	State of New Mexico Nincole and Natural Resources nent	Form C-144 July 21, 2008 For temporary pits, closed-loop sytems, and below-grade
Dis 130 REGISTERED Dis 1000 Rio Brazos Rd., Aztec, NM 8/410 District IV	on Division Francis Dr. Sama re, 19M 87505	tanks, submit to the appropriate NMOCD District Office. For permanent pits and exceptions submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.
1220 S. St. Francis Dr., Santa Fe, NM 87505	d Loon Suntan Dalam Cra	
	d-Loop System, Below-Grac tive Method Permit or Closu	
Closure o Modificat	a pit, closed-loop system, below-grade f a pit, closed-loop system, below-grade tion to an existing permit lan only submitted for an existing perm ade tank, or proposed alternative method	e tank, or proposed alternative method itted or non-permitted pit, closed-loop system,
		op system, below-grade tank or alternative request
Please be advised that approval of this request does n	not relieve the operator of liability should operations	result in pollution of surface water, ground water or the e governmental authority's rules, regulations or ordinances.
¹ Operator: Burlington Resources Oil & Gas Comp Address: PO Box 4289, Farmington, NM 87499		OGRID#: 14538
Facility or well name: LAWSON 1A		
API Number: 3004522124	OCD Permit Numb	ег:
U/L or Qtr/Qtr: <u>D</u> Section: <u>12</u> T	Fownship: 31N Range: 6.91733°N Longitude: Private Tribal Trust or India	11W County: San Juan -107.94673°W NAD: X 1927 1983 an Allotment X 1927 1983
Lined Unlined Liner type: Thi String-Reinforced Liner Seams: Welded Factory Oth	2&A ickness mil LLDPE her Volume:	HDPE PVC Other bbl Dimensions Lx Wx D
3 Closed-loop System: Subsection H of 19.15.1 Type of Operation: P&A Drilling a new 1 Drying Pad Above Ground Steel Tanks 1 Lined Unlined Liner type: 1 Liner Seams: Welded Factory	well Workover or Drilling (Applies to notice of intent) Haul-off Bins Other cknessmil LLDPE	o activities which require prior approval of a permit or HDPE PVD Other
Visible sidewalls and liner Visible sidewalls	f fluid: Produced Water Metal Visible sidewalls, liner, 6-inch lift and au idewalls only	tomatic overflow shut-off Unspecified
5 Alternative Method: Submittal of an exception request is required. Exception	ons must be submitted to the Santa Fe Envir	onmental Bureau office for consideration of approval.
Form C-144	Oil Conservation Division	Page 1 of 5

6 °.¥		
Fencing: Subsection D of 19.15.17.11 NMAC (Applies to permanent pit, temporary pits, and below grade tanks)		
Chain link, six feet in height, two strands of barbed wire at top (Required if located within 1000 feet of a perminent residence, school, hospital, in	antitution or a	(mrch)
Four foot height, four strands of barbed wire evenly spaced between one and four feet		
X Alternate. Please specify 4' hog wire fencing topped with two strands barbed wire.		
7		
Netting: Subsection E of 19.15.17.11 NMAC (Applies to permanent pits and permanent open top tanks)		
X Screen Netting Other		
Monthly inspections (If netting or screening is not physically feasible)		
8		
12" X 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers		
X Signed in compliance with 19.15.3.103 NMAC		
)		
Administrative Approvals and Exceptions: Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance.		
Please check a box if one or more of the following is requested, if not leave blank:		
X Administrative approval(s): Requests must be submitted to the appropriate division district of the Santa Fe Environmental Bureau office for con (Fenering/BGT Liner)	nsideration of	approval.
Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.		
0		
Siting Criteria (regarding permitting): 19.15.17.10 NMAC Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau Office for consideration of approval. Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to drying pads or above grade-tanks associated with a closed-loop system.		
Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	Yes	XNo
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other watercourse, lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). - Topographic map; Visual inspection (certification) of the proposed site	Yes	XNo
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.	Yes	XNo
(Applies to temporary, emergency, or cavitation pits and below-grade tanks)	NA	
- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image		
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.	Yes	No
 (Applied to permanent pits) Visual inspection (certification) of the proposed site; Aerial photo; Satellite image 	XNA	
 visual inspection (certification) of the proposed site; Aerial photo: Satellite image Within 500 horizonal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering 		W
purposes, or within 1000 horizontal feet of any other fresh water well or spring that less than five nousenoids use for domestic or stock watering	Yes	XNo
- NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site.		
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended	Yes	XNo
 Written confirmation or verification from the municipality; Written approval obtained from the municipality Within 500 feet of a wetland. US Figh and Withlife Wedland Identification many Transmission on With the set of a wetland. 	Yes	XNo
- US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site Within the area overlying a subsurface mine.	Yes	XNo
- Written confirmation or verification or map from the NM EMNRD - Mining and Mineral Division		
 Within an unstable area. Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map 	Yes	XNo
Within a 100-year floodplain - FEMA map	Yes	XNo

plan.
plan.

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¹⁶ Waste Removal Closure For Closed-loop Systems That Utilize Above (Instructions: Please identify the facility or facilities for the disposal of liqu are required.	Ground Steel Tanks or Haul-off Bins Only: (19.15.17.13.D NMAC ads. drilling fluids and drill cuttings. Use attachment if more than is	") 19 facilities
Disposal Facility Name:	Disposal Facility Permit #-	
Disposal Facility Name: Disposal Facility Name:	Dienoval Excility Denuit #.	
Will any of the proposed closed-loop system operations and associat Yes (If yes, please provide the information No	ted activities occur on or in areas that will not be used for future	e service and operations?
Required for impacted areas which will not be used for future service and Soil Backfill and Cover Design Specification - based upon th Re-vegetation Plan - based upon the appropriate requirement Site Reclamation Plan - based upon the appropriate requirement	ne appropriate requirements of Subsection H of 19.15.17.13 NM ts of Subsection 1 of 19.15.17.13 NMAC	IAC
17 <u>Siting Criteria (Regarding on-site closure methods only:</u> 19.15.1 Instructions: Each siting criteria requires a demonstration of compliance in the cl- certain sung criteria may require administrative approval from the appropriate d for consideration of approval. Justifications and/or demonstrations of equivalence.	osure plan. Recommendations of acceptable source material are provided by listrict office or may be cansidered an escantion which must be submitted on	elow. Requests regarding changes to he Santa Fe Environmental Bareau office
Ground water is less than 50 feet below the bottom of the buried was - NM Office of the State Engineer - iWATERS database search; USG		Yes No
Ground water is between 50 and 100 feet below the bottom of the bu	iried waste	Yes No
- NM Office of the State Engineer - iWATERS database search; USGS		
Ground water is more than 100 feet below the bottom of the buried w	vaste	
- NM Office of the State Engineer - iWATERS database search; USGS		Yes No
Within 300 feet of a continuously flowing watercourse, or 200 feet of any o (measured from the ordinary high-water mark).		
- Topographic map: Visual inspection (certification) of the proposed sit	te	
Within 300 feet from a permanent residence, school, hospital, institution, or - Visual inspection (certification) of the proposed site; Aerial photo; sate	church in existence at the time of initial application. ellite image	Yes No
Within 500 horizontal feet of a private, domestic fresh water well or spring purposes, or within 1000 horizontal fee of any other fresh water well or spri - NM Office of the State Engineer - iWATERS database; Visual inspect	ng, in existence at the time of the initial application.	Yes No
 Within incorporated municipal boundaries or within a defined municipal fre pursuant to NMSA 1978. Section 3-27-3, as amended. Written confirmation or verification from the municipality: Written ap 	sh water well field covered under a municipal ordinance adopted	Yes No
Within 500 feet of a wetland	pro-in-induce rom ale maneparty	
 US Fish and Wildlife Wetland Identification map; Topographic map; 	Visual inspection (certification) of the proposed site	
Within the area overlying a subsurface mine. - Written confiramtion or verification or map from the NM EMNRD-Mi	ning and Mineral Division	Yes No
 Within an unstable area. Engineering measures incorporated into the design; NM Bureau of Geo Topographic map 	ology & Mineral Resources: USGS; NM Geological Society;	Yes No
Within a 100-year floodplain. - FEMA map		Yes No
18		
On-Site Closure Plan Checklist: (19.15.17.13 NMAC) Instruction	s: Each of the following items must bee attached to the closu	re plan. Please indicate,
by a check mark in the box, that the documents are attached.		
Siting Criteria Compliance Demonstrations - based upon the ap		
Proof of Surface Owner Notice - based upon the appropriate re		
Construction/Design Plan of Burial Trench (if applicable) base		
Construction/Design Plan of Temporary Pit (for in place burial	of a drying pad) - based upon the appropriate requirements of 1	9.15.17.11 NMAC
Protocols and Procedures - based upon the appropriate requirer		
Confirmation Sampling Plan (if applicable) - based upon the ap		
Waste Material Sampling Plan - based upon the appropriate rec		
 Disposal Facility Name and Permit Number (for liquids, drilling Soil Cover Design - based upon the appropriate requirements o 	g fluids and drill cuttings or in case on-site closure standards car f Subsection H of 19.15.17.13 NMAC	(not be achieved)

Re-vegetation Plan - based upon the appropriate requirements of Subsection 1 of 19.15.17.13 NMAC

Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

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Operator Application Certification:		
Hereby certify that the information submitted with this application is true, accu		my knowledge and belief.
Name (Print): Crystal Tafoya	Title:	Regulatory Technician
Signature: Crystal Jufoya	Date:	12/22/2008
e-mail address:	Telephone:	505-326-9837
20		
20 OCD Approval: Permit Application (including closure plan)	Closure Plan (only)	OCD Conditions (see attachment)
OCD Representative Signature:		conditions (see all chinene)
OCD Representative Signature:		Approval Date:
Title:	OCD Permit Nun	nber:
21 Classica Demont (construct with in (0, down of 1)		
Closure Report (required within 60 days of closure completion): Subsections: Operators are required to obtain an approved closure plan prior to	ction K of 19,15,17-13 NMAC implementing any closure activ	ities and submitting the closure report. The closure
report is required to be submitted to the division within 60 days of the completio.	n of the closure activities. Pleas	e do not complete this section of the form until an
approved closure plan has been obtained and the closure activities have been co	mpleted.	
	Closure Comp	letion Date:
32		
Closure Method:	_	
Waste Excavation and Removal On-site Closure Method	Alternative Closure Method	Waste Removal (Closed-loop systems only)
If different from approved plan, please explain.		
23		
Closure Report Regarding Waste Removal Closure For Closed-loop Systems Instructions: Please identify the facility or facilities for where the liquids, drilli	That Utilize Above Ground St	eel Tanks or Haul-off Bins Only:
were utilized.	ng juuus ana arm cumngs were	aisposed. Use allachment if more than two facilities
Disposal Facility Name:	Disposal Facility Permit N	lumber:
Disposal Facility Name:	Disposal Facility Permit N	lumber:
Were the closed-loop system operations and associated activities performed or		t for future service and opeartions?
	No	
Required for impacted areas which will not be used for future service and ope Site Reclamation (Photo Documentation)	rations:	
Soil Backfilling and Cover Installation		
Re-vegetation Application Rates and Seeding Technique		
24		
Closure Report Attachment Checklist: Instructions: Each of the follow	ving items must be attached to t	he closure report. Please indicate, by a check mark in
the box, that the documents are attached. Proof of Closure Notice (surface owner and division)		
Proof of Deed Notice (required for on-site closure)		
Plot Plan (for on-site closures and temporary pits)		
Confirmation Sampling Analytical Results (if applicable)		
Waste Material Sampling Analytical Results (if applicable)		
Disposal Facility Name and Permit Number		
Soil Backfilling and Cover Installation		
Re-vegetation Application Rates and Seeding Technique		
Site Reclamation (Photo Documentation)		
On-site Closure Location: Latitude:	Longitude:	NAD 1927 1983
25		
Operator Closure Certification:		
I hereby certify that the information and attachments submitted with this closure r he closure complies with all applicable closure requirements and conditions spec	eport is ture, accurate and comp ified in the approved closure nto	tete to the best of my knowledge and belief. I also certify that n.
Name (Print):	Title:	
Signature:	Date:	
		·····
e-mail address:	Telephone:	

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New Mexico Office of the State Engineer

Page	1	of	5
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	Township: 31N	Range: 11W	Sections:	
N	AD27 X:	Y:	Zone:	Search Radius:
County:	Bas	in:		Number: Suffix:
Owner Nam	e: (First)	(Last)		○ Non-Domestic ○ Domestic ④ A
POD	/ Surface Data Repo	ort Avg	Depth to Water	Report Water Column Report

WATER COLUMN REPORT 08/20/2008

							3=SW 4=SE)							
							smallest)			Depth	Depth	Water	(in	feet)
	Number	Tws	Rng				Zone	x	Y	Well	Water	Column		
	02395	31N	11W			13				95	35	60		
	01640	31N	11W		2 4					32	7	25		
	01551	31N	11W		2 4					64	42	22		
A	00560	31N	11W		2 4	-				39	25	14		
	01729	31N	11W		2 4	4				48	28	20		
Toma a second se	01541	31N	11W		3					52	30	22		
	01539	31N	11W		3	_				52	30	22		
- FOR	00946	31N	11W		3 :	3				135	100	35		-
	01540	31N	11W		4					52	30	22		
And a statement with the	01879	31N	11W		4					26	8	18		
V	01801	31N	11W		4					22	15	7		
A	03413	31N	11W		4 2					60				
1	03412	31N	11W			2				60				
Annual Addisory on the	03736 POD1	31N	11W			2 1				19	6	13		
	02495	31N	11W			2 1				28	12	16		
and the first summaries of	03623	31N	11W			21				30	16	14		
Burnandi Marra	03264	31N	11W			22				20	11	9		
and a company	03124	31N	11W			2 4				20	5	15		
	03125	31N	11W		4 2					20	5	15		
* = * *	03712 POD1	31N	11W		4					19	11	8		
	03018	31N	11W		4					20	8	12		
a new to see a	03670	31N	11W		4					26	10	16		
	01538	31N	11W		4 4					52	30	22		
/ + -ma	01683	31N	11W		4 4	1				45	25	20		
	01731	31N	11W		4 4					43	25	. 18		
SJ	01644	31N	11W	13	4 4	1				2.3	6	17		
SJ	02149	31N	11W	13	4 4	1				35				
SJ	01645	31N	11W	13	4 4	1				22	6	16		
SJ	01767	31N	11W	13	4 4	1				42	18	24		
SJ	01730	31N	11W	13	4 4	1				40	24	16		
SJ	01699	31N	11W	13	4 4	1				42	12	30		
SJ	01609	31N	11W	13	4 4	1				40	18	22		

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SJ 01537	31N 11W	13 4 4						
SJ 01542	31N 11W					52	28	24
SJ 01663	31N 11W							
SJ 02093	31N 11W	-	VJ	470700	2142000	4.5	25	20
SJ 03440	31N 11W		6.4	±70700	2143800	40	20	20
SJ 03084	31N 11W :					20	6	14
SJ 03085	31N 11W					19	11	8
SJ 02801		.3 4 4 3				18	8	10
SJ 03064	31N 11W 1					36	5	31
SJ 01142	31N 11W 1				-7	45		
SJ 02838	31N 11W 1					30	8	22
SJ 02855	31N 11W 1					38	10	28
SJ 01173	31N 11W 1					31		
SJ 02289	31N 11W 1					46	28	18
SJ 03458	31N 11W 1					45	16	29
SJ 02978	31N 11W 2					140		
SJ 01817	31N 11W 2	+				800		
SJ 02129	31N 11W 2					65	20	45
SJ 02161	31N 11W 2					72	35	37
SJ 01600	31N 11W 2	4 1				40	25	15
SJ 02124	_ 31N 11W 2					30 55	6	24
SJ 03755 POD1 SJ 03695 POD1	31N 11W 2	-		269112	2142037	27	40 7	15
SJ 03695 PODI	31N 11W 2					25	13	20
SJ 03696	31N 11W 2					2.5	13	12
SJ 03695	31N 11W 24					24	12	12
SJ 03696 POD1	31N 11W 24					25	13	12 12
SJ 01559	31N 11W 24					24	12	12
SJ 01744	31N 11W 24 31N 11W 24					50	27	23
SJ 01375	31N 11W 24 31N 11W 24					44	20	24
SJ 01986 S	31N 11W 24					30	11	19
SJ 01986	31N 11W 24					45	30	15
SJ 00555	31N 11W 24					38	21	17
SJ 03408	31N 11W 24	2 3 1				60	19	41
SJ 02928	31N 11W 24	2 3 2				26	11	15
SJ 02924	31N 11W 24	2 3 2				70		
SJ 02846	31N 11W 24	2 3 3				33	15	18
SJ 02888	31N 11W 24	2 3 3				45 65	18	27
SJ 03650	_ 31N 11W 24	2 3 3				32	15	
SJ 00555 X	31N 11W 24	24				58	15 39	17
SJ 02839 SJ 03707 POD1	31N 11W 24	2 4 1				55	19	19 36
SJ 02758	31N 11W 24	2 4 1				60	4.0	20
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SJ 00365	31N 11W 24	$\begin{array}{cccccccccccccccccccccccccccccccccccc$				65	40	25
SJ 01670	31N 11W 24	3				71	40	31
SJ 00287	31N 11W 24	324				45	27	18
SJ 01553	31N 11W 24	3 4				38	6	32
SJ 02171	31N 11W 24	3 4 3				44	35	9
SJ 01366	31N 11W 24	4 1				45	25	20
SJ 02644	31N 11W 24	4 1 4				30	11	19
SJ 00913		4 3				45	18	27
SJ 01405	31N 11W 24	4 3				81	55	26
SJ 01455	31N 11W 24	4 3 4				30	9	21
SJ 01047	31N 11W 24	434				101 205	66	35
SJ 00405	31N 11W 24	434				69	70	135
SJ 03438	31N 11W 24	44				40	42	27
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						200		

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SJ 02499	31N	11W 25	2 1 1		66	45	21
SJ 03198	31N	11W 25	3 3 1		600	100	
SJ 02834	31N	11W 25	3 3 3		200		500
SJ 03450	31N	11W 25	3 3 3			160	40
SJ 03126	31N	11W 26	1 1 1		144	95	49
SJ 01233	31N	11W 26	1 4		41	21	20
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A many property of the second state of the sec	31N	11W 26	142		280	25	255
SJ 00675	31N	11W 26	143		36	22	14
SJ 02887	31N	11W 26	1 4 4	.,	51	28	23
SJ 02898	~	11W 26	2 1 4		50		
SJ 01789		11W 26	3 1		29	12	17
SJ 00705	31N	11W 26	3 1 1		18	8	10
SJ 00371	31N	11W 26	3 1 2		29	9	20
SJ 03323	31N	11W 26	3 1 4		30	6	24
SJ 00363	31N	11W 26	3 1 4		25	5	20
SJ 01545 X	31N	11W 26	3 3		27	10	17
SJ 00926	31N	11W 26	4 1		62	32	30
SJ 01519	31N	11W 26	4 2		69	47	22
SJ 01620	31N	11W 26	4 2		67	26	
SJ 00610	31N	11W 26	4 2		80	50	41
SJ 02011	31N	11W 26	4 2		55		30
SJ 01628	31N	11W 26	4 2		66	38	17
SJ 03697 POD1	31N	11W 26	4 2 3			25	41
SJ 00562	31N	11W 26	4 3		80	50	30
SJ 00561	31N	11W 26	4 3		40	20	20
SJ 01042	31N	11W 20	4 4		38	20	18
SJ 00494	31N	11W 20	4 4		100	30	70
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FILEBRE FILEBRE AND A DATA CONTRACTOR OF A DATA AND AND AND AND AND AND AND AND AND AN	31N	11W 27	4 2 1		51	39	12
SJ 03540	31N	11W 27	4 2 1		40	21	19
SJ 03772 POD1	31N	11W 27	4 2 1	268239 2135717	41	30	11
SJ 02914	31N	11W 27	4 2 3		25	15	10
SJ 02468	31N	11W 27	4 2 3		49	30	19
SJ 02656	31N	11W 27	4 2 4		21	9	12
SJ 02871	31N	11W 27	4 2 4		22	11	11
SJ_02215	31N	11W 27	4 3		54	23	31
SJ 02676	31N	11W 27	4 3		19	7	12
SJ 03247	31N	11W 27	4 3 1		70		
SJ 03505	31N	11W 27	4 3 3		50	14	36
SJ 02549	31N	11W 27	4 3 3		49	30	19
SJ 02853	31N	11W 27	434		22	6	16
SJ 02984	31N	11W 27	4 4 1		20		
SJ 03181	31N	11W 27	4 4 1		19	10	9
SJ 01884	31N	11W 30	4 2 3		71	30	41
SJ 01739	31N	11W 30	4 2 4		98	30	68
SJ 01154	31N	11W 30	4 2 4		190	150	40
SJ 01834	31N	11W 30	4 2 4		103	30	73
SJ 01797	31N	11W 30	4 4		100	40	60
SJ 01396	31N	11W 30	441		80	57	23
SJ 00970	31N	11W 30	4 4 4		110	80	30
SJ 01811	31N	11W 31	2 2		8.9	50	39
SJ 02994	31N	11W 33	4 3 2		300	200	100
SJ 02993	31N	11W 33	4 3 2		280	160	.120
SJ 01137	31N	11W 33	4 4 4		37	19	18
SJ 02277	31N	11W 34	1 2		16	7	9
SJ 02167	31N	11W 34	1 4		83	69	14
SJ 01533	31N	11W 34	1 4		58	40	
SJ 01251	31N	11W 34	1 4				18
SJ 03211	31N	11W 34	1 4 1		79	65	14
www.www.www.www.www.www.	2 T T A	711/ JA	T 7 T		24	14	10

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SJ 01675	31N					20	6	14
SJ 00632	31N					33	7	26
SJ 01656	31N					25	7	18
SJ 00656						20	6	14
SJ 00631	31N					30	8	22
the second	31N					30	11	19
SJ 03448	31N			1		41	21	20
SJ 01267	31N		2	1	4	65	45	
SJ 01618	31N	11W 34	2	1		28		20
SJ 01840	31N	11W 34	2	1 1		65	8	20
SJ 03316	31N	11W 34	2	1 1		30	25	40
SJ 00660	31N	11W 34	2	1 1			10	20
SJ 01768	31N	11W 34	2	2		50	30	20
SJ 01721	31N	11W 34	2	2		20	6	14
SJ 03172	31N	11W 34	2	22		22	10	12
SJ 03047	31N	11W 34	2	2 4		19	7	12
SJ 02119	31N	11W 34	2	3		19	6	13
SJ 02113	31N	11W 34	2	3		11	3	8
SJ 00659	31N	11W 34	2	3		12	4	8
SJ 00661	31N	11W 34	2			33	11	22
SJ 02972	31N	11W 34				52	32	20
SJ 03107	31N	11W 34	2	3 4		15	5	10
SJ 03106	31N	11W 34		4 1		18	8	10
SJ 03183	31N			4 1		25		
SJ 03780 POD1	104	11W 34		4 4		19	6	13
SJ 02859	31N	11W 34		1 2	267922 213034	1 28	12	16
SJ 02967	31N	11W 34		1 4		22	6	16
SJ 02856	31N	11W 34		2 3		20	5	15
SJ 02852	31N	11W 34		2 3		24	6	18
SJ 03065	31N	11W 34		23		23	7	16
SJ 03025	31N	11W 34		23		22	7	15
the second	31N	11W 34		23		22	5	17
SJ 03014	31N	11W 34		24		30	5	25
SJ 03002	31N	11W 34		2 4		22	-	25
SJ 02861	31N	11W 34	3	31		. 21	7	14
SJ 03220	31N	11W 34		31		20	6	14
SJ 03042	31N	11W 34		32		23	6	17
SJ 03710 POD1	31N	11W 34	3 1	32		20	4	1.6
SJ 03048	31N	11W 34	3 :	34		21	$\hat{4}$	17
SJ 02857	31N	11W 34	3 4	11.		23	6	17
SJ 03492	31N	11W 34	3 4			30	0	- <i>1</i>
SJ 03631	31N	11W 34		1 2		27	6	21
SJ 03493	31N	11W 34		12		25	15	10
SJ 03357	31N	11W 34		1 2		22	6	16
SJ 03260	31N	11W 34	3 4	1 4		41	3	38
SJ 03609	31N	11W 34	3 4	4		27	6	21
SJ 01608	31N	11W 34	4			48	17	31
SJ 03720 POD1	31N	11W 34	4 1	. 3		21	6	15
SJ 03497	31N	11W 34	4 1	4		30	10	20
SJ 03402	31N	11W 34	4 1	4		25	10	20
SJ 03377	31N	11W 34	4 2	4		20	2	1.0
SJ 03016	31N	11W 34		1		35	2	18
SJ 03739 POD1	31N	11W 34		1			2	
SJ 02966	31N	11W 34		3		25	3	22
SJ 00985	31N	11W 34	4 4			48	20	28
SJ 02827	31N	11W 35	1 1			40	16	24
SJ 03371	31N	11W 35	1 1			60		
SJ 02902	31N	11W 35	1 1			21	5	16
SJ 02897	31N	11W 35				19	5	14
	J T []	TTM 23	1 3	T		17	6	11

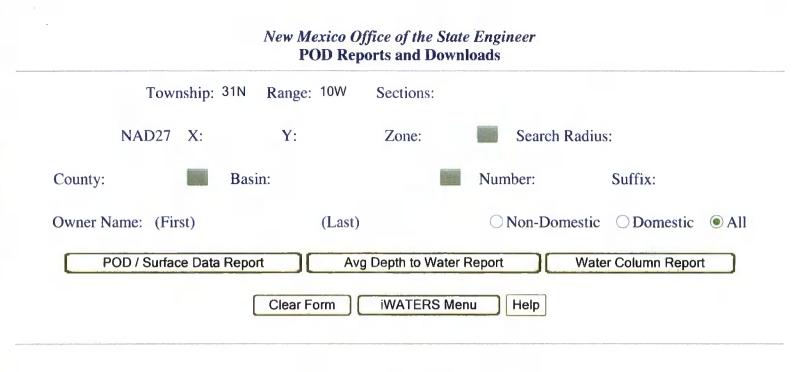
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SJ	03760	POD1	31N	11W	35	1	4	1
SJ	03543		31N	11W	35	1	4	4
SJ	01144		31N	11W	3.5	1	4	4
នភ្	01319	the set will don't ran set	31N	11W	3.5	2	2	2
SJ	00185		31N	11W	35	2	3	
SJ	03676		31N	11W	35	2	3	1
SJ	03560	The Real Property of the State	31N	11W	35	2	3	2
SJ	03165		31N	11W	35	2	4	4
SJ	03166		31N	11W	35	2	4	4
SJ	00983	a such a later water a star of the second star	31N	11W	35	3		
SJ	00939	ar and an interpret of the summary of the set	31N	11W	35	3		
SJ	00940	And appropriate the second	31N	11W	35	3	1	
SJ	01580	where the low constraint is not marked in	31N	11W	35	3	1	1
SJ	02932		31N	11W	35	3	1	2
SJ	02933		31N	11W	35	3	1	2
SJ	03574		31N	11W	35	3	1	4
SJ	00591		31N	11W	35	3	1	4
SJ	00939	1	31N	11W	35	3	2	
SJ	00713		31N	11W	35	4	2	

		30	6	24
268465	2130772	43	12	31
		61	30	31
		55	30	25
			155	
		54		
		52	19	33
		62	32	30
		20		
	3	20		
		110	70	40
		60	30	30
		64	15	49
		65	30	35
		27	14	13
		37	24	13
		100		
		83	54	29
		6.0	30	30
		37	19	18

Record Count: 229

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New Mexico Office of the State Engineer



WATER COLUMN REPORT 08/20/2008

(quarters are 1=NW 2=NE 3=SW 4=SE)

(ຕູນ	arter	s are	e big	gge	est	to:	smallest)			Depth	Depth	Water	(in	feet)
POD Number	Tws	Rng	Sec	đ	đ	g	Zone	x	Y	Well	Water	Column		
SJ 00498	31N	10W	04	1	2					26	8	18		
SJ 03062 CLW263578	31N	10W	04	1	2	2				47	40	7		
SJ 03062	31N	10W	04	1	2	2				55	46	9		
SJ 02844	31N	10W	04	1	2	4				37	21	16		
SJ 00573	31N	10W	04	1	4					37	12	25		
SJ 00595	31N	10W	04	1	4	2				90	12	78		
SJ 00595 S	31N	10W	04	1	4	2				70	10	60		
SJ 00175	31N	10W	04	2						28	13	15		
SJ 01563	31N	10W	04	2	1					44	28	16		
SJ 02089	31N	10W	04	2	1					55	40	15		
SJ 03033	31N	10W	04	2	1					52	30	22		
SJ 03034	31N	10W	04	2	1	2				45	23	22		
SJ 01564	31N	10W	04		2					34	10	24		
SJ 00128	31N	10W		2	2					70	21	49		
SJ 02044	31N	10W		1	3					22	12	10		
SJ 01370	31N	10W		1	3	2				48	28	20		
SJ 01967 X	31N	10W		1	3	2				25	10	15		
SJ 02843	31N	10W		1	3	2				25	10	15		
SJ 02044 X	31N	10W		1		4				28	14	14		
SJ 02083	31N	10W		2	2					23	10	13		
SJ 02069	31N	10W		2	2					22	9	13		
SJ 03013	31N	10W		2	2					19	7	12		
SJ 03109	31N	10W		2		3				21	2	19		
SJ 03004	31N	10W		2	2					18	6	12		
SJ 02945	31N	10W		2	2	4				17	5	12		
SJ 03368	31N	10W	05	2	2	4				19	6	13		
SJ 03549	31N	10W	05	2	4	4				42	3.5	7		
SJ 02884	31N	10W	05	2	4	4				75				
SJ 00304	31N	10W		3	4					18	5	13		
SJ 02399	31N	10W		3	4	1				40	14	26		
SJ 02944	31N	10W		3	4	2				100				
SJ 03112	31N	10W	05	3	4	2				4.5	33	12		

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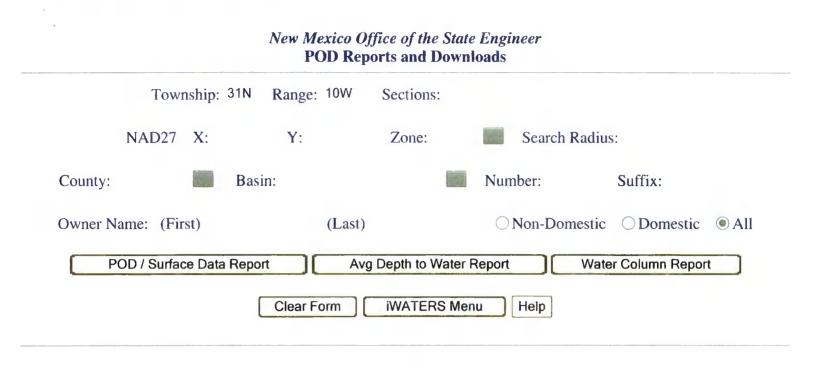
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SJ 01373	31N	10W 05		3					6	3	3
SJ 02037	31N	10W 05	4						39	11	28
SJ 03452	31N	10W 05	4	4	2				61	30	31
SJ 03336	31N	10W 05	4	4	3				58	28	30
SJ 03246	31N	10W 05	4		3				65	15	50
SJ 01958	31N	10W 05	2	4	ر				103	83	20
	31N	10W 06		3					93	33	60
SJ 01977	31N	10W 06		4	3				100	60	40
SJ 03308			2	2	5						
SJ 02150	31N	10W 07 10W 07		2	3				41 48	23 31	18
SJ 02389	31N	10W 07	2							71	17
SJ 03079	31N								50		
SJ 03330	31N	10W 07	3	3	Т				400	2.0	10
SJ 01521	31N	10W 07	4	2	2	26070	2	2140004	45	29	16
SJ 03802 POD1	31N	10W 07	4	3	2	26979	3	2149984	41	24	17
SJ 00585	31N	10W 08	1	2					40	23	17
SJ 02304	31N	10W 08	1		Λ				35	29	6
SJ 03057	31N	10W 08	1		4				19	6	13
SJ 03714 POD1	31N	10W 08	3	1	Т				21	6	15
SJ 00054	31N	10W 10	2						455		
SJ 00830 -EXPLOR	31N	10W 15	3	4					550	07	C 1
SJ 01198	31N	10W 17	3						158	97	61
SJ 02624	31N	10W 18	1						295	125	170
SJ 01616	31N	10W 18	1		1				18	8	10
SJ 01534	31N	10W 18	1						34	23	11
SJ 03345	31N	10W 18	1		2				21	11	10
SJ 01796	31N	10W 18	1		3				32	20	12
SJ 01598	31N	10W 18	1						30	5	25
SJ 01587	31N	10W 18	1	4	2				35	5	30
SJ 03163	31N	10W 18	1	4	3				19	5	14
SJ 01747	31N	10W 18	1	4 1	3				20	6	14
SJ 01718	31N	10W 18	2	1	4	26077	0	0140065	30	4	26 10
SJ 03813 POD1	31N	10W 18 10W 18	2	1 3	4 2	26977	0	2148065	16 21	6 1	20
SJ 03070	31N	10W 18	2	з З	2				43	20	23
SJ 03324	31N 31N	10W 18	2	4	2				35	20	45
SJ 03474	31N	10W 18 10W 18	3		2				21	6	15
SJ 01625	31N	10W 18	3	_					26	15	11
SJ 01500	31N	10W 18	3						22	7	15
SJ 01550 SJ 02821	31N	10W 18		1	1				24	8	16
SJ 03119	31N	10W 18	3		2				10	8	2
SJ 01552	31N	10W 18		1					30	22	8
SJ 03114	31N	10W 18	3		1				16	8	8
SJ 02749	31N	10W 18	3		2				16	10	6
SJ 03722 POD1	31N	10W 18	3						20	6	14
SJ 03721 POD1	31N	10W 18	3						25	10	15
SJ 03435	31N	10W 18		2					10	6	4
SJ 03622	31N	10W 18	3		3				20	6	14
SJ 00611 S	31N	10W 18	3	3					65	25	40
SJ 00611	31N	10W 18	3		3				58	46	12
SJ 00555 CLW225581	31N	10W 19	1						70	45	25
SJ 02909	31N	10W 19		1	1				60	47	13
SJ 02929	31N	10W 19		1					58	40	18
SJ 02979	3.1N	10W 19		1					57	43	14
SJ 03103	31N	10W 19		1					53	33	20
SJ 03359	31N	10W 19			1				70	55	20
SJ 03705 POD1	31N	10W 19			2				69	5.6	13
SJ 03705 PODI SJ 03487	31N	10W 19			3				65	45	20
DU V3%07	J T 14	TOM TA	T	1	J				00		20

SJ	03086		31N	10W	19	1	1	3	
SJ	03486		31N	10W	19	1	1	3	
SJ	01428		31N	10W	19	1	3		
SJ	01349		31N	10W	19	1	3	3	
SJ	03285		31N	10W	19	3	1	1	
SJ	02084		31N	10W	25	4	4	2	
SJ	00967		31N	10W	27	4	3		
SJ	00990		31N	10W	27	4	3		
SJ	01483		31N	10W	27	4	4	1	
SJ	02960		31N	10W	27	4	4	2	
SJ	03178		31N	10W	27	4	4	2	
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SJ	03387		31N	10W	34	2	2	1	
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SJ	03576		31N	10W	35	2	3	3	
SJ	03570		31N	10W	35	2	4	4	
SJ	03554		31N	10W	35	4	2	1	

61	44	17
65	45	20
65	45	20
78	67	11
40		
315		
130	90	40
162	110	52
195	150	45
200	150	50
235	150	85
205	124	81
1538		
1538		
185	175	10
164	118	46
245	125	120
165	65	100
250	200	50
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Record Count: 117



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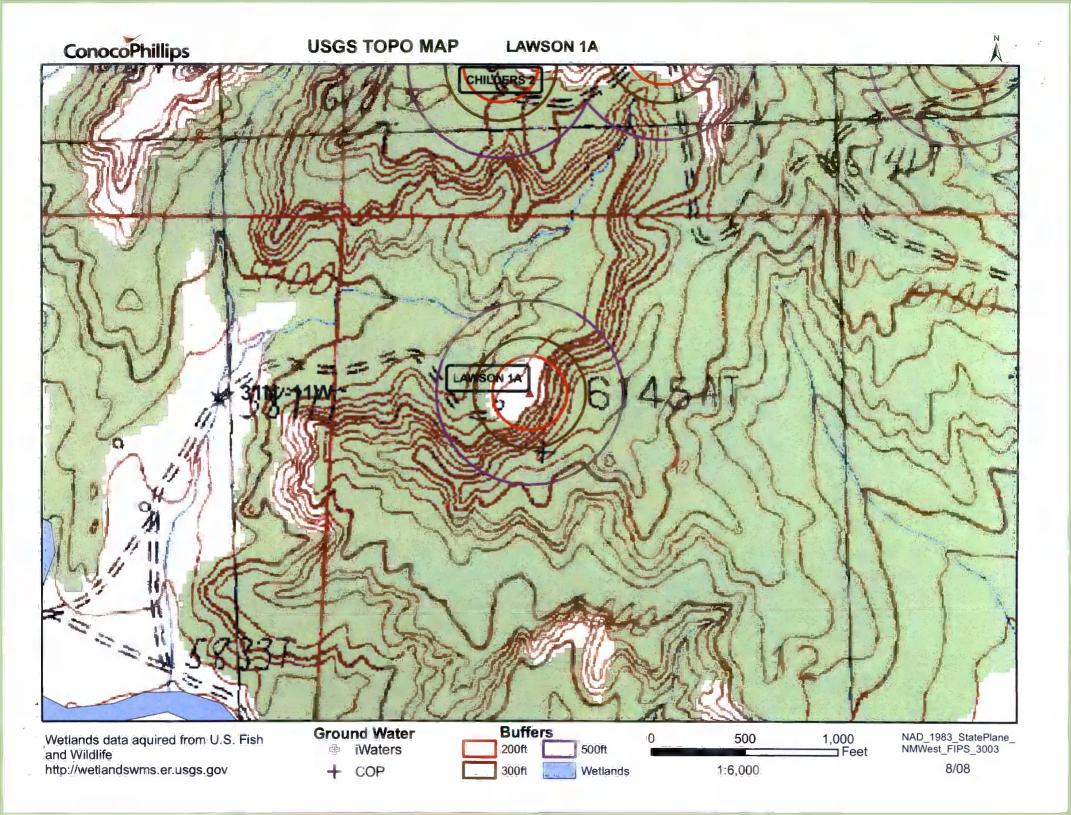
(qua	arter	s are	1=1	W	2=N]	3=SW 4=SE)							
(qua	arter	s are	big	ge	st 1	co smallest)			Depth	Depth	Water	(in	feet)
POD Number	Tws	Rng	Sec			Zone	х	Y	Well	Water	Column		
SJ 00498	31N	10W		1					26	8	18		
SJ 03062 CLW263578	31N	10W			2 2				47	40	7		
SJ 03062	31N	10W	04		22				55	46	9		
SJ 02844	31N	10W	04	1	2 4				37	21	16		
SJ 00573	31N	10W	04	1	4				37	12	25		
SJ 00595	31N	10W	04	1	4 2				90	12	78		
SJ 00595 S	31N	10W	04	1	4 2				70	10	60		
SJ 00175	31N	10W	04	2					28	13	15		
SJ 01563	31N	10W	04	2	1				44	28	16		
SJ 02089	31N	10W	04		1 1				55	40	15		
SJ 03033	31N	10W	04	2	1 1				52	30	22		
SJ 03034	31N	10W	04		1 2				45	23	22		
SJ 01564	31N	10W	04	2					34	10	24		
SJ 00128	31N	10W	04	2					70	21	49		
SJ 02044	31N	10W		1					22	12	10		
SJ 01370	31N	10W		1					48	28	20		
SJ 01967 X	31N	10W	05		3 2				25	10	15		
SJ 02843	31N	10W	05		32				25	10	15		
SJ 02044 X	31N	10W	05		3 4				28	14	14		
SJ 02083	31N	10W	05		2 1				23	10	13		
SJ 02069	31N	10W	05		2 1				22	9	13		
SJ 03013	31N	10W	05	2	23				19	7	12		
SJ 03109	31N	10W	05	2	23				21	2	19		
SJ 03004	31N	10W	05	2	2 4				18	6	12		
SJ 02945	31N	10W	05	2	2 4				17	5	12		
SJ 03368	31N	10W	05	2	2 4				19	6	13		
SJ 03549	31N	10W	0.5	2	4 4				42	35	7		
SJ 02884	31N	10W	05	2	4 4				75				
SJ 00304	31N	10W	05	3	4				18	5	13		
SJ 02399	31N	10W		3	4 1				40	14	26		
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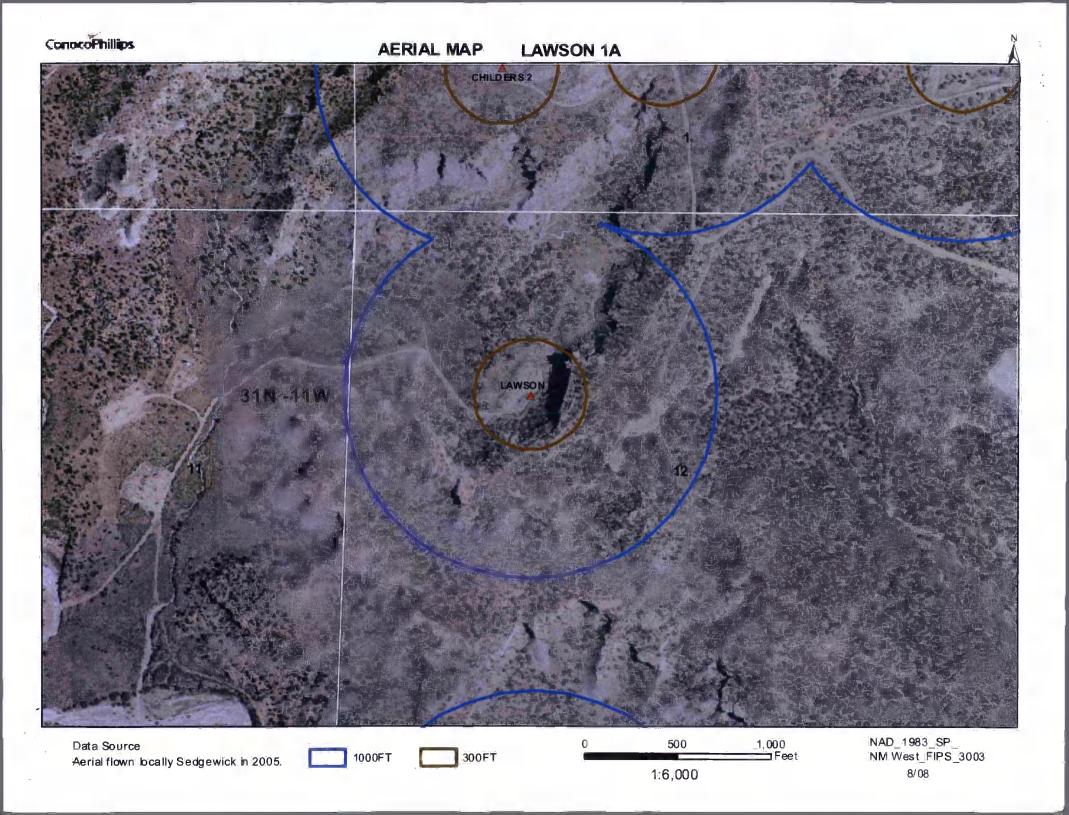
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SJ 01373	31N	10W 05	4 3			6	3	3
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SJ 03336	31N	10W 05	4 4 3			58	28	30
SJ 03246	31N	10W 05	4 4 3			65	15	50
SJ 01958	31N	10W 06	2			103	83	20
SJ 01977	31N	10W 06	2 3			93	33	60
SJ 03308	31N	10W 06	2 4 3			100	60	40
SJ 02150	31N	10W 07	2 2			41	23	18
SJ 02389	31N	10W 07	2 2 3			48	31	17
SJ 03079	31N	10W 07	2 2 3			50		
SJ 03330	31N	10W 07	3 3 1			400		
SJ 01521	31N	10W 07	4			45	29	16
SJ 03802 POD1	31N	10W 07	4 3 2	269793	2149984	41	24	17
SJ 00585	31N	10W 08				40	23	17
SJ 02304	31N	10W 08	1 2			35	29	6
SJ 03057	31N	10W 08	1 3 4			19	6	13
SJ 03714 POD1	31N	10W 08	3 1 1			21	6	15
SJ 00054	31N	10W 10	2			455		
SJ 00830 -EXPLOR	31N	10W 15	3			550		
SJ 01198	3.1N	10W 17	3 4			158	97	61
SJ 02624	31N	10W 18	1 1			295	125	170
SJ 01616	31N	10W 18	1 3			18	8	10
SJ 01534	31N	10W 18	1 3 1			34	23	11
SJ 03345	31N	10W 18	1 3 2			21	11	10
SJ 01796	31N	10W 18	1 3 3			32	20	12
SJ 01598	31N	10W 18	1 4			30	5	25
SJ 01587	31N	10W 18	14			35	5	30
SJ 03163	31N	10W 18	1 4 3			19	5	14
SJ 01747	31N	10W 18	1 4 3			20	6	14 26
SJ 01718	31N	10W 18 10W 18	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	260779	2148065	30	4 6	10
SJ 03813 POD1	31N			269778	2140000	16 21	1	20
SJ 03070	31N	10W 18	2 3 2 2 3 2			43	20	23
SJ 03324	31N	10W 18 10W 18				35	20	25
SJ 03474	31N 31N	10W 18	2 4 2 3 1			21	6	15
SJ 01625	31N	10W 18	3 1			26	15	11
SJ 01500	31N	10W 18	3 1			22	7	1.5
SJ 01550 SJ 02821	31N	10W 18	3 1 1			24	8	16
SJ 03119	31N	10W 18	3 1 2			10	8	2
SJ 01552	31N	10W 18	3 1 4			30	22	8
SJ 03114	31N	10W 18	3 2 1			16	8	8
SJ 02749	31N	10W 18	3 2 2			16	10	6
SJ 03722 POD1	31N	10W 18	3 2 3			20	6	14
SJ 03721 POD1	31N	10W 18	3 2 3			25	10	15
SJ 03435	31N	10W 18	3 2 3			10	6	4
SJ 03622	31N	10W 18	3 2 3			20	6	14
SJ 00611 S	31N	10W 18	3 3			65	25	40
SJ 00611	31N	10W 18	3 3 3			58	46	12
SJ 00555 CLW225581	31N	10W 19	1			70	45	25
SJ 02909	31N	10W 19	1 1 1			60	47	13
SJ 02929	31N	10W 19	1 1 1			58	40	18
SJ 02979	31N	10W 19	1 1 1			57	43	14
SJ 03103	31N	10W 19	1 1 1			53	33	20
SJ 03359	31N	10W 19	1 1 1			70		
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SJ 03487	31N	10W 19	1 1 3			65	45	20
50 V3407	9 TIV	1011 17	J					

,								
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SJ	03486		31N	10W	19	1	1	3
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SJ	02960		31N	10W	27	4	4	2
SJ	03178		31N	10W	27	4	4	2
SJ	03539		31N	10W	27	4	4	3
SJ	00163		31N	10W	28	1	4	1
SJ	00163	EXPL	31N	10W	28	1	4	3
SJ	03459		31N	10W	32	3	3	2
SJ	00981		31N	10W	34	2	1	
SJ	01480		31N	10W	34	2	1	
SJ	03624		31N	10W	34	2	1	2
SJ	03387		31N	10W	34	2	2	1
SJ	03728	POD1	31N	10W	35	1	3	3
SJ	03545		31N	10W	35	1	4	3
SJ	03544		31N	10W	35	1	4	4
SJ	03571		31N	10W	35	1	4	4
SJ	03576		31N	10W	35	2	3	3
SJ	03570		31N	10W	35	2	4	4
SJ	03554		31N	10W	35	4	2	1

61	44	17
65	45	20
65	45	20
7.8	67	11
40		
315		
130	90	40
162	110	52
195	150	45
200	150	50
235	150	85
205	124	81
1538		
1538		
185	175	10
164	118	46
245	125	120
165	65	100
250	200	50
365	230	135
455	317	138
325	220	105
250		
450	137	313
250		
454	317	137

Record Count: 117

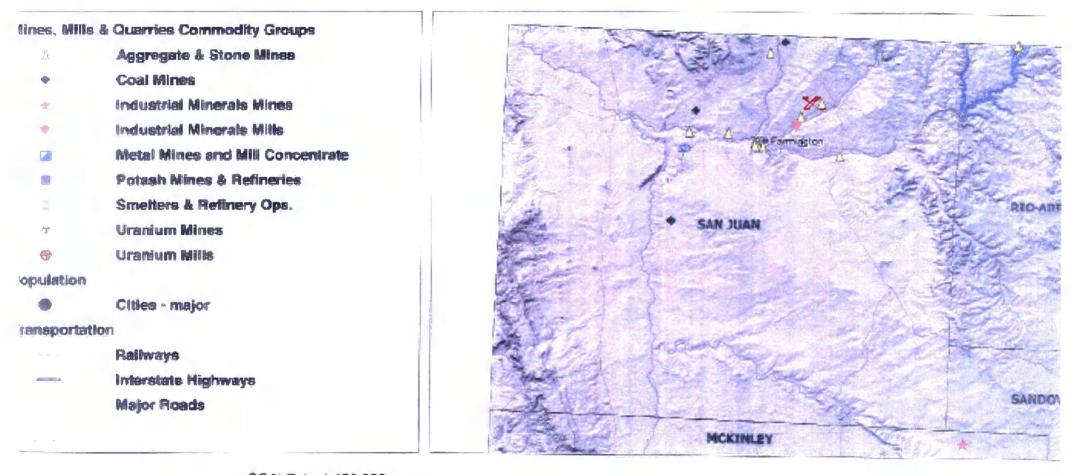




Mines, Mills and Quarries Web Map

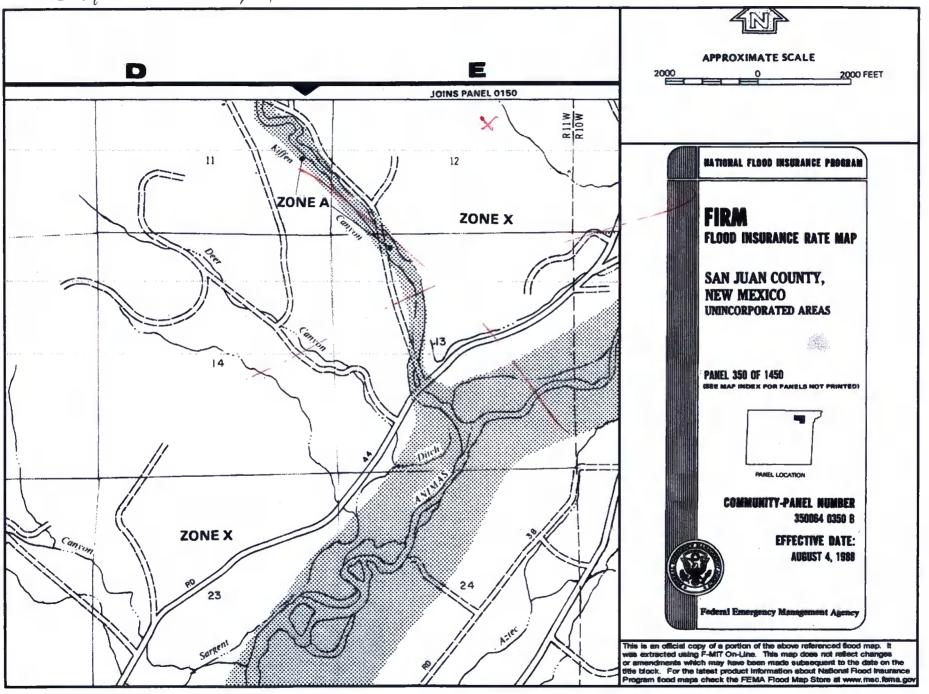
Unit Letter: D, Section: 12, Town: 031N, Range: 011W

LAWSON 1A





iAwson IA



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LAWSON 1A

Site Specific Hydrogeology

A visual site inspection confirming the information contained herein was performed on the well 'LAWSON 1A', which is located at 36.91733 degrees North latitude and 107.94673 degrees West longitude. This location is located on the Cedar Hill 7.5' USGS topographic quadrangle. This location is in section 12 of Township 31 North Range 11 West of the Public Land Survey System (New Mexico Principal Meridian). This location is located in San Juan County, New Mexico. The nearest town is Cedar Hill, located 3.6 miles to the northeast. The nearest large town (population greater than 10,000) is Farmington, located 19.1 miles to the southwest (National Atlas). The nearest highway is US Highway 550, located 1.9 miles to the southeast. The location is on BLM land and is 1,340 feet from the edge of the parcel as notated in the BLM land status layer updated January 2008. This location is in the Animas. Colorado, New Mexico, Sub-basin. This location is located 1869 meters or 6130 feet above sea level and receives 12 inches of rain each year. The vegetation at this location is classified as Colorado Plateau Mixed Bedrock Canyon and Tableland as per the Southwest Regional Gap Analysis Program.

The estimated depth to ground water at this point is 156 feet. This estimation is based on the data published on the New Mexico Engineer's iWaters Database website and water depth data from ConocoPhillips' cathodic wells. Groundwater data available from the NM State Engineer's iWaters Database for wells near the proposed site are attached. The nearest stream is 603 feet to the northwest and is classified by the USGS as an intermittent stream. The nearest perennial stream is 4,869 feet to the northeast. The nearest water body is 4,742 feet to the northeast. It is classified by the USGS as an intermittent lake and is 0.4 acres in size. The nearest spring is 5,340 feet to the west. All stream, river, water body and spring information was determined as per the USGS Hydrographic Dataset (High Resolution), downloaded 3/2008. The nearest water well is 2,828 feet to the northeast. The nearest wetland is a 58.7 acre Ravine located 2,494 feet to the southwest. The slope at this location is 7 degrees to the northwest as calculated from USGS 30M National Elevation Dataset. This information is also discerned from the aerial and topographic map included. The surface geology at this location is NACIMIENTO FORMATION -- Shale and sandstone with a Shale dominated formations of all ages substrate. The soil at this location is 'Gypsiorthids-Badland-Stumble complex, moderately steep and is somewhat excessively drained and not hydric with severe erosion potential as taken from the NRCS SSURGO map unit, downloaded January 2008. The nearest underground mine is 4.4 miles to the northeast as indicated on the Mines, Mills and Quarries Map of New Mexico provided.

Regional Geological context:

The Nacimiento Formation is of Paleocene age (Baltz, 1967, p. 35). It crops out in a broad band inside the southern and western margins of the central basin and in a narrow band along the west face of the Nacimiento Uplift. The Nacimiento is a nonresistant unit and typically erodes to low, rounded hills or forms badland topography.

The Nacimiento Formation occurs in approximately only the southern two-thirds of the San Juan Basin where it conformably overlies and intertongues with the Ojo Alamo Sandstone (Fassett, 1974, p. 229). The Nacimiento Formation grades laterally into the main part of the Animas Formation (Fassett and Hinds, 1971, p. 34); thus, in this area, the two formations occupy the same stratigraphic interval.

Strata of the Nacimiento Formation were deposited in lakebeds in the central basin area with lesser deposition in stream channels (Brimhall, 1973, p. 201). In general, the Nacimiento consists of drab, interbedded black and gray shale with discontinuous, white, medium- to very coarse grained arkosic sandstone (Stone e al., 1983, p.30). Stone et al. indicated that the formation may contain more sandstone than commonly reported because some investigators assume the slope-forming strata in the unit area shales, whereas in many places the strata actually are poorly consolidated sandstones.

Total thickness of the Nacimiento Formation ranges from about 500 to 1,300 feet. The unit generally thickens from the basin margins toward the basin center (Steven et al., 1974). The sandstone deposits within the Nacimiento Formation are much thinner than the total thickness of the formation because their environment of deposition was localized stream channels (Brimhall, 1973, p. 201). The thickness of the combined San Jose, Animas, and Nacimiento Formations ranges from 500 to more than 3.500 feet.

Hydraulic Properties:

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Reported well yields for 53 wells completed in either the Animas or Nacimiento Formations range from 2 to 90 gallons per minute and the median yield is 7.5 gallons per minute. The primary use of water from Nacimiento and Animas Formations is domestic and livestock supplies. There are no known aquifer tests for the Animas or Nacimiento Formations, but specific capacities reported for six wells range from 0.24 to 2.30 gallons per minute per foot of drawdown (Levings et al., 1990).

The Animas and Nacimiento Formations are in many ways hydrologically similar to the San Jose Formation because sands in both units produce approximately the same quantities of water. However, the greater percentage of fine materials in the Animas and Nacimiento Formations may restrict downward vertical leakage to the Ojo Alamo Sandstone or Kirtland Shale. The poorly cemented fine material is highly erodible, forms a badland terrain, and supports only spotty vegetation. These conditions are more conductive to runoff than retention of precipitation.

References:

Baltz, E.H., 1967, Stratigraphy and regional tectonic implications of part of Upper Cretaceous rocks, eastcentral San Juan Basin, New Mexico: USGS Professional Paper 552, 101 p.

Brimhall, R.M., 1973, Ground-water hydrology of Tertiary rocks of the San Juan Basin, New Mexico, in Fassett, J.E., ed., Cretaceous and Tertiary rocks of the Southern Colorado Plateau: Four Corners Geological Society Memoir, p. 197-207.

Fassett, J.E., 1974, Cretaceous and Tertiary rocks of the eastern San Juan Basin, New Mexico and Colorado, in Guidebook of Ghost Ranch, central-northern New Mexico: New Mexico Geological Society, 25th Field Conference, p. 225-230.

Fassett, J.E., and Hinds, J.S., 1971, Geology and fuel resources of the Fruitland Formation and Kirtland Shale of the San Juan Basin, New Mexico and Colorado: USGS Professional Paper 676, 76 p.

Levings, G.W., Craigg, S.d., Dam, W.L., Kernodle, J.M., and Thorn, C.R., 1990, Hydrogeology of the San Jose, Nacimiento, and Animas Formations in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah: USGS Hydrologic Investigations Atlas HA-720-A, 2 sheets.

Stone, W.J., Lyford, F.P., Frenzel, P.F., Mizell, N.H., and Padgett, E.T., 1983, Hydrogeology and water resources of San Juan Basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Hydrologic Report 6.

Burlington Resources Oil & Gas Company, LP San Juan Basin Below Grade Tank Design and Construction

In accordance with NMAC 19.15.17 the following information describes the design and construction of below grade tanks on Burlington Resources Oil & Gas Company, LP (BR) locations. This is BR's standard procedure for all below grade tanks (BGT). A separate plan will be submitted for any BGT which does not conform to this plan.

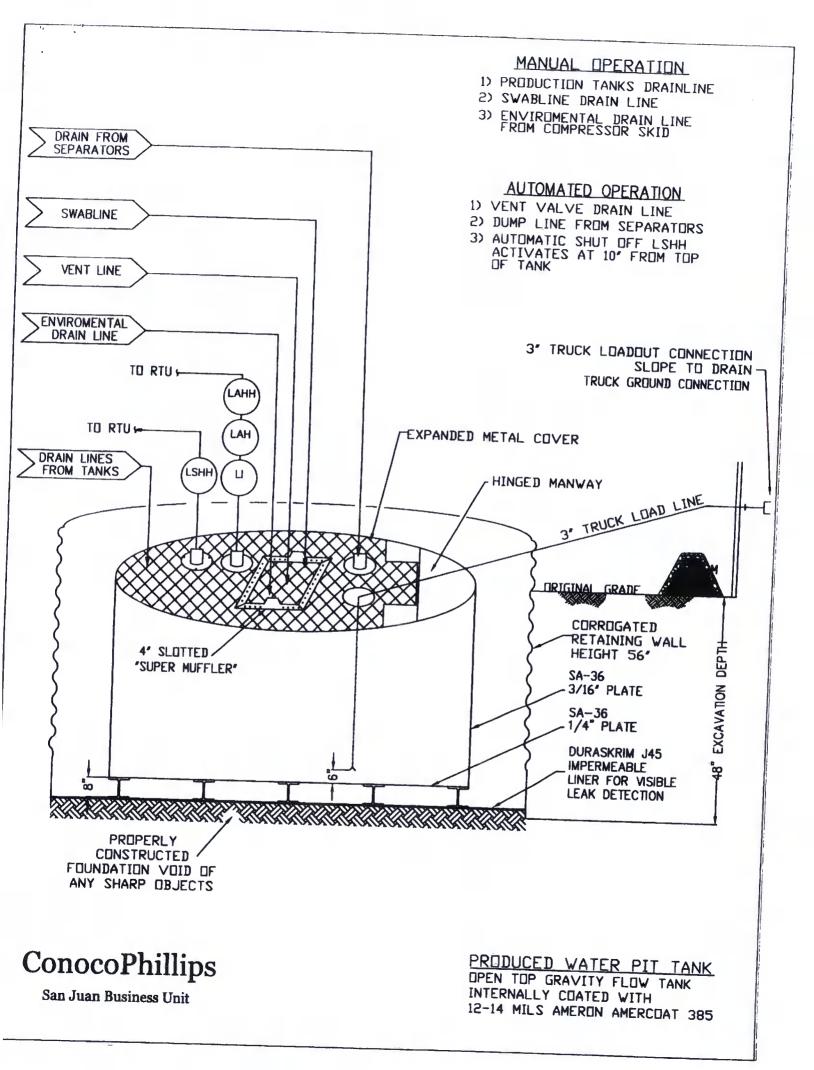
General Plan:

- 1. BR will design and construct a properly sized and approved BGT which will contain liquids and should prevent contamination of fresh water to protect the public health and environment.
- 2. BR signage will comply with 19.15.3.103 NMAC when BR is the operator. If BR is not the operator it will comply with 19.15.17.11NMAC. BR includes Emergency Contact information on all signage.
- 3. BR has approval to use alternative fencing that provides better protection. BR constructs fencing around the BGT using 4 foot hog wire fencing topped with two strands of barbed wire, or with a pipe top rail. A six foot chain link fence topped with three strands of barbed wire will be use if the well location is within 1000 feet of permanent residence, school, hospital, institution or church. BR ensures that all gates associated with the fence are closed and locked when responsible
- 4. BR will construct a screened, expanded metal covering, on the top of the BGT.
- 5. BR shall ensure that a below-grade tank is constructed of materials resistant to the below-grade tank's particular contents and resistant to damage from sunlight as shown on design drawing and specification sheet.
- 6. The BR below-grade tank system shall have a properly constructed foundation consisting of a level base free of rocks, debris, sharp edges or irregularities to prevent punctures, cracks or indentations of the liner or tank bottom as shown on design drawing.
- 7. BR shall operate and install the below-grade tank to prevent the collection of surface water run-on. BR has built in shut off devices that do not allow a belowgrade tank to overflow. BR constructs berms and corrugated retaining walls at least 6" above ground to keep from surface water run-on entering the below grade tank as shown on the design plan.
- 8. BR will construct and use a below-grade tank that does not have double walls. The below-grade tank's side walls will be open for visual inspection for leaks, the below-grade tank's bottom is elevated a minimum of six inches above the underlying ground surface and the below-grade tank is underlain with a geomembrane liner to divert leaked liquid to a location that can be visually inspected.

9. BR has equipped the below-grade tanks with the ability to detect high level in the tank and provide alarm notification and shutdown process streams into the tank. Once high level is detected RTU logic closes the inlet separator sales valve and does not permit vent valve to open. This shutdown of the sales valve and gagging of the vent valves prevents any hydrocarbon process streams from entering the pit tank once a high level is detected. Furthermore, an electronic page is sent to the BR MSO for that well site and to the designated contract "Water-Hauling" Company indicating a high level and that action must be taken to address this alarm. The environmental drain line from BR's compressor skid under normal operating conditions is in the open position. The environmental drain line is in place to capture any collected rain water or spilled lubricants from our compressor skids. The swab drain line is a manually operated drain and by normal operating procedures is in the closed position. The tank drain line is also a manually operated drain and during normal operations it is in the closed position.

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- 10. The geomembrane liner consists of a 45-mil flexible LLDPE material manufactured by Raven Industries as J45BB. This product is a four layer reinforced laminated containing no adhesives. The outer layers consist of a high strength polyethylene film manufactured using virgin grade resins and stabilizers for UV resistance in exposed applications. The J45BB is reinforced with 1300 denier (minimum) tri-directional scrim reinforcement. It exceeds ASTMD3083 standard by 10%. J45BB has a warranty for 20 years from Raven Industries and is attached. It is typically used in Brine Pond, Oilfield Pit liner and other industrial applications. The manufacture specific sheet is attached and the design attached displays the proper installation of the liner.
- 11. The general specification for design and construction are attached in the BR document.



PROPERTIES	TEST METHOD	K K walkers	130BB	t de la companya de l	36B8	J	15BE
Anno 977777		Min. Roll Averages	Typical Roll Averages	Min. Roll Averages	Typical Rol Averages	• · · · · · · · · · · · · · · · · · · ·	Typical Roll
Appearance		Bla	ck/Black	Blac	k/Black		Averages k/Black
Thickness	ASTM D 5199	27 mil	30 mil	32 mil	36 mil		
Weight Lbs Per MSF (oz/yd²)	ASTM D 5261	126 lbs (18.14)	140 lbs (20.16)	151 lbs (21.74)	168 lbs (24.19)	40 mil 189 lbs (27.21)	45 mil 210 lbs
Construction		"Ex	trusion laminate	ed with encapsul		(27.21)	(30.24)
Ply Adhesion	ASTM D 413	16 lbs	20 lbs	19 lbs	-		rcement
1ª Toppille Stania at		00 164 140		+	24 lbs	25 lbs	31 lbs
1" Tensile Strength	ASTM D 7003	88 lbf MD 63 lbf DD	110 lbf MD 79 lbf DD	90 lbf MD 70 lbf DD	113 lbf MD 87 lbf DD	110 lbf MD 84 lbf DD	138 lbf MD 105 lbf DD
1" Tensile Elongation @ Break, % (Film Break)	ASTM D 7003	550 MD 550 DD	750 MD 750 DD	550 MD 550 DD	750 MD 750 DD	550 MD 550 DD	750 MD
1" Tensile Elongation @ Peak % (Scrim Break)	ASTM D 7003	20 MD 20 DD	33 MD 33 DD	20 MD 20 DD	30 MD 31DD	20 MD 20 DD	750 DD 36 MD 36 DD
Tongue Tear Strength	ASTM D 5884	75 lbf MD 75 lbf DD	97 lbf MD 90 lbf DD	75 lbf MD 75 lbf DD	104 lbf MD 92 lbf DD	100 lbf MD 100 lbf DD	117 lbf MD 118 lbf DD
Grab Tensile	ASTM D 7004	180 lbf MD 180 lbf DD	218 lbf MD 210 lbf DD	180 lbf MD 180 lbf DD	222 lbf MD 223 lbf DD	220 lbf MD 220 lbf DD	257 lbf MD 258 lbf DD
Trapezoid Tear	ASTM D 4533	120 lbf MD 120 lbf DD	146 lbf MD 141 lbf DD	130 lbf MD 130 lbf DD	189 lbf MD 172 lbf DD	160 lbf MD 160 lbf DD	193 lbf MD
Dimensional Stability	ASTM D 1204	<1	<0.5	<1	<0.5		191 lbf DD
Puncture Resistance	ASTM D 4833	50 lbf	64 lbf	65 lbf		<1	<0.5
Maximum Use Temperature		180° F			83 lbf	80 lbf	99 lbf
			180° F	190° E	1008 5		

MD = Machine Direction

Minimum Use Temperature

DD = Diagonal Directions

Note: Minimum Roll Averages are set to take into account product variability in addition to testing variability between laboratories.

180° F

-70° F

180° F

-70° F

*Dimensional Stability Maximum Value

-70° F

**DURA-SKRIM J30BB, J36BB & J45BB are a four layer reinforced laminate containing no adhesives. The outer layers consist of a high strength polyethylene film manufactured using virgin grade resins and stabilizers for UV resistance in exposed applications. DURA-SKRIM J30BB, J36BB & J45BB are reinforced with a 1300 denier (minimum) tri-directional scrim

Note: RAVEN INDUSTRIES MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and



PLANT LOCATION

180° F

-70° F

Sioux Falls, South Dakota

SALES OFFICE

180° F

-70° F

180° F

-70° F

P.O. Box 5107 Sioux Falls, SD 57117-5107 (605) 335-0174 (605) 331-0333 FAX 800-635-3456

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RAVEN INDUSTRIES INC. EXPOSED GEOMEMBRANE LIMITED WARRANTY

Raven Industries Inc. warrants Dura-Skrim J30BB, J36BB, and J45BB to be free from manufacturing defects and to be able to withstand normal exposure to sunlight for a period of 20 years from the date of sale for normal use in approved applications in the U.S and Canada, excluding Hawaii. This warranty is effective for products sold and shipped from January 1, 2008 to December 31, 2008.

This Limited Warranty does not include damages or defects in the Raven geomembrane resulting from acts of God, casualty or catastrophe including but not limited to: earthquakes, floods, piercing hail, or tornadoes. The term "normal use" as used herein does not include, among other things improper handling during transportation, unloading, storage or installation, the exposure of Raven geomembranes to harmful chemicals, atypical atmospheric conditions, abuse of Raven geomembranes by machinery, equipment or people; improper site preparation or covering materials, excessive pressures or stresses from any source or improper application or installation. Raven geomembrane material warranty is intended for commercial use only and is not in effect for the consumer as defined in the Magnuson Moss Warranty or any similar federal, state, or local statues. The parties expressly agree that the sale hereunder is for commercial or industrial use only.

Should defects or premature loss of use within the scope of the above Limited Warranty occur, Raven Industries Inc. will, at its option, repair or replace the Raven geomembrane on a pro-rata basis at the then current price in such manner as to charge the Purchaser/User only for that portion of the warranted life which has elapsed since purchase of the material. Raven Industries Inc. will, at its will have the right to inspect and determine the cause of any alleged defect in the Raven geomembrane and to take appropriate steps to repair or replace the Raven geomembrane if a defect exists which is covered under this warranty. This Limited Warranty extends only to Raven's geomembrane, and does not extend to the installation service of third parties nor does it extend to materials furnished or installed by others in connection with the intended use of the Raven geomembranes.

Any claim for any alleged breach of this warranty must be made in writing, by certified mail, to the General Manager of Engineered Films Division of Raven Industries Inc. within ten (10) days of becoming aware of the alleged defect. Should the required notice not be given, the defect and all warranties are waived by the Purchaser, and Purchaser shall not have any rights under this warranty. Raven Industries Inc. shall not be obligated to perform repairs or replacements under this warranty unless and until the area to be replaced is clean, dry, and unencumbered. This includes, but is not limited to, the area made available for repair and/or replacement of Raven geomembrane to be free from all water, dirt, sludge, residuals and liquids of any kind. If after inspection it is associated with the site inspection.

In the event the exclusive remedy provided herein fails in its essential purpose, and in that event only, the Purchaser shall be entitled to a return of the purchase price for so much of the material as Raven Industries Inc. determines to have violated the warranty provided herein. Raven Industries Inc. shall not be liable for direct, indirect, special, consequential or incidental damages resulting from a breach of this warranty including, but not limited to, damages for loss of production, lost profits, personal injury or property damage. Raven Industries Inc. shall not be obligated to reimburse Purchaser for any repairs, replacement, modifications or alterations made by Purchaser unless Raven Industries Inc. specifically authorized, in writing, said repairs, replacements, modifications or alteration in advance of them having been made. Raven Industry's liability under this warranty shall in no event exceed the replacement cost of the material sold to the Purchaser for the particular installation in which it failed.

Raven Industries Inc. neither assumes nor authorizes any person other than the undersigned of Raven Industries Inc. to assume for it any other or additional liability in connection with the Raven geomembrane made on the basis of the Limited Warranty. The Limited Warranty on the Raven geomembrane herein is given in lieu of all other possible material warranties, either expressed or implied, and by accepting delivery of the material; Purchaser waives all other possible warranties, except those specifically given. This Limited Warranty may only be modified by written document mutually executed by Owner and Raven Industries Inc.

Limited Warranty is extended to the purchaser/owner and is non-transferable and non-assignable; i.e., there are no third-party beneficiaries to this warranty.

Purchaser acknowledges by acceptance that the Limited Warranty given herein is accepted in preference to any and other possible materials warranties.

THIS LIMITED WARRANTY SHALL BE GOVERNED BY SOUTH DAKOTA LAW AND VENUE FOR ALL LEGAL PROCEEDINGS IN CONNECTION WITH THIS LIMITED WARRANTY SHALL BE IN MINNEHAHA COUNTY, SOUTH DAKOTA. RAVEN INDUSTRIES INC. MAKES NO WARRANTY OF ANY KIND OTHER THAN THAT GIVEN ABOVE AND HEREBY DISCLAIMS ALL WARRANTIES, BOTH EXPRESSED OR IMPLIED, OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THIS IS THE ONLY WARRANTY THAT APPLIES TO THE MATERIALS REFERRED TO HEREIN AND RAVEN INDUSTRIES INC. DISCLAIMS ANY LIABILITY FOR ANY WARRANTIES GIVEN BY ANY OTHER PERSON OR ENTITY, EITHER WRITTEN OR ORAL.

RAVEN INDUSTRIES' WARRANTY BECOMES AN OBLIGATION OF RAVEN INDUSTRIES INC. TO PERFORM UNDER THE WARRANTY ONLY UPON RECEIPT OF FINAL PAYMENT AND EXECUTION BY A DULY AUTHORIZED OFFICER OF RAVEN INDUSTRIES INC.

Burlington Resources Oil & Gas Company, LP San Juan Basin Below Grade Tank Maintenance and Operating Plan .

In accordance with Rule 19.15.17 the following information describes the operation and maintenance of Below Grade Tank (BGT) on Burlington Resources Oil & Gas Company, LP (BR) locations. This is BR's standard procedure for all BGT. A separate plan will be submitted for any BGT which does not conform to this plan.

General Plan:

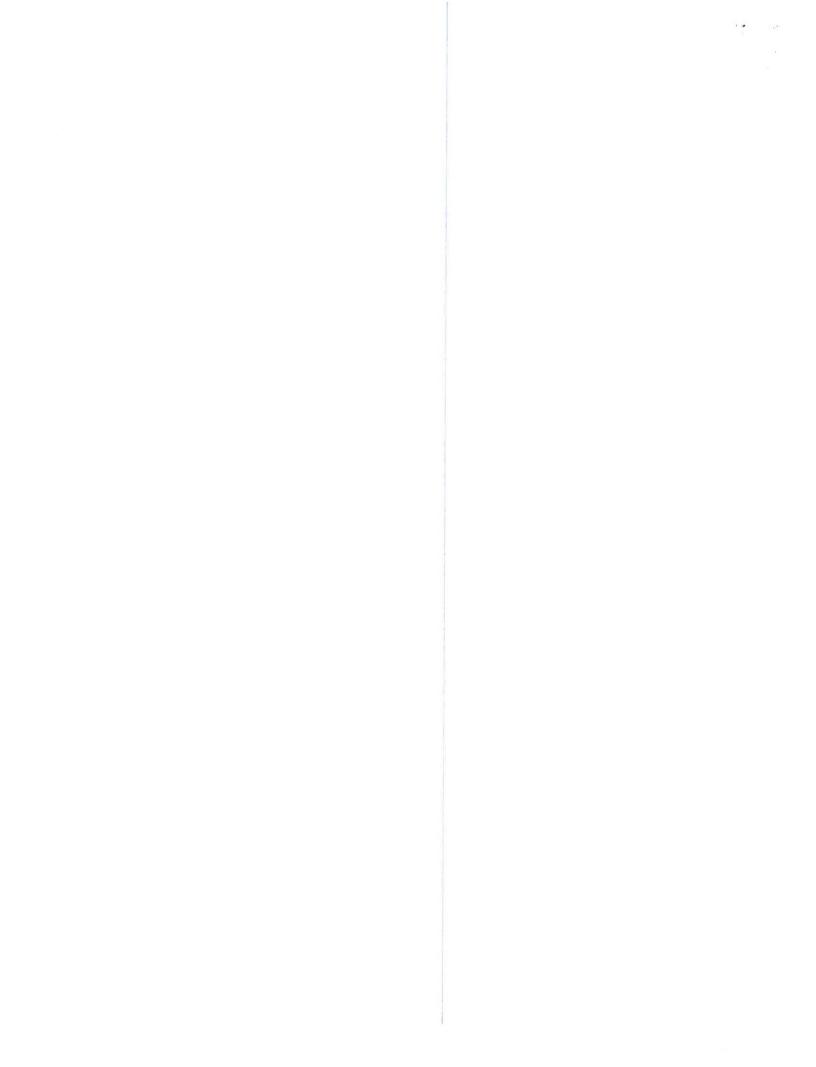
- BR will operate and maintain a BGT to contain liquids and solids and maintain the integrity of the liner, liner system and secondary containment system to prevent contamination of fresh water and protect public health and environment. BR will accomplish this by performing an inspection on a monthly basis, installing cathodic protection, and automatic overflow shutoff devices as seen on the design plan.
- 2. BR will not discharge into or store any hazardous waste in the BGT.
- 3. BR shall operate and install the below-grade tank to prevent the collection of surface water run-on. BR has built in shut off devices that do not allow a below-grade tank to overflow. BR constructs berms and corrugated retaining walls at least 6" above ground to keep from surface water run-on entering the below grade tank as shown on the design plan.
- 4. As per 19.17.15.12 Subsection D, Paragraph 3, BR will inspect the below-grade tank at least monthly reviewing several items which include 1) containment berms adequate and no oil present, 2) tanks had no visible leaks or sign of corrosion, 3) tank valves, flanges, and hatches had no visible leaks and 4) no evidence of significant spillage of produced liquids. In addition, BR's multi-skilled operators (MSOs) are required to visit each well location once per week. If detected on either inspection, BR shall remove any visible or measurable layer of oil from the fluid surface of a below-grade tank in an effort to prevent significant accumulation of oil overtime. The written record of the monthly inspections will include the items listed above and will be maintained for five years.
- 5. BR shall require and maintain a 10" adequate freeboard to prevent overtopping of the below-grade tank.
- 6. If the below grade tank develops a leak, or if any penetration of the pit liner or below grade tank, occurs below the liquid's surface, then BR shall remove all liquid above the damage or leak line within 48 hours. BR shall notify the appropriate district office. BR shall repair or replace the pit liner or below grade tank, within 48 hours of discovery. If the below grade tank or pit liner does not demonstrate integrity, BR shall promptly remove and install a below grade tank or pit liner that complies with Subsection I of 19.15.17.11 NMAC. BR shall notify the appropriate district office of a discovery of leaks less than 25 barrels as required pursuant to Subsection B of 19.15.3.116 NMAC shall be reported within twenty-four (24) hours of discovery of leaks greater than 25 barrels. In addition, immediate verbal notification pursuant to Subsection B, Paragraph (1), and Subparagraph (d) of 19.15.3.116 NMAC shall be reported to the division's Environmental Bureau Chief.

Burlington Resources Oil & Gas Company, LP San Juan Basin Below Grade Tank Closure Plan

In accordance with Rule 19.15.17.13 NMAC the following information describes the closure requirements of Below Grade Tanks (BGTs) on Burlington Resources Oil & Gas Company, LP locations hereinafter known as BR locations. This is BR's standard procedure for all BGTs. A separate plan will be submitted for any BGT which does not conform to this plan.

General Requirements:

- BR shall close a below-grade tank within the time periods provided in Subsection A of 19.15.17.13 NMAC. This will include a) below-grade tanks that do not meet the requirements of Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC or is not included in Paragraph (5) of Subsection I of 19.15.17.11 NMAC within five years, if not retrofitted to comply with Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC; b) permitted below-grade tanks within 60 days of cessation of the below-grade tank's operation., or c) an earlier date that the division requires because of imminent danger to fresh water, public health or the environment. For any closure, BR will file the C144 Closure Report as required.
- BR shall remove liquids and sludge from a below-grade tank prior to implementing a closure method and shall dispose of the liquids and sludge in a division-approved facility. The facilities to be used will be Basin Disposal (Permit #NM-01-005) and Envirotech Land Farm (Permit #NM-01-011). The liner after being cleaned well (Subsection D, Paragraph 1, Subparagraph (m) of 19.15.9.712 NMAC) will be disposed of at the San Juan County Regional Landfill located on CR 3100.
- 3. BR will receive prior approval to remove the below-grade tank and dispose of it in a division-approved facility or recycle, reuse, or reclaim it in a manner that the appropriate division district office approves. Documentation of how the below-grade tank was disposed of or recycled will be provided in the closure report.
- 4. If there is any on-site equipment associated with a below-grade tank, then BR shall remove the equipment, unless the equipment is required for some other purpose.
- 5. BR shall test the soils beneath the below-grade tank to determine whether a release has occurred. BR shall collect, at a minimum, a five point, composite sample; collect individual grab samples from any area that is wet, discolored or showing other evidence of a release; and analyze for BTEX, TPH and chlorides to demonstrate that the benzene concentration, as determined by EPA SW-846 methods 8021B or 8260B or other EPA method that the division approves, does not exceed 0.2 mg/kg; total BTEX concentration, as determined by EPA SW-846 methods 8021B or 8260B or other EPA method that the division approves, does not exceed 0.2 mg/kg; total BTEX concentration, as determined by EPA SW-846 methods 8021B or 8260B or other EPA method that the division approves, does not exceed 50 mg/kg; the TPH concentration, as determined by EPA method 418.1 or other EPA method that the division approves, does not exceed 50 mg/kg; the TPH division approves, does not exceed 100 mg/kg; and the chloride concentration, as determined by EPA method that the division approves, does not exceed 250 mg/kg, or the background concentration, whichever is greater. BR shall notify the division of its results on form C-141.
- 6. If BR or the division determines that a release has occurred, then BR shall comply with 19.15.3.116 NMAC and 19.15.1.19 NMAC, as appropriate.



- 7. If the sampling program demonstrates that a release has not occurred or that any release does not exceed the concentrations specified in Paragraph (4) of Subsection E of 19.15.17.13 NMAC, then BR shall backfill the excavation with compacted, nonwaste containing, earthen material; construct a division-prescribed soil cover; recontour and re-vegetate the site.
- 8. Notice of Closure will be given prior to closure to the Aztec Division office between 72 hours and one week via email or verbally. The notification of closure will include
 - i. Operator's name

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- ii. Location by Unit Letter, Section, Township, and Range. Well name and API number
- 9. The surface owner shall be notified of BR's closing of the below-grade tank prior to closure as per the approved closure plan via certified mail, return receipt requested.
- 10. Re-contouring of location will match fit, shape, line, form and texture of the surrounding. Re-shaping will include drainage control, prevent ponding, and prevent erosion. Natural drainages will be unimpeded and water bars and/or silt traps will be place in areas where needed to prevent erosion on a large scale. Final re-contour shall have a uniform appearance with smooth surface, fitting the natural landscape.
- 11. BR shall seed the disturbed areas the first growing season after the operator closes the pit. Seeding will be accomplished via drilling on the contour whenever practical or by other division-approved methods. BLM stipulated seed mixes will used on federally jurisdicted lands and division-approved seed mixtures (administratively approved if required) will be utilized on all State or private lands. Vegetative cover will equal 70% of the native perennial vegetative cover (un-impacted) consisting of at least three native plant species, including at least one grass, but not including noxious weeds, and maintain that cover through two successive growing seasons. If alternate seed mix is required by the state, private owner or tribe, it will be implemented with administrative approval if needed. BR will repeat seeding or planting will be continued until successful vegetative growth occurs.
- 12. A minimum of four feet of cover shall be achieved and the cover shall include one foot of suitable material to establish vegetation at the site, or the background thickness of topsoil, whichever is greater.
- 13. All closure activities will include proper documentation and be available for review upon request and will be submitted to OCD within 60 days of closure of the belowgrade tank. Closure report will be filed on C-144 and incorporate the following:
 - Soil Backfilling and Cover Installation
 - Re-vegetation application rates and seeding techniques •
 - Photo documentation of the site reclamation
 - Confirmation Sampling Results
 - Proof of closure notice