KOCH

KOCH NITROGEN COMPANY

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RCRA BARCODE

May 31, 2007

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Director
RCRA Corrective Action & Permits Branch
Air, RCRA and Toxics Division
U.S. Environmental Protection Agency Region VII
901 North Fifth Street
Kansas City, Kansas 66101 (2 copies)

RCAP-RECEIVED
JUN 04 2007

Re: Well TW-28 Investigation: Amendment to Sampling and Analysis Plan
Koch Nitrogen Company, Dodge City Nitrogen Plant
EPA ID. No. KSD044625010

Dear Ms. Stone:

On September 6, 2006, Koch Nitrogen Company (KNC) submitted a revised investigation plan for three sites where small releases of recovered water had occurred (*Sampling and Analysis Plan (SAP) for the Andco Clarifier Basin Overflow, Pipe Fracture, and Pipe Union Failure Groundwater Release)* to EPA Region 7 and KDHE. On November 7, 2006, KNC received approval (with comments) to implement this SAP. Field work for this SAP was completed during the first quarter of 2007.

On April 7, 2007, during the preparations for the April 2007 quarterly sampling event, KNC discovered that a leaking valve at groundwater extraction well TW-28 had released a small amount of groundwater. The spill was reported to EPA and KDHE upon discovery, with specific details associated with the spill and the response. Because of the similarity of this release to those covered in the SAP, EPA suggested that the referenced SAP be amended to include the investigation at TW-28, with sampling and analysis protocol in accordance with the technical approach and field sampling protocol detailed in that SAP. The amendment is detailed below.

Section 1, **Introduction**, page 1, delete first paragraph, and replace with:

"The Koch Nitrogen Plant (KNC) experienced four minor groundwater spills between June 24, 2005 and April 7, 2007. Each spill was reported to EPA and the area of each spill was documented by drawings, notes, and photographs."

Section 1, **Introduction**, page 3, after fourth paragraph:

"On April 7, 2007, KNC discovered that a leaking surface valve at groundwater extraction well TW-28 had occurred as the result of a valve shutoff malfunction. The leaking valve was promptly repaired and the well placed back in service. The estimated worst-case leakage, assuming the duration extended back to the time of the previous inspection, was about 1116

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gallons of recovered groundwater over a 31-day period. The leakage would have run onto the ground surface in the vicinity of the well. The surface area impacted by the leak is estimated at 150 sq. feet (15 ft by 10 ft area), as depicted in Figure 1. The surface expression of the wetting front is located directly north of TW-28 in accordance with the gently sloping topography. The depth of the wetting front is estimated at less than 1 foot below ground surface based on the observed soil density, volume of water released, and the observed surface flow area."

Section 2, **Sampling and Analysis Plan**, page 5, after second paragraph:

"TW-28 Surface Valve Malfunction

The groundwater sample from TW-28 during the second quarter of 2007 contained 0.175 mg/l of total chromium and 83.3 mg/l of nitrate plus nitrite as N. Based on the worst-case total volume noted above, the leakage could have released 0.0016 lb. of Cr and 0.78 lb. of N. Laboratory results are provided in Appendix B."

Section 2, replace Table 2-1 with the following revised table:

Andco Overflow	Pipe Fracture	Union Failure	TW-28	Description (bgs = below ground surface)
AO-01-01	PF-01-01	UF-01-01	TW28-01-01	Grab sample at 0.5 ft bgs
AO-01-02	PF-01-02	UF-01-02	TW-28-01-02	Grab sample at 1.0 ft bgs
AO-01-03	PF-01-03	UF-01-03	TW-28-01-03	Grab sample at 2.0 ft bgs
AO-02-01	PF-02-01	UF-02-01	TW-28-02-01	Grab sample at 0.5 ft bgs
AO-02-02	PF-02-02	UF-02-02	TW-28-02-02	Grab sample at 1.0 ft bgs
AO-02-03	PF-02-03	UF-02-03	TW-28-02-03	Grab sample at 2.0 ft bgs
AO-03-01	PF-03-01	UF-03-01	TW-28-03-01	Grab sample at 0.5 ft bgs
AO-03-02	PF-03-02	UF-03-02	TW-28-03-02	Grab sample at 1.0 ft bgs
AO-03-03	PF-03-03	UF-03-03	TW-28-03-03	Grab sample at 2.0 ft bgs
AO-04-01	PF-04-01	UF-04-01	TW-28-04-01	Grab sample at 0.5 ft bgs
AO-04-02	PF-04-02	UF-04-02	TW-28-04-02	Grab sample at 1.0 ft bgs
AO-04-03	PF-04-03	UF-04-03	TW-28-04-03	Grab sample at 2.0 ft bgs
AO-05-01	-	UF-05-01	TW-28-05-01	Grab sample at 0.5 ft bgs
AO-05-02	-	UF-05-02	TW-28-05-02	Grab sample at 1.0 ft bgs
AO-05-03	-	UF-05-03	TW-28-05-03	Grab sample at 2.0 ft bgs
AO-06-01	-	UF-06-01	-	Grab sample at 0.5 ft bgs
AO-06-02	-	UF-06-02	-	Grab sample at 1.0 ft bgs
AO-06-03	-	UF-06-03	-	Grab sample at 2.0 ft bgs

Andco Overflow (cont'd.)	Pipe Fracture	Union Failure	TW-28	Description (bgs = below ground surface)
AO-07-01	-	UF-07-01	-	Grab sample at 0.5 ft bgs
AO-07-02	-	UF-07-02	-	Grab sample at 1.0 ft bgs
AO-07-03	-	UF-07-03	-	Grab sample at 2.0 ft bgs

Figures: Add *Figure 5* showing proposed sample points

The revised text of the Plan reflecting these changes, and Figure 5, are attached.

If you have any questions regarding this report or attachments, please contact AnnieLaurie Burke at (620) 227-8631, Ext. 350.

In accordance with Section B.22 of the Part II Permit, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

Gary J. LeRock

Gary J. LeRock
Plant Manager

CC:

Everett Spellman, Kansas Department of Health and Environment, Topeka, Kansas
AnnieLaurie Burke, Koch Nitrogen Company, Dodge City, Kansas
Stephen B. Ellingson, Ph.D., Koch Mineral Services, Wichita, Kansas
Cory Zellers, Koch Nitrogen Company, Dodge City, Kansas

1.0 Introduction

The Koch Nitrogen Plant (KNC) experienced four minor groundwater spills between June 24, 2005 and April 2, 2007. Each spill was reported to EPA and the area of each spill was documented by drawings, notes, and photographs.

On June 24, 2005, approximately 1,000 gallons of recovered groundwater was released (overflowed) from the Andco Clarifier Basin (Figure 1 and 2). The release occurred as the result of a shutoff malfunction during installation of a potable water supply line which KNC was installing for the Bogner family, whose well could potentially have been impacted by historical operations. An area operator noticed the overflow and immediately took action to stop the release by putting the recovery system in manual override to shutdown the pumps.

The surface area impacted by the Andco Clarifier Basin overflow is estimated at approximately 500 sq. feet. as depicted in Figure 1. The leak occurred over the Andco Clarifier Basin east wall along a 16 feet interval. The overflow traveled down the east wall onto the ground surface and developed into channel flow moving in a southeast direction. The width of the downgradient channel was estimated at approximately 5 feet and extended a distance of approximately 62 feet. The depth of the wetting front is estimated at less than 1 foot below ground surface based on the observed soil density, volume of water released, and the observed surface flow area.

On November 7, 2005, approximately 200 gallons of recovered groundwater was released from a subsurface pipe fracture in the vicinity of TW-09 (Figure 3). The pipe fracture was located approximately 4 feet below ground surface. An area operator noticed the pipe fracture and immediately took action to stop the release by turning the supply line off.

The estimated surface area of ground covered by the spill is approximately 70 sq. feet. The wetted surface consists of a surface area 10 feet by 5 feet centered on the break area and a channelized flow area 1 foot wide extending for approximately 20 feet topographical downgradient in a southeast direction. The depth of the impact in the channelized areas is estimated at less than 0.5 feet below ground surface based on observations of soils below the wetted areas as observed during excavation for pipe repairs. The depth of the wetting area at the pipe break extends less than 1 foot below the pipe break as observed during excavation and repair of the pipe.

On July 7, 2006, approximately 500 gallons of recovered groundwater was released from a separated subsurface pipe union (Figure 4). The release occurred approximately 800 feet north of TW-08. The pipe fracture was located approximately 4 feet below ground surface. An area operator noticed the release and immediately took action to stop the release by turning the supply line off.

The estimated surface area of ground covered by the spill is approximately 115 sq. feet. The wetted surface consists of an area 10 feet by 10 feet centered on the break area and a channelized flow area 0.5 foot wide extending for approximately 30 feet topographical downgradient in a northeast direction. The depth of the wetting area at the pipe break extends less than 1 foot below the pipe break as observed during excavation and repair of the pipe.

On April 7, 2007, KNC discovered that a leaking surface valve at groundwater extraction well TW-28 had occurred as the result of a valve shutoff malfunction. The leaking valve was promptly repaired and the well placed back in service. The estimated worst-case leakage, assuming the duration extended back to the time of the previous inspection, was about 1116 gallons of recovered groundwater over a 31-day period. The leakage would have run onto the ground surface in the vicinity of the well. The surface area impacted by the leak is estimated at 150 sq. feet (15 ft by 10 ft area), as depicted in Figure 5. The surface expression of the wetting front is located directly north of TW-28 in accordance with the gently sloping topography. The depth of the wetting front is estimated at less than 1 foot below ground surface based on the observed soil density, volume of water released, and the observed surface flow area.

It is difficult to estimate the subsurface area of the spill for the pipeline fracture of November 2005 and the recent pipe union failure of July 2006. However, water from the subsurface piping tends to well up, primarily saturating the ground above the pipe. Water migrates upwards due to the relatively low permeability of the undisturbed soil beneath the pipeline versus that of the disturbed soils above the pipeline.

To date, no soil has been removed in the spill areas. Soil removal will be conducted, if needed, pending approval of this sampling and analysis plan and collection and analyses of soil data. KNC notified the EPA and KDHE to keep them informed of KNC's activities relating to the groundwater recovery and treatment system, although KNC believes that these incidents are not releases under Section C.4 of its Permit, and the guidance that KNC received from the Kansas Department of Health and Environment (KDHE) is that these are not considered releases under K.A.R. 28-48-2.

2.0 Sampling and Analysis Plan

This Sampling and Analysis Plan (SAP) provides a discussion of the technical approach and field sampling protocol proposed to evaluate the spill areas. The sample collection procedures for the groundwater spills will be in accordance with the RFI Sampling and Analysis Plan and accompanying Quality Assurance Project Plan (QAPP) [1], which has been prepared to support the specific quality assurance/quality control (QA/QC) activities designed to achieve the stated objectives in the RFI Work Plan.

Andco Overflow

At the time of the groundwater release, the Andco clarifier basin contained recovered groundwater that had been treated by the electrochemical reduction unit. KNC believes that the treated groundwater within the Andco clarifier basin contained 0.24 milligram per liter (mg/L) or less of chromium. This result is based on the regular in-house measurements taken on the Andco unit per the Post-Closure Plan, Section F. Prior to treatment, groundwater extracted from recovery wells contains maximum chromium concentrations of 0.560 mg/L and maximum nitrite plus nitrate as (N) concentrations of 122 mg/L.

Pipe Fracture Leak

At the time of the pipe fracture and subsequent groundwater release, the discharge pipe contained recovered water from groundwater recovered in the vicinity of TW-09. KNC believed that the groundwater within the pipe contained 0.30 milligram per liter (mg/L) or less of chromium and a maximum nitrite plus nitrate as (N) concentration of 100 mg/L. A water sample was collected during the release event from the overland flow downgradient of the fractured pipe. The chromium concentration was 0.215 mg/l, well below the levels estimated above from TW-09. Laboratory results are provided in Appendix B.

Union Failure Leak

At the time of the pipe fracture and subsequent groundwater release, the discharge pipe contained recovered water from groundwater recovered in the vicinity of TW-08. A surface water sample collected from the leak showed 0.19 mg/l of dissolved chromium, 0.17 mg/l of total chromium and 24.4 mg/l of nitrate plus nitrite as (N). Laboratory results are provided in Appendix B.

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[1] Sampling and Approach Sampling and Analysis Plan RCRA Facility, Dodge City, Kansas, USEPA ID No. KSDO44625010. GeoSyntec Consultants, December 2005.

TW-28 Surface Valve Malfunction

The groundwater sample from TW-28 during the second quarter of 2007 contained 0.175 mg/l of total chromium and 83.3 mg/l of nitrate plus nitrite as N. Based on the worst-case volume and duration noted above, the leakage could have released a total of 0.0016 lb. of Cr and 0.78 lb. of N. Laboratory results are provided in Appendix B.

The following sections outline procedures to investigate the spill areas, including sampling locations, sample collection methods, and subsequent laboratory analysis.

2.1 Sampling Locations and Nomenclature

Sampling will be conducted in two phases. Phase 1 will focus on sampling locations directly downgradient of the overflow and within the primary surface flow channels as determined through the visual inspections and photographs. These areas received the longest contact time with the groundwater releases and therefore would show the greatest impacts, if any. Samples will be collected at four locations for each spill area. Three depth sampling intervals will be tested (0.5 feet, 1.0 feet, and 2.0 feet bgs). Sampling greater than 2 feet below ground surface near the pipeline and associated electrical lines is not proposed because of health and safety concerns. Table 2-1 lists the sampling locations and depth intervals for Phase 1 sampling. Figures 2, 3, and 4 denote the sampling locations in relation to site features.

Unique alphanumeric identifications will be assigned to each sampling location. Sample designation, sampling time and date, sampling personnel, and analyses will also be recorded on the field records, sample labels, and chain-of-custody.

If results of Phase 1 sampling indicate chromium or nitrate/nitrite impacts above background levels, additional (Phase 2) sampling will be conducted to delineate the impacted area. Sampling locations and depths associated with Phase 2 will be provided as a separate submittal, if needed.

Table 2-1 Sample Locations

Andco Overflow	Pipe Fracture	Union Failure	TW-28	Description (bgs = below ground surface)
AO-01-01	PF-01-01	UF-01-01	TW28-01-01	Grab sample at 0.5 ft bgs
AO-01-02	PF-01-02	UF-01-02	TW-28-01-02	Grab sample at 1.0 ft bgs
AO-01-03	PF-01-03	UF-01-03	TW-28-01-03	Grab sample at 2.0 ft bgs
AO-02-01	PF-02-01	UF-02-01	TW-28-02-01	Grab sample at 0.5 ft bgs
AO-02-02	PF-02-02	UF-02-02	TW-28-02-02	Grab sample at 1.0 ft bgs
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AO-06-03	-	UF-06-03	-	Grab sample at 2.0 ft bgs
AO-07-01	-	UF-07-01	-	Grab sample at 0.5 ft bgs
AO-07-02	-	UF-07-02	-	Grab sample at 1.0 ft bgs
AO-07-03	-	UF-07-03	-	Grab sample at 2.0 ft bgs

2.2 Sample Collection

Prior to commencement of field activities, field personnel will be trained on the requirements for data collection outlined in the FSP and QAPP to ensure the collection of representative data. All applicable health and safety procedures associated with the Koch Nitrogen Plant will be strictly followed during all sampling activities.

2.3 Sample Handling and Custody

Samples will be collected per the procedures discussed in the preceding sections. Sample collection containers will consist of one 4-ounce glass jar per sample. Procedures for the

handling and transport of the samples will be in accordance with the recently developed RCRA Investigation Facility Sampling and Analyses Plan including the chain-of-custody procedures. Samples will be kept in a pre-cooled ice chest until samples are logged, placed on ice, transported to the laboratory.

2.4 Laboratory Sample Analyses

Soil samples obtained during the investigation will be analyzed for total nitrate plus nitrite as N (USEPA Method 353.2) and total chromium (USEPA Method 6010B). Analyses for chromium using the TCLP or Synthetic Precipitation Leaching Procedure (SPLP) (USEPA Methods 1312 and 6010B)[2] may be completed pending the results of the total chromium analyses. All analyses will be completed by a Kansas State Certified laboratory.

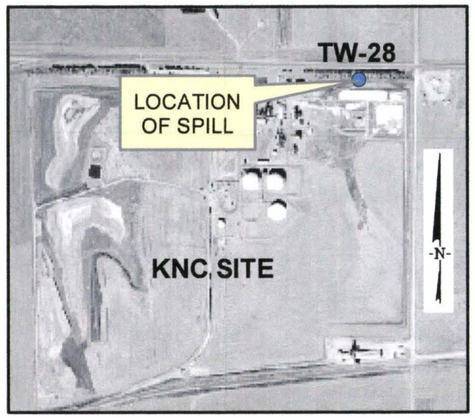
3.0 ANALYSIS AND REPORTING

The sampling results will be compared to threshold levels developed from a background dataset. The background and threshold datasets were developed as part of the RCRA Investigation Facility Sampling and Analyses Plan reference earlier in this document. Using this approach, if the measured concentrations are less than the applicable thresholds, no additional vertical or lateral delineation or remediation will be required. Conversely, if concentrations are above threshold levels, additional Phase 2 delineation may be required to determine future actions.

The results of the sampling and analysis will be summarized in a letter report. The report will include an analysis and interpretation of the laboratory results, recommendations for further action, if needed, and all analytical laboratory results.

[2] Approach described in the January 2004 CDU Closure Plan to evaluate direct contact and potential leaching to groundwater.

TW-28 GROUNDWATER LEAK AREA
LOOKING EAST



LEGEND

- PROPOSED SAMPLE LOCATION. THREE GRAB SAMPLES WILL BE COLLECTED AND ANALYZED FROM EACH LOCATION AT DEPTHS OF 0.5, 1 AND 2 FEET BGS.

PROPOSED SAMPLING LOCATIONS FOR INVESTIGATION OF GROUND-WATER LEAK AT WELL TW-28

PREPARED BY:

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DODGE CITY, KS 67801

PROJECT NO.	FIGURE NO. 5
DATE. MAY 2007	FILE NO.