will be used in the comparisons.	Volume II of IV, Field Sampling Plan (FSP), Section 2, p. 5, item 5, last sentence	*Yes*	Background concentrations from the OU2 RI. *The EPA agreed. Clarification will be provided in the text.*

EPA II.2	a) The first paragraph in this section indicates that soil samples from only two intervals will be collected. Verify that the human health assumptions that serve as the basis for the soil PRGs for construction/utility workers, will remain valid if high contamination levels are encountered or suspected between the proposed sample intervals, and samples are not collected at these intermediate intervals. b) Verify that additional samples should not be collected between these proposed intervals if high contamination levels are suspected based on field screening of visual results.	FSP, Section 2, p. 7, subsection 2.3	*Yes*	*A field GC will be used to screen samples. The sample with the highest field GC result in the interval of 2 to 12 feet will be collected for analysis at a fixed base laboratory along with the sample from the 0 to 2 foot interval. Field GC results will be used for evaluating protectiveness of groundwater.*
EPA II.3	The left column in this table describes that rationale for sampling point selection. The description "not selected preagonal" is confusing and it is unclear why this description is necessary.	FSP, Section 2, Table 2-1	*Yes*	Wording not found. *The EPA agreed.*
EPA II.4	Verify that the requirements for direct push technology (DPT) drilling and Rotosonic drilling procedures comply with Minnesota Department of Health (MDH) regulations for wells and borings (Minnesota final regulations, Chapter 4725). Past experience with the MDH has required compliance with their regulations regarding permitting for wells and DPT boring (DPT boreholes used to collect water samples are considered temporary wells by MDH).	FSP, Section 7.2, p. 2	Yes	Rotosonic drilling was developed in Minnesota. Boart Longear (our potential driller) installs monitoring wells via rotosonic drilling in Minnesota frequently. Therefore, I don't foresee any conflicts. As for the DPT drilling, we agree that they are temporary well points. Section 4725.0475, Subpart 2, Part A states that as long as the sampling device is removed from the hole immediately after sample collection (temporary well point), there will be an exception to license or registration. Since the DPT drilling will be installing temporary well points, we should be exempt from the state for applying for a permit. *Navy will contact state to discuss.*
EPA II.5	This section indicates that the DPT borings will be advanced to the top of the water table which is estimated to be approximately 25 feet below ground surface. Because one of the objectives of the soil sampling program is to evaluate the impact that contamination in the unsaturated zone may have on groundwater, clarify why soil samples for chemical analysis are not proposed to be collected below 12 feet. Although it was stated in the work plan that soil samples collected in support of the human health assessment would be adequate for evaluation of the impact to groundwater, consideration should be given to collecting potentially impacted soil samples below 12 feet, especially if there is a reason to suspect that there is contamination in this zone. If conclusion is to stay with the discussion be included to clarify that a potential lack of data from the unsaturated zone below 12 feet will not require additional sampling.	FSP, Section 7.3, p. 4	Yes	*A field GC will be used to analyze samples below 12 feet.*
EPA II.6	The last two sentences in this paragraph describe that sealing/abandonment procedure for the DPT boreholes. Verify that the sealing procedures outlined in chapter 4725.3850 of the Minnesota regulations are not required.	FSP, Section 7.3, p. 5, para. 2	Yes	Section 4725.3050, Subpart 1, Part D of the MDH regs. states that granular bentonite is allowed as a grout material when used in unconsolidated material. Section 4725.3850 (as referenced by the EPA) Subpart 4, Part A states that a boring in unconsolidated material must be filled with bentonite grout. Based on the referenced section above, bentonite pellets or hole plug should be sufficient for backfill. *Navy will contact state to discuss.*
EPA II.7	This paragraph indicates that purging of temporary wells is not necessary. It is suggested that consideration be given to purging at least 3 volumes of water from the sampling system (tubing, pump, etc.) to ensure that any residuals in the sample equipment do not impact the sample.	FSP, Section 7.5.1, p. 12, top paragraph	*Yes*	*Purging of at least 3 volumes will be attempted. If the point goes dry, then a sample will be collected upon recharge.*

EPA II.8	Indicate in the table that the Analysis of **Reduced Iron** will be done in the field.	FSP, Table 2-4	Yes	*Text will be changed accordingly.*
EPA II.9	Delete last sentence. Filtered samples are not being collected.	FSP, Section 4.1, 1st paragraph, last sentence	*Yes*	Filtered samples will be collected to evaluate intrinsic biodegradation. *The EPA agreed.*
EPA II.10	For the Parameter **Reduced Iron (Fe^{2+})** the Maximum Holding Time of **48 hours** is in disparity with Section 4.c. of the method. Please resolve.	FSP, Table 4-1, p. 2/3	Yes	Reduced iron will be analyzed in the field.
EPA II.11	Designate how samples collected for MS/MSD will be identified.	FSP, Section 5.2	Yes	Text will be added.
EPA II.12	The sample containers should meet the requirements given in, *Specifications and Guidance for Contaminant-Free Sample Containers*, EPA 540/R-93/051.	FSP, Section 6.4	Yes	Specific requirement will be added.
EPA II.13	Delete references to dissolved metals and filtration.	FSP, Section 7.5.1	*Yes*	Dissolved metals will be analyzed to evaluate intrinsic biodegredation. *The EPA agreed.*
EPA II.14	Bailers are allowed, but not recommended, for sample collection.	FSP, Section 7.5.1	*Yes*	*The sample collection technique will be specified. Care will be taken not to release VOCs.*
EPA II.15	Amend typo, pg 13/16, Table 2-5, should be Table 2-4.	FSP, Section 7.5.1	Yes	Text will be revised.
EPA II.16	If nonaqueous-phase liquids (**DNAPL** or **LNAPL**) are detected, samples should be collected for chemical analysis.	FSP, Section 7.5.1, pg 12/16, para. 3	Yes	*Text will be changed accordingly.*
EPA II.17	The SOP **SA-2.2 (Air and Gas Sampling Methods)** was not included in Appendix B. Please provide.	FSP, Section 9.3	Yes	The SOP will be included in Appendix B.
EPA II.18	Denote the concentration of the calibration gas.	FSP, **SOP ME-15**, Section 5.2	Yes	The concentration of the calibration gas will be provided in the text.
EPA II.19	Bailers are allowed, but not recommended, for sampling.	FSP, **SOP SA-1.1**, Section 5.1	*Yes*	*The sample collection technique will be specified. Care will be taken not to release VOCs (e.g., use of bottom discharge bailers).*
EPA II.20	The SOP **SA-6.2** was not included. If this SOP is relevant to the project, it should be attached to Appendix B.	FSP, **SOP SA-1.1**, Section 5.6.2, items 12 & 14	Yes	Reference to SOP SA-6.2 will be removed.
EPA II.21	Clarify the reference to Section 5.3.3. The SOP does not have this section.	FSP, **SOP SA-1.3**, Section 5.6, item 5, p.8/20	Yes	The reference is to Section 5.3 which is present but crossed out because surface soil sampling is proposed. Section 5.3 will not be crossed out since it is referenced by another section that is applicable.
EPA II.22	This section on Field Filtration can be deleted.	FSP, **SOP SA-6.1**, Section 5.3, p 6/23	Yes	Dissolved metals will be analyzed to evaluate intrinsic biodegredation. *The EPA agreed.*
EPA III.1 (6)	On this page delete **IDA LEVINE**, replace with **SUPERFUND**.	Volume III of IV, Quality Assurance Project Plan (QAPP), Section I, Title/Signature Page	Yes	IDA LEVINE will be replaced with SUPERFUND on the title/signature page.
EPA III.2	Specify that groundwater samples will be collected unfiltered.	QAPP, Section II, Section 1.1.1	*Yes*	Dissolved Ca, Mg, Na, and K are needed to evaluate natural attenuation of chlorinated solvents. Both filtered and unfiltered samples will be collected. *The Navy will provide further details on why dissolved metals are being analyzed for under separate cover.*
EPA III.3	In item (2) delete the matrix Surface Water. Surface water samples are not being collected and analyzed.	QAPP, Section II, Section 1.1.1	Yes	The reference to surface water will be deleted.
EPA III.4	Include the determination of the parameter **Reduced Iron**. See APPENDIX A Comment EPA III.14 below.	QAPP, Section II, Section 1.4.2.1	Yes	Reduced iron will be included in the discussion of field parameters.
EPA III.5	The compound **Pyridine** should be included in the list of Semivolatile Organic Compounds. See WP Section 3.1, pg 4/9, and Areas of Concern 63 & 64.	QAPP, Section II, Section 1.4.2.2 and Table 1-1	Yes	Pyridine will be added to the semivolatile organic compound list.

EPA III.6	The Biological Laboratory selected to perform the **Methantropic Bacteria** test should be identified, and they should provide their SOP for conducting this test.	QAPP, Section III, Analytical and Measurement Procedures	*Yes*	Methantropic bacteria will be removed from the parameter list. This comment is, therefore, no longer applicable. *The EPA agreed.*
EPA III.7	Include the following SOPs: **WC.34, WC.21, WC.02, WC.46**.	QAPP, Appendix A, Table of Contents	Yes	The Table of contencts for Appendix A will be revised to include all SOPs.
EPA III.8	GRO ANALYSIS BY MODIFIED SW846 METHOD 8015B No. 8015BGRO A. Provide Retention Times (RTs) and Detection Limits (DLs) for GROs of interest in this project, and perhaps, an example chromatogram. B. It is recommended to prepare the calibration curve with 5 standards, rather than 3 standards. C. Provide the preparation procedures for Soil and Water samples, or the purge and trap procedures. D. Specify the components and concentration of the Matrix Spike solution. See QAPP table 3-9.	QAPP, Appendix A, A. Section 1.0 B. Section 7.2 C. Section 7.5 D. Table 3-9	*Yes*	GRO analysis will no longer be performed. This comment, therefore, is not applicable. *The EPA agreed.*
EPA III.9	Provide Retention Times (RTs) and Detection Limits (DLs) for DROs of interest in this project, and perhaps, an example chromatogram.	QAPP, Appendix A, TPH No. 8015BDRO, Section 1.0	*Yes*	DRO analysis will no longer be performed. This comment, therefore, is no longer applicable. *The EPA agreed.*
EPA III.10	SULFATE BY EPA METHOD 375.4 No. WC.34 A. Stipulate concentration of the calibration standards, and include a calibration blank. B. A calibration verification standard should be tested after every 10 samples and at the end of the analysis. C. Indicate the concentration of the Matrix Spike.	QAPP, Appendix A, A. Section 12.1 B. Section 12.2 C. Section 14.4	Yes	A. The concentration of the calibration standards is 0.0 mg/L, 10.0 mg/L, 20.0 mg/L, 25.0 mg/L, 30.0 mg/L, and 40.0 mg/L. B. A calibration verification standard at 20.0 mg/L is analyzed after every 10 samples and at the end of the run. C. The Matrix Spike concentration is 20.0 mg/L.
EPA III.11	Hardness (EDTA Titrimetric Method) by A Method 130.2 No. WC.21 A. Indicate the range of this method. The RL is 2 mg/L. B. A Titrant Check, or LCS, should be included. Specify the frequency, such as, after every 10 samples, and at the end of the run. C. Include an MS, its concentration, QC criteria, and calculation.	QAPP, Appendix A, A. Section 4.0 B. Section 6.0 C. Section 6.0	Yes	A. The range of this method is 2 - 2000 mg/L $CaCO_3$. B. A titrant check (CCV) is analyzed every 10 samples and at the end of the analysis at a level of 318 mg/L. C. An MS is analyzed at a concentration of 318 mg/L. The QC limits are 75% - 125% recovery. The spike recovery is calculated as follows: % Recovery = $\frac{\text{Spikedsampleresult-SampleResult}}{\text{AmountSpiked}} \times 100\%$

EPA III.12	ALKALINITY, TOTAL (TITRIMETRIC, PH 4,5) No. WC.02 Include calculations for the MS Recovery and Duplicate % RPD.	QAPP, Appendix A, Section 13	Yes	The QC criteria is 75 - 125% recovery of the spike and 20% RPD of the duplicate. The calculations are as follows: % Recovery = Spikedsampleresult-SampleResult x 100% AmountSpiked $\%RPD = \frac{X_1-X_2}{(X_1+X_2)/2} \times 100\%$
EPA III.13	Total Suspended Solids dried at 103 - 105° C No. WC.46 An MS/MSD is not usually performed with this method.	QAPP, Appendix A, Section 6.4	Yes	This SOP has been updated to remove the requirement for an MS/MSD.
EPA III.14	3500-Fe D. Phenanthroline Method As indicated in Section 4.c **Ferrous iron** should be determined at the sampling site immediately after sample collection, because the ferrous-ferric ratio can change in acid solution. This should be considered a field parameter, and be performed by a Chemist. Prepare a Field SOP for this method. Indicate if **Total Iron** and **Ferric Iron** are going to be project desired parameters.	QAPP, Appendix A, Section 4.c	Yes	A methodology for Ferrous Iron will be included in the FSP. Total iron is included in the analyte. Ferric iron is not included.
EPA III.15	9215 HETEROTROPHIC PLATE COUNT The selected biological laboratory should provide their SOP for determining **Methantropic Bacteria** and the project should denote some QA/QC acceptance criteria for this method.	QAPP, Appendix A,	*Yes*	Methanotropic bacteria will be removed from the parameter list. This comment is, therefore, no longer applicable. *The EPA agreed.*
EPA IV.1 [7]	Add a statement explaining who has the authority to stop site operations for Health and Safety reasons.	Volume IV of IV, Site Security and Health and Safety Plan (SS/HSP), Section 1.1, p.1	Yes	In the event of an imminent danger or other perceived life-threatening situation, the FOL or SSO shall have the authority to stop site operations. All personnel must immediately notify the FOL or SSO of conditions which may warrant termination of operations. Should the FOL and SSO be unavailable, any employee or project-related personnel has the authority to terminate operations for health and safety reasons.

(1) MPCA I.1 represents the first comment from the Minnesota Pollution Control Agency's (MPCA's) Attachment I (Modifications to the Draft Work Plan) to the MPCA's letter dated 7/26/96.

(2) MPCA II.1 represents the first comment from the Minnesota Pollution Control Agency's (MPCA's) Attachment II (Modifications to the Draft Field Sampling Plan) to the MPCA's letter dated 7/26/96.

(3) MPCA III.1 represents the first comment from the Minnesota Pollution Control Agency's (MPCA's) Attachment III (Modifications to the Draft Quality Assurance Project Plan) to the MPCA's letter dated 7/26/96.

(4) EPA I.1 represents the first comment from the United States Environmental Protection Agency's (EPA's) Attachment I (Modifications to the Draft Work Plan) to the EPA's letter dated 9/26/96.

(5) EPA II.1 represents the first comment from the United States Environmental Protection Agency's (EPA's) Attachment II (Modifications to the Draft Field Sampling Plan) to the EPA's letter dated 9/26/96.

(6) EPA III.1 represents the first comment from the United States Environmental Protection Agency's (EPA's) Attachment III (Modifications to the Draft Quality Assurance Project Plan) to the EPA's letter dated 9/26/96.

(7) EPA IV.1 represents the first comment from the United States Environmental Protection Agency's (EPA's) Attachment IV (Modifications to the Draft Site Security and Health and Safety Plan) to the EPA's letter dated 9/26/96.

* Text shown in italics indicates resolution obtained during the comment resolution meeting held October 22, 1996 between the Navy, EPA and MPCA (EPA QAPP comment resolution was reached during a conference call between the Navy and EPA on October 21, 1996).

ATTACHMENT 4

MPCA Letter Dated October 18, 1996
Regarding RCRA Permit Modification

Minnesota Pollution Control Agency

October 18, 1996

Commander
United States Navy
Attention Code SEA0713
2531 Jefferson Davis Highway
Arlington, Virginia 22242-5160

RE: United Defense, L.P./United States Navy
Hazardous Waste Storage Facility
Minor Modification No. 1
to the Hazardous Waste Facility Permit
EPA ID No. MN3170022914

Dear Commander:

Please find enclosed draft modifications to Parts I and IX of the above referenced Resource Conservation and Recovery Act Hazardous Waste Facility Permit, and draft cover letter. The intent of the permit modification is to clear up any confusion regarding the responsibilities of the Co-Permittees regarding investigation and remediation of Solid Waste Management Units and Areas of Concern identified within the facility boundaries of the permit.

Please respond within 15 days of the date of this letter to Fred Jenness or Cragne Biglow of my staff, at 612/297-8470 or 612/297-8377, with any questions or comments related to this draft modification or draft cover letter. Once my staff have received your comments, and had a chance to

discuss your comments with you, they will revise the modification as appropriate and make it effective by sending to you under the enclosed cover letter. Thank you for your cooperation in this matter.

Sincerely,

Bruce W. Brott, P.E., Supervisor
Permit and Review Unit
Regulatory Compliance Section
Hazardous Waste Division

BWB:mln

Enclosure

cc: Scott Glass, U.S. Navy, Charleston
Kerry Morrow, U.S. Navy, Minneapolis
Tom Bloom, U.S. Environmental Protection Agency, Region V, Chicago

Minnesota Pollution Control Agency

October 18, 1996

Mr. Douglas Hildre
Environmental Control Manager
United Defense, L.P.
4800 East River Road
Minneapolis, Minnesota 55421

RE: United Defense, L.P./United States Navy
Hazardous Waste Storage Facility
Minor Modification No. 1
to the Hazardous Waste Facility Permit
EPA ID No. MN3170022914

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Please respond within 15 days of the date of this letter to Fred Jenness or Cragne Biglow of my staff, at 612/297-8470 or 612/297-8377, with any questions or comments related to this draft modification or draft cover letter. Once my staff have received your comments, and had a chance

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Permit and Review Unit
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BWB:mln

Enclosure

cc: Scott Glass, U.S. Navy, Charleston
Kerry Morrow, U.S. Navy, Minneapolis
Tom Bloom, U.S. Environmental Protection Agency, Region V, Chicago

Mr. Douglas Hildre
Environmental Control Manager
United Defense, L.P.
4800 East River Road
Minneapolis Minnesota 55421

Commander
United States Navy
Attention Code SEA0713
2531 Jefferson Davis Highway
Arlington, Virginia 22242-5160

RE: United Defense, L.P. / United States Navy
Hazardous Waste Storage Facility
Minor Modification No. 1
to the Hazardous Waste Facility Permit
EPA ~~ID No.~~ MN3170022914

Dear Mr. Hildre:

Dear Commander:

United Defense, L.P. (UDLP) and the United States Navy (Navy) (Co-Permittees) were reissued a hazardous waste facility permit under the Resource Conservation and Recovery Act (RCRA) on March 1, 1996. The Facility permit has not been modified since the permit reissuance.

On March 27, 1991, the Navy entered into a Federal Facilities Agreement (FFA) with the Minnesota Pollution Control Agency (MPCA) to investigate and clean up the Naval Industrial Reserve Ordnance Plant pursuant to the Minnesota Environmental Response and Liability Act, Minn. Stat. Ch 115B. Pursuant to the FFA, and based on documentation of elevated levels of contaminants of concern under the NIROP main building, the MPCA staff has repeatedly requested that the Navy investigate possible source areas in and under the main NIROP building. While the Navy has agreed to conduct this investigation on and under property allegedly owned by the Navy pursuant to the FFA, the Navy has repeatedly refused to conduct this investigation on and under property allegedly owned by UDLP because the Navy believes that this property is not included in the FFA. Instead of proceeding with the formal dispute resolution process described in the FFA at this time, the MPCA hereby requires that the Co-Permittees conduct an investigation, and possible cleanup, of possible source areas pursuant to the RCRA facility permit.

The enclosed minor permit modifications have been initiated by the MPCA and modify Part I and Part IX of the RCRA permit. The permit modifications have been issued for the investigation, and possible cleanup, of source areas associated with Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) identified within the facility boundary of the permit. The modifications to the RCRA Permit are described below and become an integral and enforceable part of the RCRA Permit on the modification effective date.

Part I of the storage facility permit, Description of Facility, has been modified to more accurately describe the facility boundary. The facility boundary includes the Plant Building and that area outside the building as described in the Modified Permit Facility Description as shown on the location map dated 8/5/96.

Part IX of the facility permit, Corrective Action for Solid Waste Management Units, was modified to more accurately describe the Co-Permittees' responsibilities to fulfill the requirements of the Minnesota Hazardous Waste Rules, Minn. Rule 7045.0485, and to provide a

schedule for initiating and completing these requirements. The Co-Permittees are required under this permit modification to identify and locate all known SWMUs and AOCs located within the facility boundary, identify releases or potential releases from these units, and submit an investigation work plan proposing investigative activities at each of the SWMUs and AOCs. The permit modification also provides a schedule for the reporting of newly identified SWMUs and AOCs, and releases or potential releases from identified SWMUs and AOCs.

In accordance with the modification to Part IX of the permit, the Co-Permittees shall, within 60 days of the effective date of this modification, submit an investigation work plan to the Site Response Section of the MPCA that addresses each of the identified SWMUs and AOCs. The Co-Permittees may use the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process under the FFA to satisfy the Corrective Action requirements under this permit.

These permit modifications constitute minor modifications under Minnesota Rules, Minn. R. 7001.0190, subp. 3, item C (1995). As such, the modifications will not result in allowing an actual or potential increase in the discharge of a pollutant to the environment and will not result in a reduction of the MPCA's ability to monitor the Co-Permittee's compliance with applicable statutes and rules. The revised permit being issued for these permit modifications replaces previously issued permits and shall become effective on the date of this letter. The expiration date for your permit has not been affected by this modification.

Please contact Fred Jenness of my staff at 612/297-8470 if you have any questions regarding these issues.

Sincerely,

Timothy K. Scherkenbach
Division Manager
Hazardous Waste Division

TKS:

Enclosure

cc: Scott Glass, U.S. Navy, Charleston, SC
Kerry Morrow, U.S. Navy, Minneapolis, MN
Tom Bloom, U.S. EPA, Region V, Chicago

(Revised 10-17-96)

PART I

DESCRIPTION OF FACILITY

The hazardous waste storage facility covered by this permit is located within the City of Fridley, Anoka County, Minnesota. The facility boundary encloses 94.6 acres as shown on the attached site boundary map dated August 5, 1996. The facility is divided into two (2) areas on the basis of ownership. The larger area to the north is owned by the United States Navy, and consists of approximately 82 acres and is occupied by buildings containing approximately 1,567,000 square feet of space. These buildings and property (the Naval Industrial Reserve Ordnance Plant) are contiguous and adjacent to buildings and property just to the south owned by United Defense, L.P. The United Defense, L.P. owned land and buildings addressed in this permit are those buildings and property contained within the security fence and bounded to the south by the United Defense, L.P. employee parking area (the Armament Systems Division Plant). The Armament Systems Division Plant contains approximately 12.6 acres with approximately 326,000 square feet of floor space covered by a roof. The two areas are collectively referred to as the facility. The remaining United Defense, L.P. property lies within the boundaries of the Post Closure Permit for the United Defense, LP hazardous waste containment and treatment facility as shown on the site boundary map dated August 5, 1996.

Hazardous wasted generated at the facility are stored in Hazardous Waste Storage Area E (HWE) and these wastes are described in Part II of this Permit under "Authorized Hazardous Waste Managed". Three (3) closed storage areas (A, B, and D) and one (1) storage area undergoing closure (Area C) are also located at the facility.

Hazardous wastes are generated by metal fabrication, cleaning, finishing, and coating operations. Painting and paint gun cleaning generates ignitable solvents and paint filters. Waste ignitable and chlorinated solvents result from cold cleaning of metal parts. A metal hydroxide sludge is generated as a by-product of a waste water treatment system from plating and coating operations. Spent corrosive, TCLP toxic waste, and cyanide sludge are produced from the bottom of stripping, cleaning, and plating baths from electroplating operations.

(revised 10-15-96)

PART IX

CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

A. SCOPE OF CORRECTIVE ACTION

The primary objective of the Resource Conservation and Recovery Act (RCRA) corrective action program is to clean up releases of hazardous waste or hazardous constituents at treatment, storage, or disposal facilities subject to Subtitle C of RCRA. Section 3004 (u) of the 1984 Hazardous and Solid Waste Amendments (HSWA), and Minn. Rules pt. 7045.0485 require facilities issued permits after November 8, 1984, to provide corrective action for releases of hazardous waste or hazardous constituents from any solid waste management unit (SWMU) or Area of Concern (AOC), regardless of the time such waste was placed in the unit.

All presently identified SWMUs are described in the attached Solid Waste Management Unit tables. All known SWMUs and AOCs shall be investigated and remediated pursuant to this RCRA Permit.

B. REQUIREMENTS

The Co-Permittees shall submit an investigation work plan proposing investigation activities for each of the identified SWMUs and AOCs. The work plan shall be submitted to the Site Response Section of the MPCA, NO LATER THAN SIXTY (60) DAYS after the effective date of this permit modification. The work plan shall include the following:

1. A list of all known SWMUs or AOCs including those known but not listed in the attached Solid Waste Management Unit tables. This must include all sumps, drywells, degreasers, tanks, and sewers not included in the attached SWMU tables;

2. A description of the steps that will be taken to identify additional SWMUs and AOCs not previously identified;

3. A site plan view map, with a scale of 1 inch equals 60 feet, which identifies the location of all SWMUs and AOCs;

4. The type and function of each known SWMU or AOC. Include a description of all the industrial processes that are or were related to the use of each SWMU and AOC;

5. The general dimensions, capacities, and structural description of each known SWMU or AOC (supply any available drawings);

6. The period during which each unit was operated;

7. The specific details on all wastes, including hazardous wastes and constituents, that have been or are being, or are expected to be managed at each SWMU or AOC and a summary of the efforts made to ascertain this information;

8. The results of any sampling and analysis required for the purpose of determining whether releases of hazardous wastes or hazardous constituents have occurred, are occurring, or are likely to occur from each unit; and

9. A detailed description of all proposed investigation activities to be conducted at the site, the schedule for implementing and completing the investigation and work proposed in the work plan, and the qualifications of personnel performing or directing the investigation and the overall management of the investigation.

NO LATER THAN THIRTY (30) CALENDAR DAYS after receiving written approval from the Commissioner for the work plan, the Co-Permittees shall begin implementation of the work plan according to the schedules specified in the work plan.

C. STANDARD CONDITIONS

1. Failure of the Co-Permittees to fulfill the requirements of this Corrective Action Section, or falsification of any submitted information, is grounds for termination of this Permit. The Co-Permittees shall ensure that all plans, reports, notifications, and other submissions to the Commissioner required in this Corrective Action Section are signed and certified in accordance with Minn. Rules pt. 7001.0060 and 7001.0070. All submittals made by the Co-Permittees pursuant to this part shall be made to MPCA's Site Response Section, attention: David Douglas.

2. All plans and schedules required, upon approval of the Commissioner, shall be incorporated by reference and become an enforceable part of this Permit. Any noncompliance with such approved plans and schedules shall be deemed to be in noncompliance with this Permit. Extensions of the due dates for submittals may be granted by the MPCA upon a showing of good cause. The grant of an extension shall be in writing.

D. DISCOVERY OF NEWLY-IDENTIFIED SWMU(s)

1. Notification

The Co-Permittees shall notify the Commissioner in writing of any additional SWMU(s) or AOC(s) (i.e., a unit not specifically identified in this permit) discovered during the course of the investigation conducted pursuant to Part IX of this permit, or during the course of ground water

monitoring, field investigations, environmental audits, or other means, NO LATER THAN FIFTEEN (15) CALENDAR DAYS after discovery.

2. Request for SWMU and AOC Assessment report

After such notification, the Commissioner may request, in writing, that the Co-Permittees prepare and submit to the MPCA a SWMU and AOC Assessment Report NO LATER THAN SIXTY (60) CALENDAR DAYS from the MPCA request. At a minimum, the Report shall provide the following information for each newly-identified SWMU and AOC:

a. The location of the newly-identified SWMU or AOC in relation to the other SWMUs and AOCs on an updated site plan view map referenced in Part IX.B.3, above;

b. The type and function of the unit. Include a description of all the industrial processes that are or were related to the use of the SWMU or AOC;

c. The general dimensions, capacities, and structural description of the unit (supply any available drawings);

d. The period during which the unit was operated;

e. The specific details on all wastes, including hazardous wastes and constituents, that have been or are being, or are expected to be managed at the SWMU or AOC, to the extent available; and

f. The results of any sampling and analysis required for the purpose of determining whether releases of hazardous wastes or hazardous constituents have occurred, are occurring, or are likely to occur from the unit.

3. Investigation of newly-identified SWMUs or AOCs

Based on the results of the SWMU and AOC Assessment Report, the Commissioner shall determine the need for further investigation at specific units. If the Commissioner determines that such investigation is needed, the commissioner may require the Co-Permittees to prepare a plan for such investigation. The investigation plan shall be submitted to the MPCA NO LATER THAN SIXTY (60) DAYS after receipt of the request for the plan from the MPCA. This plan will be reviewed for approval by the MPCA. Based on any such investigation, the MPCA may require any such measures with respect to a SWMU or AOC which the MPCA deems reasonably appropriate.

E. NOTIFICATION OF NEWLY-DISCOVERED RELEASE AT SWMUs AND AOCs

The Co-Permittees shall notify the Commissioner in writing, of any release(s) or threatened release(s) of hazardous waste or hazardous constituents discovered by the Co-Permittees or an agent or employee thereof, NO LATER THAN FIFTEEN (15) CALENDAR DAYS after discovery. Such newly-discovered releases may be from any SWMU or AOC, existing or newly

discovered. The Commissioner will require further investigation of the newly-identified release(s) in accordance with Minn. Rules pt. 7045.0485.