1R - 427-142

APPROVALS

YEAR(S):

2013

Hansen, Edward J., EMNRD

From:	Hansen, Edward J., EMNRD
Sent:	Monday, July 29, 2013 1:59 PM
To:	Hack Conder (hconder@riceswd.com)
Cc:	Leking, Geoffrey R, EMNRD; Laura Pena (lpena@riceswd.com); Katie Jones <kjones@riceswd.com> (kjones@riceswd.com); Scott Curtis (scurtis@riceswd.com)
Subject:	Remediation Plan (1R427-142) Termination - ROC EME O-35 South Site

RE: Termination Request
for the Rice Operating Company's
EME O-35 South Site
Unit Letter O, Section 35, T20S, R36E, NMPM, Lea County, New Mexico
Remediation Plan (1R427-142) Termination

Dear Mr. Conder:

The New Mexico Oil Conservation Division (OCD) has received Rice Operating Company's report and request to close the above-referenced site, dated July 19, 2013 (received July 24, 2013). The report is acceptable to the OCD.

The above-referenced report, submitted in accordance with 19.15.29 NMAC (Rule 29; formally, Rule 116), indicates that Rice Operating Company has met the requirements of 19.15.29 NMAC; therefore, the OCD approves the report and hereby notifies you that the remediation plan (1R427-142) is terminated in accordance with 19.15.29 NMAC.

Please be advised that OCD approval of this report does not relieve the owner/operator of responsibility should operations pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the owner/operator of responsibility for compliance with any OCD, federal, state, or local laws and/or regulations.

If you have any questions regarding this matter, please contact me at 505-476-3489.

Edward J. Hansen
Hydrologist
Environmental Bureau

RICE *Operating Company*
122 West Taylor • Hobbs, New Mexico 88240
Phone: (575) 393-9174 • Fax: (575) 397-1471

CERTIFIED MAIL
RETURN RECEIPT NO. 7007 2560 0000 4569 8906

July 19, 2012

Mr. Edward Hansen
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: Termination Request
EME O-35 South (1R427-142): UL/O, Sec. 35, T20S, R36E
RICE Operating Company – Eunice Monument Eumont SWD System

Mr. Hansen:

Rice Operating Company (ROC) is the service provider (agent) for the EME Saltwater Disposal (SWD) System and has no ownership of any portion of the pipeline, well, or facility. The System is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage ownership/usage basis.

Background and Previous Work
In 2004, ROC initiated work on the former O-35 South junction box. The site is located in UL O, Sec. 35, T20S, R36E. The junction box, the south box of two junction boxes, is located within an active production facility. NM OSE records indicate that groundwater would likely be encountered at a depth of approximately 122 +/- feet. The site was delineated using a backhoe to form a 10x3x12 ft deep excavation and soil samples were screened at regular intervals for both hydrocarbons and chlorides. Each sample was field titrated for chlorides and screened for TPH, resulting in low concentrations for chlorides and TPH. The 12 ft sample was sent to a commercial laboratory for analysis, resulting in a chloride concentration of 1,070 mg/kg and concentrations of gasoline range organics (GRO) and diesel range organics (DRO) below detectable limits.

To further investigate the depth of chloride presence, a soil bore was initiated on 6/1/2004 and advanced to a depth of 38 ft below ground surface (bgs). Each sample was field titrated for chlorides and screened for TPH, resulting in chloride concentrations that decreased with depth. The 38 ft sample was sent to a commercial laboratory for analysis, resulting in a chloride

concentration of 176 mg/kg and GRO and DRO concentrations below detectable limits. The soil bore was plugged with bentonite to ground surface.

The excavation was backfilled to ground surface and contoured to the surrounding area. A new watertight junction box was built outside the facility, approximately 200 ft northeast of this site.

The junction box site location map, area map, final report, chloride graph, soil bore log, facility diagram, photodocumentation, laboratory analysis, PID sheet and current photodocumentation are attached.

Recommendations
Site investigation demonstrates that residual chloride and hydrocarbons in the vadose zone will not with reasonable probability contaminate groundwater in excess of NMOCD standards. This site meets the requirements of the NMOCD-approved Revised Junction Box Upgrade Work Plan (July 16, 2003). As such, ROC request termination of the regulatory file, or similar closure status.

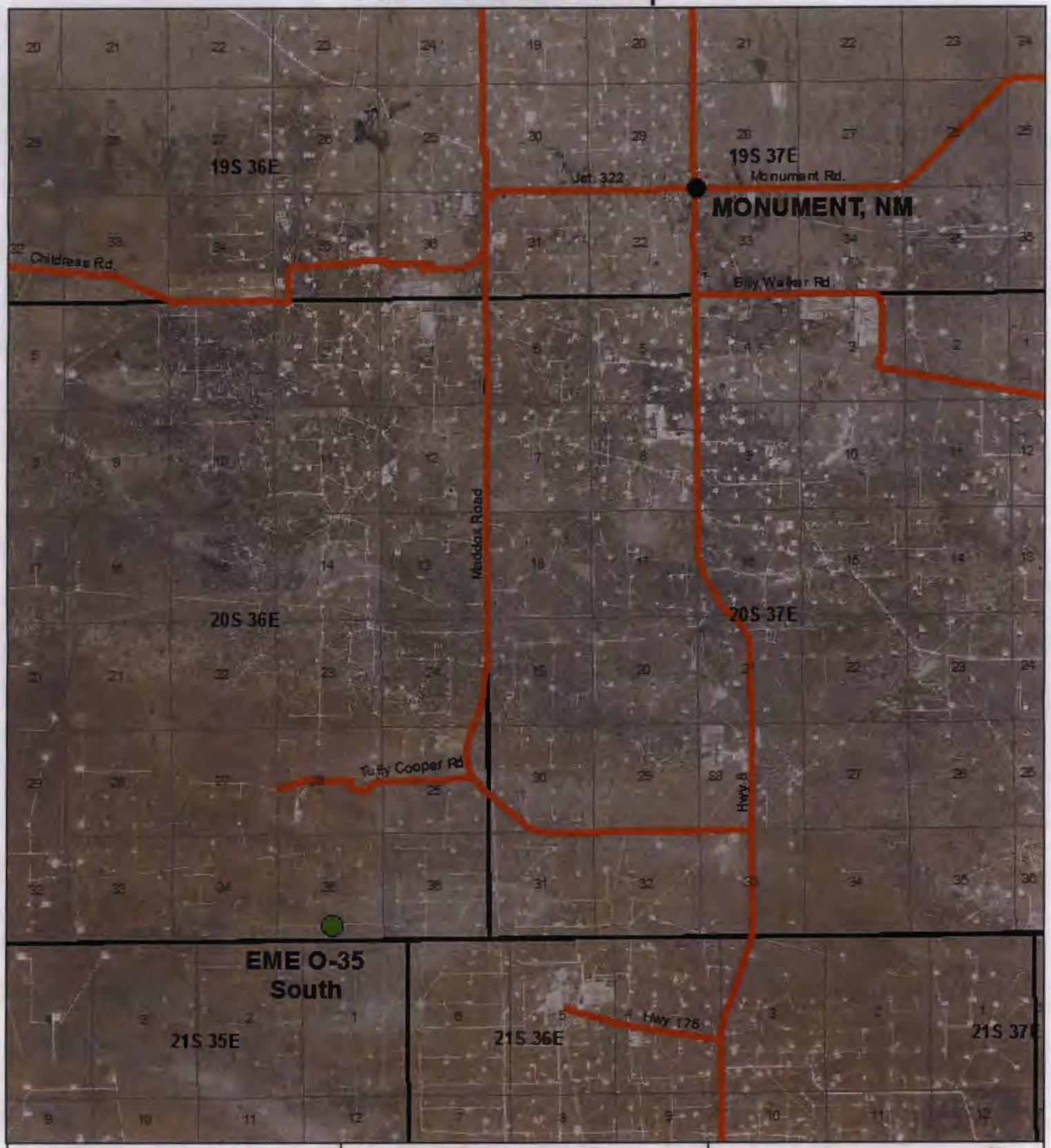
Please contact me at (575)393-9174 if you have any questions or wish to discuss this site. Thank you for your time and consideration.

Sincerely,
RICE Operating Company

Hack Conder
Environmental Manager

enclosures

Site Location Map



RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

EME O-35 South (1R427-142)

UL/O SECTION 35
T20S, R36E
LEA COUNTY, NM

N
W E
S

0 1 2 Miles

Drawing date:7/12/13 LS

Area Map

RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

RECS

EME O-35 South (1R427-142)

UL/O SECTION 35
T20S, R36E
LEA COUNTY, NM

N
W
E
S

0 500 1,000 Feet

Drawing date: 7/12/13 LS

Junction Box Report

RICE *Operating Company* (ROC)
112 West Taylor Hobbs, NM 88240
Phone: (575) 393-9174 Fax: (575) 397-1471

RICE OPERATING COMPANY
JUNCTION BOX FINAL REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
EME	O-35 South	O	35	20S	36E	Lea	Moved 200 ft Northeast (outside battery)		

LAND TYPE: BLM _____ STATE _____ FEE LANDOWNER Tuffy Cooper OTHER _____

Depth to Groundwater 122 feet NMOCD SITE ASSESSMENT RANKING SCORE: 0

Date Started 3/22/2004 Date Completed 6/1/2004 OCD Witness No

Soil Excavated 13 cubic yards Excavation Length 10 Width 3 Depth 12 feet

Soil Disposed 0 cubic yards Offsite Facility n/a Location n/a

FINAL ANALYTICAL RESULTS: **Sample Date** 3/22/2004, 6/1/2004 **Sample Depth** 12 ft

Procure 5-point composite sample of bottom and 4-point composite sample of sidewalls. TPH and Chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOCD guidelines.

Sample Location	PID ppm	GRO mg/kg	DRO mg/kg	Chloride mg/kg
VERTICAL @ 12 ft	0.0	<10.0	<10.0	1070
33 ft East @ 12 ft (background)	XXX	<10.0	<10.0	128
SOIL BORE @ 38 ft	1.6	<10.0	<10.0	176

CHLORIDE FIELD TESTS

LOCATION	DEPTH (ft)	ppm
Vertical	5	147
at box	6	285
	7	318
	8	273
	9	699
	10	554
	11	936
	12	968
	13	1147
	14	876
Soil bore	15	626
at box	20	654
	21	652
	26	600
	31	300
	36	184
	37	184
	38	161

General Description of Remedial Action: This was the South box of 2 that were located inside an active production facility. Vertical delineation was conducted with a backhoe while chloride field tests were performed every foot. Chloride concentrations to 14 ft exhibited an ambiguous trend which warranted further investigation. A soil bore was initiated on 6/1/2004 and advanced to a depth of 38 ft where a conclusive trend of decline in chloride concentrations was observed (see graph). Some moisture was encountered around 33 ft so a bentonite plug was placed in the bore hole from 33-38 ft, as well as at the surface to 3 ft BGS. Chloride left in place at this site is not threatening to groundwater at 122 ft BGS. All PID field screening results were minimal and lab analysis confirmed TPH concentrations well below NMOCD guidelines. All excavations were backfilled and contoured to the surrounding surface. A new watertight junction box has been built outside the battery approximately 200 ft Northeast of this box.

enclosures: chloride graph, photos, lab results, PID field screenings, soil bore log, diagram

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

SITE SUPERVISOR Joe Gatts SIGNATURE Joe Gatts COMPANY RICE Operating Company

REPORT ASSEMBLED BY Kristin Farris Pope SIGNATURE Kristin Farris Pope

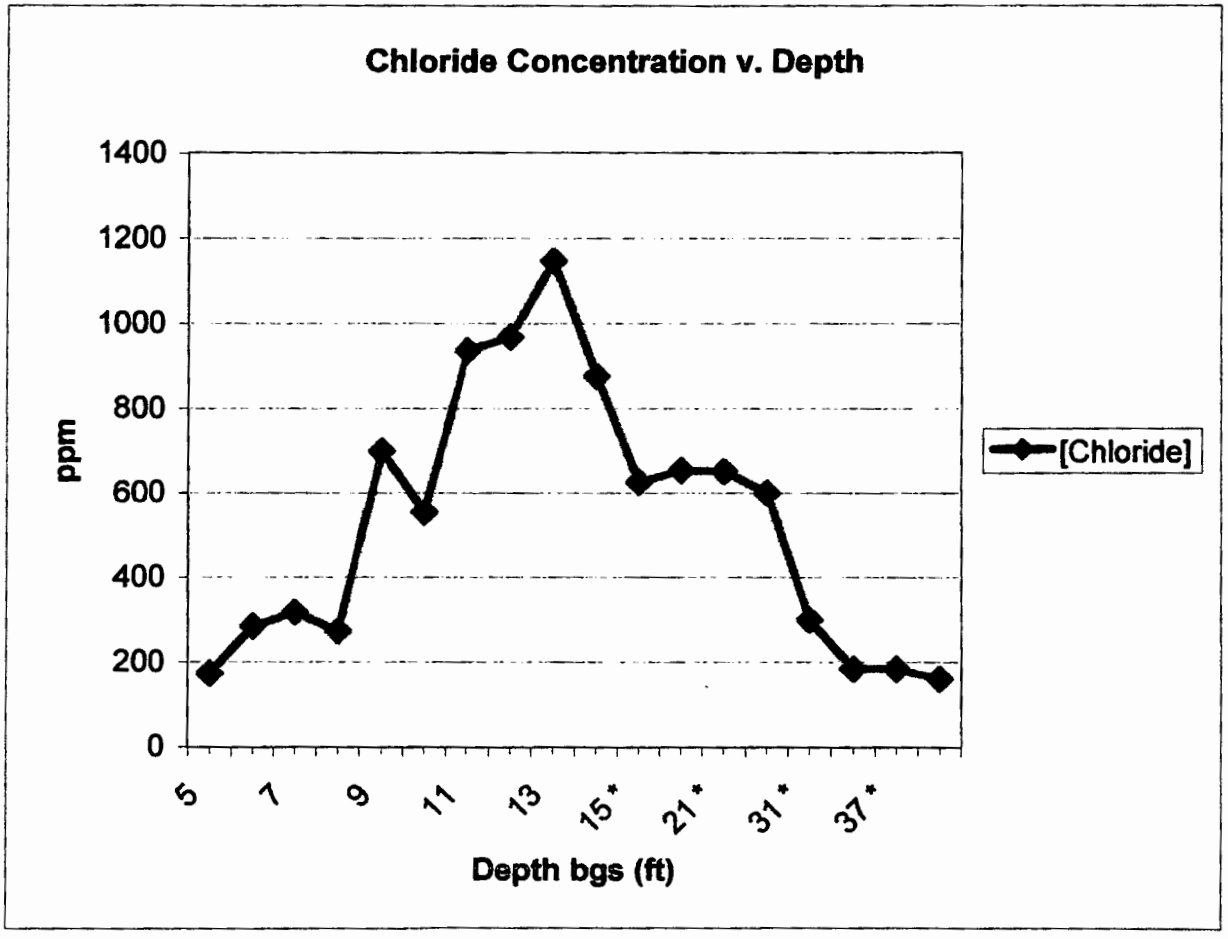
DATE 7/26/2004 TITLE Project Scientist

EME jct. O-35 South

T20S, R36E

Vertical Delineation at Source

Depth bgs (ft)	[Cl⁻] ppm
5	174
6	285
7	318
8	273
9	699
10	554
11	936
12	968
13	1147
14	876
15 *	626
20 *	654
21 *	652
26 *	600
31 *	300
36 *	184
37 *	184
38 *	161



* Soil bore samples

Groundwater = 122 ft

LOG OF BORING

K. Farris
RICE Operating Company

Logger:	Israel Juarez; Mort Bates	**Client:**	**Well ID:**
Driller:	Atkins Engineering Associates, Inc.	RICE Operating Company	SB-1
Drilling Method:	Hollow Stem Auger	**Project Name:**	
Start Date:	6/1/2004	jct. O-35 South	
End Date:	6/1/2004	**Location:**	
Notes: Bored at the site of the O-35 South box TD = 38 ft Groundwater = 122 ft		EME SWD System Sec. 35, T20S, R36E Lea County, NM	

Depth (feet)	Split Spoon chloride	Split Spoon PID	Description	Lithology	Additional Notes
0.0			0-15 ft Clayey Sand w/Caliche: loose, tan dry	0-3 ft hydrated bentonite plug	
2.0					
4.0					
6.0					
8.0					
10.0					
12.0					
14.0					
	626	4.0			remainder of bore backfilled with drill cuttings
16.0			15-23 ft Caliche: firm, white, dry		
18.0					
20.0					
	652	1.8			
22.0					
24.0			23-27 Clayey Sand w/Caliche: firm, tan, dry		
26.0	600	1.7			
28.0			27-30 ft Clayey Sand: loose, tan, dry		
30.0					
	300	1.2	30-38 ft Silty Sand: loose, tan, damp	33-38 ft hydrated bentonite plug	
32.0					
34.0					
36.0	184	1.9			
	184	1.4			
38.0	161	1.6			lab = 176 ppm Cl⁻

EME jct. O-35 North & South

Unit 'O', Sec. 35, T20S, R36E

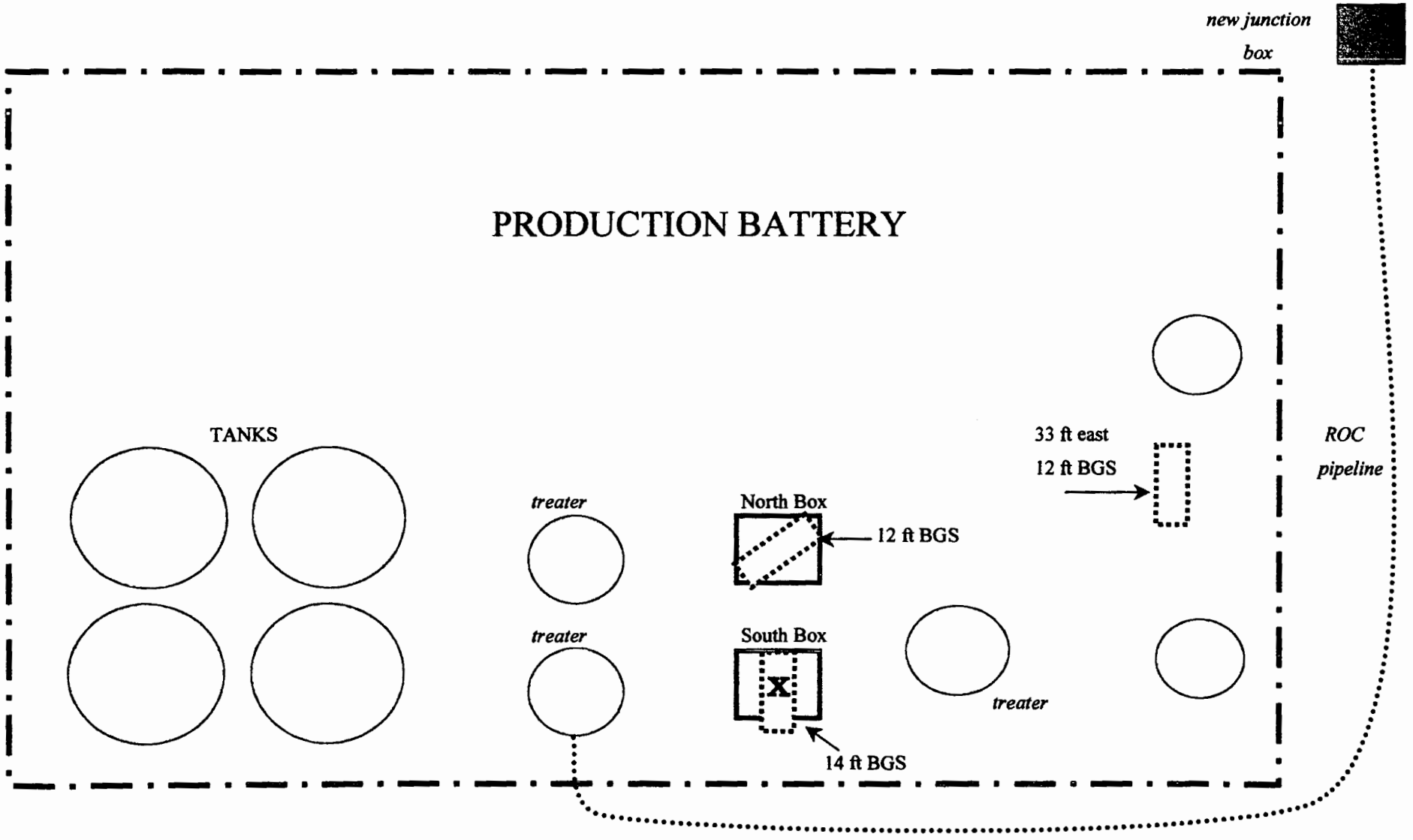
*** *NOT TO SCALE* ***

= Excavation trench

X = Soil Bore Location

N

LEASE ROAD



EME jct. O-35 South Box

Boxes inside battery (looking SW); South box on left 12/30/02

Vertical delineation with backhoe 3/22/04

Construction of new junction box 200 ft NE 9/26/03

Soil bore at south box 6/1/04

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
RICE OPERATING CO.
ATTN: KRISTIN FARRIS
122 W. TAYLOR
HOBBS, NM 88240
FAX TO: (505) 397-1471

Receiving Date: 03/22/04
Reporting Date: 03/23/04
Project Number: NOT GIVEN
Project Name: JCT. O-35
Project Location: EME

Sampling Date: 03/22/04
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: BC/AH

LAB NO.	SAMPLE ID	GRO (C_6-C_{10}) (mg/Kg)	DRO (>C_{10}-C_{28}) (mg/Kg)	Cl* (mg/Kg)
ANALYSIS DATE		03/22/04	03/22/04	03/23/04
H8550-1	NORTH BOX 12' BGS	<10.0	<10.0	160
H8550-2	SOUTH BOX 12' BGS	<10.0	<10.0	1070
H8550-3	33' EAST OF N. BOX 12' BGS	<10.0	<10.0	128
Quality Control		843	835	980
True Value QC		800	800	1000
% Recovery		105	104	98.0
Relative Percent Difference		5.6	1.1	2.0

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Cl^-: Std. Methods 4500-Cl^-B
*Analyses performed on 1:4 w:v aqueous extracts.

Chemist

3/23/04
Date

H8550.XLS

CARDINAL LABORATORIES, INC.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
(915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

Page____ of ____

Company Name:	RICE Operating	BILL TO	
Project Manager:	Kristin Farris	P.O. #:	
Address:	122 W. Taylor	Company:	
City:	Hobbs State: NM Zip: 88240	Attn:	
Phone #:	(505) 393-9174 Fax #: (505) 397-1471	Address:	
Project #:	Project Owner:	City:	
Project Name:	Jct. O-35	State: Zip:	
Project Location:	EME	Phone #:	
Sampler Name:	K. Farris	Fax #:	

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	PRESERV: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	ANALYSIS REQUEST: TPH 8015	Cl.
18550-1	North Box 12'bgs	G	1			X					X		3/22/04	10:00	X	X
-2	South Box 14'bgs	G	1			X					X		3/22/04	10:30	X	X
-3	33' East of North Box 12'bgs	G	1			X					X		3/22/04	11:00	X	X

BILL NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collection, including attorney's fees.

Sampler Relinquished:	Date:	Received By:	Phone Result:	☐ Yes	☐ No
Kristin Farris	Time:		Fax Result:	☐ Yes	☐ No
Relinquished By:	Date: 04/22/03	Received By: (Lab Staff)	REMARKS:		
Joe Stott	Time: 4:30				
Delivered By: (Circle One)	Sample Condition: Cool ☒ Yes ☐ No; Intact ☒ Yes ☐ No	CHECKED BY: (Initials)			
Sampler - UPS - Bus - Other:					

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476.

SOIL BORE

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
RICE OPERATING CO.
ATTN: KRISTIN FARRIS
122 W. TAYLOR
HOBBS, NM 88240
FAX TO: (505) 397-1471

Receiving Date: 06/03/04
Reporting Date: 06/03/04
Project Number: NOT GIVEN
Project Name: EME JCT O-35 @ 38'
Project Location: NOT GIVEN

Sampling Date: 06/01/04
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: BC/AH

LAB NO. SAMPLE ID	GRO (C_6-C_{10}) (mg/Kg)	DRO (>C_{10}-C_{28}) (mg/Kg)	Cl* (mg/Kg)
ANALYSIS DATE	06/03/04	06/03/04	06/03/04
H8780-1 EME JCT O-35 @ 38'	<10.0	<10.0	176
Quality Control	790	765	950
True Value QC	800	800	1000
% Recovery	98.8	98.2	95.0
Relative Percent Difference	0.9	7.2	6.0

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Cl: Std. Methods 4500-ClB
*Analysis performed on a 1:4 w:v aqueous extract.

Chemist

6/3/04
Date

H8780.XLS

CARDINAL LABORATORIES, INC.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
(915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

Page____ of ____

Company Name: RICE Operating	BILL TO
Project Manager: Kristin Farris	P.O. #:
Address: 122 W. Taylor	Company:
City: Hobbs State: NM Zip: 88240	Attn:
Phone #: (505) 393-9174 Fax #: (505) 397-1471	Address:
Project #: Project Owner:	City:
Project Name: EME Jct O-55 @ 38'	State: Zip:
Project Location:	Phone #:
Sampler Name: K. Farris	Fax #:

ANALYSIS REQUEST: TPH 8015 M; Cl

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	PRESERV: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME
H8780-1	EME Jct O-35 @ 38'	G	1			✓					✓		6-1-04	5:25

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analysis. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Terms and Conditions: Interest will be charged on all accounts over their 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collection, including attorney's fees.

Sampler Relinquished: Kristin Farris	Date:	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time:		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By: Donald Farris	Date:	Received By: (Lab Staff) Amy Hill	REMARKS:
	Time:		
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		Sample Condition: Cool: ☐ Yes ☐ No Intact: ☐ Yes ☐ No	CHECKED BY: (Initials)

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476.

RICE OPERATING COMPANY

122 WEST TAYLOR
HOBBS, NEW MEXICO 88240
PHONE: (505) 393-9174 FAX: (505) 397-1471

VOC FIELD TEST REPORT FORM

MINI RAE PLUS CLASSIC PHOTOIONIZATION GAS DETECTOR

MODEL NO: PGM 761S
CALIBRATION GAS
GAS COMPOSITION: ISOBUTYLENE
AIR
LOT NO: 02-22-30
EXP. DATE: 11/20/04
METER READING
ACCURACY: 99.8

SERIAL NO: 104412

100 PPM
BALANCE
FILL DATE: 5/20/03
ACCURACY: + or - 2%

SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE
EME	0-35	0	35	T20S	R36E

SAMPLE	PID RESULT	SAMPLE	PID RESULT
N. Box 5'bgp	194	S. Box 10'bgp	0
N. Box 6'bgp	144	S. Box 11'bgp	0
N. Box 7'bgp	31	S. Box 12'bgp	0
N. Box 8'bgp	17	S. Box 13'bgp	0
N Box 9'bgp	0	S. Box 14'bgp	0
N. Box 10'bgp	0		
N. Box 11'bgp	0		
N. Box 12'bgp	0		
S. Box 5'bgp	147		
S. Box 6'bgp	120		
S. Box 7'bgp	55		
S. Box 8'bgp	15		
S. Box 9'bgp	0		

I certify that I have calibrated the above instrument in accordance to the manufacture operation manual.

Jack Scott
Signature

3/22/04
Date

Current Photodocumentation

RICE *Operating Company* (ROC)
112 West Taylor Hobbs, NM 88240
Phone: (575) 393-9174 Fax: (575) 397-1471

EME O-35 South (1R427-142)

UL/O, Section 35, T20S, R36E

Facing north 5/28/2013

Facing south 5/28/2013

MULTIMED V1.01 DATE OF CALCULATIONS: 29-JUL-2013 TIME: 14:19:51

U. S. E N V I R O N M E N T A L P R O T E C T I O N A G E N C Y

E X P O S U R E A S S E S S M E N T

M U L T I M E D I A M O D E L

MULTIMED (Version 1.50, 2005)

1
Run options
--- -------

115 feet to ground water with 30.0 mm / year infiltration

580 mg/L initial
Chemical simulated is Chloride

Option Chosen Saturated and unsaturated zone models
Run was DETERMIN
Infiltration Specified By User: 3.050E-02 m/yr
Run was transient
Well Times: Find Maximium Concentration
Reject runs if Y coordinate outside plume
Reject runs if Z coordinate outside plume
Gaussian source used in saturated zone model
1
1
UNSATURATED ZONE FLOW MODEL PARAMETERS
(input parameter description and value)

NP	- Total number of nodal points	240
NMAT	- Number of different porous materials	1
KPROP	- Van Genuchten or Brooks and Corey	1
IMSHGN	- Spatial discretization option	1

NVFLAYR - Number of layers in flow model 1

OPTIONS CHOSEN
------- ------
Van Genuchten functional coefficients
User defined coordinate system
1

Layer information

LAYER NO.	LAYER THICKNESS	MATERIAL PROPERTY
1	35.00	1

DATA FOR MATERIAL 1
---- --- --------
VADOSE ZONE MATERIAL VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Saturated hydraulic conductivity	cm/hr	CONSTANT	3.60	-999.	-999.	-999.
Unsaturated zone porosity	--	CONSTANT	0.250	-999.	-999.	-999.
Air entry pressure head	m	CONSTANT	0.700	-999.	-999.	-999.
Depth of the unsaturated zone	m	CONSTANT	35.0	0.000	0.000	0.000

DATA FOR MATERIAL 1

VADOSE ZONE FUNCTION VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Residual water content	--	CONSTANT	0.116	-999.	-999.	-999.
Brook and Corey exponent,EN	--	CONSTANT	-999.	-999.	-999.	-999.
ALFA coefficient	1/cm	CONSTANT	0.500E-02	-999.	-999.	-999.
Van Genuchten exponent, ENN	--	CONSTANT	1.09	-999.	-999.	-999.

1

UNSATURATED ZONE TRANSPORT MODEL PARAMETERS

NLAY	- Number of different layers used		1
NTSTPS	- Number of time values concentration calc		40
DUMMY	- Not presently used		1
ISOL	- Type of scheme used in unsaturated zone		2
N	- Stehfest terms or number of increments		18
NTEL	- Points in Lagrangian interpolation		3
NGPTS	- Number of Gauss points		104
NIT	- Convolution integral segments		2
IBOUND	- Type of boundary condition		2
ITSGEN	- Time values generated or input		1
TMAX	- Max simulation time	--	0.0

WTFUN - Weighting factor -- 1.2

OPTIONS CHOSEN
------- ------
Convolution integral approach
Nondecaying pulse source
Computer generated times for computing concentrations
1

DATA FOR LAYER 1
---- --- -----
VADOSE TRANSPORT VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Thickness of layer	m	CONSTANT	35.0	-999.	-999.	-999.
Longitudinal dispersivity of layer	m	DERIVED	-999.	-999.	-999.	-999.
Percent organic matter	--	CONSTANT	0.000	-999.	-999.	-999.
Bulk density of soil for layer	g/cc	CONSTANT	1.99	-999.	-999.	-999.
Biological decay coefficient	1/yr	CONSTANT	0.000	-999.	-999.	-999.

1

CHEMICAL SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Solid phase decay coefficient	1/yr	DERIVED	-999.	-999.	-999.	-999.
Dissolved phase decay coefficient	1/yr	DERIVED	-999.	-999.	-999.	-999.
Overall chemical decay coefficient	1/yr	DERIVED	-999.	-999.	-999.	-999.
Acid catalyzed hydrolysis rate	1/M-yr	CONSTANT	0.000	-999.	-999.	-999.
Neutral hydrolysis rate constant	1/yr	CONSTANT	0.000	-999.	-999.	-999.
Base catalyzed hydrolysis rate	1/M-yr	CONSTANT	0.000	-999.	-999.	-999.
Reference temperature	C	CONSTANT	25.0	-999.	-999.	-999.
Normalized distribution coefficient	ml/g	CONSTANT	0.000	-999.	-999.	-999.
Distribution coefficient	--	DERIVED	-999.	-999.	-999.	-999.
Biodegradation coefficient (sat. zone)	1/yr	CONSTANT	0.000	-999.	-999.	-999.
Air diffusion coefficient	cm2/s	CONSTANT	-999.	-999.	-999.	-999.
Reference temperature for air diffusion	C	CONSTANT	-999.	-999.	-999.	-999.
Molecular weight	g/M	CONSTANT	-999.	-999.	-999.	-999.
Mole fraction of solute	--	CONSTANT	-999.	-999.	-999.	-999.
Vapor pressure of solute	mm Hg	CONSTANT	-999.	-999.	-999.	-999.

	Henry`s law constant	atm-m^3/M	CONSTANT	-999.	-999.
-999.	-999.				
	Overall 1st order decay sat. zone	1/yr	DERIVED	0.000	0.000
0.000	1.00				
	Not currently used		CONSTANT	0.000	0.000
0.000	0.000				
	Not currently used		CONSTANT	0.000	0.000
0.000	0.000				

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SOURCE SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS	
			MEAN	STD DEV
LIMITS				
MIN MAX				
Infiltration rate	m/yr	CONSTANT	0.305E-01	-999.
-999. -999.				
Area of waste disposal unit	m^2	DERIVED	892.	-999.
-999. -999.				
Duration of pulse	yr	CONSTANT	50.0	-999.
-999. -999.				
Spread of contaminant source	m	DERIVED	-999.	-999.
-999. -999.				
Recharge rate	m/yr	CONSTANT	0.000	-999.
-999. -999.				
Source decay constant	1/yr	CONSTANT	0.000	0.000
0.000 0.000				
Initial concentration at landfill	mg/l	CONSTANT	580.	-999.
-999. -999.				
Length scale of facility	m	CONSTANT	36.6	-999.
-999. -999.				
Width scale of facility	m	CONSTANT	24.4	-999.
-999. -999.				

	Near field dilution		DERIVED	1.00	0.000	
0.000	1.00					
1						

AQUIFER SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Particle diameter	cm	CONSTANT	-999.	-999.	-999.	-999.
Aquifer porosity	--	CONSTANT	0.300	-999.	-999.	-999.
Bulk density	g/cc	CONSTANT	1.86	-999.	-999.	-999.
Aquifer thickness	m	CONSTANT	6.10	-999.	-999.	-999.
Source thickness (mixing zone depth)	m	CONSTANT	3.18	-999.	-999.	-999.
Conductivity (hydraulic)	m/yr	CONSTANT	315.	-999.	-999.	-999.
Gradient (hydraulic)		CONSTANT	0.300E-02	-999.	-999.	-999.
Groundwater seepage velocity	m/yr	DERIVED	-999.	-999.	-999.	-999.
Retardation coefficient	--	DERIVED	-999.	-999.	-999.	-999.
Longitudinal dispersivity	m	FUNCTION OF X	-999.	-999.	-999.	-999.
Transverse dispersivity	m	FUNCTION OF X	-999.	-999.	-999.	-999.
Vertical dispersivity	m	FUNCTION OF X	-999.	-999.	-999.	-999.

	Temperature of aquifer	C	CONSTANT	20.0	-999.
-999.	-999.				
	pH	--	CONSTANT	7.00	-999.
-999.	-999.				
	Organic carbon content (fraction)		CONSTANT	0.000	-999.
-999.	-999.				
	Well distance from site	m	CONSTANT	1.00	-999.
-999.	-999.				
	Angle off center	degree	CONSTANT	0.000	-999.
-999.	-999.				
	Well vertical distance	m	CONSTANT	0.000	-999.
-999.	-999.				

MAXIMUM WELL CONCENTRATION IS 183.6 AT 0.276E+03 YEARS