



Minnesota Pollution Control Agency

November 9, 2001

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

Commanding Officer
Southern Division
Naval Facilities Engineering Command
Attn.: Joel R. Sanders, Code 1868
P.O. Box 190010
North Charleston, SC 29419-9010

RE: Naval Industrial Reserve Ordnance Plant Superfund Site

Dear Mr. Sanders:

The Minnesota Pollution Control Agency (MPCA) staff has reviewed the document entitled "Remedial Investigation for Operable Unit 3, Volume 1 of IV Text," (OU3 RI Report) dated September 2001 and the "Supplemental Remedial Investigation Information Report," dated September 2001. The OU3 RI Report is for Operable Unit 3 and the Supplemental Remedial Investigation Information Report is for Operable Unit 2 of the Naval Industrial Reserve Ordnance Plant (NIROP) Superfund Site and were submitted pursuant to the Federal Facility Agreement, dated March 27, 1991, between the MPCA, the U.S. Environmental Protection Agency (EPA), and the U.S. Navy (Navy).

The MPCA staff hereby modifies the OU3 RI Report pursuant to Attachment I of this letter. The MPCA staff hereby modifies the Supplemental Remedial Investigation Information Report pursuant to Attachment II of this letter. These modifications are based on the MPCA staff letter of August 17, 2000; the Tetra Tech NUS, Inc. letter to me dated December 28, 2000; and meeting notes from the April 25, 2001 NIROP partnering meeting.

If you have any questions regarding this letter, please contact me at (651) 296-7818.

Sincerely,

A handwritten signature in black ink, appearing to read "David N. Douglas".

David N. Douglas, Project Manager
Superfund/RCRA Unit
Site Remediation Section
Metro District

DND:ais

cc: Thomas Bloom, US Environmental Protection Agency (w/enclosures)
Mark Sladic, Tetra Tech NUS, Inc. (w/enclosures)

Attachment I

Modifications to “Remedial Investigation for Operable Unit 3, Volume 1 of IV Text,” Dated September 2001

Executive Summary, Human Health Risk Assessment, page ES-15, last sentence of the second paragraph following the bulleted decision criteria

The MPCA staff requests that the Navy change the sentence as follows, “An evaluation of the need for and the feasibility of implementing appropriate remedies would not be necessary based on the results of the 0-4 feet bgs risk evaluation of the ~~major infrequent~~ **minor frequent** construction worker.”

Executive Summary, OU2 RI Conclusions, page ES-16

This text appears to be the same as the previous version (May 2000) of the Supplemental Remedial Investigation Information Report, i.e., before the OU2 re-evaluation was complete, and is therefore not consistent with ten sub areas described in the current Supplemental Remedial Investigation Information Report. The MPCA staff requests that the Navy delete this section on this page and add the narrative below:

The Supplemental Remedial Investigation Information Report, dated September 2001 evaluated unsaturated soils outside of the buildings and other structures in September of 2001. In this report, ten sub areas were evaluated: sub areas A1, A2, A3, and A4 located on the northern part of the property in the general vicinity of the North 40; sub areas B1 and B2 located in the northeast corner of the property; sub area D, a previously unidentified disposal trench and former storage area C located on the east side of the property, north of the tank farm; sub area E located on the east side of the property south of the tank farm; sub area F located near the southwest corner of the building; and an additional sub area designated as “Other” located west of sub area A4 and between sub areas A1 and A2 which includes all samples not located in any of the above listed sub areas. The locations of the ten sub areas are presented in Figure 2-1 of the Supplemental Remedial Investigation Information Report.

Executive Summary, OU2 RI Conclusions, pages ES-17 and 18

The MPCA staff requests that the Navy delete the bullets and conclusions and re-write the bullets and conclusions to be consistent with the current version of the Supplemental Remedial Investigation Information Report as modified by the MPCA staff (see comments on Section 3 Summary/Conclusions in Attachment II.)

Executive Summary, Initial Screening of Possible Alternative Response Actions

In response to the MPCA staff comment, the Navy wrote, “[t]he No-Action Alternative involves leaving the building floor in place, it is sufficient for addressing what appears to be a small area contaminated by chromium because chromium is not mobile there as long as the floor is in place.”

As the NIROP partnering team discussed at our April 25, 2001 meeting, the floor is actually an engineering-control remedy that is in place, not a no-action alternative.

Also for further clarification, the purpose of the no-action alternative is as follows:

The no-action alternative provides a baseline for comparing other alternatives. Because no remedial activities would be implemented with the no-action alternative, long-term human health and environmental risks for the site essentially would be the same as those identified in the baseline risk assessment. (See “Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA,” page F-4, EPA 540-G-89-004, October 1988.)

For example, a no-action alternative for the chromium contamination under the former East Plating Shop would be leaving the chromium in the soil in the absence of a floor and institutional controls in this area to protect workers who could be exposed to the chromium. Moreover, it is not appropriate to refer to the contaminated area as a “small area” because the full magnitude and extent of the chromium contamination in the soil has not been determined. It is acceptable to the MPCA staff to estimate the lateral extent of the contamination to be the boundaries of the former East Plating Shop; however, the vertical extent of the contamination is neither presently known nor can it be accurately estimated. Therefore, the magnitude and extent of the chromium contamination is not known. The MPCA staff requests that these important uncertainties be identified in this narrative.

The MPCA staff requests that the Navy modify the narrative to acknowledge that the floor is an engineering control-remedy; estimate the lateral extent of the chromium contamination (the boundaries of the former the East Plating Shop is acceptable to the MPCA staff); and indicate that the magnitude and extent of the chromium contamination has not been determined.

Also this section does not discuss any initial screening of possible alternative response actions for Operable Unit 2. The MPCA staff requests that the Navy re-write this narrative to be consistent with Section 7.4 for Operable Units 2 and 3 as modified by the MPCA staff (see modifications to Section 7.4).

Executive Summary, Initial Screening of Possible Alternative Response Actions, second paragraph, page ES-19

The MPCA staff requests that the following sentence be added at the end of this paragraph, “The Navy, EPA, and MPCA will address issues related to the ground water contamination associated with Operable Units 2 and 3 during the development of data quality objectives for Operable Unit 1.”

Executive Summary, Table ES-4

Since the calculated cancer risks presented for OU3 are the actual values calculated (e.g., 0.35×10^{-5} not simply $< 1 \times 10^{-5}$); the MPCA staff requests that the calculated risks for OU2 be presented in the same way. This means that in the calculated cancer risk column (column number 3) under the "Refined Risk Evaluation for OU2 – Sub Areas A3, A4 and E (4)," the calculated risk for the typical industrial worker be changed from $> 1 \times 10^{-5}$ to 2×10^{-5} ; for the minor frequent construction worker, changed from $> 1 \times 10^{-5}$ to 2×10^{-5} ; and for the major infrequent construction worker, changed from $> 1 \times 10^{-5}$ to 2.5×10^{-5} (A3) and 2.5×10^{-5} (A4). The MPCA staff requests that iron in sub area A4 for the major infrequent construction worker be deleted in the last column (see MPCA staff comments on iron in Attachment II).

The MPCA staff requests that the depth for the major infrequent construction worker in OU2 be changed from 0-20 feet to 0-12 feet.

The MPCA staff requests that the Navy shade exceedances for the summary tables in OU2 for easy identification.

Section 7.1 Conclusions from the OU2 RI Report

This section appears to be identical to the previous version (May, 2000) of the Supplemental Remedial Investigation Information Report and was not revised to reflect the current Supplemental Remedial Investigation Information Report. The MPCA staff requests that the narrative be deleted and replaced with narrative consistent with the current Supplemental Remedial Investigation Information Report as modified by the MPCA staff (see MPCA staff modifications to the Executive Summary/OU2 RI Conclusions and on Section 3 Summary/Conclusions of the Supplemental Remedial Investigation Information Report contained in Attachment II).

7.4 Initial Screening of Possible Alternative Response Actions

The MPCA staff requests that Section 7.4 as written be deleted and re-written as follows:

Operable Unit 3, Major Infrequent Construction Worker

For OU3, unacceptable risks were identified in subsurface soil under the main NIROP building. For subsurface soil, only chromium was retained as a COC. Chromium at an unacceptable level was found under the former East Plating Shop of the main NIROP building and only for the major infrequent construction worker scenario. Chromium slightly exceeds the acceptable (target) risk, assuming that chromium is in the hexavalent form. This assumption was made because the chromium was not speciated.

A possible alternative response action for this risk scenario would be an engineering-control response action combined with an institutional control. The existing floor of the former East Plating Shop constitutes an engineering-control response action. Chromium likely is not mobile so long as the floor is in place. Implementation of this response action would consist of leaving the existing floor of the former East Plating Shop in

place. This response action would be combined with an institutional control in the form of an environmental restrictive covenant under MERLA that calls for additional remedial actions if the floor is removed and an exposure route for chromium is established.

A second possible alternative response action would be the no-action response action consisting of the absence of the floor and institutional controls for this area.

Operable Unit 2

The OU3 risk exposure scenarios for the main NIROP building were also applied to the OU2 areas to provide for consistency in remedy evaluation. OU2 areas where calculated risk slightly exceeds allowable levels include sub areas A3, A4, and E (see Figure 2-1 of the Supplemental Remedial Investigation Information Report).

Operable Unit 2, Typical Industrial Worker

For the typical industrial worker exposure scenario (0-5 feet bgs) for OU2, the calculated cancer risk in sub areas A4 slightly exceeds allowable levels. Carcinogenic PAHs at sample location AB032A (1-3 feet bgs) was the primary driver of the calculated risk. Selected VOCs and metals at two subsurface sample locations in sub area A3, AT009D1 (8-10 ft below ground surface (bgs)) and AT007C (6-8 ft bgs,) could pose a potential risk if these soils were accessed.

In April 2001, the NIROP partnering team began evaluating response actions for areas of unacceptable risk in OU2. As documented in Decision 0401D04 at the April 25, 2001 NIROP team partnering meeting (Meeting 29), the team identified "...the following preliminary options to address the excess OU-2 in surface soil: (1) non-time-critical removal action (IRM); (2) engineering controls – covers, institutional controls; (3) institutional controls with MPCA policy waiver." Also as documented in Decision 0401D05 at the April 25, 2001 NIROP team partnering meeting (Meeting 29), the team decided that "...OU2 subsurface soil is already effectively capped where the risk assessment shows the surface soil is acceptable."

A possible alternative response action to be evaluated for this risk scenario would be the non-time-critical removal action. In order for this alternative response action to be implemented, surface soil (0-3 feet) contaminated by cPAHs would be removed from sub area A4 and disposed of off-site in an appropriate facility.

A second possible alternative response action would be an engineering-control response action such as a cover over the surface soil in sub area A4 contaminated by cPAHs and institutional controls to maintain the cover and limit exposure to industrial workers. The cover would be three feet of clean fill or equivalent, e.g., an appropriate depth of asphalt paving with a class 5 aggregate subbase.

A third possible alternative response action would be the no-action alternative consisting of leaving the surface contamination in place without institutional controls for sub area A4.

Operable Unit 2, Minor Frequent Construction Worker

For the minor frequent construction worker exposure scenario (0 to 5 feet bgs), the calculated risk in sub areas A4 and E slightly exceeds allowable levels for carcinogenic PAHs. The risk is primarily driven by sample AB032A (1 to 3 ft bgs) in sub area A4 and sample EB004A (1 to 3 ft bgs) in sub area E. Selected VOCs and metals at two subsurface sample locations in sub area A3, AT009D1 (8 to 10 ft bgs) and AT007C (6 to 8 ft bgs,) could pose a potential risk if these soils were accessed.

A possible alternative response action would be the non-time-critical removal action of cPAHs from sub area A4. In order for this alternative response action to be implemented, surface soil (0-3 feet) contaminated by cPAHs would be removed and disposed of off-site in an appropriate facility.

A second possible alternative response action would be an engineering-control response action such as a cover over the surface soil in sub area A4 contaminated by cPAHs. The cover would be three feet of clean fill or equivalent, e.g., an appropriate depth of asphalt paving with a class 5 aggregate subbase.

A third possible alternative response action would be the no-action alternative consisting of leaving the surface contamination in place without institutional controls for sub areas A4 and E.

Operable Unit 2, Major Infrequent Construction Worker

OU2 areas where calculated risk slightly exceeds allowable levels for the major infrequent construction worker exposure scenario (0-12 feet bgs) include sub areas A3 and A4. In sub area A3, 1,1,1-trichloroethane, 1,1-dichloroethane, 2-butanone, tetrachloroethene, toluene, trichloroethene, and xylenes contamination in the vicinity of sample location AT009 (8 – 10 feet bgs) and iron at AT007 (6 – 8 feet bgs) were the primary risk drivers. In sub area A4, cPAHs at sample location AB032A (1-3 feet bgs) were the primary risk driver. In addition, the concentrations of 1,1,1-trichloroethane, tetrachloroethene, and xylenes exceed the default soil saturation limit suggesting that free product may be present.

Sub area A3

A possible alternative response action would consist of the leaving the contamination in place with institutional controls for this sub area.

A second possible alternative response action is the no-action alternative consisting of leaving the contamination in place without institutional controls for this sub area.

As noted above, high concentrations of the contaminants found in the barrel removal area exceed the default soil saturation limits suggesting that free product may be present. This potential ground water problem should be addressed as a component of OU1.

Sub area A4

A possible alternative response action would be the non-time-critical removal action of cPAHs from sub area A4. In order for this alternative response action to be implemented, surface soil (0-3 feet) contaminated by cPAHs would be removed and disposed of off-site in an appropriate facility.

A second possible alternative response action would be an engineering-control response action such as a cover over the surface soil in sub area A4 contaminated by cPAHs. The cover would be three feet of clean fill or equivalent, e.g., an appropriate depth of asphalt paving with a class 5 aggregate subbase.

A third possible alternative response action would be the no-action alternative consisting of leaving the surface contamination in place without institutional controls.

Other Characteristics Common to all Possible Alternative Response Actions

While the OU2 and OU3 investigations were adequate to determine if large-scale contamination sources were present, activities are continuing around the facility to support the sale of the plant and could result in the discovery of spatially localized sources of contamination. Responses to address these sources would be agreed by the Partnering Team, and then at each Five-Year Review. The adequacy of each of these responses can be revisited in the context of whether the selected institutional controls remain protective in light of any new found contamination.

A steel hurricane fence prevents trespass to the NIROP facility, and access is limited to those passing through staffed security gates. Land use is not expected to change from industrial use.

Attachment II

Modifications to Supplemental Remedial Investigation Information Report, Dated September 2001

Section 2.2 Selection of COPCs, page 2-2, first paragraph

This paragraph could be interpreted that we only focused on the few chemicals that dominated the risk at this step. In fact the approach that was taken was much more conservative than this statement indicates. The COPC selection process identifies chemicals that *may* be of potential concern not just chemicals that dominate the risk. Therefore, the MPCA staff requests that the Navy rewrites the first sentence as follows, "The selection of COPCs is a semi-qualitative process which identifies chemicals which may be of concern and therefore warrant evaluation in a HHRA."

The MPCA staff requests that the phrase "residential SRVs" be changes to "Tier 1 SRVs."

There appears to be a typo within the parenthesis of sentence 4.

Section 2.3 Screening Risk Evaluation, first paragraph, fifth sentence

Restrictions beyond limiting land use are included. The MPCA staff requests that the sentence be changed to the following, "This information will be used to determine if and what level of institutional controls are required."

Section 2.4 Refined Risk Evaluation, Major Infrequent Construction Worker, last paragraph, page 2-6

A calculated HQ of 1.2 for iron would not be considered to exceed a HQ of 1. The MPCA staff requests that the Navy change the text accordingly.

Tables 2-12 through 2-14

The reader may misinterpret whether carcinogenic PAHs were retained. The "Retained for Further Evaluation" column indicates that the individual carcinogenic PAHs and the total cPAHs were not retained. These chemicals were incorporated into a BaP equivalent and in effect were retained in the evaluation - the "No" in the "Retained for Further Evaluation" column should be changed to reflect this. The MPCA staff also suggests the following alternative: replace "No" with "see BaP equiv" or include footnote states that this contaminant was included in the BaP equivalent concentration.

Table 2-18 Major Contributors to Cancer Risk and Hazard Indices for the Typical Industrial Worker

It is the MPCA staff's understanding that Table 2-18 was to be a "companion" table to Table 2-17, i.e., it would identify the key contributors for the risks identified in Table 2-17. The author may be trying to present the results of the subsurface screening results as well; however, the presentation does not work since these results were not presented in Table 2-17. The MPCA staff requests only presenting sub area A4 here since it was the only area identified in Table 2-17. The staff also requests that the major contributors in sub area A3 somehow also be identified (e.g., flagged with footnote explanation) in Table 2-21. Simply flagging the chemicals and a footnote explaining that these chemicals and locations would also be of concern should these soils be accessed by the industrial worker is sufficient, i.e., the industrial worker-based ICR and HQs are not necessary.

Table 2-19 Major Contributors to Cancer Risk and Hazard Indices for the Minor Frequent Construction Worker

As with Table 2-18, it was the MPCA staff's understanding that Table 2-19 was to be a "companion" table to Table 2-17, i.e., it would identify the key contributors for the risks identified in Table 2-17. The MPCA staff request that the Navy presents sub area A4 and Sub area E here since they are the areas identified in Table 2-17 and somehow identify (e.g., flagged with footnote explanation) the sub area A3 major contributors in Table 2-21. Simply flagging the chemicals and a footnote explaining that these chemicals and locations would also be of concern should these soils be accessed by the minor frequent construction worker is sufficient, i.e., the minor frequent construction worker-based ICR and HQs are not necessary.

Table 2-20 Summary of Refined Risk Analysis Major Infrequent Construction Worker

The MPCA staff requests that the Navy remove the shading of the HQ > 1 iron as Helen Goeden previously commented to Bob Jupin that a HQ of 1.2 for iron would not be considered an exceedence. The MPCA staff requests that the wording in the text on page 2-6 be modified to reflect this.

Section 3 Summary/Conclusions

First sentence should read: "The following items summarize the results of the HHRA for OU2."

Bullet 2: The MPCA staff requests that the last two sentences be changed as follows, "The ICRs for minor frequent construction workers exposed to surface soil at sub areas A4 and E slightly exceed the MPCA acceptable risk level, although the ICRs at sub area E were within EPA's target risk range. Carcinogenic PAHs at sampling location AB032A (1-3 feet bgs) in sub area A34 and EB004A (1-3 feet bgs) in sub area E where the major contributors to the ICR."

Bullet 3: As indicated in earlier discussions iron needed not be identified as a contaminant whose HQ exceeds our target risk levels.

The first four bullets are consistent with those submitted in the past. In my previous comments, Helen Goeden requested that a discussion be added that presents the overall conclusions based on the bulleted results. Apparently four additional bullets were added in response to the request for a discussion. This discussion does not include a complete discussion of the overall conclusions. In Helen's comments to Bob Jupin in April 2001, Helen requested the following discussion, which the MPCA again requests. The approach of "stepping-back" and identifying the driving contaminants and locations is consistent with the methods utilized in OU3.

Based on the bulleted results above residual contamination in sub areas A1, A2, B1, B2, D, F and "Other" are not of concern if the land use is limited to industrial/restricted commercial use. In the remaining sub areas (i.e., A3, A4 and E) localized areas of contamination (i.e., hot spots) result in potential risk levels that exceed levels of concern.

In sub area A3, VOC contamination in the vicinity of sample locations AT009 and AB043 at depths of 8-10 feet bgs and iron at AT007 at depths of 6-8 feet bgs are largely responsible for the risk exceedences. These sampling locations are located in and near the area where drum removal occurred and where a decontamination pad exists. Examination of these samples indicates a localized area with significantly elevated levels of contamination. For example, at AT009 the concentrations of 1,1,1-trichloroethane, 1,1-dichloroethane, 2-butanone, tetrachloroethene, toluene, trichloroethene, and xylenes correspond to ICR 15 times higher than the acceptable target risk level and hazard indices from approximately 3-14 times the target risk level. The concentrations of these contaminants at this location are also significantly (11-360 times) higher than the next highest concentration in sub area A3 suggesting a hot spot of contamination. In addition, the concentrations of 1,1,1-trichloroethane, tetrachloroethene, and xylenes exceed the default soil saturation limit suggesting that free product may be present. Removal of these sampling data points and recalculation of the 95 percent UCL mean exposure concentration produces risks within target risk levels.

In sub area A4, cPAH contamination at AB032 at a depth of 1-3 feet bgs is largely responsible for the risk exceedence. Examination of this location indicates a localized area with significantly elevated levels. The concentration of cPAHs (as BaP equivalents) at this location corresponds to risk levels 10-20 times higher than the acceptable target risk level. The concentration is six times higher than the next highest concentration in sub area A4. Removal of this sampling data point and recalculation of the 95 percent UCL mean exposure concentration produces risks within target risk levels.

In sub area E the number of sampling data points was insufficient to calculate a 95 percent UCL of the mean and therefore maximum concentrations were utilized as exposure concentrations in the refined risk assessment. Carcinogenic PAHs (as BaP equivalents) at sample location EB004 at a depth of 1-3 feet bgs is largely responsible for the risk exceedence. The concentration of cPAHs (as BaP equivalents) corresponds to approximately 1.5 times the target risk and is approximately two times higher than the next highest concentration in sub area E. Based on the limited data available EB004 does not appear to be a hot spot and the risk level associated with this specific location slightly exceeds the target risk.