



# Brown & Root Environmental

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C-49-04-7-112

April 11, 1997

TO: DISTRIBUTION

Reference: CLEAN Contract No. N62467-94-D-0088  
Contract Task Order No. 0003  
Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota  
OU3 Remedial Investigation, Feasibility Study,  
Proposed Plan, and Record of Decision

Subject: Submittal of Draft Final Work Plan

As directed by the Navy under the reference contract, the subject document is transmitted for your review and comment. The Draft Final Work Plan is submitted in accordance with the Federal Facility Agreement (FFA), dated March 27, 1991, between the MPCA, the EPA, and the U.S. Navy. Your comments are requested within 30 days, in accordance with the FFA.

The Draft Final Work Plan was revised to address regulatory comments as noted in the table attached to this letter.

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

Very truly yours,

A handwritten signature in cursive script that reads "Mark T. Perry".

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

MTP/dt

Enclosure

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c: Debra Evans-Ripley, SOUTHDIV (w/o enclosure)  
Project File 6966

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	Comment/Action Taken
MPCA I.1 <sup>(1)</sup>	<p>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.</p> <p>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.</p>	Volume I of IV, Work Plan (WP), Section 1.3	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	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	The statement has been removed.
MPCA I.4	<p>a) The Navy shall indicate that the NIROP Fridley NPDES permit has been issued.</p> <p>b) The Navy shall identify any NPDES permit issues affecting the OU3 RI/FS in the Work Plan.</p>	WP, Section 2.6, p. 18	<p>a) Text has been changed to indicate that the permit has been issued.</p> <p>b) Discharge of treated groundwater from the OU1 extraction system does not pertain to OU3. No change necessary.</p>
MPCA I.5	The Navy shall include the interoffice memorandum from Eric Lindahl as an attachment to the Work Plan.	WP, Section 3.1	The Navy has provided a copy of the memorandum 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	The project team agreed that this is a legitimate concern although it was considered to be a compliance/SPCC rather than an OU3 issue. No Work Plan change was necessary. The Navy forwarded information related to this comment to the State under separate cover.

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MPCA I.7	<p>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.</p> <p>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.</p>	WP, Section 3.2	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. 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, the Navy will include the conclusions from the OU2 risk assessment. The 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	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	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	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, 1996 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 be modified to incorporate appropriate site specific information (e.g., area of contamination, soil moisture, etc.).	WP, Section 4.1	<p>The OU3 risk assessment will be completed in accordance with the MPCA memorandum from Helen Gorden to Dave Douglas dated February 10, 1997.</p> <p>Chrome will be speciated at several soil samples plus background.</p>
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	An industrial worker scenario has been developed. However it was agreed that the values will be used for the potential development of deed restrictions, not clean up values.

Regulatory Comment No.	Regulatory Comment	Work Plan Volume and Section	Comment/Action Taken
MPCA I.14	<p>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.</p> <p>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.</p>	WP, Section 4.1	See response to MPCA I.12.
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	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	See response to MPCA I.7.
MPCA I.17	<p>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.</p> <p>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.</p>	WP, Section 4.1	DNAPLs are considered a chemical source and are addressed in the decision rule at the end of Section 4.2. An additional sentence has been added to clarify that DNAPLs will be addressed if detected.
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	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 immediately following the COPC list states that the COPC list is not expected to be all inclusive, but is sufficient for preliminary planning purposes. Text has been added to indicate that the final list of COPCs to be evaluated in the baseline risk assessment will be selected based on a comparison of maximum contaminant concentrations in soils to PRGs developed for the typical industrial worker and other relevant factors.
MPCA I.19	Navy shall discuss data collection as appropriate in this section.	WP, Section 4.1	Data needs are discussed in this section. The data acquisition strategy is discussed in FSP, Section 2. 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	The project team agreed that this section is adequate as written regarding DQOs. No change necessary.
MPCA I.21	The EPA 1992 Office of Solid Waste and Emergency Response guidance shall be utilized to calculate representative exposure concentrations. See attached guidance.	WP, Section 4.1, p.2, para. 2	The method for calculating exposure concentrations will be resolved when the sampling results are available.

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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	A statement has been added as the last sentence of Section 4.1.2 which indicates 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	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	See response to MPCA I.12.
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)	The text has been revised to include these target risk levels. However, it was agreed that these values would be used to trigger discussions with the Project Team regarding the need for access restoration zone restrictions or deed notification (industrial worker) or the need for an FS (construction worker), 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	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	This evaluation will be performed if concentrations found in the deep aquifer indicate the presence of DNAPL. A sentence stating such has been added as the last sentence of Section 4.2.
MPCA I.28	The decision statement that an evaluation of alternatives will be made "...would result in 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	The decision statement has been changed to "...result in a beneficial reduction in the overall time for groundwater restoration as measured by the nine criteria."
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	MCLs and HRLs were compared and the more conservative value used. If no MCL or HRL exists, the State developed an HBV for the parameter in question. The HRLs, MCLs, and HBVs for each COPC have been summarized in a table.
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	References to the MPCA soil leaching model have been deleted. Leaching numbers for the OU2 soils have been redeveloped. The calculations of leaching numbers for the OU3 soils will be deferred until after the OU3 data is collected and reviewed.

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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	Text was modified to indicate that the RI will complete the characterization of the site.
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	The Navy has documented that all SWMUs listed in the Permit on Navy property were considered in developing the list of AOCs.
MPCA I.33	<p>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.</p> <p>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.</p>	WP, Section 5.2.3	The Navy response was provided in a letter to MPCA dated 8/16/96. The MPCA has agreed to put this issue aside and is pursuing investigation of the UDLP property via modification to the RCRA permit.
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	<p>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.</p> <p>The need for additional sampling will be evaluated after the results from Phase I are received.</p>
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	Text has been revised to indicate that data from the "North 40 Barrel Removal Project" will be incorporated into the OU3 RI Report as appropriate.

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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	No changes will be made to this section as the referenced material is not applicable. However, the subject matter has been addressed in Section 7.3 of the FSP. Samples will be collected at every lithologic change and soil samples will be field screened with a field gas chromatograph. Representative soils samples will be analyzed for TOC. An ultraviolet (UV) fluorescence analysis will also be performed on soil samples.  The Navy has contacted Dr. Looney to discuss this issue.
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	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	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	Geochemistry parameters have been 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	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 has been 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	No treatability studies are planned at the present time. However, parameters will be collected to evaluate natural attenuation 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	No treatabilities studies are planned at the present time.

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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	Information required to evaluate natural attenuation of chlorinated ethenes has been 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	The schedule has been revised to comply with the 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	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	Text has been 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	Text has been 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	Text has been changed accordingly.
MPCA I.49	The laboratory shall be identified in this section with reference to their Quality Assurance Manual.	WP, Section 7.4	The laboratory has been identified in this section. The laboratory Quality Assurance Manual has been 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	The chart has been revised according to input provided by the MPCA..
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	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	The North 40 Barrel Removal Project report conclusions will be considered in the OU3 RI Report.

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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 from 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	The North 40 Barrel Removal Project 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	The final results of the seismic test and the North 40 Barrel Removal action have been provided by the Navy. The need for additional monitoring wells in the North 40 will be evaluated after the groundwater model has been updated.
MPCA II.4	<p>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.</p> <p>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.</p>	FSP, Section 2.2, Item 3, p. 5	The need for additional monitoring wells in the North 40 will be evaluated after the groundwater model has been updated.
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	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	<p>SWMUs on the United Defense property will not be included as AOCs (see response to MPCA I.33).</p> <p>All SWMUs on the Navy property were considered when determining AOCs.</p>
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	A reference has been provided qualifying the use of an ultraviolet light to check for DNAPL.

Regulatory Comment No.	Regulatory Comment	Work Plan Volume and Section	Comment/Action Taken
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	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 practice 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	This was only used as a starting point in an iterative process. Rationale for not selecting AOC 45 is explained 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	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	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	After reviewing the employee interview notes, the Navy added AOC 69, TCE storage tank.
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	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	Text was 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	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	AOC 46 was added to the Table and drawing. Analysis for parameters to evaluate bioremediation was included.

Regulatory Comment No.	Regulatory Comment	Work Plan Volume and Section	Comment/Action Taken
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	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	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	GRO/DRO analyses was deleted. The laboratory has been 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	Text was 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	(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 was 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	Examples of the forms that will be used are referenced in Section 5.2 of the QAPP and are included in an SOP attached to 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	No longer applicable since all laboratory SOPs are being resubmitted based on a change in the laboratory being subcontracted.
MPCA II.24	The Navy shall define the Ceimic system. Is this a LIMS or a paper tracking system?	FSP, APP. B, SOP005	The laboratory system (a LIMS) is 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	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	DRO analysis will not be performed per MPCA's request in comment above.

Regulatory Comment No.	Regulatory Comment	Work Plan Volume and Section	Comment/Action Taken
MPCA III.1 (3)	The Navy shall discuss safety monitoring.	Volume III of IV, Quality Assurance Project Plan (QAPP), Section 1.4.2.1	The second sentence in the second paragraph on page 1-6 of the QAPP, regarding field measurements of total volatile organics using a PID, has been 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	The DQO information in the Work Plan is currently 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	The reference to the Work Plan has been removed. Only Section 2 of the FSP is now referenced.
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	Section 7.2.1 of the QAPP discusses the determination of MDLs: Laboratory SOP LTL-1011, included in Appendix A of the QAPP describes the laboratory's procedures for MDL studies.  Footnote number 5 on Table 1-4 of the QAPP indicates reporting limits which have been revised based on MPCA criteria. Section 4.0 of the work plan provides further detail regarding MPCA criteria.
MPCA III.5	The contract required quality limits (CRQLs) listed do not meet many of the limits required.	QAPP, Tables 1-1 - 1-3	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	Analysis for methanotrophic bacteria will not be performed.
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	The organization chart in Section 7.0 of the Work Plan has been 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. A copy of the Table of Contents for the laboratory's Quality Assurance Plan has been included in Appendix B of the QAPP.  The B&R Environmental Quality Assurance Manager (QAM) is responsible for overall quality assurance. A statement has been 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 is 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	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. Appropriate revisions to the text have been made.
MPCA III.9	The Navy shall identify the limits for the relative percent difference (RPD) for the SOPs.	QAPP, Section 3.0	The limits for RPD are provided in Tables 3-1 through 3-4 of the QAPP.

Regulatory Comment No.	Regulatory Comment	Work Plan Volume and Section	Comment/Action Taken
MPCA III.10	Discussion regarding method selection shall be included in Section 7.0 of the QAPP.	QAPP, Section 3.0	Discussion regarding method selection is provided in the last three paragraphs on page 7-1 of the QAPP. A sentence has been 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	Although not required by CLP protocol, LCS analysis for mercury has been performed. Table 3-8 has been 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	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	The references to the completeness equation has been 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	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	The third paragraph in Section 3.6 of the QAPP indicates that field duplicates, with the exception of VOA samples, are homogenized. Section 8.2 indicates that laboratory duplicates and matrix spike duplicates, with the exception of VOA samples are homogenized.  The actual process for homogenization is provided in Section 8.1.1 of the 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	The text has been 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	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	See response to MPCA III.4.
MPCA III.19	The Navy shall include the calibration procedure for the Sensidyne flame ionization detector (FID).	QAPP, Section 7.0	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	The following sentence has been added to Section 8.1: "Quality Control limits for field-related Quality Control checks were discussed in Section 3.0 of this QAPP and Section 8.0 of the attendant FSP."  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	A copy of Laucks' QA Plan will be provided to MPCA under separate cover. A copy of the Table of Contents for the QA Plan has been included as Appendix B of the QAPP..

Regulatory Comment No.	Regulatory Comment	Work Plan Volume and Section	Comment/Action Taken
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	The statement in question was meant to indicate that results will be used as received by the laboratory. The sentence has been 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	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 has been more clearly written and indicates 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	<p>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.</p> <p>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 quantitation limit as the result for the nondetect. The next three equations provide calculations for the three possible instances.</p> <p>The second equation shows the calculation for two samples which are both nondetects. The average of one-half of each quantitation limit would be the sum of the quantitation limits divided by 4. The equation has been revised, as follows, so it will be more clear:</p> $\text{Average} = \frac{[(\text{Original Quantitation Limit}/2) + (\text{Duplicate Quantitation Limit}/2)]}{2}$ <p>For further clarification of the third and fourth equations, it should be noted that it is possible that one-half the quantitation 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 quantitation limit of 10 ug/L, one-half the quantitation limit of the duplicate (5 ug/L) would be greater than the positive result reported for Sample A.)</p> <p>The text has been revised to state that quantitation, not detection, limits will be used in the calculations. The MPCA agreed.</p>

Regulatory Comment No.	Regulatory Comment	Work Plan Volume and Section	Comment/Action Taken
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	The text did originally state that the calculations of upper 95% confidence limit would be used only for risk assessment purposes. This, however, was 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 has been revised to clarify this.
MPCA III.26	The Navy shall describe the internal audits done by "[a] US Navy Contractor."	QAPP, Section 10.0	This information has been provided to the MPCA under separate cover.
MPCA III.27	The Navy shall submit the audit checklist.	QAPP, Section 10.1.1	The field audit checklist has been included as Appendix D.
MPCA III.28	The Navy shall define the terms, "formal quality notices" and "docketing protocol."	QAPP, Section 10.1.3	Upon re-evaluation, it has been determined that the terms "docketing protocol" and "Quality Notices" were inappropriately used. This section has been revised accordingly.
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	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	Section 10.2.1.3 of the QAPP discusses internal audit procedures. A reference to the laboratory's SOP regarding internal audits has been added and the SOP is included in Appendix A.  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. Text has been added to Section 10.2.1.3 to state this.
MPCA III.31	The Navy shall submit the quality assurance manual (QAM) from Ceimic and reference the proper laboratory section.	QAPP, Section 11.0	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	See comment MPCA III.8 regarding 10% MS/MSD frequency.  Specific mention of Tables 3-1 through 3-11 has been 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	The following sentence was 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	As specified in Section 13.1, all project parties will approve any significant change in the approved Project Plan. Section 2 of the QAPP references Section 7 of the Work Plan which identifies the Task Order 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	No longer applicable since this section has been revised based on the change in subcontract laboratory.

Regulatory Comment No.	Regulatory Comment	Work Plan Volume and Section	Comment/Action Taken
MPCA III.36	The Navy shall submit the laboratory QAM and reference the appropriate section.	QAPP, Section 13.3	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	All text referring to project manager in Section 14 was 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	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	Reference to these sites has been removed.
EPA I.2	Correct reference to pending NPDES permit.	WP, Section 2.6, p. 18, para. 2	Text was 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	See response to EPA I.1.
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	Decision statement is consistent with process to conduct a feasibility study if a risk is identified. 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	See response to MPCA I.12.
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	See response to MPCA I.30.
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.	Language was taken from the FFA. The FFA is incorrect. The language was changed to reflect EPA guidance.
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	The text was corrected.
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	Permit requirements have been acknowledged in FSP. Text was changed accordingly.
EPA I.10	For the <u>Date</u> May 1995, <u>1,1,1-tetrachloroethane</u> , should be, <u>1,1,1-trichloroethane</u> .	WP, Table 2-1, p 12/23	Text was changed accordingly.
EPA I.11	The group (6) plating, should be, (7) plating.	WP, Section 3.1.1, p 5/9, 1st bullet	Text was changed accordingly.

Regulatory Comment No.	Regulatory Comment	Work Plan Volume and Section	Comment/Action Taken
EPA I.12	Clarify the references to <u>RMT Figure 1</u> and <u>RMT Figure 2</u> . These figures are not included in the WP.	WP, Section 5.2.5, p 3/12 and 8/12	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>U.S. EPA Region V</u> , delete <u>I. Levine, QA Manager</u> , and replace with <u>Superfund QA Reviewer</u> .	WP, Figure 7-1, p 2/7	Text was changed accordingly.
EPA I.14	<u>U.S. EPA Region V Quality Assurance Manger</u>  1) In the subtitle delete <u>Quality Assurance Manager</u> , replace with <u>Superfund Quality Assurance Reviewer</u> .  2) In the text delete <u>Quality Assurance Manager, Ida Levine</u> , replace with <u>Superfund Quality Assurance Reviewer</u> .	WP, Section 7.3	Text was changed accordingly.
EPA II.1 <sup>(5)</sup>	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	Background concentrations from the OU2 RI supplemented with background soil sampling for hexavalent chrome and TOC will be used. 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	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	Wording not found. No change necessary.
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	The Navy has contacted MDH and identified the requirements for DPT and rotosonic drilling procedures. The requirements are indicated in the FSP.
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	A field GC will be used to analyze samples below 12 feet.

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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	The navy has contacted MDH and identified the requirements. The requirements are included in the FSP.
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	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 <u>Analysis</u> of Reduced Iron will be done in the field.	FSP, Table 2-4	Text was changed accordingly.
EPA II.9	Delete last sentence. Filtered samples are not being collected.	FSP, Section 4.1, 1st paragraph, last sentence	Filtered samples will be collected to evaluate natural attenuation of chlorinated ethenes.
EPA II.10	For the <u>Parameter Reduced Iron (Fe<sup>2+</sup>)</u> the <u>Maximum Holding Time of 48 hours</u> is in disparity with Section 4.c. of the method. Please resolve.	FSP, Table 4-1, p. 2/3	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	Text was added.
EPA II.12	The sample containers should meet the requirements given in, <i>Specifications and Guidance for Contaminant-Free Sample Containers</i> , EPA 540/R-93/051.	FSP, Section 6.4	The specific requirement was added.
EPA II.13	Delete references to dissolved metals and filtration.	FSP, Section 7.5.1	Dissolved metals will be analyzed to evaluate natural attenuation of chlorinated ethenes.
EPA II.14	Bailers are allowed, but not recommended, for sample collection.	FSP, Section 7.5.1	Low flow sampling techniques will be used.
EPA II.15	Amend typo, pg 13/16, Table 2-5, should be Table 2-4.	FSP, Section 7.5.1	Text was 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	Text was 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	The SOP was included in Appendix B.
EPA II.18	Denote the concentration of the calibration gas.	FSP, SOP ME-15, Section 5.2	The concentration of the calibration gas was provided in the text.
EPA II.19	Bailers are allowed, but not recommended, for sampling.	FSP, SOP SA-1.1, Section 5.1	See response to EPA II.14.
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	Reference to SOP SA-6.2 was 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	SOP SA-1.3 has been revised to correct this typographical error.
EPA II.22	This section on Field Filtration can be deleted.	FSP, SOP SA-6.1, Section 5.3, p 6/23	Dissolved metals will be analyzed to evaluate natural attenuation of chlorinated ethenes.
EPA III.1 <sup>(6)</sup>	On this page delete IDA LEVINE, replace with SUPERFUND.	Volume III of IV, Quality Assurance Project Plan (QAPP), Section I, Title/Signature Page	IDA LEVINE was 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	Dissolved Ca, Mg, Na, and K are needed to evaluate natural attenuation of chlorinated ethenes. Both filtered and unfiltered samples will be collected. The Navy provided further details on why dissolved metals are being analyzed for under separate cover.
EPA III.3	In item (2) delete the matrix <u>Surface Water</u> . Surface water samples are not being collected and analyzed.	QAPP, Section II, Section 1.1.1	The reference to surface water was deleted.

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EPA III.4	Include the determination of the parameter <b>Reduced Iron</b> . See APPENDIX A Comment EPA III.14 below.	QAPP, Section II, Section 1.4.2.1	Reduced iron has been included in the discussion of field parameters.
EPA III.5	The compound <b>Pyridine</b> 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	Pyridine has been added to the semivolatile organic compound list.
EPA III.6	The Biological Laboratory selected to perform the <b>Methantropic Bacteria</b> test should be identified, and they should provide their SOP for conducting this test.	QAPP, Section III, Analytical and Measurement Procedures	Methantropic bacteria has been removed from the parameter list. This comment is, therefore, no longer applicable.
EPA III.7	Include the following SOPs: <b>WC.34, WC.21, WC.02, WC.46</b> .	QAPP, Appendix A, Table of Contents	The Table of contents for Appendix A has been 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	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	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	All Ceimic Corporation laboratory SOPs have been replaced by Laucks Testing Laboratory SOPs. This comment is, therefore, no longer applicable.
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	All Ceimic Corporation laboratory SOPs have been replaced by Laucks Testing Laboratory SOPs. This comment is, therefore, no longer applicable.
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	All Ceimic Corporation laboratory SOPs have been replaced by Laucks Testing Laboratory SOPs. This comment is, therefore, no longer applicable.
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	All Ceimic Corporation laboratory SOPs have been replaced by Laucks Testing Laboratory SOPs. This comment is, therefore, no longer applicable.

Regulatory Comment No.	Regulatory Comment	Work Plan Volume and Section	Comment/Action Taken
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	Total iron is included in the laboratory analyte list. Ferric iron is not included.  Ferrous iron in groundwater samples will be measured in the field using a portable colorimeter. Further information is provided in Section 1.4.2.1 of the QAPP and Section 9.0 of the FSP.
EPA III.15	9215 HETEROTROPHIC PLATE COUNT The selected biological laboratory should provide their SOP for determining Methanotropic Bacteria and the project should denote some QA/QC acceptance criteria for this method.	QAPP, Appendix A,	Methanotropic bacteria has been removed from the parameter list. This comment is, therefore, no longer applicable.
EPA IV.1 <sup>(1)</sup>	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	A statement addressing this issue has been added to Section 1.1 of the HASP.

(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.