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NIROP FRIDLEY
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

MAR 3 1999

REPLY TO THE ATTENTION OF:

SR-6J

Commanding Officer
Southern Division
Naval Facilities Engineering Command
Attn: Joel R. Sanders, Code 1868
P.O. Box 190010
2155 Eagle Drive
North Charleston, SC 29419-9010

RE: Remedial Investigation for Operable Unit 3, Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota, Revision), August 1998

Dear Joel:

The United States Environmental Protection Agency (U.S. EPA) has completed review of the Remedial Investigation for Operable Unit 3, Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota, Revision 0, August 1998 (RI for OU3). U.S. EPA understands that the U.S. Navy has worked well with U.S. EPA and the Minnesota Polltuion Control Agency (MPCA) personnel during the scoping of this RI for OU3. Please respond to or incorporate into the RI for OU3, Revision 1, the following U.S. EPA review comments.

The following comments were generated based on a review of the Remedial Investigation (RI) Report for Operable Unit 3 (OU3) at the Naval Industrial Reserve Ordnance Plant (NIROP). The RI Work Plan including the Field Sampling Plan were used as references during the review. The comments, which include a review of the RI Report, as well as the associated Risk Assessment, are presented in the following order: General Comments on the RI Report, Specific Comments on the RI Report, General Comments on the Risk Assessment and Specific Comments on the Risk Assessment. The document is formatted in this manner to allow for the different technical elements to be separated for review by different technical specialists, where applicable.

GENERAL COMMENTS - RI REPORT

1. OU3, by the definition included in the first paragraph of Section 1.2.3 of the RI Report, includes any dense nonaqueous phase liquids (DNAPLs) present within the saturated zone. The evidence for DNAPLs needs to be evaluated with respect to the nature and extent of contamination and the possible fate and transport of any DNAPLs present. Any conclusions would then need to be incorporated in the FS.

   The investigation of OU3 included screening of the soils with an ultra-violet (UV) light source to determine if non-aqueous phase liquids (NAPLs) were present. The results

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from this screening were noted on the soil sample log sheets, but were not summarized or discussed in the text. Include a discussion of the positive results including the sample location, and depth and correlation with the analytical results for that boring. Also, add any recommendations such as the potential need to evaluate accelerated methods for remediating soil in these locations.

Based on a review of the log sheets included in Appendix A, the borings showing positive UV light test results for NAPLs were at Areas of Concern (AOCs) 26, 28, and 32. The test was positive to depths of 32 feet and 16 feet below ground surface (bgs) for AOCs 32 and 26, respectively, indicating that NAPLs may exist at or beneath the water table. At AOC 26 no analytical samples were collected at a depth greater than 12 feet bgs, even though the presence of NAPLs was indicated by the UV light test.

The lack of samples makes it difficult to assess the magnitude of contamination at these depths, however, the results of the UV light test should be incorporated into the site conceptual model. If the lack of samples at the greater depths can be explained, this should also be included in the report.

2. The section of the report that addresses the nature and extent of contamination does not include a complete synthesis of the data collected. Data included in tables provides the range of concentrations and locations, but no discussion is included in the text regarding the locations and types of contamination and their possible relationship to the AOCs.

   The maps in this section do not clearly depict the locations and types of contamination that exist. Understandably, the data are limited to the locations and depths investigated for this report, however, more simplified maps might provide a clearer picture. For example, Figures 4-1 through 4-9 include the detected organic and inorganic chemicals found in the soil and groundwater samples. These maps are helpful, but it is difficult to determine the distribution of patterns in the contamination found. It might be more helpful to include one map for each constituent as well as contour maps to present the extent of contamination.

   Based on the types and distribution of contamination, conclusions should then be drawn about these areas and their likely fate and transport. For example, areas with volatile organic constituent (VOC) contamination might be more susceptible to biodegradation or transport by groundwater as compared to metals which tend to be less mobile. The conclusions drawn should be used to update the site conceptual model developed in the RI Work Plan. These conclusions would also aid in identifying any data gaps.

3. It was noted in the Final RI Work Plan and Final Field Sampling Plan that results of the OU2 RI Report and the North 40 Removal Action Report were to be incorporated into the OU3 RI Report. These items were included in the report, but were not used to provide a

clear picture of the contamination and their relationship to contamination at OU3. Review the OU2 and North 40 Removal Action results and include any pertinent information in the OU3 site conceptual model.

4. The Final RI Work Plan indicated that field change orders were to be completed in the event that conditions warranted a deviation from the work plan. The RI Report did not include any field change orders. Conditions in the field generally warrant some deviations from the work plan and these changes should be documented in the RI Report. Revise the RI Report to include any field change orders completed during the investigation and describe any deviations from the work plan in the text of the RI Report.

5. Section 5.3.1.2 (Soils Investigation, Section 5, Page 10) of the Final RI Work Plan states that three soil samples were collected at the southeastern corner of the building in an excavation for new production assembly pit foundations. However, these results do not appear to be presented or discussed in the RI Report. Revise the report to incorporate the analytical results for these samples and discuss their significance.

6. The second paragraph on page 20 of Section 2.3 (Phase I - Soils and Shallow Groundwater Investigation) of the Final Field Sampling Plan states that spatial modeling techniques, such as Kriging would be used to evaluate the data generated during the RI. However, the RI Report does not appear to include this analysis. Revise the report to include the analysis or provide an explanation for its exclusion

SPECIFIC COMMENTS-RI REPORT

1. Section 5.4, Natural Attenuation, Pages 5-9 through 5-13: Several references are included in this section, however, they did not appear to be included in the reference list. Revise the RI Report to include these references in the reference list.

2. Table of Contents: Please add a discussion in 3.0 Physical Characteristics of the Study Area addressing Demography & Land Use and Ecology.

3. Table of Contents: Please add a subsection addressing Environmental Evaluation or language to explain why an Environmental Evaluation was not scoped.

4. ES-5, Human Health Risk Assessment, 4th sentence: Please explain in more detail how exposures to groundwater were evaluated in the OU1 RI. Which exposure routes were evaluated and what potential receptors were considered.

5. ES-8, Initial Screening of Possible Alternative Response Actions, 5th sentence: If DNAPLs are identified, the groundwater (DNAPL) could be considered a source. Please add a statement explaining.

6. Page 1-24, Storm Sewer: Please add a discussion regarding the scoping of AOCs and potential leaks from storm sewers. Also, I believe that investigatory work was conducted on the storm sewer collection system (telescoping sewer lines). Some lines were replaced. Please include a discussion of storm sewer collection system investigations.

7. Page 2-1, Scope of Environmental Investigation: Please include a discussion regarding meetings held to provide scoping efforts between U.S. Navy, U.S. EPA and MPCA.

8. Page 2-8, Background Soil Sampling Procedures: Please spell out which "regulators" are being referenced here. (1. the mechanism in a watch that governs its speed, 2. an accurate clock used as a standard for timing other clocks, 3. a device for controlling the flow of gases, liquids, or electric current, 4. one that regulates)?

9. Page 2-17, Investigation Derived Waste: 1. Were was the PPE that was placed in trash receptacles finally disposed of ? Please add a statement explaining.

10. Page 4-7, 2nd paragraph: Please explain what "positive" results reported means.

11. Page 5-8, Contaminant Fate and Transport: Please discuss the potential routes of migration for specific contaminant concentrations at NIROP.

12. Page 5-9, Natural Attenuation: Please explain why Natural Attenuation is the only mechanism discussed as it relates to Contaminant Fate and Transport at NIROP.

13. Page 7-3, Soil Concentrations Protective of Groundwater: Please explained how dilution factor parameters (K,i,d I & L) were chosen. (K = research/book or actually measured at site).

GENERAL COMMENTS - RISK ASSESSMENT

1. Although the risk assessment for OU-3 is included as Section 6.0 of the Remedial Investigation (RI) Report, to the extent practicable, the risk assessment should be drafted as a stand-alone document to allow for the separate review by different technical specialists within the regulatory agencies.

2. Proper referencing of documents, and exposure parameter values in particular, is lacking. It is very difficult to verify a particular number or course of action without proper referencing. The entire report should be reviewed and revised to add all relevant references. Lack of references for exposure parameter values and toxicity factors are particularly troublesome. Where references for the numbers do occur. These references cite documents which are not provided in the document reference list, documents which are not commonly available, or documents which are still in their developmental stages. The referencing of developmental documents is problematic. At a minimum, additional

information should be provided within the text of the risk assessment to provide a foundation for the use of particular values and not just provide a general or broad-sweeping reference for a host of values. Likewise, NIROP should make an effort to reference standard terminology and guidance, such as the U.S. EPA risk range of $1x10^{-4}$ to $1x10^{-6}$ from the National Oil and Hazardous Substances Pollution Contingency Plan (NCP, 1990).

3. NIROP developed its list of contaminants of potential concern (COPC) based on all chemicals which were detected in soil at the facility. It used the Minnesota Pollution Control Agency (MPCA) Soil Reference Values (SRV) to refine this list and develop a list of contaminants of concern (COC) for quantitative evaluation within the risk characterization. The SRVs are predicated on a target risk of $1x10^{-5}$. In this case, it could be possible to effectively screen out a number of contaminants at levels representing risks in the 10^{-6} range, which could, assuming additivity, result in risk ranges into the 10^{-5} range. Generally, U.S. EPA conducts contaminant screening or focusing of available resources within a risk assessment on those chemicals representing risks greater than 10^{-6}. Screening of chemicals on the 10^{-6} basis makes it extremely unlikely to negate chemical concentrations which could effect an order of magnitude change such that final total estimates of risk or hazard are unlikely to exceed the 10^{-4} threshold. Although it is recognized that the generally low chemical concentrations and exposures associated with soil at NIROP would tend to indicate that this screening basis of 10^{-5} is not likely to result in a significant underestimation of total risks or hazards associated with facility-derived contamination it is recommended that screening based on a target risk range of 10^{-6} be conducted to account for additivity.

4. Based on prior agreement with MPCA, NIROP has been allowed to develop a COC list predicated on a screening process using industrially-based exposure criteria, rather than residentially-based criteria. U.S. EPA standard methodology is to advance a health-based screening process predicated on residential exposures even at industrial facilities, to maintain a conservative approach and maintain the suite of chemicals which could contribute to additive health effects. Although the facility is controlled by the U.S. Navy, future use of the property is "expected" and not "known" as is stated repeatedly within the document. Future residential development of OU-2 was considered in previous reports and preliminary risk assessment results from OU-2 indicated unacceptable residential risks associated with inhalation of contaminants volatilizing from impacted soil. It should be noted that this inhalation considered only contaminants arising from soil, and not from heavily impacted shallow groundwater. Although future development of the property for other than industrial use is unlikely, there exists no institutional control such as a restrictive covenant on the deed of the facility to preclude either future commercial or residential development of the property. This sort of binding agreement is necessary to advance definitive statements regarding the future use of the property, as well as to determine a defensible and transparent basis for the risk assessment strategy and remedial action, if necessary. At the discretion of U.S. EPA

Region 5, screening based on industrial health-based criteria may be applicable at NIROP, however steps need to be taken to ensure the implementation of a State of Minnesota Deed Notification to preclude future commercial or residential development. U.S. EPA Region 5 should be included in the review of the language associated with this Deed Notification to ensure it is an appropriately binding agreement.

5. NIROP has not provided a discussion of appropriately sensitive detection limits or sample quantitation limits associated with risk assessment data. NIROP developed its list of COCs based on whichever contaminants were detected in soils at the facility. Phenomena such as matrix interference can significantly elevate contaminant detection limits. In addition, other phenomena can affect the sample-specific sample quantitation limit (SQL) which can often be an order of magnitude greater than the reported method or instrument detection limit. In cases where a given contaminant was not detected but where the contaminant and sample-associated detection limit or SQL exceeded the most appropriate screening criterion (in this case the industrial SRV), the contaminant at issue should be retained as a facility COPC and addressed qualitatively within the uncertainty section of the risk assessment.

6. Based on statements in Section 1.2.3 of the RI Report, OU-3 is defined to include all sources in the unsaturated and saturated zones (assumed to be inclusive of OU-2). However, throughout the document, OU-3 is defined as the soil within and underlying the footprint of the NIROP building. Revise the RI Report to clarify which environmental media are included in a risk assessment of exposures associated with OU-3.

7. Although on-site or adjacent residential development of the property is unlikely, recreational use does take place at the Anoka County Riverfront Regional Park to the west of the NIROP property. Recreational users of this park could potentially be impacted by operations or contaminated environmental media (inhalation of volatilizing contaminants or contaminants entrained on suspended dust particles) associated with the NIROP facility. Given a review of the relatively low risk associated with receptor populations on-site, it is highly unlikely that recreational users with substantially less potential contact could be adversely impacted by releases from the site. However, this potential exposure should be addressed within the risk assessment, given the fragmented nature of the risk assessment process as applied at NIROP, specifically in reference to the separation of potentially additive risks or hazards associated with OUs -1, -2 and -3.

8. Although a review of groundwater contamination (OU-1) is beyond the scope of this review, it is notable to mention that this risk assessment, limited as it is to a single impacted medium, is incapable of estimating total aggregate cancer risk or noncancer hazards associated with worker exposures at the NIROP facility. No discussion is provided within this document to address potential groundwater exposures associated with potential future intrusive operations at the facility. A discussion of this potential exposure should be added to the risk assessment. In addition, such a discussion should

present actions associated with the predicted depth of future intrusive operations [mentioned elsewhere in the document as 8 feet below ground surface (bgs)] and how this relates to depth to groundwater. Based on a review of other sections of the RI Report, depth to groundwater is assumed to be deeper than 8 feet bgs, precluding direct contact concerns, but not eliminating inhalation exposures stemming from the release of VOCs from impacted groundwater. A discussion of these additional pathways should be presented, at a minimum within the uncertainty section of the RI Report and a discussion should be provided regarding how these pathways potentially affect the aggregate estimates of risk and hazard.

9. Although the facility is reportedly fenced and guarded, no discussion of these institutional controls is provided within the risk assessment. A discussion of these controls and their efficacy in eliminating the need to address additional receptor populations, such as a trespasser should be added to the risk assessment.

10. Generally, there is insufficient discussion of localized contaminant levels potentially representative of hotspot contamination. Where contaminant levels are deemed particularly elevated (usually orders of magnitude above the most relevant health-based screening criterion) the potential for acute effects and the necessity of a potential interim measure should be addressed. Given the generally low contaminant concentrations in soils at NIROP, hotspot contamination does not appear to be a significant concern. Still, this issue should be addressed in a discussion of the data review and evaluation.

11. Although NIROP is following MPCA guidance, it is U.S. EPA's current position that the route-to-route extrapolation of toxicity criteria from the oral to dermal exposure route is inappropriate for chemicals which demonstrate a direct toxic effect in the skin. An example of this is the development of a dermal cancer slope factor for the carcinogenic polynuclear aromatic hydrocarbons (PAH) from an oral cancer slope factor. Therefore, resulting estimates of dermal risk due to contact with the carcinogenic PAHs should be viewed with skepticism. It is preferable to address dermal risk associated with this suite of chemicals qualitatively within the risk characterization and again within the uncertainty section of the risk assessment.

12. Section 6.0, Human Health Risk Assessment Procedures, lacks an effective summary or conclusionary statements regarding the risks and hazards associated with site-related contamination. Section 8.3, Human Health Risk Assessment, does a cursory job of summarizing the results of the risk assessment, but then progresses to a discussion of remedial options. The report fails to address what the results of the risk assessment mean in a risk management context. For example, the report should address what a hazard index of 2.9 means to theoretical major infrequent construction worker exposures based on the maximum of site-wide detections.

SPECIFIC COMMENTS - RISK ASSESSMENT

1. Section 6.1, Data Evaluation, Page 6-2: This section does not provide a discussion of detection limits, SQLs or the necessity of targeting specific potential breakdown products from known compounds with appropriately sensitive detection limits. Contaminants reported as nondetect for all samples must have appropriately sensitive detection limits or SQLs. In cases where an elevated detection limit or SQL resulted for a contaminant which was otherwise not detected, the contaminant at issue should be retained as a COPC and addressed within the uncertainty section of the report and perhaps qualitatively evaluated within the risk characterization. Contaminants in this situation can be reviewed to determine whether their presence at the facility is likely or not. This can be accomplished through a review of the facility records to determine whether the contaminant was ever used or stored on-site or whether the contaminant is a potential or likely breakdown product of a contaminant known to be present at the facility. In this manner, the facility-specific COPC list can be refined.

2. Section 6.1, Data Evaluation, Page 6-2: This section references background concentrations as being presented in Table 2-x. It has been assumed for the purposes of this review that this is a typographical error and the referenced table is Table 2-6. Revise the RI Report to correct these discrepancies.

3. Section 6.2, Toxicity Assessment, Page 6-4: U.S. EPA no longer uses the weight-of-evidence classifications for carcinogenic toxicity of A through E. Please see U.S. EPA's Proposed Guidelines for Carcinogen Risk Assessment (1996). A discussion of these classifications is warranted since toxicity values used in this risk assessment are taken from U.S. EPA's Integrated Risk Information System (IRIS) which has not been fully updated and still presents the outdated carcinogen classifications.

4. Section 6.2.1, Carcinogenic Effects, Page 6-5: For contaminants where a route-to-route extrapolation is not contraindicated by the available toxicological evidence, it may be appropriate to adjust the oral slope factor for dermal absorption efficiency and adjust the oral intake equation to account for an absorbed rather than an administered dose. U.S. EPA does not currently support a definitive position on this methodology, but does allow for these adjustments in its Risk Assessment Guidance for Superfund (RAGS) (1989). Currently, U.S. EPA's dermal workgroup is addressing these issues, specifically. A definitive guidance document addressing dermal exposure is expected from U.S. EPA in early 1999. In this case, NIROP has applied the ABS (or dermal absorption efficiency) value appropriately, however, NIROP's application of the gastrointestinal absorption factor does not appear in concert with standard U.S. EPA positions. Use of estimated dermal absorbed doses and oral toxicity factors estimates potential for systemic effects based on dermal absorption. The resulting risk estimate does not take into account potential for toxicity at the skin surface. No quantitative toxicity values for these effects have been developed by U.S. EPA. For chemicals which have these effects at the skin surface, lack of information to describe this risk quantitatively may result in underestimation of risk. There is, in fact, a significant body of evidence in the literature

to generate a dose-response relationship for PAHs effects as a result of dermal application of PAHs to the skin surface. It is important to realize that the lack of dermal toxicity values may significantly underestimate the risk of exposure to PAHs in soil.

The adjustment of an oral slope factor/reference dose (RfD) should be performed when the following conditions are met: 1) the critical study upon which the toxicity value is based employed an administered dose in the study design, and 2) a scientifically defensible database exists and demonstrates that the gastrointestinal (GI) absorption of the chemical in question, from a medium, similar to the one employed in the critical study, is significantly less than 100 percent. A cutoff of 50 percent GI absorption is recommended to reflect the intrinsic variability in the analysis of absorption studies. Thus, this cutoff obviates the need to make comparatively small adjustments in the toxicity value that would otherwise impart on the process a level of accuracy that is not existent.

In the event that these criteria are not met, it is recommended that a default value of 100 percent oral absorption be assumed, thereby eliminating the need for oral toxicity value adjustments. This application should be addressed in the uncertainty section of the risk assessment.

Quantitative toxicity reference values for use in quantifying dermal exposures have not been developed by U.S. EPA. Therefore, U.S. EPA has advocated the use of oral reference doses and oral cancer potency factors to assess dermal exposures. Compared to oral exposures to chemicals, dermal routes of exposure may result in different patterns of distribution, metabolism and excretion. Uncertainty in the risk assessment is introduced because the differences are not taken into account. Use of oral toxicity factors may result in over- or underestimation of risk, depending on the chemical at issue. In the absence of information on GI absorption, risk characterization for dermal pathways has used unadjusted reference doses and slope factors. This may result in an underestimation of risk. Following the MPCA guidance, NIROP has assumed a default GI absorption factor of 0.9, instead. This practice will generally lead to a more conservative estimate for the dermal cancer potency factor. U.S. EPA, however, currently does not suggest an adjustment of the oral slope factor for most (e.g., PAHs, TCDD, PCBs, pentachlorophenol, DDT, 2,4-D, chlordane or arsenic) chemicals and only recommends absorption currently for cadmium, or other compounds with gastrointestinal absorption rates of 5 percent or less.

5. Section 6.2.2, Noncarcinogenic Effects, Page 6-6: The wholesale route-to-route extrapolation from oral to dermal routes of exposure in the development of a dermal RfD cannot be supported for chemicals which have demonstrated a direct toxic effect in the skin. Such a determination must be made by a professional toxicologist. No mention of such a review being conducted was presented.

6. Section 6.3, Exposure Assessment, Page 6-6: There appears to be a typographical error in this section of the report, or a section of the report is missing, or the next subsection, Conceptual Site Model should be numbered as Section 6.3.1, rather than 6.3.2.

7. Section 6.3.1, Contaminant Release and Migration Mechanisms, Page 6-8: Since OU-2 sources have been incorporated within the investigation of OU-3, it is appropriate to consider overland runoff to the facility stormwater system as a possible release mechanism of contaminants adsorbed onto suspended surficial soil particles. This release mechanism has not been discussed within the RI Report.

8. Section 6.3.1, Air, Page 6-8: Although contaminated groundwater is beyond the scope of this evaluation, it should be noted that volatile contaminants could be contributed to ambient air from shallow impacted groundwater which could in turn effect estimates of risk to exposed populations via inhalation exposures.

9. Section 6.3.1, The Typical Industrial Worker, Page 6-9: Because soils associated with OU-2 are now included within the evaluation of OU-3, exposure of an on-site typical industrial worker are not hypothetical (future potential), but are assumed to currently exist. In addition, workers within the building could be exposed to inhalation of volatile contaminants arising from impacted soils beneath the building. Please see the American Society for Testing and Materials (ASTM) E-1739-95, Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites, for a representative methodology to evaluate the compromise of foundation structures and the intrusion of volatile vapors into overlying containing structures.

10. Section 6.3.2, last paragraph, Item 4, Page 6-10: The Navy is required, under the OU-1 Record of Decision, to provide alternate water sources or treatment in the event there is development of the groundwater in the off-site contaminant groundwater plume. However, it should be noted that this addresses only direct contact pathways and does not address the potential for volatile intrusion into homes or other structures and associated inhalation exposures. Revise the RI Report include the additional pathway(s) and the resulting actions, if applicable.

11. Section 6.3.4, Quantification of Exposure, Page 6-13: This section is extremely difficult to understand. Exposure parameters are poorly referenced. This section references Table 6-3, but values do not correspond. Moreover, this section, except for specific cases like the exposure frequencies, references MPCA document 1998, but the 1998 document referenced in the text is not presented in the Reference Section of the RI Report. Table 6-3 merely references the MPCA and not a specific document. This is important because many of the values cannot be definitively back-checked. For example, the noncancer subchronic averaging time (AT) is given as 91 days in the text, however the value presented in draft guidance from a personal communication with the MPCA is 60 days. Since subchronic exposures, or all exposures less than a year in duration are in fact

averaged over the course of one year, the subchronic exposure duration (ED) should be 1.0 (or left out of the equation, as the MPCA appears to do in their draft risk assessment documents). Instead, NIROP's effective subchronic ED is presented in Table 6-3 as 0.25 year and references the MPCA. Where definitive values are presented, they are lacking in supporting documentation in the text and tables mostly evidenced, for example, by the EFs presented for all intake pathways considered within Table 6-3. Revise the risk assessment to provide accurate referencing.

12. Section 6.3.4, Incidental Ingestion of Soil, last paragraph, Page 6-15: NIROP has applied a climate adjustment factor of 0.75 to the intake equations designed to account for an industrial on-site worker. This factor adjusts for the assumption that industrial workers are exposed one-half of the time during the winter months (5 months) and days with precipitation (1 day a week), and all day during the rest of the year. Although this is not a U.S. EPA standard application, it does in fact excise additional conservative uncertainty and is not wholly unacceptable. NIROP should provide additional justification for the application of this number, such as precipitation days over 0.25 inches per day as defining a 'precipitation day' and relate this number to local meteorological data. If NIROP references these values as part of MPCA applied guidance, provide more specific citations to this guidance.

13. Section 6.4.3, Groundwater, first bulleted item, Page 6-19: It is not readily apparent where in the document the acronyms HBV or HRV were defined. Define these risk-assessment related terms within Section 6.0 of the document.

14. Section 6.4.5, Major Infrequent Construction Workers, Page 6-20: It is the position of the MPCA (personal communication with Helen Goeden, MPCA) to regard subchronic exposures associated with risks in excess of $1x10^{-6}$ as significant. Total cancer risk for contact with soil for the major infrequent construction worker was presented as $2.1x10^{-6}$ and reported as below the MPCA acceptable level of $1x10^{-5}$, however this is not entirely correct. This should not negate the understanding that these exposure evaluations are relatively conservative in nature. Subchronic exposures should be retained for evaluation when they exceed a level equivalent to one-tenth those associated with chronic exposures, or $1x10^{-6}$, based on the chronic cutoff of $1x10^{-5}$.

15. Section 6.4.6, Exposures to Lead, last sentence, Page 6-22: Given that the exposure point concentration for lead in soil is less than the MPCA industrial SRV of 700 mg/kg, and given the fact that lead was only detected in one sample at a concentration in excess of the SRV and that lead was only detected in two samples in excess of the U.S. EPA's <u>Soil Screening Levels (SSL) Guidance</u> (1996), U.S. EPA suggests the last sentence be revised to read, "Consequently, exposures to lead in soil by the minor frequent construction worker are [*not*] expected to result in adverse health effects". That is unless, NIROP has an indication of potential lead hotspot contamination. This statement would likely hold true for any and all industrial worker exposures, but it not protective of future potential

residential exposures, given the fact that detections exceeded the U.S. EPA's SSL value of 400 mg/kg, due to the presence of sensitive subpopulations (children).

16. Section 6.6.1, Uncertainty in the Field Screening Data, Page 6-23: The fourth sentence of the first paragraph is ambiguous. It is unclear how a degree of correlation "is" qualitative or quantitative, rather than how it can be "described" or "evaluated" qualitatively or quantitatively. Provide additional information on how NIROP evaluated the degree of correlation between linearity and coelution of COPCs.

17. Section 6.6.2, Uncertainty in Selection of Chemicals of Concern, Page 6-24: The statement which comprises this section is not accurate. Significant uncertainty is associated with the development of the COPC list, since detection limits and SQLs are not discussed, in addition to other phenomena such as VOC loss during sampling. Also see General Comment No. 5.

18. Section 6.6.3, Determination of Land Use, Page 6-24: The statement which comprises this section is not accurate. Significant uncertainty is associated with "known" versus "anticipated" or "potential" future use of the property. Also see General Comment No. 4.

19. Section 6.6.3, Exposure Routes and Receptor Identification, Page 6-24: The statements included in this section are not entirely accurate. Significant uncertainty is associated with "known" versus "anticipated" or "potential" future use of the property. Also see General Comment No. 4.

20. Tables 6-1 and 6-2: Footnotes: MPCA, 1998, is not presented within the RI Report Reference Section.

21. Table 6-3: Exposure duration of less than one year should be recorded as averaged over an entire year and should not be represented by fractions of one year. Also see Specific Comment No.11.

22. Table 6-4: The lognormal UCL for phenol in soil is given as 208 ug/kg, which exceeds the maximum detected concentration of 54 ug/kg, yet 208 ug/kg was presented as the exposure point concentration. Explain the usage of this value or designate this entry as a typographical error.

23. Figure 6-1: No discussion is presented for surface run-off of stormwater to a stormwater sewer as a release mechanism. It remains unclear whether this transport pathway is relevant. Revise the RI Report to clarify this issue.

24. Section 8.3, Human Health Risk Assessment, Page 8-6: The first sentence of the first bulleted item on this page should read, "Noncarcinogenic risk estimates for the major [*in*]frequent construction worker exceeded 1.0." Revise the RI Report to correct this

discrepancy.

If you have any concerns regarding these RI for OU3 review comments, please contact me at (312) 886-1967.

Sincerely,

Thomas R Bloom

Remedial Project Manager

cc: Dave Douglas, MPCA