UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
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REPLY TO THE ATTENTION OF

Sent Via Electronic Mail and by Certified Mail Return Receipt Requested **SR 6J**

May 22, 2003

Mr. Douglas A. McWilliams, Esq.
Squire, Sanders, & Dempsey, L.L.P
4900 Key Tower
127 Public Square
Cleveland, OH 44114-1304

Re: **Chemical Recovery Systems (CRS), Inc. - U. S. EPA's Work Plan and Field Sampling Plan Revision 1 Comments. A Conditional Approval Granted, Additional Clarifications Required**

Dear Mr. McWilliams:

Enclosed are the Agency's comments on Revision-1 Work Plan and Field Sampling Plan submitted by Parson to perform the Remedial Investigation/Feasibility Study. As you will see the Agency noted the majority of the comments have been corrected in the revision. However, there remain a small number of comments that needs additional clarification. A Conditional Approval to the Work Plan and the Field Sampling Plan is granted. The outstanding clarifications must be addressed; the appropriate replacement pages are acceptable.

I have also attached a 2-pager on background that the Agency has used in Region 5 Superfund in the past from Dr. Andrew Podowski., as requested in your comment # 48.

I will not be in the office during the week of May 25, 2003. If you have any questions, please do not hesitate to ask, and I will respond when I return to the office on June 2, 2003.

Sincerely,

Gwendolyn S. Massenburg

Enclosures

cc: Thomas Nash, ORC
Larry Antonelli, Ohio EPA
Barry Nelson, Metcalf & Eddy

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Review of PRP Documents
Review Comments Regarding the following Documents:

C Remedial Investigation/Feasibility Study (RI/FS) Work Plan, Chemical Recovery Systems, Inc., Elyria, Ohio, prepared by Parsons, Revision 1, April 2003.

C Remedial Investigation/Feasibility Study (RI/FS) Field Sampling Plan, Chemical Recovery Systems, Inc., Elyria, Ohio, prepared by Parsons, Revision 1. April 2003

NOTICE OF DEFICIENCIES TO THE RI/FS WORK PLAN (REVISION 1, APRIL 2003) CHEMICAL RECOVERY SYSTEMS INC.

The following comments (bold) were provided in the U.S. EPA=s Notice of Deficiencies to the Respondents in February 2003. These comments have been addressed by Parsons on behalf of the CRS Site Group in the April 2003 Revision 1 to the Remedial Investigation / Feasibility Study (RI/FS) Work Plan. The U.S. EPA review of the PRP=s Revision 1 response for each original comment is provided in italics below the original USEPA comment.

General Comments:

1. **The Table of Contents has several incorrect page numbers and typographical errors. Please review this text and correct as needed.**

   The table of contents appears to be in agreement with the revised text.

2. **The Work Plan should discuss the basis and procedure for determining chemicals of concern (COCs).**

   The reporting of volatile organics compounds (VOCs) and semi VOCs should include all the compounds included in the analytical method (i.e. 8260 and 8270) specified for a particular media, not just the highlighted (bold) compounds in Table 1-4 of Appendix A.

3. **The Work Plan should provide clarity on the proposed sampling approach and sampling rationale. It is not clear what the probability of finding a source area and a hot spot is and what minimum area of such a source or hot spot would be based on the selected probability.**

   The rationale for borings / wells in each area of concern is not specifically stated, but is inferred in the Section 4 discussion of the number of borings / wells to be placed at the

site. In addition, Table 5-1 provides the sampling program rationale and is accompanied by Figure 5-1 with the location of the proposed wells, borings, and other samples. The suggestions put forth by USEPA during our February 2003 meeting at Parson=s office in Cleveland are addressed by the Respondents in this revision.

4. **The Work Plan appears to follow the format of OSWER=s Suggested RI/FS Work Plan. A Work Plan Rationale Section should be included after Section 3.0. The Work Plan Rationale Section should include Data Needs and Work Plan Approach to meet these needs. The Work Plan Rationale subsection should identify data requirements for risk assessment, extent of contamination determination, and alternative evaluations. The Work Plan Approach subsection should illustrate how the proposed activities will satisfy specific data requirements.**

   Table 4-1 identified the data gaps for the areas of concern. Section 4.0 provides the work plan rationale with data requirements as requested in the original comment.

5. **In depth discussion of the sampling and analysis plan, risk assessment, and ARARs may not be warranted in the RI/FS Work Plan and could be moved to other plans and reports appropriately.**

   This comment has been addressed by the Respondents.

6. **The Work Plan should discuss fulfilling the Treatability Study and Feasibility Study requirements of the Administrative Order on Consent and the Statement of Work.**

   The fulfillment of the AOC requirements is referenced in Section 1.1 of the revised text. A separate statement in Section 5.0 could clarify that the intent of the Treatablility Study and Feasibility Study is to meet the requirements of the AOC and SOW.

7. **A cost and key assumptions section would enhance the RI/FS work plan.**

   Section 6 provides a Are-wording@ of the primary work that will be done at the site and assumptions such as the data QC level, number of borings / wells, level of sample collection work (Level D), etc. that is previously discussed throughout the work plan. The cost has not been addressed in terms of actual dollar amounts.

8. **The Administrative Order of Consent (AOC), Section V, Findings of Fact, Item 9, describes the Site as *Aapproximately four (4) acres (with several lots within the 4 acres).@* The figures in the work plan documents have maximum dimensions of 425= x 300= (this assumes the northern property line extends from Locust Street to the *opposite* river bank on the diagram as drawn and that the western property line runs due west, although the southern property line is actually less than 300') for a maximum total area of 127,500 ft^2 or approximately 3 acres. The Work Plan does**

state in Section 1.4 that the Site is *Aapproximately 2.5 acres in size.@* Review of previous site diagrams does not resolve this issue. Estimates of total site size using figures and provided scales from E&E=s report have the site size ranging from 2.2 to 3.3 acres. Ohio EPA=s STEP Report=s (Figures 2 and 3) has an estimated area of 9-10 acres. PRC=s 1995 Focused Site Inspection Prioritization Site Evaluation Report figure 2 (which says modified from E&E 1982) gives a calculated size area of approximately 19 acres. Evidently the scale on the different historical figures has been altered by copying or by another means, but there is no agreement on the site size. Please note the discrepancies in the past site figures and provide a consistent description of the area of the site.

U. S. EPA agrees with Respondents= findings of 2.5 acres for the area of the site.

9. **Figure 1-2 (site plan) appears to inaccurately portray the eastern riverbank. The diagram shows part of the former above ground storage tank area as being in the East Branch of the Black River. If the site diagram of E&E is correct, the riverbank on Figure 1-2 should be approximately 25 feet further west at the northern and southern portions of the site. Please adjust Figure 1-2.**

The figures have been revised in the new work plan.

10. **The Site Plan (Figure 1-2) indicates that MW-1, MW-2, and MW-3 have been destroyed. MW-1 and MW-2 were located and sampled during Ohio EPA=s STEP investigation of 1996. Have the destroyed wells been located in the field and if so, what is their current condition? Figure 2-4 does not provide the Adestroyed monitoring well@ symbol in the legend.**

The figures have been revised, but an effort to locate the wells during any excavation activities (future removal actions) would be prudent to eliminate potential conduits from the surface to groundwater.

11. **A Generalized Stratigraphic Column would be a helpful addition to the text (Section 3) to provide a visual representation of the geology beneath the vicinity of the site.**

The figure was added to the revised work plan.

12. **PCBs are not scheduled to be measured for the majority of soil boring samples. Given the extensive regrading of the site, the expected relative immobility of PCBs, and the previous detection of PCBs in groundwater at the site (including both monitoring well MW-2 located in the southern portion of the site and MW-1 located in the northern portion of the site) it is recommended that all samples be analyzed for PCBs.**

The Respondents agreed to this comment and revised the work plan as necessary.

13. **A storm sewer that runs under the site may have allowed contaminant migration on to the site (PRC, 1995). No borings or groundwater samples have been indicated in the area of this storm sewer to assess if contaminants have migrated along this pathway. It is recommended that additional borings be located near this storm sewer adjacent to areas of concern, such as former drum storage areas and the area of the former Brighten Still building.**

    Respondents addressed this in Section 5.0 (Figure 5-1).

14. **Reportedly, groundwater flows west under the site toward the East Branch of the Black River (E&E, 1982). No down gradient groundwater samples are indicated for potential source areas identified as former drum storage areas 1, 4 and 5, the former aboveground storage area, or former tanker staging area two (see Figure 4-1). Please provide the rationale for the lack of groundwater sampling at these locations.**

    The revised work plan provides additional groundwater data from the soil borings in the center of the areas of concern (piezometers) and the addition of monitoring wells on the site. Although the new approach appears to be adequate, the Respondents should be aware that additional groundwater wells may be required based on these initial results of the investigation.

Specific Comments

1.0 INTRODUCTION

15. Section 1.1, INTRODUCTION: This section should discuss key reasons for conducting the RI/FS.

Respondents state that all work is being conducted in fulfillment of the AOC requirements, dated May 29, 2002.

16. 1.2, GOALS OF THE RI/FS PROCESS: Suggestion - List the goals by bulleted numbers. Additional goals for the CRS RI/FS should include:
a. Identify all sources, hot spots, spills, etc., contributing to contamination at the site and define the nature and extent of contamination.
b. Identify and define sources, if any, due to past and current discharges or spills to Black River, and define the nature and extent of contamination on the banks of the site.
c. Collect data for treatability studies and feasibility studies, if needed.

The goals are provided in Section 1.3, however, mention of Black River has been omitted from the revised text. Additional clarification should be provided as to why the banks of the river are not included as an Area of Concern. The Respondents statement to identify all source areas and areas of concern at the site must also include the river.

17. Section 1.3, SITE LOCATION: The correct CRS address is 142 Locust Street.

Corrected.

18. Section 1.4, CURRENT SITE DESCRIPTION AND USE: The sentence appears cut off at the bottom of page 1 and does not continue to page 2. Please provide the missing text.

Corrected.

2.0 SITE HISTORY

19. Section 2.3.4, POTENTIAL AREAS OF ACTIVITY/CONCERN: There is a bulleted list of eight potential Areas of Concern (AOC) whereas Section 4.2.1.4, page 23 of 43 (last two lines of the page) identifies five categories of AOCs. Section 4.2.1.4 does not include groundwater, the riverbank, or the AST farm. Please explain the discrepancy in the two lists.

This has been corrected for groundwater (at all AOCs) and the AST farm, however, the

riverbank is not specifically addressed. Instead, the storm sewer outfall is the area of concern. U.S. EPA strongly suggests that samples be collected from the river bank under the outfall pipe.

20. **Figure 2-4: The scale presented is one inch equal 20 foot, however, the same base drawing used in Figure 1-2 (Site Plan) is one inch equal 40 foot. Based on the aerial photographs and other drawings it appears that the Figure 2-4 scale is incorrect. Please review the scales on the figures and correct as necessary.**

    Corrected.

21. **Section 2.4.4, HEALTH CONSULTATION-AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY (1999): The last two sentences in this paragraph are not part of the Health Consultation Report and should be moved to sections discussing rationale for sampling or identification of migration pathways.**

    Corrected.

22. **Section 2.4.5, ASSESSMENT RESULTS-HARSHAW/ENGELHARD SITE: Should limit discussion to activities conducted on CRS site and give findings and conclusions of their investigation with respect to CRS contamination.**

    Respondents chose to add Section 2.8 to address the adjacent site.

23. **Section 2.4.6, REMEDIAL ACTIVITIES - HARSHAW/ENGELHARD SITE: This may be irrelevant for CRS RI/FS.**

    Respondents added Section 2.8 to address the adjacent site.

24. **Section 2.5, CRS SITE SUMMARY: Last sentence of the page is not ATSDR=s conclusion and would be appropriate in pathways/sampling rationale discussion.**

    Corrected.

3.0 INITIAL EVALUATION

25. **Section 3.1.5, GROUNDWATER USE: This section should only discuss groundwater uses and move conclusions of other reports and migration pathway evaluation under conceptual site model discussion. All migration pathways and exposure pathways and the preliminary assessment of public health and environmental impacts should be included under the conceptual site model discussion.**

Corrected.

26. **Section 3.1.8, IDENTIFICATION OF CHEMICALS OF CONCERN (COCS): This sub-section needs to explain the evaluation criteria for determining COCs and what regulatory levels, if any, were used for screening COCs.**

Corrected, as explained in Comment 2 under the General Comments above.

27. **Section 3.1.8, IDENTIFICATION OF CHEMICALS OF CONCERN (COCS): ALevels of chemicals currently detected in the East Branch of the Black River sediments and surface water are minimal and below levels of public health concern (ATSDR 1999).@ COC identification should not be based on health consultation. COC identification is normally based on past operations and analytical results. If contamination was observed in past sediment and surface water sampling events, then those contaminants should be part of the COCs. Further sampling and risk evaluation, as part of the RI/FS, is necessary. A health consultation is just a consultation report and not a risk assessment. The data collection requirements, data screening, and risk evaluation for a risk assessment is intense and quite different from a health consultation. A health consultation alone will not satisfy all the requirements of RAGS in evaluating risks.**

Corrected, as explained in Comment 2 under General Comments above.

28. **Section 3.1.8, IDENTIFICATION OF CHEMICALS OF CONCERN (COCS): ASpecific chemicals of concern, for each media, are outlined in Tables included in Appendix C.@ However, the table numbers could not be located. Please provide table numbers where COCs are listed.**

Corrected.

29. **Section 3.3, CONCEPTUAL SITE MODEL: Historical sources listed here should coincide with the Potential Areas of Activity/Concern (AOCs) listed in Section 2.3.4.**

Corrected.

30. **Section 3.3, CONCEPTUAL SITE MODEL: The following additional pathways should also be considered.**
    a. **Groundwater dermal exposure (industrial use) both on-site and off-site.**
    b. **Stream sediment ingestion (aquatic animals).**

Figure 3-1 has included these additional pathways.

31. **Section 3.4.1, DEFINE DATA GAPS: The Table 1 showing data gaps should**

include lateral and vertical sampling as a data gap, since none of the sources identified in earlier sections have been defined with respect to their lateral and vertical extent.

Revised text is corrected to include horizontal and vertical extent as a data gap.

32. **Section 3.4.2, DEFINE DATA QUALITY OBJECTIVES (DQOS): DQOs discussion should be included in the Sampling and Analysis Plan (SAP) rather than in the Work Plan. A Work Plan Rationale Section with a Data Needs subsection and Work Plan Approach subsection should be included in this Work Plan. The Work Plan requires discussion of data needs and how they will be addressed through sampling. For example, the sump area characterization and the lateral and vertical extent of contamination is not known. The data needs include identifying all contaminants present and their extent of occurrence. This subsection should identify all data needs and should correspond to the data gaps identified in the previous subsection and Table 1 of the Work Plan. Data needs for risk assessment and remedial alternatives should also be identified in the Work Plan. The Work Plan Approach subsection should include activities that will satisfy data needs of the site.**

Respondents stated that DQOs are discussed extensively in the QAPP. Respondents should reference the section of the QAPP where the DQOs are discussed.

33. **Section 3.5, APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS: Suggest that this section limit discussion to regulatory programs, guidances, etc., and move general information such as definitions, types of ARARs, etc., to RI/FS Report.**

Corrected.

34. **Section 3.5, APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS: U.S. EPA Region 9 Risk Based Concentrations (RBCs) should be considered as an ARAR.**

Corrected.

35. **Section 3.6, PRELIMINARY GENERAL RESPONSE ACTIONS AND REMEDIAL ACTION ALTERNATIVES: Removal with treatment (excavation, treatment, and disposal) should also be considered.**

Corrected.

4.0 REMEDIAL INVESTIGATION TASKS

36. **Section 4.0, REMEDIAL INVESTIGATION TASKS: This section heading should be AREMEDIAL INVESTIGATIONS/FEASIBILITY TASKS@(RI/FS) since the Administrative Order on Consent (AOC) and the Statement of Work (SOW) requires performing RI/FS for CRS site.**

Corrected.

37. **Section 4.1, PURPOSE AND DQO REVIEW: Please list RI/FS goals.**

This was *completed and included in the Anature and extent@ wording for work plan.*

38. **Section 4.2.1.4, OVERVIEW OF FIELD ACTIVITIES: AThe objective of field sampling effort is to obtain data, which is sufficient to determine the presence, extent and magnitude of chemicals of concern at the CRS site.@ The objective of the field sampling effort should include obtaining data to first, identify all contaminants present at the site and second, to identify COCs. The data obtained to determine the presence; extent and magnitude of COCs may not satisfy the data needs for evaluating potential risks and developing remedial options.**

This section has been revised; however, a more appropriate response is as follows: The first objective of the field sampling effort is to identify all contaminants and impacted media at the site and the second objective is to identify all chemicals of concern. Then data will be collected which is sufficient to determine the presence, extent, and magnitude of the chemicals of concern identified at the CRS site. This data, and any additional data needed to properly characterize risk, will later be utilized to determine the potential risks to human health and the environment, and to develop and screen remedial options. This section identifies the field activities to be conducted at the site, as discussed in the FSP.

39. **Section 4.2.1.4, OVERVIEW OF FIELD ACTIVITIES: AThese data will then be utilized to determine and evaluate the potential risks to human health and the environment (if applicable), and to develop and screen remedial options.@ The clause A(if applicable)@ is redundant since a risk assessment is required to determine if there are potential risks to human health and the environment. The conceptual site model proposed earlier depicted migration pathways and exposure routes. Only a risk assessment would show what risks, if any, exist due to site contaminants.**

Corrected.

40. **Section 4.2.1.4, OVERVIEW OF FIELD ACTIVITIES, SOIL SAMPLING: Section 2.3.4 identified 5 AOCs and 10 sub areas of potential concern. The rationale**

for selecting nine soil borings should be discussed. The Work Plan should explain how approximately one boring per AOC would assist in evaluating the lateral and vertical extent of contamination. The Agencies suggest that the sampling rationale follow U.S. EPA=s Removal Program Representative Sampling Guidance or other sampling guidance.

The sampling rationale and plan was revised as a result of the February 2003 meeting in Cleveland between the Respondents, Ohio EPA, and USEPA.

41. **Section 4.2.1.4, OVERVIEW OF FIELD ACTIVITIES, SOIL SAMPLING: AA maximum of three soil samples from each boring....@ The Work Plan should indicate the type of sample to be collected (composite or grab). All soil borings require screening with monitoring instruments to assist in collecting the highest reading sample from the mid-interval depth being proposed in this Work Plan.**

Corrected (Section 5.0).

42. **Section 4.2.1.4, OVERVIEW OF FIELD ACTIVITIES, SOIL SAMPLING: AIn addition to being utilized to define the presence, extent and magnitude of impacts.....@ One boring will not determine the extent and magnitude of impacts by contaminants. Additional sampling should be proposed to clearly assist in defining the extent and magnitude of impacts, identifying source areas, if any, and estimating the volume of contamination for screening and developing remedial alternatives.**

a. The kind of sampling proposed in this Work Plan may not assist in determining potential risks to human health and the environment since representative sampling (not just from AOCs) will be required and several background samples need to be collected. Please refer to Ohio EPA requirements on collection of background samples and determination of background concentrations.

b. The sampling proposed in this Work Plan may not assist in the evaluation and selection of potential remedial alternatives since parameters such as pH, soil density, porosity, heat value, etc., would be needed for some of the general response actions and remedial action alternatives proposed in Section 3.6. In addition, excavation and disposal alternatives have to abide by several Federal and State regulations, including the requirement to sample and determine that the waste is nonhazardous, if no treatment is proposed.

The sampling rationale and plan was revised as a result of the February 2003 meeting in Cleveland between the Respondents, Ohio EPA, and USEPA.

43. **Section 4.2.1.4, OVERVIEW OF FIELD ACTIVITIES, MONITORING WELL**

INSTALLATION AND GROUNDWATER SAMPLING: Table 3 and Figure 7 list seven monitoring wells and the text is citing six additional monitoring wells to be installed.

a. **A replacement monitoring well adjacent to the dismantled MW-1 location is necessary since MW-1 was known to be impacted by contamination. The results of the new monitoring well sampling could provide information on continued releases, if any, and may lead to a source contributing to this release.**

b. **Monitoring wells at the eastern boundary of the site would be required to evaluate up gradient concentrations and assess any contamination coming onto the site from off-site sources.**

c. **There are no monitoring wells proposed in the middle section of the site. At least two monitoring wells along the north-south middle line of the site would provide groundwater quality in this area of the site. In addition to these monitoring wells, several geoprobe samples would be required on the site to evaluate groundwater quality as well as to delineate source areas and identify any unknown sources.**

The sampling rationale and plan was revised as a result of the February 2003 meeting in Cleveland between the Respondents, Ohio EPA, and USEPA. The Respondents have addressed the above concerns.

44. **Section 4.2.1.1, MOBILIZATION ACTIVITIES: The AOC (Section VIII Work to Be Performed, Item 66) *ARespondents will not proceed further with any subsequent activities or tasks until receiving U.S. EPA approval for the following deliverables: RI/FS workplan and sampling and analysis planÿ.@* Mobilization activities should also include a specified notice period to U.S. EPA.**

Corrected.

45. **Section 4.2.1.4, OVERVIEW OF FIELD ACTIVITIES, SEDIMENT SAMPLING: There are five outfall/pipes shown on Figure 7. At least one sediment sample from each outfall/pipe should be collected, in addition to proposed locations, to determine location specific contamination.**

Although no fluids were observed discharging from these outfall locations, sediment samples should be collected directly beneath each of the outfalls to confirm the absence or presence of historical impacts.

46. **Section 4.2.4, DATA ASSESSMENT: AIf concentrations of chemicals of concern, do not exceed these levels, no risk assessment will be completed.@ The RI/FS**

requirement for this site is based on past sampling which identified contamination in soil, sediment, and groundwater. A risk assessment is necessary based on past data alone. Replicate sampling should be proposed to mimic past locations in addition to new sampling locations to assess their current risks. There are some compounds/analytes without U.S. EPA screening levels and would require site-specific risk assessment.

U. S. EPA recommends the use of Region 9 screening levels because they=re the most effective in screening for COCs. The use of Region 3 or 6 screens should be used only if Region 9 screens are missing toxicity information that the other screens have.

The sentence: AIf concentrations of chemicals of concern do not exceed these levels, no risk assessment will be completed,@ should be changed to: AIf concentrations of chemicals do not exceed these levels, no risk assessment will be performed for these chemicals.@ This is because the >chemicals of concern= by definition are already chemicals that have exceeded the screen levels.

Corrected.

47. Section 4.3.1, HUMAN HEALTH EVALUATION: The title should be in line with Section 4.3 title ARISK ASSESSMENT@ to read AHuman Health Risk Assessment@

Corrected.

48. Section 4.3.1.1, DATA EVALUATION: What criteria will be used to judge whether background concentrations have been exceeded for inorganics?

For purposes of identifying and selecting COCs., U. S. EPA recommends the use of the regional memo: U.S. Environmental Protection Agency (EPA), 1993, Identification of Chemicals of Concern (COCs) at Superfund Sites for the Baseline Risk Assessment, Memorandum from Andrew Podowski, EPA Region 5 Toxicologist, provided to PRP Group, dated November 2, 2001.

Respondents have requested USEPA to provide a copy of this memo. This memo has been included as an attachment.

For background values, it is recommended to use reasonable site-related background (=best) or regional background values, rather than values from guidance documents, which sometimes contain national ranges that may have little or no relevance to a specific site. Or the background concentrations may have to be determined based on state regulations. Verifying the state regulations and

coordinating with U.S. EPA is suggested for regional background determinations.

Corrected.

For groundwater, or any other media, ARARS, e.g., MCLs are insufficient for selecting COCs and, therefore, should not be used. Rather risk-based screening values, such as Region 9 should be used. However, if ARARs are exceeded for any chemical this should be mentioned.

Corrected.

Also, for Exposure Assessment it is recommended to use both, unfiltered and filtered samples, to simulate potential receptor exposures, e.g., private well water use vs. municipal water use. The sentence: Data collected, as specified in this document, will be statistically evaluated prior to use in the Risk Assessment. How will it be evaluated statistically?

Corrected.

49. **Section 4.3.1.2, EXPOSURE ASSESSMENT: RAGS Part D Standard Tables must be incorporated and used in the Risk Assessment to make it clear and transparent for the Exposure Assessment, etc. These Tables are also necessary for submittal, in electronic format, to U.S.EPA Headquarters to be transferred into U.S.EPA=s Database.**

Agreed to by the Respondents as stated in Section 5.5.1.2.

Exposure Point Concentrations - It states that EPCs will be based on soils, groundwater and surface water. Air should also be included since VOCs were detected in all 3 media.

Corrected.

Noncarcinogenic Effects: The sentence: For a human being, chronic exposure is considered to include exposures of at least seventy years duration. This is incorrect. According to U.S. EPA RAGS Part A (1989), chronic exposure is defined as greater than seven years.

This correction was not made in the text provided in Section 5.5.1.4 (Page 48 of 73).

Carcinogenic Effects: The sentence: Carcinogenic risk is expressed as a probability of developing cancer as a result of lifetime exposure. This is not true because it implies that a lifetime of exposure to a carcinogen is necessary in order to get some

probability of developing cancer. A receptor can be exposed for a very short period of time to a carcinogen and end up carrying the burden of developing cancer over the rest of his/her life. And since cancer usually occurs with a delaying factor, it means it can manifest itself 10, 20 or 50 years later. However, the probability of developing a cancer increases the longer a receptor is exposed. Therefore, the sentence should be changed to:
ACarcinogenic risk is expressed as the probability of developing cancer over a lifetime.@

Corrected.

50. **Section 4.3.2, ECOLOGICAL EVALUATION: Again the title should be in line with the Section 4.3, title ARISK ASSESSMENT,@ to read AEcological Risk Assessment.@**

Corrected.

51. **Section 4.3.2, GENERAL COMMENTS: The work plan appears to be following the Superfund Ecological Risk Assessment Guidance (USEPA 1997). Many of the comments made here are relevant because the site characterization has not been done and those issues will presumably be resolved once that stage of the investigation is completed.**

However, it has been stated and repeated several times that a Preliminary Risk Evaluation (PRE) was performed, but the extent of that PRE was not indicated. Some of the information from that PRE was apparently not included in the development of this workplan. There are also some inaccuracies which are detailed below. As is, the work plan is for the ecological risk assessment is unacceptable. Which is due to, in general, insufficient details and inadequate explanations for each of the steps? Every step needs to be filled out with additional details. For example: It appears as if a PRE was done, but little information and no details from that PRE was included in the development of this workplan. If a Screening Level Ecological Risk Assessment (SERA), including screening out Contaminants of Concern was not performed, then it should be done, not a ABaseline@ ERA (BERA) as suggested in the workplan. A BERA is performed place after a SLERA, if it is deemed necessary to do further investigative work at the site.

Corrected.

52. **Section 4.3.2.1, SITE CHARACTERIZATION: The work plan mentions completion of site characterization in a Apreliminary risk evaluation.@ If a preliminary risk evaluation was performed, the resultant information should have been included in this document. The selection of ecological receptors (i.e., plants and**

animals affected by contaminants present) is based on the site characterization.

A description of current and future habitat availability and land-use is acceptable here in site characterization. However, consideration and evaluation of these factors are more appropriate in the Risk Characterization portion of the ERA, not the site characterization and data evaluation sections.

Both comments above were addressed and corrected by the Respondents.

53. **Section 4.3.2.2, DATA EVALUATION: This statement is too vague. Assuming that the Contaminants of Concern (COCs) will be identified using testing of various samples, some COCs may affect ecological receptors and not affect human health, and vice versa.**

Corrected.

54. **Section 4.3.2.3, TOXICITY ASSESSMENT: The specific criteria that will be used to assess toxicity to wildlife should be listed and described.**

<u>Aquatic Life</u>: Why are sediments samples not to be taken? Was there no contamination in the sediments? If this has not been established, then sediment sampling, screening of those results against established benchmarks, and toxicity evaluation should be done.

Corrected.

<u>Terrestrial Wildlife</u>: It is incorrect that ACriteria have not been developed specifically for the protection of terrestrial wildlife.@ In addition, it is not acceptable to use guidelines for livestock drinking water as protective of terrestrial wildlife as toxicity values protective of domesticated animals should not be used in ecological risk assessments. There are several possibilities for assessing toxicity to terrestrial wildlife:

1. **Generic soil screening numbers (such as the Region 5 Environmental Data Quality levels and others);**

2. **Toxicity to earthworms via soil exposure; and,**

3. **Toxicity to small mammals and other terrestrial wildlife via soil exposure; four, food chain modeling.**

Corrected.

<u>Vegetation:</u> What are the USEPA guidelines for phytotoxicity? There is no reference.

See the DOE Oak Ridge National Laboratory (ORNL) website for screening benchmarks for wildlife and plants. (http://www.esd.ornl.gov/programs/ecorisk/ecorisk.html)

In addition to AWQC, Ohio regulations on water quality criteria for Black River, if any, may be applicable.

Corrected.

55. Section 4.3.2.4, EXPOSURE ASSESSMENT: Again, if a PERA was done, where is the information on ecological receptors from that study? If it was done, information on ecological receptors at the site might be available and, if so, included here.

Respondents stated that a PRE was not performed as part of earlier investigations.

The USEPA=s Wildlife Exposure Handbook provides information on intake rates for a number of species, and there are benchmarks available (e.g., ORNL), if not necessarily for the receptors present, then for surrogate species.

It does not seem as if there will be unusual species present at the site, and thus calculating/estimating exposure to ecological receptors should not pose a tremendous difficulty. However, considering that none of the ecological receptors that were allegedly identified in the PERA are listed here, it is impossible to determine if exposure estimates can or cannot be calculated. Sampling should be done to allow for the calculation/estimation of exposure to plants and wildlife.

This section addressed USEPA=s comments by stating that a SERA would be conducted and possibly a BERA if warranted by the SERA results.

56. Section 4.3.2.5, RISK CHARACTERIZATION: Additional data should be collected to rectify Athe lack of quantitative exposure and toxicity information.@

The next statement, AExposure concentrations of chemicals of concern in groundwater or surface waters will be compared with USEPA=s AWQC, as appropriate,@ appears to contradict what was stated in the Exposure Assessment section. The Exposure Assessment section suggests that exposure estimates were not, and will not be, done. If exposure estimates were not calculated, what numbers are being used to compare against the AWQC?

Soil concentrations should at least be compared to earthworms in addition to

terrestrial vegetation.

What are the potential sources of uncertainty?

The document repeats that there is information available in the Preliminary (or Initial) Risk Evaluation. However, details from that study should be included here to present a better understanding of what will be further investigated in terms of ecological receptors, toxicity, and so on.

Please provide U. S. EPA a copy of the APreliminary Risk Evaluation Report.@

Corrected.

57. **Section 4.4.1, DEVELOPMENT AND SCREENING OF ALTERNATIVE REMEDIAL ACTIONS: AApproaches will be screened coincident with site characterization to ensure that sufficient data are collected....@ The Work Plan should include necessary sampling and analysis that are necessary in evaluating remedial actions.**

The sampling rationale and plan was revised as a result of the February 2003 meeting in Cleveland between the Respondents, Ohio EPA, and USEPA. The above concerns have been addressed by the Respondents.

58. **Section 4.4.1, DEVELOPMENT AND SCREENING OF ALTERNATIVE REMEDIAL ACTIONS: AIf the site conditions suggest COCs could migrate to the Black River at an unacceptable concentration, consideration may be made for a mixing zone at the point of discharge to the river when determining the point of risk evaluation.@ The area, if any, between the discharge and the river should also be taken into consideration for evaluation of risks. Discharge of contaminated material to the Black River will require obtaining permits and meeting state discharge criteria. Sampling analysis required for discharge permits should be proposed in this Work Plan. If site conditions suggest COC migration to the Black River, these conditions would have to be mitigated to the extent possible, before considering a discharge to the river.**

Corrected.

59. **Section 5.3.2, FEASABILITY STUDY: The text states that the FS report will follow the goals in Section 4.5, but it appears that Section 4.4 should have been referenced as well.**

This is addressed in Table 5-3 and Section 5.8.3.2 of the revised work plan.

60. **Section 5.3.2, FEASABILITY STUDY: The text states that the FS report will follow the goals in Section 4.5, but it appears that Section 4.4 should have been referenced as well.**

Duplicate response B addressed in Comment #59 above.

COMMENTS ON TABLES

61. **Table 1, DATA GAP IDENTIFICATION:**
    1. **Complete characterization should be a data gap for all AOCs. A composite sample from each AOC should be collected in addition to proposed sampling and analyzed for metals, VOCs, SVOCs, and PCBs. The historical data in some areas of the site is 20 years old. New releases, if any, cannot be identified if limited parameter analysis is conducted.**

    2. **Both the lateral and vertical extent of contamination is a data gap for all AOCs. The Work Plan sampling should address this data gap.**

Both comments were corrected in the revised work plan.

62. **Table 2, DQO STEPS - SOIL STUDY:**

1. **STEP 1: Problem Statement should include identifying all hazardous substances, pollutants, and contaminants. STEP 1 should also identify the lack of information on contaminant risks and exposure pathways for risk assessment.**

2. **STEP 3: Decision input related to the decision in STEP 2 should be to identify contaminants which may pose a threat to human health and the environment. The decision inputs related to CRS Site should include identification of all ARARs so that STEP 2 results can be evaluated.**

3. **STEP 4: The study boundaries should cover lateral extent of contamination for each AOC**

4. **STEP 5: Decision rules should answer STEP 2 and 3. For example, STEP 5 should answer the question Awhat is next if contamination above regulatory/preliminary risk limits is found?@**

5. **STEP 7: Sampling design for the site should be proposed. To optimize the number of VOC samples, screening level data could be proposed to select VOC samples.**

Corrected

63. **Table 3, SAMPLING PROGRAM RATIONALE:**
In general one boring per AOC would not characterize the entire AOC and cannot define the lateral and vertical extent of contamination in the AOC. A systematic sampling approach would enable discovering all contaminants and sources present on the site. At least one sample from each AOC should be analyzed for all analytes ever detected on the site.

Former Drum Storage Area
Drum Storage Area 5 is not proposed for sampling and no rationale is given for not sampling. The text in Section 2.3.4 refers to five drum storage areas while Figure 7 shows four drum storage areas.

Slope and Still Buildings

Rodney Hunt Still Building: The rationale for only VOC analysis is not justified when previous sampling showed VOCs, SVOCs, and pesticides/PCBs.

Monitoring Well Installation
Drum Storage Area 2 proposed monitoring well locations should be located closer to the Drum Storage Area 2 to determine impacts at this location to groundwater.

Sediment and Surface Water
To determine the impact of former site operations on surface water quality, all five discharge pipe areas should be sampled in addition to proposed locations.

Sediment samples should follow the same rationale as surface water given in the previous comment.

Shallow and Deep Groundwater
The rationale for proposed analysis of PCBs after filtration should be given. It is recommended to use both filtered and unfiltered samples. For reasons previously stated in the last paragraph of # 34 above.

Significant revisions to the sampling program were incorporated into the revised sampling plan, as discussed in the February 2003 meeting between USEPA, the Respondents, and Ohio EPA. The agreed upon changes have addressed the above comments.

END OF WORK PLAN COMMENTS

NOTICE OF DEFICIENCIES TO THE REMEDIAL INVESTIGATION/ FEASIBILITY STUDY FIELD SAMPLING PLAN (REVISION 1, APRIL 2003) CHEMICAL RECOVERY SYSTEMS INC.

The following comments (bold) were provided in the USEPA=s Notice of Deficiencies to the Respondents in February 2003. These comments have been addressed by Parsons on behalf of the CRS Site Group in the April 2003 Revision 1 to the Remedial Investigation / Feasibility Study (RI/FS) Field Sampling Plan. M&E=s review of the PRP=s Revision 1 response for each original comment is provided in italics below the original USEPA comment.

General Comments

1. **Table of Contents (TOC) has several incorrect page numbers and some of the titles for tables and figures are different than the TOC headings. Please review this text and correct as needed.**

   The Table of Contents appears to be in agreement with the revised text.

2. **The Administrative Order of Consent (AOC) and Statement of Work (SOW) specifies in Task 3, Section a.iii that each source of contamination must be located. It also specifies A*the areal extent and depth of contamination will be determined by sampling at incremental depths on a sampling grid.*@ In FSP section 2.1, 4th and 5th paragraph, the Respondents proposes to perform judgmental sampling of known areas of impact. The FSP proposes a total of 12 laterally different boring locations. Ten potential source areas have been defined;**

   - **Tanker Staging Area #1**
   - **Tanker Staging Area #2**
   - **Above Ground Storage Tank Area**
   - **Brighten Still Building Area**
   - **Rodney Hunt Still Building Area**
   - **Drum Storage Area #1**
   - **Drum Storage Area #2**
   - **Drum Storage Area #3**
   - **Drum Storage Area #4**
   - **Drum Storage Area #5 (although not shown in the figures).**

   This equals a single sample for characterizing the majority of each of the areas of concern.
   Twelve samples would be equivalent to sampling the centers of a 100-foot by 100-

foot grid overlaid on the site. Based on historical data from previous investigations, these selected locations would be expected to indicate contamination, but it is unclear how the results would be used to assess the lateral extent of contamination and how uncontaminated areas (either up gradient, down gradient or cross gradient) would be identified. It is recommended that two locations be selected in each area of concern, along with an up gradient and down gradient location to assess lateral extent of contamination.

Significant revisions to the sampling program were incorporated into the revised sampling plan, as discussed in the February 2003 meeting between USEPA, the Respondents, and Ohio EPA. The agreed upon changes have addressed the above comments.

3. **PCBs are not scheduled to be measured for the majority of soil boring samples. Given the extensive regrading of the site, the expected relative immobile migration of PCBs, and the previous detection of PCBs in groundwater at the site (including both monitoring well MW-2 located in the southern portion of the site and MW-1 located in the northern portion of the site) it is recommended that all samples be analyzed for PCBs.**

   Corrected.

4. **The FSP does not provide specific analytical methods for each media to be analyzed nor does it refer to the QAPP document. Please amend the tables and text in the FSP to show the specific analysis being performed in each AOC.**

   Table 2-2 has been revised to show analytical methods.

<u>Specific Comments</u>

5. **<u>Section 1.3, page 2 of 15, third paragraph:</u> Section IV, Item 6 of the AOC states A*in entering into this Consent Order, the objectives of U.S. EPA and the Respondents are: (a) to determine the nature and extent of contamination and any threat to the public health, welfare, or the environment caused by the release of hazardous substances, pollutants or contaminants at or from the Site or facility, by conducting a remedial investigation;@ The* objectives in Section 1.3 to Aevaluate@ and Aprovide information@ do not meet the requirements of the AOC.**

   Corrected.

6. **<u>Table 1.2</u>:$ Five drum storage areas are identified in this table, but Section 2.2 (page 4 of 15) identifies four drum storage areas. Figure 1-2 labels four of the drum storage areas and appears to show the outline of a fifth area. Please clarify the table, text and figures to show a consistent number of drum storage areas.**

   Corrected.

7. **<u>Table 1.1:</u> The slope from the Site to the River is identified as a data gap, but it is not included in Table 1.2 Site Activities List. PRC (1995) describes that in 1978 up to six leachate seeps were observed flowing in the East Branch of the Black River. A leachate sample analyzed in 1980 contained PCBs. It is recommended that samples near or from the riverbank be collected during this investigation.**

   Additional clarification should be provided regarding why the banks of the river are not included as an Area of Concern? The Respondents statement to identify all source areas and areas of concern at the site should include the river.

8. **<u>Section 2.1, page 3 of 15</u>:$ The slope from the Site to the River should be included as the sixth AOC at the end of the second paragraph due to the seeps noted in the 1995 PRC report and the fact that it is a data gap in Table 1.1 (see comment above).**

   See the response to comment #7 above.

9. **<u>Section 2.1, page 3 of 15</u>:The details of the two monitoring wells located on Locust Street, which were installed by Harshaw/Englehard Corp. Information regarding the casing type and diameter, screen type and length, date of installation and total well depth would be useful when evaluating the data collected from those monitoring wells.**

   The Respondents should provide documentation to the Agency upon receipt of this data.

10. **<u>Section 2.3 and Figure 2-1:</u>$ Two former tanker staging areas have been identified on the southern portion of the site. These areas are consistent with the aerial**

    photograph from 1978 (Work Plan figure 2-3).$ Work Plan figure 2-2, an aerial photograph from 1966, is annotated with indicators of tanker storage areas that extend former tanker staging area 1 northerly, and former tanker staging area 2 easterly. No sample locations have been proposed in these extended areas that

    appear to have been historically used for tanker storage. $ It is recommended that

soil samples be collected from this area.

Corrected.

11. **<u>Section 2.4, page 5 of 15</u>: Paragraph 1, sentence 6 states *APast soil borings collected near the Brighton Still building indicate no soil impact@.$* Table 2.3, 1st row, >Previous Assessments= column states *ASample collected at up-slope portion of facility (EASN/MEAGH4) indicated no soil impact@.***

Former Table 2.3 has been revised B refer to Table 2-1.

12. **Soil sample EASN/MEAGH4 (STEP, 1997) collected 8/14/96 at a depth interval of 5-6' and identified as ABrighton Still@ had chlorinated VOCs (e.g. PCE at 290 ppb), BTEX (e.g. xylenes at 89 ppb), phthalates (e.g. butylbenzylphthalate at 8,000 ppb), and PCBs (e.g. Aroclor-1232 at 1,100 ppb). Boring B-7 (E&E, 1982) was also taken in this general area and indicated the presence of chlorinated volatiles (e.g. TCE at 58,000 ppb at 15-16.5'), BTEX (e.g. Toluene at 530,000 ppb at 15-16.5') and PCBs (e.g. Aroclor 1254 at 7,600 ppb at 2.4-4') from surface to 16.5' bgs. This indicates that impacted soil has been seen in the area of the site. In addition monitoring well MW-1, sampled in both previous studies, is in the area of the former Brighten Still Building and high levels of contaminants were found in this monitoring well (e.g. toluene at 100,000 ppb, TCE at 6,300 ppb) in both previous major studies. The text should reflect the past findings as noted above and remove the statements regarding no impact.**

Section 2. 4 have been corrected.

13. **<u>Table 2.3, 2nd row, >Previous Assessments= column:</u> The Rodney Hunt Still Building explanation states, *ATwo soil samples collected from vicinity of site (S04 and B-9) indicate the presence of VOCs, SVOCs, and pesticides/PCBs.@* Figure 3 of the STEP report does indicate sample S04 was located in this area, but no data is presented for any sample identified as being in the vicinity of the Rodney Hunt Still Building. Reference to this sample should be deleted.**

Clarification presented by Respondents.

14. **<u>Figure 2-1:</u>$ The indicated location for boring GP-1 is on the hydraulically up gradient, eastern edge of the area identified as Former Tanker Staging Area 1.$ It is recommended that this geoprobe boring location be moved to the west to place it in the western half of the area of concern.**

Corrected.

15. **<u>Figure 2-1 (also corresponds to Work Plan Figure 4-1):</u> As noted in the Work Plan comments, groundwater reportedly flows west under the site towards the East Branch of the Black River (E&E, 1982). No down gradient groundwater samples are indicated for potential source areas identified as former drum storage areas 1, 4 and 5, the former above-ground storage area, or former tanker staging area 2. Additional monitoring locations should be placed in these area and rationale provided for the groundwater monitoring.**

    This was addressed through the use of temporary wells in the middle of the areas of concern, however, the Respondents should recognize that, based on the findings, additional ground water investigation may be warranted.

16. **<u>Section 3.1, Section 3.2, and Appendix A SOP 1:$</u> The AOC (Section VIII Work to Be Performed, Item 66) *ARespondents will not proceed further with any subsequent activities or tasks until receiving U.S. EPA approval for the following deliverables: RI/FS work plan and sampling and analysis planÿ@* Mobilization and demobilization activities should also include a specified notice period to U.S. EPA.**

    Corrected.

17. **<u>Section 3.4.1, page 8 of 15, second paragraph:</u> A sufficient number of geotechnical samples should be collected to adequately characterize the site. Four samples from two lithologic units will likely not accomplish this task. Please revise this section and provide rationale for the new geotechnical sample locations.**

    Corrected.

18. **<u>Section 3.4.1, page 8 of 15</u>, third paragraph: A standard soil and rock classification system should be used to maintain consistency throughout the project. Field personnel should use the Unified Soil Classification System in association with Munsell7 rock and soil color charts.**

    Corrected.

19. **<u>Section 3.4.2 Monitoring Well Construction</u>: It is stated within this section that a soil sample will be colleted at each well location in the zone of the fill/natural soil interface, or just above the ground water interface. It is unclear as to what the purpose of these samples is for in relation to the description of the soil borings in Section 3.4.1. Are these samples proposed for the description, screening,**

geotechnical, or laboratory (chemical) analysis?

Corrected.

20. **<u>Section 3.4.3, page 9 of 15</u>:$ The existing monitoring wells onsite and offsite should be redeveloped prior to analytical sampling of the groundwater to ensure that the wells are free of sediment.**

Corrected.

21. **<u>Section 4.1.1, page 10 of 15:</u>$ Appendix A, SOP 4 does not reference Arelevant Ohio guidance.@ Please see additional comments below on SOP 4.**

Corrected.

22. **<u>Section 4.1.4, pages 11 and 12 of 15:</u>$ Sediment samples should be collected with the farthest downstream sample first, working back up to the farthest upstream sample to eliminate the possibility of suspended sediments upstream impacting the downstream samples.**

Corrected.

23. **<u>Section 4.2, first sentence, page 11 of 15:</u>$ The QAPP should be referenced for the sample handling procedures.**

Appendix A, SOP 11 refers to the QAPP.

24. **<u>Section 4.3, page 11 of 15:</u>$ This general section needs to be in agreement with the revised QAPP.**

Corrected

25. **<u>Section 4.4, page 12 of 15:</u>$ Appendix B is referenced in this section, which in turn states that a photoionization detector (PID) will be used to screen for volatile**

organic compounds.$ Appendix A, SOP 12 states that a PID with an 11.7ev lamp will be used for field screening of the soil samples. The 11.7 ev lamp tend to be less durable under normal field conditions than 10.6 ev lamps. They have a shorter work

life and generally experience more Adrift@ induced by moisture and dust. Additional calibration checks are required to ensure that the meter is functioning properly. Flame ionization detectors (FIDs) are preferable due to the fewer number of response and maintenance issues. Please provide justification for not using FIDs. If PIDs will still be used, regular calibration checks should be added to the SOP for the 11.7 ev lamps.

Corrected.

26. **<u>Section 4.8, pages 13 and 14 of 15, general comment:</u> Decontamination of equipment and personnel should be governed by the procedures outlined in the FSP, HASP and QAPP. Thus, decontamination intervals are expected to be more numerous than just at project closeout. Investigation-derived waste shall be managed as required by Federal, state and local regulation. These regulations may require the removal of investigation-derived waste from the site prior to project closeout.**

Corrected.

27. **<u>Section 4.8.4, page 14 of 15:</u>$ SOP 16 does not exist in Appendix A, SOP 15 does address the handling of IDW. Please revise the text.**

Corrected.

<u>Appendix A B Standard Operating ProceduresAppendix A B Standard Operating Procedures</u>

28. **<u>SOP 1, page 2 of 21:</u>$ Prior to initiating field activities, notice of EPA=s acceptance of the work plan documents is required. The Respondent=s contractor shall provide advance notice to EPA of the fieldwork schedule.**

Corrected.

29. **<u>SOP 3, page 4 of 21</u>:$ Based on the rationale tables provided at the end of Section 2, VOCs, SVOCs, PCBs, and metals will constitute most of the analysis and therefore, will impact the sampling equipment. An alternate decontamination methodology that addresses these contaminants should be provided.**

Corrected.

30. **<u>SOP 4, page 5 of 21</u>:$ The first bullet under Drilling and Geologic Logging Method states that soil borings will be drilled either with 6.25-I.D. hollow stem augers or a hand auger. Contrary to the FSP text, there is no discussion of using a Geoprobe7 nor is there a methodology for collecting and handling Geoprobe7 samples. Please provide a detailed SOP for use of the Geoprobe7 at the site and clarify the use of a hollow stem auger rig at the site.**

Corrected.

31. **<u>SOP 4, page 5 of 21</u>:$ The 7th bullet under Drilling and Geologic Logging Method discusses the collection of soil sample in accordance with SW846 Method 8260, however, in January of 1998, EPA finalized Method 5035 as part of the Third Edition revisions to SW-846, *Methods for the Testing and Analysis of Hazardous Wastes.* Method 5035 requires soil samples to be analyzed for VOCs to be preserved in the field with either methanol (High Level Method) or an aqueous solution of sodium bisulfate (Low Level Method). Alternatively, soil samples for VOC analysis can be collected using an EnCore™ or SoilCore™ sampler. Please provide the methodology for collection of soil samples for VOC analysis throughout the SOP.**

Corrected.

32. **<u>SOP 4, page 6 of 21</u>:$ The 3rd bullet references Appendix C for the forms, however, Appendix C is for the field instrument calibration and operation. Please correct the reference.**

Corrected.

33. **<u>SOP 4, page 6 of 21</u>: The 6thbullet has an incorrect reference for the well construction SOP. It should refer to SOP 5 in Appendix A.**

Corrected.

34. **<u>SOP 5, page 7 of 21, Item 2 under Shallow Monitoring Wells</u>:$ The number of feet needs to be stated under the first and second bullets of this section. Additionally, the slot size of the PVC well screen should be stated.**

Corrected.

35. **<u>SOP 5, page 7 of 21, Monitoring Well Construction:</u> In Appendix A, the PVC type is not specified for the installation of shallow and deep ground water monitoring wells. Typically, the standard PVC types for monitoring wells are either Scheduled 40 or Schedule 80. It is important to note that , during installation of the well casing, the pipe be centered in the borehole to ensure proper placement and even distribution of the filter pack, and the annular seal. This will allow for the straightness for sampling device access. Since hollow-stem augers are being used, this will likely not be a major issue. The annular seal cementing material should be emplaced using a tremie pipe. The use of tremie pipes and frequent checking of the depth of the emplacement of cement grouts or clay during well construction is strongly recommended.**

Corrected.

36. **<u>SOP 5, pages 7 and 8 of 21</u>:$ The sand used for the monitoring well filter pack should be clean, washed silica sand suitable for monitoring well installation. Also, the final depth of the borehole, top of the sand pack, top of bentonite seal, and top of grout should be confirmed with a clean, weighted tape measure prior to adding each successive layer. Please add this detail to the SOP.**

Corrected.

37. **<u>SOP 6, page 9 of 21:</u>$ Does the 24 hours after installation begin at the installation of the bentonite seal, grout, or the entire completion of the monitoring well? Please explain the time for development and state the minimum amount of water to be developed from each monitoring well.**

Corrected.

38. **<u>SOP 6, Monitoring Well Development:</u> Should specify that the monitoring well development waters will be containerized in a similar manner as the purge waters will be during the sample collection.**

Corrected.

39. **Note: Since it is specified in the FSP that a low flow (micropurge) ground water sampling technique will be employed, the Agencies does not support filtration for metal analysis. This is referenced in the document on page 6 of 10 (Table 2.6). The report state that a turbidity level of five or less NTU=s will not be a target for**

monitoring wells after development. If that can be achieved, the low flow pumping rate (100 -500 ml/min) should minimize disturbance of the water column and sample, such that in-situ ground water quality is best represented with respect to its entire mobile contaminant load. Should turbidity levels create a problem (> 5 NTU) and filtration become necessary, an in-line filtering technique should be used to minimize aeration of the ground water? The samples should be filtered using a polycarbonate or cellular acetate filter. The filter should be pre-washed by running some of the sample through the in-line filter prior to sample collection.

Corrected.

40. **SOP 7, page 10 of 21: Please state that chain of custody procedures will be followed as stated in Section 9 of the approved Quality Assurance Project Plan.**

The QAPP has been referenced in Appendix A, SOP 7.

41. **<u>SOPs 8 through 12</u>: Each SOP needs to be in compliance with the U.S. EPA approved QAPP for the project. Please provide information on how this will be done.**

Corrected.

42. **<u>SOP 12, page 17 of 21</u>: see comment 18 under the *Specific Comments* section.**

Addressed in response #25 for the FSP.

43. **<u>SOP 13, pages 18 and 19 of 21</u>: Both the sampling of surface water and sediments should start in the most downstream position and work up to the farthest upstream position. Please add this to the SOP so that the sampling methods are in compliance with the U.S. EPA approved QAPP.**

The SOP was corrected.

44. **<u>SOP 15, page 21 of 21</u>: Investigation-derived waste shall be managed as required by Federal, state and local regulations and the SOW (U.S. EPA 2002).**

Corrected.

45. **<u>SOP 15, page 21 of 21:</u>$ The composite sample(s) for the investigation-derived soils should be sampled for all of the constituents being addressed by the investigation. Low concentrations or nondetections of volatile organic compounds alone cannot justify spreading the drill cuttings on the ground. Please revise the**

rationale and handling methods for investigation-derived wastes at the site.

Corrected. Note: depending on the number of drums of investigation-derived waste, more than one composite sample may be warranted.

Appendix B B Field Measurements Appendix B B Field Measurements

The calibration procedures for the photoionization detector, interface probe and water level indicator are not provided in Appendix C as stated. Please revise.

The comment was addressed and the appropriate information is provided in Appendix C of the revised document.

Appendix D B Forms and Checklists

A daily sign in sheet, located at the main field office, is recommended to keep track of personnel entering and leaving the site. Suggested fields are: *DATE, TIME IN, TIME OUT, NAME, and COMPANY NAME.*

Corrected.

Field Sampling Plan Comments that were attached to the end of the QAPP comments.

1. **Tables from 2.6 to 2.10: Region 5 does not require equipment blanks to be collected for the soil samples. However, if Adedicated@ equipment is not used to collect the water samples, then equipment blanks for the water samples must also be collected.**

   Corrected B dedicated equipment is to be used.

2. **Tables 2.6, 2.7, and 2.10: Water samples for the metals analysis should be collected unfiltered. If filtered samples are required, then both types of samples should be collected.**

   Both filtered and unfiltered samples will be collected based on our February 2003 meeting discussion in Clevelend and the revised test provided in the FSP.

3. **Please provide the field SOPs for the measurement of pH, conductivitiy,**

temperature, and other field measurements. The SOPs should also include the frequency and acceptance criteria for the QC samples.

Corrected

END OF FIELD SAMPLING PLAN COMMENTS

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