UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

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Article No. 7004 2510 0006 9723 8138

30 SEP 2005

Gary J. LeRock
Plant Manager
Koch Nitrogen Company
P.O. Box 1337
Dodge City, KS 67801-1337

RE: Volume I: Field Sampling Plan and Volume II: Quality Assurance Project Plan, dated June 2005
Koch Nitrogen Company
Dodge City, KS 67801
EPA I.D. #KSD044625010

Dear Mr. LeRock:

The U.S. Environmental Protection Agency Region 7 (EPA) and the Kansas Department of Health and Environment (KDHE) are in receipt of Koch Nitrogen Company's (KNC's) Volume I: Field Sampling Plan (FSP) and Volume II: Quality Assurance Project Plan (QAPP) dated June 2005. Both Agencies' technical staffs have reviewed the documents, including EPA's Quality Assurance Manager.

These plans were developed in response to EPA and KDHE comments that were sent to KNC in a letter dated April 27, 2005. As EPA stated in a subsequent letter to KNC dated August 3, 2005, the plans have deficiencies that need to be addressed. The objective of the RCRA Facility Investigation is to define the vertical and horizontal extent of contamination. Although KNC's plan improves the soil investigation, it does not address how KNC will define the vertical and horizontal extent of contamination if its initial sampling investigation does not answer that question. The groundwater investigation proposes borings to obtain groundwater information, but again does not include information on how to define the vertical and horizontal extent of contamination if the information derived from the borings does not yield the answer to the question.

The meeting held at the EPA office on August 26, 2005 was very helpful in answering some of these concerns. EPA is very pleased with the clarification that was accomplished at the meeting. However, the details that were discussed need to be included in the FSP and QAPP. EPA believes, based on the discussions at the meeting, that we are very close to having an approvable FSP and QAPP, provided that certain sections in the FSP and QAPP are revised.

The Agencies offer the comments listed in Appendix A. Most of the comments listed below were transmitted to KNC via e-mails dated August 31 and September 2, 2005. Please note: some comments that were similar, that were sent via e-mail, have been combined into one comment.

Please revise and resubmit the FSP and QAPP within thirty (30) calendar days in accordance with the comments listed in Appendix A.

If KNC has any questions regarding these comments, please call me at (913) 551-7662 or 1-800-223-0425 extension 7662.

Sincerely,

Andrea R. Stone

Andrea R. Stone
Environmental Scientist
Air, RCRA & Toxics Division
RCRA Corrective Action & Permits Branch

cc: Kathy Dunn
KDHE
Everett Spellman
KDHE
AnnieLaurie Burke
KNC-Dodge City office
Stephen B. Ellingson
KNC-Wichita office

# APPENDIX A

## GENERAL COMMENTS

1. The plan lacks sufficient detail. Several examples of this are on page I-14 of the FSP. "Boreholes may be advanced using hand augers, direct push technologies or Rotasonic drilling techniques." Page I-14 "Surface Soils: Surface soil samples will generally be collected from 0 to 6 inches below land surface using hand augers post-hole diggers, shovels, spoons, or trowels." These are just a few instances cited were the plan lacks sufficient detail. EPA would like KNC to be more specific. What equipment is KNC going to use? Please revise the FSP to include *specific* information on the types of equipment that will be used. Also, Table I-2-1 has some information, but does not include enough specifics on the equipment, field measurements, etc.

2. The plan uses generalities. On page I-39 of the FSP, KNC uses generalities. "Types of Field Measurements, Analysis and Tests. During sampling events, a number of field measurements may be recorded, depending on the nature of the investigation and media of concern. These may include: pH; Specific conductance; Temperature; Dissolved oxygen; Turbidity; Total dissolved solids; Oxidation/reduction potential; Water levels; and Organic vapor content." This is only one instance cited were the plan uses generalities. EPA would like KNC to be more specific. Please describe what field measurements will be taken at each location and include this specific information in the FSP. This specific information needs to be included in the Tables.

3. KNC proposes to use the Synthetic Precipitation Leaching Procedure (SPLP) instead of totals, and wants to take any constituents detected in the SPLP extract at concentrations greater than 20 times their respective MCL or tap water PRGs to develop the list of analytes to use for the groundwater monitoring well sampling. EPA has to have "totals" for the samples. Also using 20 times the concentration is not acceptable to EPA. Please revise the FSP and the QAPP to state that KNC will sample for "totals" not SPLP. KNC may collect samples for SPLP purposes if it wishes, but EPA must have "totals."

4. KNC appears to be focusing on "risk" instead of defining the vertical and horizontal extent of contamination. As discussed at the August 26, 2005, meeting, EPA requires delineation to presence or absence of contamination. As further discussed, on Nitrates and Chromium, KNC will delineate to "background levels" approved by EPA. The plan fails to provide information if KNC's soil and groundwater investigations do not answer the question of where the contamination is horizontally and vertically. Please revise the FSP to include additional information to define the vertical and horizontal extent of contamination.

4. KNC appears to be focusing on "risk" instead of defining the vertical and horizontal extent of contamination. As discussed at the August 26, 2005, meeting, EPA requires delineation to presence or absence of contamination. As further discussed, on Nitrates and Chromium, KNC will delineate to "background levels" approved by EPA. The plan fails to provide information if KNC's soil and groundwater investigations do not answer the question of where the contamination is horizontally and vertically. Please revise the FSP to include additional information to define the vertical and horizontal extent of contamination.

5. As discussed at the August 26, 2005, meeting, KNC will attach procedures as an Appendix on how to determine "background levels" and obtain "background samples." These background levels and locations will be reviewed and approved by EPA.

6. Soil samples proposed for the SWMUs/AOCs are appropriate for a first phase investigation, unless specified otherwise in the "Specific Comments." Additional detail needs to be added to the plan on KNC's next steps to characterize the nature, vertical and horizontal extent of contamination if the first phase of sampling does not answer the questions of where the contamination is?; how far down does it go?; and how far out does it go?

7. Figure No. 2-1 that was handed out at the August 26, 2005, meeting is supposed to show all of the proposed work (soil, surface water, groundwater, etc.). However, in comparing the individual maps in the FSP for each SWMU/AOC and groundwater borings, to Figure No. 2-1, it appears that Figure No. 2-1 does not show, on some of the SWMUs/AOCs, the appropriate number of samples or locations for those samples as the maps in the FSP. Please correct this discrepancy.

8. SWMU #26 and AOC #6 appear to be missing from the investigation work that is proposed in the FSP. SWMU #26 is the West-side pit (Neutralization Waste Pit #4), and AOC #6 is the Chromium contamination to the underlying Dakota Aquifer. Based on the discussion at the August 26, 2005, meeting, agreement was reached that a new deep well would be installed in the Dakota aquifer by the former injection well #1, and three other deep wells would be sampled to characterize the Dakota aquifer. These other three wells included Well #B-2, Land O'Lakes deep well, and Kansas Byproducts deep well. EPA expressed concerns regarding the integrity of well B-2 in its April 27, 2005, comment letter in Appendix B, Comment #17. EPA reserves the right to request the installation of an additional deep well, if testing on B-2, and if the new well installed by former injection well #1 exhibits significantly different water level elevation measurements different from well B-2. Please revise and include SWMU#26 and AOC #6 in the FSP.

9. The Tables need to be revised for AOCs 1 and 5, to add "totals" for nitrate-nitrite and chromium to the deep samples.

**SPECIFIC COMMENTS**

1. FSP, Page I-6, Section I-2.4 RFI Strategy: In this section under "Other," KNC lists Site-Wide Unconsolidated Groundwater. Please provide additional clarification. Does this mean the Dakota formation is included, or does this mean the Ogallala formation, or does it include both formations? Please revise the FSP to include descriptive information.

2. FSP, Page I-6, Section I-2.4 RFI Strategy, second paragraph: In this paragraph it states, "Source characterization and delineation of the specific constituents present at each SWMU/AOC will be accomplished through the collection and analysis of soil, settleable matter, and surface water (if present)..." Please add, "for totals" after (if present), and add "sediment, sludge" after "soil," so the sentence reads, "Source characterization and delineation of the specific constituents present at each SWMU/AOC will be accomplished through the collection and analysis of soil, sediment, sludge, settleable matter, and surface water (if present) for totals at each SWMU/AOC, and north of SWMU2. These samples will be used to determine the detection (presence or absence) of constituents in the soil, sediment, sludge, settleable matter and surface water."

3. FSP, Pages I-6 and I-7, Section I-2.4 RFI Strategy, last paragraph of page I-6 and continuing onto Page I-7: This paragraph states, "Due to the occurrence of chromium and nitrate-nitrite in groundwater underlying the site it is difficult, if not impossible, to identify the contribution of constituents from each SWMU/AOC to groundwater through the evaluation of monitoring well data. Therefore, to meet this objective, the source characterization at each SWMU/AOC will include the collection of soil samples for Synthetic Precipitation Leaching Procedures (SPLP) testing to evaluate the potential for SWMU/AOC-specific constituents to leach to groundwater. The results of this SPLP testing will be used to refine the target analytes for the groundwater plume characterization and delineation. Any constituents detected in the SPLP extract at concentrations greater than 20 times their respective MCLs or tap water PRGs will be added to the analyte list for the groundwater monitoring well sampling." Based on the discussion at the August 26, 2005, meeting, please delete this entire paragraph. This same paragraph appears in the QAPP on pages II-8 and II-9. Please delete this paragraph in the QAPP also. In addition, while the collection of soil samples for Synthetic Precipitation Leaching Procedure (SPLP) testing may be done if Koch chooses, the EPA requires that the investigation of the nature and extent of contamination must be performed using results representing the total concentrations of analytes from environmental samples. This is because results of total concentrations of contaminants are needed in order to evaluate risk with respect to potential direct dermal exposure, such as during excavation work, and also for the potential inhalation of contaminated dust.

The EPA agrees with Koch in that another concern is the potential for contaminants present in soil to leach to groundwater during infiltration of precipitation. The EPA is also in agreement with Koch's approach in evaluating this issue using the SPLP. However, because the RFI is in its initial stages with respect to investigating soil contamination at the SWMUs and AOCs, the EPA recommends that Koch consider postponing SPLP testing at this time, and wait to see what is found during the initial soil sampling effort. Initial soil sampling could indicate the absence of contamination, in which case additional SPLP testing would not be needed. Also, the initial scan of a wide variety of contaminants (Appendix IX) is necessary in order to ensure that evaluation for all potential contaminants is performed. However, it is anticipated that subsequent soil sampling, if deemed necessary, would then likely be focused on a much smaller suite of contaminants of concern, as would any SPLP testing also. Another reason to wait before performing SPLP testing is that it would need to be performed on the areas with the highest concentrations of contaminants in order for conclusions to be drawn regarding whether migration to groundwater would occur. The EPA believes that by postponing SPLP testing until after the initial soil sampling is performed, Koch will greatly reduce the number of soil samples, and analytes, for which SPLP results would be needed.

4. FSP, Pages I-7, Section I-2.4 RFI Strategy, first full paragraph: This paragraph starts out with, "The strategy for characterizing the extent..." Please add the following sentences before the last sentence in that paragraph: "Groundwater samples will be analyzed for "total" concentrations. These groundwater samples will be used to determine the detection (presence or absence) of constituents in the groundwater. Nitrate-Nitrite and Chromium detected in the groundwater samples will be compared to background levels that have been approved by the EPA."

5. FSP, Pages I-7, Section I-2.4 RFI Strategy, last full paragraph, first sentence: Please add, "...by adding additional borings..." to the first sentence after, "will continue," and delete "...is less than 10 milligrams per liter (mg/L) and chromium is less than 0.1 mg/L.", so the sentence reads, "The delineation of chromium and nitrate in on and off-site areas will continue by adding additional borings until the reported groundwater concentrations of nitrate plus nitrite as nitrogen ($NO_3$-N) and chromium is at or below background levels approved by EPA."

   In addition, in that same paragraph, third sentence, please add, "...,approved by EPA,...", after "...permanent monitoring wells...", so the sentence reads, "Once the extent of the plume has been defined using the groundwater samples collected from these Rotasonic® borings, permanent monitoring wells, approved by EPA, will be installed at appropriate locations to confirm the delineation."

6. FSP, Pages I-7 and I-8, Section I-2.4 RFI Strategy, last partial paragraph Page I-7 and continuing on Page I-8: This paragraph describes the monitoring well that

will be installed downgradient of Former Disposal Well #1. Based on the discussions at the August 26, 2005, meeting, please add information to this paragraph that in addition to the new monitoring well installed downgradient of Former Disposal Well #1, monitoring well #B-2, Kansas ByProducts and Land O'Lakes Feedmill deep wells will be sampled to characterize the Dakota aquifer. EPA expressed concerns regarding the integrity of well B-2 in its April 27, 2005, comment letter in Appendix B, Comment #17. EPA reserves the right to request the installation of an additional deep well, if testing on B-2, and if the new well installed by former injection well #1 exhibits significantly different water level elevation measurements different from well B-2.

7. FSP, Pages I-8, Section I-2.4 RFI Strategy, first full paragraph, last sentence: The sentence states, "As mentioned previously, the target analyte list may be modified to include constituents..." Please revise this sentence to delete reference to the SPLP by changing the sentence to read, "As mentioned previously, the target analyte list may be modified to include constituents detected during sampling activities."

8. FSP, Page I-15, Section I-3.2.1.3 Deep Soils: As discussed at the August 26, 2005, meeting, EPA stated that KNC does not need to take deep samples collected from a depth of 8 to 10 bls for SPLP. Koch tentatively agreed to initially collect soil samples from the 0-6" and 6"-24" intervals and evaluate those results before proposing any additional sampling at all of the SWMUs and AOCs, with the exception of AOC #1 (Chromate Spills), AOC #5 (UAN Tank Leak Area), and underneath landfills. If Koch remains in agreement with this strategy this section may be deleted from the revised plan. KNC may choose to collect soils at depth below 24", but EPA will not require deep soil samples except at AOCs 1 and 5, and underneath landfills.

9. FSP, Pages I-18 and I-19, Section I-3.2.3 Vertical Profiling of Groundwater: In describing how vertical profiling of groundwater for contamination will be performed, the first sentence in this section states that once saturated soils are encountered, vertical profiling of water quality will be initiated, and the remainder of the section goes on to describe in detail how this will be done, implying that the proposed profiling only applies to the upper unconsolidated aquifer. Because drilling into the Dakota Formation is not specifically mentioned, it is not clear as to whether the plan is proposing to perform vertical profiling within the Dakota. Because the plan proposes to install the Dakota well with a 20-foot screen sealed-in from 430'-450' (Section I-3.3.1, pages I-21 and I-22) the EPA is concerned that unless vertical profiling is performed within the Dakota it is possible that contamination may be missed if it occurs in the shallower part of the Dakota, such as near the top at approximately 175'. In addition, the text states field-based test kits may be used to analyze groundwater samples in the field. This is acceptable as a field-screening tool to aid the contaminant plume delineation process. Data from standard analytical procedures will be required to verify the lateral extent of the plume. The text also states that KNC will acquire confirmation data from a

certified laboratory for about twenty percent of the field-based test analysis. Include the criteria KNC will use to determine when a sample will be submitted to a certified laboratory.

10. FSP, Page I-20, Figure I-3-1, and Table I-2-1, AOC #6, Section I-3.3, Monitoring Well Installation: The text describes the installation of a single monitoring well to delineate groundwater contamination in the Dakota Aquifer. One monitoring well may not be sufficient to adequately delineate the vertical and horizontal extent of contamination. Include additional information to explain how KNC will delineate the Dakota Aquifer.

11. FSP, Page I-21, Section I-3.3.1, General Requirements: Wells to be installed in the Dakota Formation are proposed to terminate at 450 feet below ground surface. Please explain KNC's rationale for selecting this depth.

12. FSP, Page I-29, and Figure I-3-5, Section I-3.6.1, Variable Head (Slug) Permeability Test Procedures: The test locations KNC proposed are on the perimeter of the groundwater contaminant plume. Instead of conducting a variable head (slug) test at well TW-25, conduct a test at a location near the center of the facility property, perhaps at well TW-31 or a nearby well. Also, state that slug tests will be conducted, upon EPA and KDHE approval, at several locations south of the facility.

13. FSP, Page I-30, and Figure I-3-6, Section I-3.6.2, Specific Capacity Tests: Include an explanation of KNC's rationale for selecting well TW-93 for the specific capacity test. Also, extrapolation of data to off-site locations is inappropriate and will not be accepted.

14. FSP, Page I-31, and Figure I-3-6, Section I-3.7, Multiple Well Hydraulic Tests: Include an explanation of KNC's rationale for selecting wells TW-14 and TW-52 for the constant-rate pumping test. Considering the southward migration of contaminated groundwater, KNC may wish to relocate the test proposed for well TW-52 to a location in the southern portion of the facility. Also, state that testing will be conducted, upon EPA and KDHE approval, at several locations south of the facility.

15. FSP, Page I-36, Section I-4, Sampling and Analyses, I-4.1 Overview: This section describes the sampling procedures to ensure the collection of quality data. In the first bullet it states, "samples will be collected in order of lowest to highest constituent levels..." How will KNC know where the lowest and highest concentrations are, prior to sampling? Please provide an explanation and clarify this section.

16. FSP, Page I-39, Section I-4.3.1 Types of Field Measurements, Analyses, and Tests: This section is very general and lacks specifics. Please add after the first sentence in this section, "Specific field measurements, analyses and tests for each

sampling location are outlined in Tables I-2-1 and I-2-2. A summary of these may include:" Please delete "These may include:" Please also ensure that this specific and detailed information is included in those tables (Tables I-2-1 and I-2-2).

17. FSP, Page I-40, Section I-4.3.1.2 Nitrate Screening Using Hach Kit: The last sentence states, "Approximately twenty percent of the samples that are field-screened will be submitted for fixed-based laboratory analysis for nitrate plus nitrite..." What criteria will KNC use to determine the 20% of samples that will be sent to the laboratory? Please revise this section and include information on the criteria that will be used to determine what samples are sent to the laboratory for analysis.

18. FSP, Page I-41, Section I-4.3.1.3 Hach Test Kit for Hexavalent and Total Chromium: The next to the last sentence in this section states, "If Hach kits are utilized, approximately twenty percent of the samples that are analyzed in the field using Hach kits will also be submitted for fixed-based laboratory analysis for total and hexavalent chromium." What criteria will KNC use to determine the 20% of samples that will be sent to the laboratory? Please revise this section and include information on the criteria that will be used to determine what samples are sent to the laboratory for analysis.

19. FSP, Pages I-41 and I-42, Section I-4.3.2 Instrument Calibration, third sentence: This sentence states, "Each instrument needs to be calibrated following the specific manufacturer's recommendations, and the calibration must meet the tolerances described in the applicable SOP describe..." There is a word missing between "SOP" and "describe." Please revise this sentence accordingly.

20. FSP, Pages I-44 and I-45, Section I-4.4.1.2 Groundwater Sampling and FS 2200, Section 1.1: This section discusses the groundwater sampling that KNC is planning on conducting. Please add after the second sentence, "Specific groundwater sampling locations are identified on Figures I-3.1 and I-2.2. Additional information on the groundwater samples, such as boring number, parameters, analytes, etc., may be found in Tables I-2-1 and I-2-2." Please ensure that this specific and detailed information is included in those tables (Tables I-2-1 and I-2-2) and the appropriate Figures are cited. In addition, the text states that groundwater samples will be collected in accordance with the September 7, 2001 RCRA Groundwater Sampling and Analysis Plan (SAP). The SAP states stabilized readings for dissolved oxygen is +/- 10 percent. However, in correspondence concerning the outstanding Class 1a permit modification to Part I of the Permit, KDHE and KNC agreed to consider +/- 10 percent or 0.1 mg/L, whichever is greater, as the stabilization criteria. Therefore, modify the RFI work plan to incorporate these criteria.

21. FSP, Page I-45, Section I-4.4.1.3 Surface-Water Sampling: This section discusses the surface-water sampling that KNC is planning on conducting. Please add after

the first sentence in the first paragraph, "Specific surface-water sampling locations are identified on Figure(s) **(insert appropriate Figure(s) number)**. Additional information on the surface-water samples, such as sampling number, parameters, analytes, etc., may be found in Table I-2-1." Please ensure that this specific and detailed information is included in Table I-2-1.

22. FSP, Page I-45, Section I-4.4.2. Surface-Water Sampling: This section discusses the soil sampling that KNC is planning on conducting. Please add after the second sentence in the first paragraph, "The specific details for each soil sampling location are described in Table I-2-1 and on Figures I-2-3 through I-2-17. Please ensure that this specific and detailed information is included in Table I-2-1 and the appropriate Figures are cited.

23. FSP, Page I-46, Section I-4-4.3 Concrete/Asphalt Sampling: A reference to Table I-2-1 for detailed information would be appropriate in this section. Please add after the first sentence, "Detailed information on the concrete and/or asphalt chip sampling may be found in Table I-2-1." Please ensure that this detailed information is included in Table I-2-1.

24. FSP, Page I-47, Section I-4.5 Quality Control Sampling, third bullet: This bullet item states, "The sampler will ensure that the total QC blank (i.e., field blanks and equipment blanks) collection frequency is at least 5 percent, with a minimum of at least one blank (i.e., field blanks and equipment blanks) for each reported test result/matrix combination each year." This sentence is confusing. Does KNC intend to conduct this sampling each year? Please provide clarification to this bullet item. Also, how does KNC define "field blank?" Trip blanks are different from field blanks, and trip blanks are required per shipment/cooler. Does the 5 percent refer to each sampling event or total? If it refers to the "total," then 5 percent is not adequate. Also, KNC can not combine field blanks and equipment blanks for the "total QC blank," because KNC would not know where the contamination came from (i.e., field blank or equipment blank), if contamination was detected. Please change this paragraph accordingly.

25. FSP, Page I-47, Last Paragraph, Section I-4.6.1 Sample Container Management: Because the Field Sampling Plan is written primarily to assist field personnel with varying levels of experience, the plan should state that all environmental samples which require cooling as a preservative should be placed immediately after containerization into a cooler containing bagged ice or ice packs.

26. FSP, Page I-53, Section I-5.3 Sampling and Shipping Containers, third sentence: This sentence states, "In an effort to minimize the number of sample containers needed for an investigation, samples for several analyses may be obtained from a single sample container." Please explain the rationale for this. In addition, this may cause problems that would not occur if the appropriate number of sample containers for each sample were on hand. Specifically, by using a single sample container for several analyses sufficient volume may not be obtained for the

different analyses. Also, compatibility of the containers needs to be considered for the different analyses of the sample. Also, preservation of analytes vary, so it might not be appropriate to combine different analysis of the sample into a single sample container, because the preservation required may be different.

27. FSP, Table I-2-1 Summary of RFI SWMU/AOC Characterization Activities, Pages 1-13: As discussed at the August 26, 2005, meeting, EPA will require "totals" for the sampling activities at all sampling depths. Please revise the Table to include "totals" for each SWMU/AOC. In addition, EPA recommended not sampling at the 8'-10' level or analyzing those samples for SPLP. KNC may use its discretion with regards to deep samples (8'-10') and analyzing for SPLP. EPA will require depth samples at appropriate intervals down to the groundwater at the spill locations and deeper samples will be required underneath landfills. Please ensure that Table I-2-1 and Table I-2-3 are consistent regarding the list of analytes to sample for at each SWMU/AOC, etc. Please revise the Tables accordingly.

28. FSP, Table I-2-1, Page 1 of 13, SWMU #1 (South Pond): In column "RFI Scope", delete reference to the 12 deep soil samples. In column "Analyses / Test Methods", delete reference to the deep samples and their analysis.

29. FSP, Table I-2-1, Page 1 of 13, SWMU #2 (North Pond): In column "RFI Scope", delete reference to the 8 deep soil samples. In column "Analyses / Test Methods", delete reference to the deep samples and their analysis.

30. FSP, Table I-2-1, Page 2 of 13, SWMU #3 (East Pond): In column "RFI Scope", delete reference to the 15 deep soil samples. In column "Analyses / Test Methods", delete reference to the deep samples and their analysis.

31. FSP, Table I-2-1, Page 2 of 13, SWMU #4, Former Disposal Well #1: Field activities proposed for disposal wells UIC #2 and UIC #3 focus on the drill cuttings that were deposited into mud pits. Disposal practices for these two wells, which were installed in the 1990's, included the use of lined mud pits for drill cuttings that contained elevated concentrations of chloride. In contrast, drill cuttings from disposal well UIC #1, which was installed in 1968 as the facility was being constructed, were likely deposited into an unlined mud pit. Because the boring for UIC #1 penetrated the same geologic formations as those penetrated while installing UIC #2 and UIC #3, the drill cuttings likely contain similar chloride concentrations. Therefore, the Field Sampling Plan should be revised to include an investigation of the mud pit for UIC #1. In addition, chloride should be added to the list of analytes for soil and water samples collected from locations downgradient of UIC #1.

32. FSP, Table I-2-1 Summary of RFI SWMU/AOC Characterization Activities, SWMU #4, Page 2 and AOC #6, Page 3: As discussed at the August 26, 2005, meeting, KNC will install a deep well into the Dakota Aquifer and use three other points to characterize the Dakota Aquifer. Those other points will include well #

B-2, Land O'Lakes Feedmill deep well, and Kansas Byproducts deep well. EPA expressed concerns regarding the integrity of well B-2 in its April 27, 2005, comment letter in Appendix B, Comment #17. EPA reserves the right to request the installation of an additional deep well, if testing on B-2, and if the new well installed by former injection well #1 exhibits significantly different water level elevation measurements different from well B-2. Please revise these SWMU #4 and AOC #6 descriptions to include this additional information.

33. FSP, Table I-2-1, Page 3 of 13, SWMU #5 (Land Farm): The EPA is uncertain as to whether this SWMU may have been covered with clean material (soil) after its use ceased, therefore to specify sampling intervals has some uncertainty involved. Under the column "RFI Scope", the plan mentions the use of test pits. This may be a good approach to take with this unit. Disposed material was apparently placed shallow, as opposed to burial, so the upper two-foot interval is probably of greatest interest. The EPA recommends deleting reference to the collection and analysis of the 6 native soil samples in the "RFI Scope" and "Analyses / Test Methods" columns. The EPA recommends keeping the 6 surface (0-6") and 6 subsurface (6"-24") samples as proposed, since this is an adequate number of samples for SWMU #5 as presented on Figure I-2-7. However, the EPA recommends waiting until a test pit (probably shallow, approximately 2 feet in depth) is excavated and then deciding on the intervals to sample in the field. It is recommended that samples of disposed material should be collected if this material is visible. EPA can be available for consultation during the actual fieldwork if Koch would like to confer on sampling after the test pit is excavated.

    Under the column "RFI Scope", delete reference to the 3 native soil samples. In column "Analyses / Test Methods", delete reference to the native soil samples and their analysis.

34. FSP, Table I-2-1, Page 4 of 13, SWMU #6 (Former Washout Area): The EPA recommends the same approach to investigating this SWMU as was recommended above for SWMU #5 (Land Farm).

    Under the column "RFI Scope", delete reference to the 3 native soil samples. In column "Analyses / Test Methods", delete reference to the native soil samples and their analysis.

35. FSP, Table I-2-1, Page 4 of 13, SWMU #21 - UIC Well 2 Cuttings, and Page 5 of 13, SWMU #22 - UIC Well 3 Cuttings: The EPA recommends the same approach to investigating these SWMUs as was recommended above for SWMU #5 (Land Farm).

    Under the column "RFI Scope", delete reference to the deep soil sample. In column "Analyses / Test Methods", delete reference to the deep soil sample and its analysis.

In addition, the text in Table I-2-1 states that a single sample will be collected from these SWMUs. Considering the drill cuttings were separated according to chloride content into one of two pits, which were 150 feet long, KDHE questions whether a single sample will be representative of this waste. Include additional sampling locations to properly characterize these SWMUs. Also, the pits are 15 feet deep, but stated sampling depth is only 10 feet. Revise the text in this table to state samples will be collected at depths below the bottom of the mud pit. Finally, the text in the table indicates direct push technology will be used to advance a soil boring through the liner of the mud pits. KDHE will not allow KNC to puncture the mud pit liner. Therefore, samples should be collected from locations outside the footprint of the pits.

36. FSP, Table I-2-1 Summary of RFI SWMU/AOC Characterization Activities, SWMU #7, (Landfill for General Plant Trash), Page 5 of 13: In the April 27, 2005, comment letter, the Agencies stated in Appendix A, comment #23 that, "It would be difficult to get a representative sample from the "landfill" material in the Former General Facility Trash Landfill without taking a large number of samples." The comment goes on to say that the "material disposed is most likely so heterogeneous that even a large number of samples would not necessarily be representative of the contents. Therefore instead of taking a sample of the "landfill" material, it would be more beneficial to take a sample of the soil below the "landfill" material (subsurface) and groundwater sampling." This could be accomplished using angled boring so as not to disturb the actual landfill. If this landfill has a liner, EPA does not want the landfill liner punctured. Revise the description for SWMU #7 to take angled borings/samples beneath the landfill without disturbing the liner or the contents of the landfill. Use of surface geophysics should be used to determine the length and depth of the landfill. In addition, under column "Analyses / Test Methods", delete reference to SPLP analysis. Also, any waste may have been disposed in the landfill for general plant trash. Therefore, include pesticides and herbicides in the list of constituents to be analyzed in soil samples from this SWMU. Modify Table I-2-1 accordingly. Also, conduct total chromium analysis on the samples collected from SWMU #7.

37. FSP, Table I-2-1 Summary of RFI SWMU/AOC Characterization Activities, SWMUs #8, #23, #24 and #25, (Former Chrome Destruct Unit and Neutralization Basins 1, 2, & 3), Page 6 of 13: Under column "Analyses / Test Methods", for the 0-1 foot soil samples in addition to TCLP analysis, include total analysis also.

Under column "Analyses / Test Methods", for the shallow soil samples (<8 ft) in addition to TCLP analysis, include total analysis also.

Under column "Analyses / Test Methods", for the deep soil samples (>8 ft) change SPLP analysis to analysis for total chromium.

Also, there is a discrepancy between the number of soil samples in the description in Table I-2-1 under the heading "RFI Scope" and Figure I-2-11 for these SWMUs. Please rectify the discrepancy and revise the Figure and the descriptions in the Table accordingly.

38. FSP, Table I-2-1 Summary of RFI SWMU/AOC Characterization Activities, SWMUs #10 (East Cell of the Lime Sludge Pond), Page 8, #11 (West Cell of the Lime Sludge Pond), Page 8), #17 (East Lime Sludge Landfill), Page 9 and #19 (West Lime Sludge Landfill), Page 10: Please refer to comments #17, 18, 19, 20 and 21, of Appendix A of EPA's April 27, 2005 letter. Comment #21 lists what the samples in these SWMUs should be sampled for. Please refer back to those comments and revise Table I-2-1 for the SWMUs accordingly. In addition, for SWMUs 10, 11, & 17, under column "Analyses / Test Methods", for the native soil samples change SPLP analysis to analysis for total chromium. For SWMU 19, under column "Analyses / Test Methods", for Trenches 1 and 2, for native soil change SPLP analysis for chromium to analysis for total chromium. Under column "Analyses / Test Methods", for Trench 3, for native soil change SPLP analysis for VOCs, SVOCs, TPH, and Appendix IX metals to "total" analyses for these constituents. Also, the entry for Trench 3 indicates soil samples will be analyzed for VOC, SVOC, TPH, Appendix IX metals, Hexavalent Chromium, Total Chromium, Nitrate-Nitrite, Sulfate, and pH. However, the entry for SWMU #19 SS08 / SB08 in Table I-2-3 does not identify these analyses will be run for this sample. As mentioned previously in comment 27 above, please ensure that Table I-2-1 and Table I-2-3 are consistent with regard to the list of analytes to sample for at each SWMU/AOC, etc. Rectify this discrepancy by adding applicable entries in Table I-2-3.

39. FSP, Table I-2-1 Summary of RFI SWMU/AOC Characterization Activities, Page 11 of 13, AOC #1 (Chromate Spills: Please refer to Comment #30 Appendix A, of EPA's April 27, 2005, comment letter. Based on discussions at the August 26, 2005, meeting, EPA said that SPLP was not necessary. Please revise the Table I-2-1, under column "Analyses / Test Methods", change SPLP analysis for chromium to analysis for total chromium.

The EPA recommends that Koch consider an alternative approach to investigating soils at the three spill areas. Because it is not known if all three spills were of sufficient volume to infiltrate to groundwater (approximately 90 feet below ground surface) and it is also not known exactly where the pathway(s) to groundwater are, it is recommended that an initial investigation focus on the areal (horizontal extent) of chromium contamination, and contamination at a shallow depth (0-3 feet). This could be done very effectively with a shallow excavation (test pit) approach, using visual evidence of contamination and real-time field analysis such as x-ray fluorescence to determine the areal extent of contamination and an initial evaluation of vertical extent and identification of pathway(s) to deeper areas. Once the horizontal extent and initial evaluation of the vertical

extent of contamination is completed, KNC can then focus on determining the full extent of the vertical extent of contamination down to groundwater.

40. FSP, Table I-2-1 Summary of RFI SWMU/AOC Characterization Activities, Page 12 of 13, AOC #4 (Former Gas Shed on the Old Farm): Please refer to comment #25 in Appendix A of EPA's April 27, 2005 letter. Comment #25 lists what analytes are to be sampled for. KNC has left out7"sulfate" in its description for AOC#4 in Table I-2-1. Please revise the Table to include "sulfate" in the list of analytes to sample for at AOC #4.

The EPA recommends that Koch consider an alternative approach to investigating soils at this AOC. Because of the uncertainty of how and where contamination may have been released at this AOC, an initial effort could be made to characterize the shallow (0-2 foot) interval, using the same total number of proposed samples but covering many more locations (36).

41. FSP, Table I-2-1 Summary of RFI SWMU/AOC Characterization Activities, Page 12 of 13. AOC #5: Please provide the rationale for the array of soil borings on the North side of the former tank. Please also refer to comment #31 Appendix A, in EPA's April 27, 2005 letter. The EPA recommends that Koch consider an alternative approach to investigating this AOC. Because the goal is to locate the area(s) where leakage from the tank occurred, a shallow excavation approach covering a large area and using field analytical methods with quick turnaround for results could be used to more precisely locate all areas of significant contamination. These areas could then be evaluated for the vertical extent of contamination. Please revise the Table accordingly.

42. FSP, Table I-2-1 Summary of RFI SWMU/AOC Characterization Activities, Site Wide Activities: Please refer to comment #27 above, and EPA comment number 26 in Appendix A of the April 27, 2005 letter. KNC's approach as described in the August 26, 2005, meeting to characterize the groundwater contamination in the Ogallala and Dakota aquifers is acceptable to EPA, including installation of permanent wells, as long as the detail is described in the FSP. Please revise the text and Tables accordingly.

43. FSP, Table I-2-2, Background Wells: Wells TW-11, TW-19, TW-22 and TW-63 are identified as background wells. These wells have been impacted by contaminants from facility operations and therefore cannot be used as background wells. KNC must select a new set of upgradient wells to assess background conditions. Wells acceptable to KDHE as background wells include TW-24, TW-25, TW-56, TW-59, TW-60, TW-61, and TW-62.

44. FSP, Table I-2-2 Summary of Proposed Groundwater Characterization Activities: In order to ensure that all groundwater contaminants are identified, the EPA believes that an initial broad scan of analytes should be performed when the new monitoring wells resulting from the groundwater contamination delineation and

vertical profiling, and the new Dakota well, are first sampled. These analytes should include VOCs, SVOCs, Appendix IX metals, hexavalent chromium, total petroleum hydrocarbons, nitrate, sulfate, and laboratory pH. The EPA believes it is important to do this because it is possible that not all potential sources of groundwater contamination may be known at this time.

It is also recommended that the same broad scan should be run on groundwater samples collected from several existing monitoring wells located in key positions downgradient from SWMUs and AOCs from which contaminants of unknown nature may have been released. These areas include the South Pond (SWMU 1), the North Pond (SWMU 2), the East Pond (SWMU 3), and the Former Gas Shed on the Old Farm (AOC 4). The EPA will defer selection of specific wells to Koch.

45. FSP, Table I-2-3: Appropriate revisions to this table should be made in order to reflect changes resulting from the preceding comments above.

## QUALITY ASSURANCE (QA) CRITICAL COMMENTS

1. QAPP, Background Samples: The revised QAPP does not include the collection of background samples. Background samples need to be collected. The QAPP needs to describe their collection including the location, type, number of samples, analytes of interest, sampling procedure, preservation, evaluation, etc. See also General Comment #5 above. Please revise the QAPP to include this information, or include this information in the appendix (See General Comment #5) and reference the appendix in the QAPP.

2. QAPP, B9. Non-direct Measurements: The previous version of the QAPP correctly addressed the use of previous data in section B9. However, the revised QAPP has deleted the original language and instead focuses on basic statistics. This section of a QAPP needs to address the type of data needed from non-measurement sources, their use, and any limitation of such data. The reason for the change in the revised QAPP for the content of section B9 is not clear. Please revise accordingly or provide an explanation.