1R-428-51

WORKPLANS

Date: 8-\3

Texerra LLC

20055 Laredo Lane Monument, CO 80132 Tel: 719-339-6791 E-mail: lpg@texetra.com

August 8th, 2013

Mr. Edward Hansen

New Mexico Energy, Minerals, & Natural Resources Oil Conservation Division, Environmental Bureau 1220 S. St. Francis Drive Santa Fe, New Mexico 87504

Re: Corrective Action Plan (CAP)

Rice Operating Company – Hobbs O-29 EOL UL O, Sec 29, T18S, R38E OCD Case No. 1R428-51

Sent via Certified Mail w/ Return Receipt No. 7007 2560 0001 9729 0683

Mr. Hansen:

This letter summarizes information gained from the NMOCD approved Investigation and Characterization Plan (ICP) of January 20th, 2010 for Rice Operating Company's Hobbs O-29 EOL project and proposes a Corrective Action Plan to protect groundwater from potential future impacts from residual chlorides and hydrocarbons.

The subject site is located in west Hobbs, New Mexico The apparent direction of groundwater flow is toward the southeast (See Appendix). The estimated depth to groundwater (the water table) is approximately 67 ft bgs.

A summary of analyses for residual soil chlorides and petroleum hydrocarbons is given in the Appendix. Petroleum hydrocarbons were significant only near the former junction box (in SB-1) near the surface and to a depth of 40 ft bgs (as evidenced by a field PID reading greater than 100). Total BTEX measured 9.24 mg/kg at 5 ft bgs and 2.80mg/kg at 40 ft bgs. Petroleum hydrocarbons were essentially insignificant in all of the other soil borings. Residual soil chlorides decreased with depth to 352 mg/kg at 70 ft bgs in SB-1, 96 mg/kg at 65 ft in SB-2, 416 mg/kg at 40 ft in SB-3, 768 mg/kg at 40 ft in SB-4, and 464 mg/kg at 40 ft in SB-5.

Although these levels of residual soil chlorides and hydrocarbons are not high, we nevertheless propose to install an impermeable, synthetic subsurface liner to protect groundwater from potential future impacts. Subject to your approval, we propose to undertake the following actions:

- 1- Excavate chloride-impacted soil over an area of approximately 52 ft x 52 ft and to a depth of approximately 4-5 ft bgs. This area extends 5 ft in all directions beyond each of the soil bores.
- 2- Install and properly seat a 20-mil, reinforced poly liner over a prepared bed of approximately 6 inches of clean blow sand, and carefully secure the liner with another 6 inches of clean blow sand below the liner.

Rice Operating Company - Hobbs O-29 EOL

- 3- Backfill the remaining excavation with soil material having a chloride concentration no greater than 500 mg/kg and a field measurement of residual hydrocarbons no greater than 100 ppm. Any excess or soil material exceeding these standards will be properly disposed of at an NMOCD approved facility.
- 4- Restore the surface to natural grade, add amendments and seed with a blend of native vegetation mix, as necessary. Vegetation above the liner will also provide a natural infiltration barrier for the site since plants capture water through their roots thereby reducing the volume of water moving through the vadose zone to groundwater.

The MultiMed simulation model was run to estimate whether residual chlorides pose a potential threat to groundwater quality following the installation of the liner. Input parameter values are given in the Appendix where the infiltration parameter value used is that of a "good" liner (0.00762 m/yr). The projected maximum potential impact (increase) in groundwater chloride concentration 1 m downgradient from the former junction box (EOL) is 79 +/- mg/L at approximately 176 +/- years into the future (Appendix – MultiMed Chloride graph and report).

The MultiMed simulation model was also run to estimate whether residual soil BTEX poses a potential threat to groundwater quality following the installation of the liner. Input parameter values are given in the Appendix where the infiltration parameter value used is indicative of no liner (0.03048 m/yr). The projected maximum potential impact (increase) in groundwater BTEX concentration beneath the former junction box (EOL) is 0.0029+/- mg/L at approximately 41 +/- years into the future (Appendix – MultiMed BTEX graph and report). This total BTEX value is less than the WQCC standard for each of the BTEX constituents (0.010 mg/l for benzene, 0.750 mg/l for toluene, 0.750 mg/l for ethylbenzene and 0.620 for xylenes).

These MultiMed simulations indicate that residual chloride and BTEX will not, in any way, affect groundwater quality beneath the site. Therefore, upon completion of the vadose zone remediation, ROC will submit a written report providing documentation of CAP activities, and, in this report, request remediation termination status for this project.

ROC is the service provider (agent) for the Hobbs 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.

Please do not hesitate to contact either Rice Operating Company or myself if you have any questions or need additional information.

Thank you for your consideration.

Sincerely,

L. Peter Galusky, Jr. Ph.D.

Principal

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Rice Operating Company - Hobbs O-29 EOL

Copy: Rice Operating Company

APPENDIX

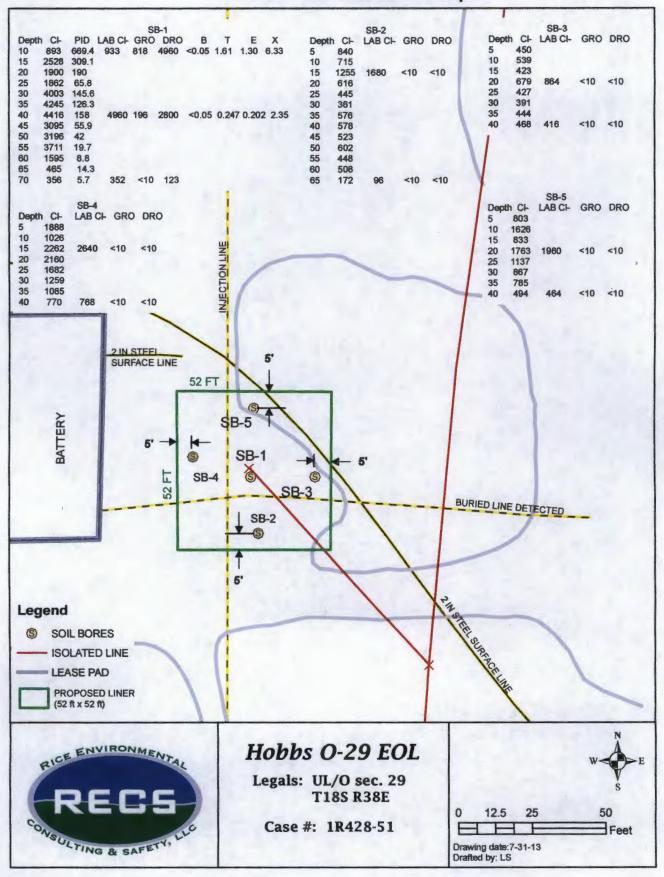
- ✓ Site Location Map
- ✓ Liner Installation Map with Soil Bore Sampling Summary
- ✓ MultiMed Chloride Parameter Input Values
- ✓ MultiMed Chloride Graph
- ✓ MultiMed Chloride Report
- ✓ MultiMed BTEX Parameter Input Values
- ✓ MultiMed BTEX Graph
- ✓ MultiMed BTEX Report

Texerra LLC 3

Site Location

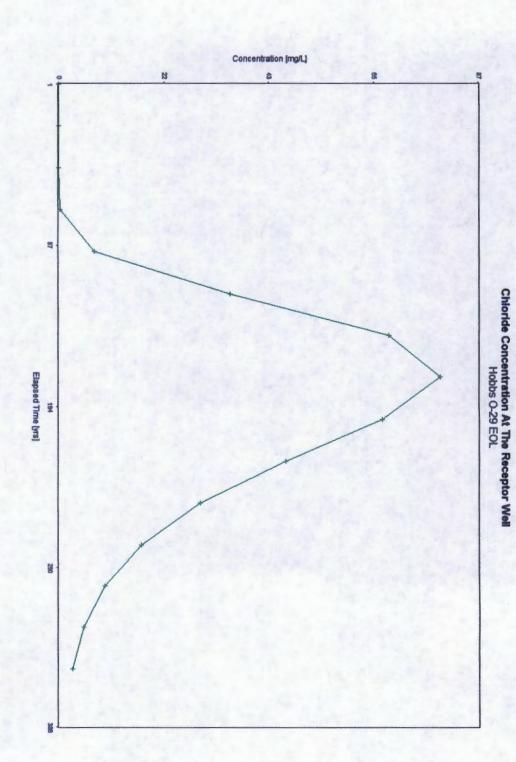


Liner Installation Map



MultiMed Input Parameter Values for Residual Soil Chlorides

t				tor Kesidual	our cino:	ides
	Title	Gen	erai	-	-	Hobbs O-29 EOL
	Application Type		-			
	Run Type	_	\vdash			Generic Deterministic
1	Source Type		-			Transient
	Aquifer Source Patch		Н			Gaussian
	Active Modules	_	Н			Unsaturated Zone
ا ْ	Active Modules	_				Saturated Zone Saturated Zone
<u> </u>	L			L		Saturated Zone
 -	Source Area	Sou	ice	261.21	^2	0.05
$\overline{}$		52	<u></u>	251.21 15.85	m^2	
	Source Length Source Width	52	_		m	Length Width
_	Source Infiltration Rate	0.3		15.85 0.00762	m	
_		0.3	m	0.00762		Good liner
	Outside Recharge Rate		Н		m/yr	Average Cl-
1						Concentration (Lab
١,,	Luisial I analysis Companyorian			1.276	/1	
	Initial Leachate Concentration		H	1,376	mg/L	Results)
	Source Duration		-		yrs 1/	Derive
	Source Decay Coefficient		\vdash		l/yr	2.5%
13	Initial Spread of Source		إحبا		m	Derive
-	In	Chen	nica			
	Chemical Name	-	\vdash		L	Chloride
	Dissolved Decay Coefficients		\vdash		1/yr	Derive
	Sorbed Phase Decay Coef.		<u> </u>		1/yr	Derive
	Overall Aquifer Decay Coef.		_		l/yr	Derive
	Acid Catalyzed Rate		L_		l/mole-yr	0
	Neutral Rate				l/yr	0
	Base Catalyzed Rate				l/mole-yr	0,
23	Reference Temperature				deg C	25
	Normalized Distribution Coef.				ml/g	0
25	Aquifer Distribution Coef.				ml/g	Derive
26	Flow Layer Thickness	16	Ð	4.88	m	Difference average depth and depth to GW
	Saturated Hydraulic Conductivity		11	4.00	cm/hr	3.6
	Effective Porosity		-		fraction	0.25
	Air Entry Pressure Head		-		m	0.23
	Residual Water Content	_	\vdash		fraction	0.116
	van Genuchten Alpha				1/cm	0.005
	van Genuchten Beta				fraction	1.09
_	Brooks and Corey Exponent		-		fraction	1.07
۳		saturated Z	one	Transport	naction	
\vdash						Difference average depth and depth to
	Transport Layer Thickness	16	ft	4.88	m	GW
	Longitudinal Dispersivity					U#
36					m	Derive
	Percent Organic Matter					Derive 0
	Bulk Density				m	
					m %	Derive 0
38	Bulk Density Biological Decay Coefficient	Saturated 2		Flow	m % g/cm^3	Derive 0 1,99
38	Bulk Density Biological Decay Coefficient Aquifer Thickness	Saturated 2		Flow 6.10	m % g/cm^3	Derive 0 1,99
38	Bulk Density Biological Decay Coefficient			y	m % g/cm^3 1/yr	Derive 0 1.99 0
38 39 40	Bulk Density Biological Decay Coefficient Aquifer Thickness			y	m % g/cm^3 1/yr m	Derive 0 1.99 0 Aquifer Thickness
39 40 41 42	Bulk Density Biological Decay Coefficient Aquifer Thickness Mixing Zone Thickness Effective Porosity Bulk Density			y	m % g/cm^3 1/yr m m	Derive 0 1.99 0 Aquifer Thickness Derive 0.3 1.855
39 40 41 42 43	Bulk Density Biological Decay Coefficient Aquifer Thickness Mixing Zone Thickness Effective Porosity Bulk Density Saturated Hydraulic Conductivity			y	m % g/cm^3 1/yr m m fraction	Derive 0 1.99 0 Aquifer Thickness Derive 0.3 1.855
39 40 41 42 43 44	Bulk Density Biological Decay Coefficient Aquifer Thickness Mixing Zone Thickness Effective Porosity Bulk Density Saturated Hydraulic Conductivity Hydraulic Gradient			y	m % g/cm^3 1/yr m fraction g/cm^3	Derive 0 1.99 0 Aquifer Thickness Derive 0.3 1.855
39 40 41 42 43 44 45	Bulk Density Biological Decay Coefficient Aquifer Thickness Mixing Zone Thickness Effective Porosity Bulk Density Saturated Hydraulic Conductivity Hydraulic Gradient Seepage Velocity			y	m % g/cm^3 1/yr m m fraction g/cm^3 n/yr	Derive 0 1.99 0 Aquifer Thickness Derive 0.3 1.855 315
39 40 41 42 43 44 45	Bulk Density Biological Decay Coefficient Aquifer Thickness Mixing Zone Thickness Effective Porosity Bulk Density Saturated Hydraulic Conductivity Hydraulic Gradient			y	m % g/cm^3 1/yr m fraction g/cm^3 m/yr fraction	Derive 0 1.99 0 Aquifer Thickness Derive 0.3 1.855 315 0.003
38 40 41 42 43 44 45	Bulk Density Biological Decay Coefficient Aquifer Thickness Mixing Zone Thickness Effective Porosity Bulk Density Saturated Hydraulic Conductivity Hydraulic Gradient Seepage Velocity			y	m % g/cm^3 1/yr m fraction g/cm^3 m/yr fraction m/yr	Derive 0 1.99 0 Aquifer Thickness Derive 0.3 1.855 315 0.003 Derive Derive Derive
38 40 41 42 43 44 45 46 47	Bulk Density Biological Decay Coefficient Aquifer Thickness Mixing Zone Thickness Effective Porosity Bulk Density Saturated Hydraulic Conductivity Hydraulic Gradient Seepage Velocity Longitudinal Dispersivity			y	m % g/cm^3 1/yr m fraction g/cm^3 m/yr fraction m/yr m	Derive 0 1.99 0 Aquifer Thickness Derive 0.3 1.855 315 0.003 Derive
389 400 411 422 433 444 455 466 477 488 49	Bulk Density Biological Decay Coefficient Aquifer Thickness Mixing Zone Thickness Effective Porosity Bulk Density Saturated Hydraulic Conductivity Hydraulic Gradient Seepage Velocity Longitudinal Dispersivity Transverse Dispersivity Vertical Dispersivity Aquifer Temperature			y	m % g/cm^3 1/yr m m fraction g/cm^3 m/yr fraction m/yr m m m	Derive 0 1.99 0 Aquifer Thickness Derive 0.3 1.855 315 0.003 Derive Derive Derive
389 40 411 422 433 444 45 46 47 48 49 50	Bulk Density Biological Decay Coefficient Aquifer Thickness Mixing Zone Thickness Effective Porosity Bulk Density Saturated Hydraulic Conductivity Hydraulic Gradient Seepage Velocity Longitudinal Dispersivity Transverse Dispersivity Vertical Dispersivity Aquifer Temperature Aquifer pH			y	m % g/cm^3 1/yr m m fraction g/cm^3 m/yr fraction m/yr m m m m m m m m m m	Derive 0 1.99 0
389 40 411 422 433 444 45 46 47 48 49 50	Bulk Density Biological Decay Coefficient Aquifer Thickness Mixing Zone Thickness Effective Porosity Bulk Density Saturated Hydraulic Conductivity Hydraulic Gradient Seepage Velocity Longitudinal Dispersivity Transverse Dispersivity Vertical Dispersivity Aquifer Temperature			y	m % g/cm^3 1/yr m m fraction g/cm^3 m/yr fraction m/yr m m m m m m m m m m	Derive 0 1.99 0 Aquifer Thickness Derive 0.3 1.855 315 0.003 Derive Derive Derive Derive 20 7
388 399 400 411 422 433 444 455 466 477 488 499 500 511	Bulk Density Biological Decay Coefficient Aquifer Thickness Mixing Zone Thickness Effective Porosity Bulk Density Saturated Hydraulic Conductivity Hydraulic Gradient Seepage Velocity Longitudinal Dispersivity Transverse Dispersivity Vertical Dispersivity Aquifer Temperature Aquifer pH			y	m % g/cm^3 l/yr m m fraction g/cm^3 m/yr fraction m/yr m m deg C	Derive 0 1.99 0 Aquifer Thickness Derive 0.3 1.855 315 0.003 Derive Derive Derive Derive 20 7
388 399 400 411 422 433 444 455 466 477 488 500 511 522	Bulk Density Biological Decay Coefficient Aquifer Thickness Mixing Zone Thickness Effective Porosity Bulk Density Saturated Hydraulic Conductivity Hydraulic Gradient Seepage Velocity Longitudinal Dispersivity Transverse Dispersivity Vertical Dispersivity Aquifer Temperature Aquifer pH Fraction Organic Carbon			y	m % g/cm^3 1/yr m m fraction g/cm^3 m/yr fraction m/yr m m deg C fraction	Derive 0 1.99 0 Aquifer Thickness Derive 0.3 1.855 315 0.003 Derive Derive Derive 20 7 0 Derive
388 399 400 411 422 433 444 455 466 477 488 500 511 522	Bulk Density Biological Decay Coefficient Aquifer Thickness Mixing Zone Thickness Effective Porosity Bulk Density Saturated Hydraulic Conductivity Hydraulic Gradient Seepage Velocity Longitudinal Dispersivity Transverse Dispersivity Vertical Dispersivity Aquifer Temperature Aquifer pH Fraction Organic Carbon Retardation Factor Biological Decay Coefficient		fi	6.10	m % g/cm^3 1/yr m m fraction g/cm^3 m/yr fraction m/yr fraction m/yr deg C fraction fraction fraction fraction	Derive 0 1.99 0 Aquifer Thickness Derive 0.3 1.855 315 0.003 Derive Derive Derive 20 7 0 Derive
38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53	Bulk Density Biological Decay Coefficient Aquifer Thickness Mixing Zone Thickness Effective Porosity Bulk Density Saturated Hydraulic Conductivity Hydraulic Gradient Seepage Velocity Longitudinal Dispersivity Transverse Dispersivity Vertical Dispersivity Aquifer Temperature Aquifer pH Fraction Organic Carbon Retardation Factor Biological Decay Coefficient	20	fi	6.10	m % g/cm^3 1/yr m m fraction g/cm^3 m/yr fraction m/yr fraction m/yr deg C fraction fraction fraction fraction	Derive 0 1.99 0 Aquifer Thickness Derive 0.3 1.855 315 0.003 Derive Derive Derive 20 7 0 Derive 0 Derive
388 399 400 411 422 433 444 455 466 477 488 499 500 511 522 533	Bulk Density Biological Decay Coefficient Aquifer Thickness Mixing Zone Thickness Effective Porosity Bulk Density Saturated Hydraulic Conductivity Hydraulic Gradient Seepage Velocity Longitudinal Dispersivity Transverse Dispersivity Vertical Dispersivity Vertical Dispersivity Aquifer Temperature Aquifer pH Fraction Organic Carbon Retardation Factor Biological Decay Coefficient	20	fi	6.10	m % g/cm^3 l/yr m m fraction g/cm^3 m/yr fraction m/yr m deg C fraction fraction	Derive 0 1.99 0 Aquifer Thickness Derive 0.3 1.855 315 0.003 Derive Derive Derive 20 7 0 Derive 0
389 40 411 422 433 444 455 46 477 50 51 52 53	Bulk Density Biological Decay Coefficient Aquifer Thickness Mixing Zone Thickness Effective Porosity Bulk Density Saturated Hydraulic Conductivity Hydraulic Gradient Seepage Velocity Longitudinal Dispersivity Transverse Dispersivity Vertical Dispersivity Vertical Dispersivity Aquifer Temperature Aquifer pH Fraction Organic Carbon Retardation Factor Biological Decay Coefficient V Radial Distance to Well Angle Off Plume Axis	20	fi	6.10	m % g/cm^3 1/yr m m fraction g/cm^3 m/yr fraction m/yr m m deg C fraction fraction 1/yr	Derive 0 1.99 0 1.99 0 1.99 0 1.99 0 1.855 315 0.003 Derive Derive Derive Derive Derive 20 7 0 0 Derive 0 0 0 0 0 1 0 0 0 1 0 0
399 400 411 422 433 444 455 466 477 488 499 500 511 522 533 545 555 566	Bulk Density Biological Decay Coefficient Aquifer Thickness Mixing Zone Thickness Effective Porosity Bulk Density Saturated Hydraulic Conductivity Hydraulic Gradient Seepage Velocity Longitudinal Dispersivity Transverse Dispersivity Vertical Dispersivity Vertical Dispersivity Aquifer Temperature Aquifer pH Fraction Organic Carbon Retardation Factor Biological Decay Coefficient	20	fi	6.10	m % g/cm^3 l/yr m m fraction g/cm^3 m/yr fraction m/yr m m deg C fraction fraction fraction fraction fraction fraction fraction fraction fraction m/yr	Derive 0 1.99 0 1.99 0 1.99 0 1.99 0 1.855 315 0.003 Derive Derive Derive Derive Derive 20 7 0 0 Derive 0 0 0 0 0 1 0 0 0 1 0 0
399 400 411 422 433 444 455 466 477 488 499 500 511 522 533 544 555 566	Bulk Density Biological Decay Coefficient Aquifer Thickness Mixing Zone Thickness Effective Porosity Bulk Density Saturated Hydraulic Conductivity Hydraulic Gradient Seepage Velocity Longitudinal Dispersivity Transverse Dispersivity Vertical Dispersivity Aquifer Temperature Aquifer pH Fraction Organic Carbon Retardation Factor Biological Decay Coefficient V Radial Distance to Well Angle Off Plume Axis Well Screen Depth Fraction	20	fi	6.10	m % g/cm^3 l/yr m m fraction g/cm^3 m/yr fraction m/yr m m deg C fraction fraction fraction fraction fraction fraction fraction fraction fraction m/yr	Derive 0 1.99 0 1.99 0 1.99 0 1.99 0 1.99 0 1.95 1.855 3.15 0.003 Derive Derive Derive Derive Derive 2.00 7 0 0 0 1.00 0 0 0 0 0 0 0 0 0



MULTIMED V1.01 DATE OF CALCULATIONS: 31-JUL-2013 TIME: 14: 7:37

U.S. ENVIRONMENTAL PROTECTION AGENCY

EXPOSURE ASSESSMENT

MULTIMEDIA MODEL

MULTIMED (Version 1.50, 2005)

1 Run options

Hobbs 0-29 EOL

1R428-51

Chemical simulated is Chloride

Option Chosen Saturated and unsaturated zone models Run was DETERMIN Infiltration Specified By User: 7.620E-03 m/yr Run was transient

Well Times: Entered Explicitly

Reject runs if Y coordinate outside plume Reject runs if Z coordinate outside plume Gaussian source used in saturated zone model

UNSATURATED ZONE FLOW MODEL PARAMETERS (input parameter description and value)

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

OPTIONS CHOSEN

Van Genuchten functional coefficients User defined coordinate system

Layer information -----

LAYER NO. LAYER THICKNESS MATERIAL PROPERTY 4.88 1

VADOSE ZONE MATERIAL VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARA MEAN	AMETERS STD DEV	LI	MITS MAX	- Man Man, Majo yake Man Man Man
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	4.88	0.000	0.000	0.000	

DATA FOR MATERIAL 1

VADOSE ZONE FUNCTION VARIABLES

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

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	3
ITSGEN	-	Time values generated or input	1
TMAX	-	Max simulation time	0.0
WTFUN	-	Weighting factor	1.2

OPTIONS CHOSEN

1

Convolution integral approach
Exponentially decaying continuous source
Computer generated times for computing concentrations

DATA FOR LAYER 1

VADOSE TRANSPORT VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS		
			MEAN	STD DEV	MIN	XAM	
Thickness of layer	m	CONSTANT	4.88	-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.	

CHEMICAL SPECIFIC VARIABLES

VARIABLE NAME	UNITS DISTRIBUTION			 METERS	T.T	MITS
VARIABLE NAME	ONIIS	DISTRIBUTION	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	l/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

SOURCE SPECIFIC VARIABLES

VARIABLE NAME	UNITS	UNITS DISTRIBUTION		ETERS	LIMITS	
			MEAN	STD DEV	MIN	MAX
Infiltration rate	m/yr	CONSTANT	0.762E-02	-999.	-999.	-999.
Area of waste disposal unit	m^2	DERIVED	251.	-999.	-999.	-999.
Duration of pulse	yr	DERIVED	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	0.250E-01	0.000	0.000	0.000
Initial concentration at landfill	mg/l	CONSTANT	0.138E+04	-999.	-999.	-999.
Length scale of facility	m	CONSTANT	15.9	-999.	-999.	-999.
Width scale of facility	m	CONSTANT	15.9	-999.	-999.	-999.
Near field dilution		DERIVED	1.00	0.000	0.000	1.00

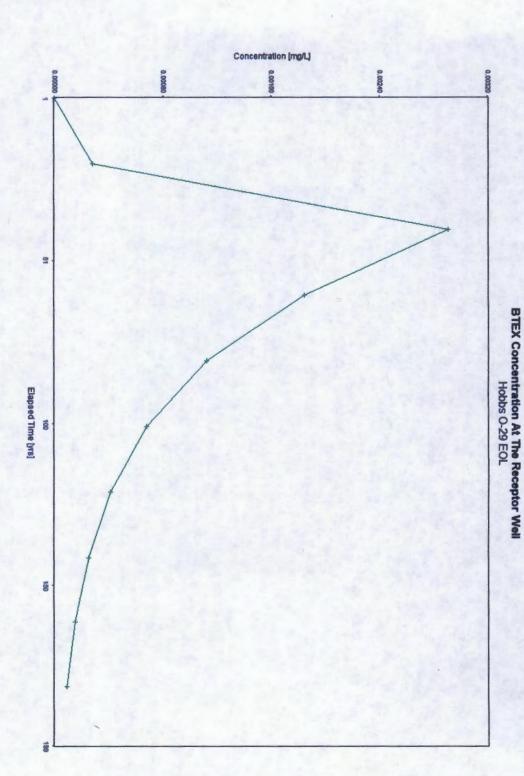
1

VARIABLE NAME	UNITS DISTRIBUTION		PARAM	ETERS	LIMITS	
	31.22		MEAN	STD DEV	MIN	MAX
Particle diameter	cm	CONSTANT	-999.	-999.	-999 .	-999.
Aquifer porosity		CONSTANT	0.300	-999.	-999.	-999,
Bulk density	q/cc	CONSTANT	1.86	-999.	-999.	-999.
Aquifer thickness	m	CONSTANT	6.10	-999.	-999.	-999.
Source thickness (mixing zone depth)	m	DERIVED	-999.	-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	С	CONSTANT	20.0	-999.	-999.	-999.
Н		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.

TIME C	ONCENTRATION
0.100E+01	0.00000E+00
0.260E+02	0.00000E+00
0.510E+02	0.00000E+00
0.760E+02	0.23289E+00
0.101E+03	0.73163E+01
0.126E+03	0.35396E+02
0.151E+03	0.68151E+02
0.176E+03	0.78892E+02
0.201E+03	0.66805E+02
0.226E+03	0.46831E+02
0.251E+03	0.29301E+02
0.276E+03	0.17033E+02
0.301E+03	0.95431E+01
0.326E+03	0.52286E+01
0.351E+03	0.28310E+01

MultiMed Input Parameter Values for Residual Soil BTEX

MultiMed Input Par			s for Residu	al Soil BTE	LX
1 Title	Gen	erai			Hobbs O-29 EOL
2 Application Type	_	\vdash			Generic
3 Run Type	+-	1			Deterministic
4 Source Type					Transient
5 Aquifer Source Patch					Gaussian
6 Active Modules					Unsaturated Zone
					Saturated Zone
	Sou	rce			
7 Source Area		_	251.21	m^2	Area
8 Source Length	52		15.85	m	Length
9 Source Width	52	-	15.85	m	Width
10 Source Infiltration Rate 11 Outside Recharge Rate	1.2	lin_	0.03048	mar	No liner
11 Outside Recharge Rate		\vdash		m/yr	Highest BTEX
12 Initial Leachate Concentration		l	6.33	mg/L	concentration
13 Source Duration	+	-	0.35	yrs	Derive
14 Source Decay Coefficient	+-	\vdash		1/yr	2.5%
15 Initial Spread of Source		_		m	Derive
	Cher	nica	i		
16 Chemical Name	T				BTEX
17 Dissolved Decay Coefficients				1/yr	20%
18 Sorbed Phase Decay Coef.				1/yr	20%
19 Overall Aquifer Decay Coef.			L	l/yr	Derive
20 Acid Catalyzed Rate		_		l/mole-yr	0
21 Neutral Rate		_		l/yr	0
22 Base Catalyzed Rate				l/mole-yr	0
23 Reference Temperature	+	⊢		deg C	25
24 Normalized Distribution Coef.	+	-		ml/g	0
25 Aquifer Distribution Coef.		L	L	ml/g	Derive
	1	T.	T		Difference average depth and depth to
26 Flow Layer Thickness	16	ft	4.88	m	GW
27 Saturated Hydraulic Conductivity		_		cm/hr	3.6
28 Effective Porosity	+	-		fraction	0.25
29 Air Entry Pressure Head 30 Residual Water Content		-		fraction	0.7 0.116
31 van Genuchten Alpha	+	-		1/cm	0.005
32 van Genuchten Beta	+	-	-	fraction	1.09
33 Brooks and Corey Exponent	+	-		fraction	
	turated Z	one	Transport	- Luciion	
	16	$\overline{}$	4.88		Difference average depth and depth to
34 Transport Layer Thickness 35 Longitudinal Dispersivity	10	11	4.88	m m	Gw Derive
36 Percent Organic Matter		\vdash		%	0
37 Bulk Density		\vdash		g/cm^3	1.99
38 Biological Decay Coefficient		\vdash		1/yr	0
S	aturated.	Zone	Flow		
39 Aquifer Thickness	20	ft	6.10	m	Aquifer Thickness
40 Mixing Zone Thickness				m	Derive
41 Effective Porosity				fraction	0.3
42 Bulk Density				g/cm^3	1.855
43 Saturated Hydraulic Conductivity		L-		m/yr	315
44 Hydraulic Gradient		-		fraction	0.003
45 Seepage Velocity	+	-		m/yr	Derive
46 Longitudinal Dispersivity 47 Transverse Dispersivity	+-	-		m m	Derive Derive
48 Vertical Dispersivity	+	-		m	Derive
49 Aquifer Temperature	-	\vdash	 	deg C	20
50 Aquifer pH		<u> </u>		u g	7
51 Fraction Organic Carbon	1			fraction	0
52 Retardation Factor				fraction	Derive
53 Biological Decay Coefficient				1/yr	0
	ell Locati	on a	nd Time		
54 Radial Distance to Well				m	1
55 Angle Off Plume Axis		_		degree	0
56 Well Screen Depth Fraction		_		fraction	0
57 Time Step Option		1			Max Concentration
					rest -
					Time Intervals



MULTIMED V1.01 DATE OF CALCULATIONS: 31-JUL-2013 TIME: 14:47:32

U.S. ENVIRONMENTAL PROTECTION AGENCY

EXPOSURE ASSESSMENT

MULTIMEDIA MODEL

MULTIMED (Version 1.50, 2005)

Run options

Hobbs 0-29 EOL

1R428-51

Chemical simulated is BTEX

Saturated and unsaturated zone models Option Chosen Run was DETERMIN Infiltration Specified By User: 3.048E-02 m/yr Run was transient Well Times: Entered Explicitly Reject runs if Y coordinate outside plume Reject runs if Z coordinate outside plume Gaussian source used in saturated zone model UNSATURATED ZONE FLOW MODEL PARAMETERS (input parameter description and value) NP - Total number of nodal points 240 NMAT - Number of different porous materials KPROP - Van Genuchten or Brooks and Corey 1 IMSHGN - Spatial discretization option NVFLAYR - Number of layers in flow model

OPTIONS CHOSEN

Van Genuchten functional coefficients User defined coordinate system

Layer information

LAYER NO. LAYER THICKNESS MATERIAL PROPERTY

1 4.88 1

VADOSE ZONE MATERIAL VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARA MEAN	AMETERS STD DEV	MIN	MITS MAX	
Saturated hydraulic conductivity Unsaturated zone porosity Air entry pressure head Depth of the unsaturated zone	cm/hr m m	CONSTANT CONSTANT CONSTANT CONSTANT	3.60 0.250 0.700 4.88	-999. -999. -999. 0.000	-999. -999. -999. 0.000	-999. -999. -999. 0.000	

DATA FOR MATERIAL 1

VADOSE ZONE FUNCTION VARIABLES

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

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	3
ITSGEN	-	Time values generated or input	1
XAMT	-	Max simulation time	0.0
WTFUN	-	Weighting factor	1.2

OPTIONS CHOSEN

1

Convolution integral approach
Exponentially decaying continuous source
Computer generated times for computing concentrations

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS		
			MEAN	STD DEV	MIN	MAX	
Thickness of layer	m	CONSTANT	4.88	-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.	

CHEMICAL SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LI	MITS	
			MEAN	STD DEV	MIN	MAX	
0.111.	1 /	CONORDIA	0.000	000		000	
Solid phase decay coefficient	1/yr	CONSTANT	0.200	-999.	-999.	-999.	
Dissolved phase decay coefficient	1/yr	CONSTANT	0.200	-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	С	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	С	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	

SOURCE SPECIFIC VARIABLES

VARIABLE NAME	UNITS	UNITS DISTRIBUTION		 ETERS	LIMITS	
	33.223		MEAN	STD DEV	MIN	MAX
Infiltration rate	m/yr	CONSTANT	0.305E-01	-999.	-999.	-999.
Area of waste disposal unit	m^2	DERIVED	251.	-999.	-999.	-999.
Duration of pulse	yr	DERIVED	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	0.250E-01	0.000	0.000	0.000
Initial concentration at landfill	mg/l	CONSTANT	6.33	-999.	-999.	-999.
Length scale of facility	m	CONSTANT	15.9	-999.	-999.	-999.
Width scale of facility	m	CONSTANT	15.9	-999.	-999.	-999.
Near field dilution		DERIVED	1.00	0.000	0.000	1.00

1

VARIABLE NAM	ME UNITS	DISTRIBUTION	PAR	PARAMETERS		4ITS	
			MEAN	STD DEV	MIN	XAM	

VARIABLE NAME	UNITS	UNITS DISTRIBUTION		PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	XAM	
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	DERIVED	-999.	-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	С	CONSTANT	20.0	-999.	-999.	-999.	
рН		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.	

TIME	C	ONÇE	NTR	AT	ION
0.100E+	-01	0.0	000	0E+	-00
0.210E+	-02	0.2	805	4E-	-03
0.410E+	-02	0.2	909	9E-	-02
0.610E+	-02	0.1	845	5E-	-02
0.810E+	-02	0.1	122	2E-	-02
0.101E+	-03	0.6	803	5E-	-03
0.121E+	-03	0.4	133	9E-	-03
0.141E+	-03	0.2	501	3E-	-03
0.161E+	-03	0.1	515	8E-	-03
0.181E+	-03	0.9	158	0E-	-04

Hansen, Edward J., EMNRD

From: Katie Jones <kjones@riceswd.com>
Sent: Tuesday, August 27, 2013 2:04 PM

To: Hansen, Edward J., EMNRD

Cc: Hack Conder; L Peter Galusky; Laura Pena

Subject:ROC - Hobbs O-29 EOL (1R428-51) CAP AddendumAttachments:ROC - Hobbs O-29 EOL (1R428-51) Proposed Liner.jpg

Mr. Hansen,

This email is an Addendum to the Hobbs O-29 EOL (1R428-51) Corrective Action Plan (CAP), submitted to the NMOCD on August 8, 2013. Pages 1 and 2, paragraph 4, points 1-4: text in blue lettering, below, will be added to the paragraph. Red lettering marked with a strike-through will be deleted. A plat showing the updated liner dimensions is attached.

"Although these levels of residual soil chlorides and hydrocarbons are not high, we nevertheless propose to install an impermeable, synthetic subsurface liner to protect groundwater from potential future impacts. Subject to your approval, we propose to undertake the following actions:

- 1- Excavate chloride-impacted soil over an area of approximately 52 ft x 52 ft and to a depth of approximately 4-5 ft bgs. surrounding the O-29 EOL site. There are pipelines running through the site preventing the installation of a single liner; a buried injection line running north-south and a buried pipeline running east-west. In order to remain a safe distance from those pipelines, ROC will excavated four separate areas to a depth of 4-5 ft bgs and install four separate 20 mil, reinforced liners. Each liner extends 5 ft in all directions beyond each of the soil bores. The northwest liner will measure approximately 34x14-ft, the northeast liner will measure approximately 33x32-ft, the southwest liner will measure approximately 12x14-ft, and the southeast liner will measure approximately 13x32-ft. Each excavation will remain at least 3 ft or a safe distance away from the pipelines.
- 2- Install and properly seat a 20-mil, reinforced poly liner in each of the excavationsover a prepared bed of approximately 6 inches of clean blow sand, and carefully secure the liner with another 6 inches of clean blow sand below the liner.
- 3- Backfill the remaining excavations with soil material having a chloride concentration no greater than 500 mg/kg and a field measurement of residual hydrocarbons no greater than 100 ppm. Any excess or soil material exceeding these standards will be properly disposed of at an NMOCD approved facility.
- 4- Restore the surface to natural grade, add amendments and seed with a blend of native vegetation mix, as necessary. Vegetation above the liner will also provide a natural infiltration barrier for the site since plants capture water through their roots thereby reducing the volume of water moving through the vadose zone to groundwater."

If you need any further information, please let me or Hack know.

Thank you.

Katie Jones Environmental Project Manager RICE Operating Company

Soil Bore Installation and Proposed Liner Depth CI-Depth Cl-PID LAB CI- GRO DRO Depth CI-LAB CI-GRO DRO B E LAB CI- GRO DRO 893 450 669.4 933 818 4960 < 0.05 1.61 1.30 6.33 840 10 10 539 15 2528 309.1 10 715 20 1900 190 1680 423 15 1255 <10 <10 20 25 25 30 679 864 <10 <10 1862 65.8 20 616 4003 25 427 145.6 445 35 391 4245 126.3 30 35 40 45 50 55 60 65 361 444 4416 158 4960 196 2800 < 0.05 0.247 0.202 2.35 576 45 416 <10 3095 <10 55.9 578 50 3196 523 55 3711 19.7 602 60 1595 8.8 448 65 465 14.3 508 356 5.7 352 <10 123 <10 <10 SB-5 SB-4 Depth CI-LAB CI-GRO DRO Depth CI-LAB CH GRO DRO 803 1888 10 1626 10 1026 15 833 2282 15 2640 <10 <10 1763 1960 <10 20 25 30 2160 1137 1682 867 1259 35 785 1085 464 494 <10 <10 770 768 <10 <10 SURFACE LINE 32 ft 14 ft 34 ft BATTERY **SB-5** 33 ft SB-1 5' SB BURIED LINE DETECTED SB-2 12 ft 13 ft 14 ft 32 ft Stay 3 ft away from lines Legend SOIL BORES ISOLATED LINE LEASE PAD 20 MIL REINFORCED POLY LINER Hobbs O-29 EOL Legals: UL/O sec. 29 T18S R38E 25 50 CONSULTING & SAFET 12.5 Case #: 1R428-51 Drawing date: 8/23/13 Drafted by: L. Weinheimer

MULTIMED V1.01 DATE OF CALCULATIONS: 3-SEP-2013 TIME: 15:16:23

U.S. ENVIRONMENTAL PROTECTION AGENCY

EXPOSURE ASSESSMENT

MULTIMEDIA MODEL

MULTIMED (Version 1.50, 2005)

1 Run options

Hobbs 0-29 EOL

1R428-51

Chemical simulated is Chloride

Option Chosen Saturated and unsaturated zone models

Run was DETERMIN

Infiltration Specified By User: 4.800E-03 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

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

OPTIONS CHOSEN

Van Genuchten functional coefficients User defined coordinate system

Layer information

LAYER NO. LAYER THICKNESS MATERIAL PROPERTY

1 10.00 1

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

VARIABLE NAME UNITS DISTRIBUTION PARAMETERS LIMITS MEAN STD DEV MIN MAXSaturated hydraulic conductivity CONSTANT 3.60 -999. cm/hr -999. -999. Unsaturated zone porosity CONSTANT 0.250 -999. -999. -999. Air entry pressure head CONSTANT 0.700 -999. m -999. -999. Depth of the unsaturated zone CONSTANT 10.0 0.000 m 0.000 0.000

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

	VARIABLE NAME	UNITS	DISTRIBUTION	PARAMI	ETERS
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.				
000	ALFA coefficient	1/cm	CONSTANT	0.500E-02	-999.
-999.	-999.		CONSTANT	1.09	-999.
-999.	Van Genuchten exponent, ENN -999.		CONSTANT	1.09	-999.
-999. 1	-999.				
-					
UNSATURA	ATED ZONE TRANSPORT MODEL PARAMETERS				
NLAY -	- Number of different layers used	1			
	- Number of time values concentration calc	40			
DUMMY -	- Not presently used	1			
ISOL -	- Type of scheme used in unsaturated zone	2			
	- Stehfest terms or number of increments	18			
	- Points in Lagrangian interpolation	3			
	- Number of Gauss points	104			
	- Convolution integral segments	2			
	- Type of boundary condition	2			
	- 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					
	mbiglyong of layer		CONSTANT	10.0	-999.	
-999.	Thickness of layer -999.	m	CONSTAINT	10.0	-333.	
-999.	Longitudinal dispersivity of layer -999.	m	DERIVED	-999.	-999.	
333.	Percent organic matter		CONSTANT	0.000	-999.	
-999.	-999. Bulk density of soil for layer	g/cc	CONSTANT	1.99	-999.	
-999.	-999.	1 /	CONCERNE	0 000	000	
-999.	Biological decay coefficient -999.	1/yr	CONSTANT	0.000	-999.	

CHEMICAL SPECIFIC VARIABLES

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

000	Henry`s law constant	$atm-m^3/M$	CONSTANT	-999.	-999.
-999.	-999.	1 /		0.000	0 000
0.000	Overall 1st order decay sat. zone	1/yr	DERIVED	0.000	0.000
0.000	Not currently used		CONSTANT	0.000	0.000
0.000	0.000		0011011111	0.000	0.000
	Not currently used		CONSTANT	0.000	0.000
0.000	0.000				
1					

SOURCE SPECIFIC VARIABLES

	VARIABLE NAME UNITS DISTRIBUTION			PARAMETERS		
LIMITS MIN	MAX			MEAN STD DEV		
	Infiltration rate	m/yr	CONSTANT	0.480E-02 -999.	-	
-999.	-999. Area of waste disposal unit	m^2	DERIVED	251. –999.		
-999. -999.	-999. Duration of pulse -999.	yr	CONSTANT	50.0 -999.		
-999.	Spread of contaminant source -999.	m	DERIVED	-999999.		
-999.	Recharge rate -999. Source decay constant	m/yr 1/yr	CONSTANT	0.000 -999. 0.000 0.000		
0.000	0.000 Initial concentration at landfill	mg/1	CONSTANT	0.496E+04 -999.		
-999.	-999. Length scale of facility	m	CONSTANT	15.9 -999.		
-999. -999.	-999. Width scale of facility -999.	m	CONSTANT	15.9 -999.		

Near field dilution DERIVED

0.000 1.00

1

-999.

-999.

AOUIFER SPECIFIC VARIABLES

1.00

0.000

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

	Temperature of aquifer	С	CONSTANT	20.0	-999.
-999.	-999 .				
	Н		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 103.6 AT 0.481E+03 YEARS