QA:NA

----- Original Message -----
From: "Delane Fitzpatrick-Maul/YM/RWDOE" <Delane_Fitzpatrick-Maul@ymp.gov>
To: "Lee Morton/YM/RWDOE" <Lee_Morton@ymp.gov>
Cc: "Ed McCann/YM/RWDOE" <Ed_McCann@Notes.YMP.GOV>; "Tom Pysto/YM/RWDOE" <Tom_Pysto@Notes.YMP.GOV>; "Andrea Randall/YM/RWDOE" <Andrea_Randall@Notes.YMP.GOV>; "Kurt Rautenstrauch/YM/RWDOE" <Kurt_Rautenstrauch@Notes.YMP.GOV>; "Michael Blois/YM/RWDOE" <Michael_Blois@Notes.YMP.GOV>; "Gerhard Tauss/YM/RWDOE" <Gerhard_Tauss@Notes.YMP.GOV>; "Gregory Mitchem/YM/RWDOE" <Gregory_Mitchem@Notes.YMP.GOV>; "Jane Summerson/YD/RWDOE" <Jane_Summerson@Notes.YMP.GOV>; "Marian Crawford/YD/RWDOE" <Marian_Crawford@Notes.YMP.GOV>; "Matthew Hagenow/YD/RWDOE" <Matthew_Hagenow@Notes.YMP.GOV>; "Scott Wade/YD/RWDOE" <Scott_Wade@Notes.YMP.GOV>; "Robin Sweeney/YD/RWDOE" <Robin_Sweeney@Notes.YMP.GOV>; "Steven Beason/YM/RWDOE" <Steven_Beason@Notes.YMP.GOV>; <kdavis@jason.com>; <jon_luellen@urscorp.com>; "Joseph Rivers/YD/RWDOE" <Joseph_Rivers@Notes.YMP.GOV>
Sent: Monday, April 16, 2007 6:09 PM
Subject: SEIS Water Balance Revision 4

>
> Attached is the Supplemental EIS Water Balance Revision 4. Changes were
> made to line 40, regarding the timing of Rail and End of Line facility
> construction and water use distribution. Water demand for this activity
> did not change. This line is highlighted in blue.
>
> I also spoke with a representative from NSTech, the M&O Contractor for the
> Nevada Test Site, regarding NTS water withdrawals from wells J-12/J-13.
> The NTS withdrew an average of 67 acre-feet per year from these two wells
> the period of time 2000 through 2006, for non-YMP purposes.
>
> Please call (702.821.7881) if you have any questions or comments.
>
> Delane
>
> (See attached file: SEIS Water Balance Rev 4.xls)

SEIS Water Balance Rev 4.xls

SEIS WATER BALANCE
April 16, 2007
Revision 4

QA:NA

	A	B	C	D	E	F	G	H	I	J	K	L
1	**ACTIVITY/START YEAR**	**CY06**	**CY07**	**CY08**	**CY09**	**CY10**	**CY11**	**CY12**	**CY13**	**CY14**	**CY15**	**CY16**
2	**REPOSITORY PHASE**							**CONSTRUCTION (5 years Oct 2011 to Mar. 2017)**				
3	***Basis for Activities is SEIS Position Paper***	**PROJECTED ANNUAL WATER CONSUMPTION (ACRE-FEET)**										
4	**Subsurface Construction**											
5	Emplacement Drifts							8.3	12.6	19.0	18.6	17.9
6	Emplacement Drift Turnouts						1.8	2.2	2.2	2.2	2.2	2.2
7	25 Foot Diameter Ventilation Drift								15.3	10.2		
8	18 Foot Diameter Drift							5.3				
9	26 Foot Intake/Exhaust Shafts						0.7	1.1		0.8	0.3	0.7
10	Shaft Access, 26 x 28									0.7		0.1
11	Exhaust Shaft 3 N Construction Access											
12	16 Foot Exhaust Shaft							0.2	0.7			
13	Panel 1 Constr. Vent Raise to ECRB, 12'								0.1			
14	Exhaust Raise Access, 16 x 16							0.3				
15	Ventilation Drift, 23 x 23						0.3					0.6
16	Ventilation Drift, 12 x 12								0.2			
17	Assembly and Disassembly Chambers							0.1	0.1	0.1		
18	ECRB Ventilation Related Drifts						0.8					
19	Intake Shaft Access											
20	Performance Confirmation Facility							2.8	1.8			
21	**Surface Construction**											
22	Surface Concrete		1.0		0.2	0.1	0.1	2.2	15.2	20.1	14.9	12.6
23	Concrete For Temporary Facilities						0.10	0.4	0.2			
24	Muck Pile and Undocumented Fill Removal						42.7	5.3				
25	General Site Dust Control				13.0	13.0	7.4	29.5	29.5	29.5	29.5	29.5
26	Excavation for Flood Control Channels							2.1	7.2	0.2	0.2	0.1
27	North Portal Pad Excavation 1,722,848 cy + 35,000 (IHF on North Portal Pad) = 1757848 cy 2% moisture 8.0 gal / cy)							3.7	13.7	14.9	8.7	
28	North Portal Temporary Facilities Excavation 467,900 cy (2% moisture 8.0 gal / cy)							8.0	3.5			
29	North Portal Pad Utilities Excavation 118,009 cy (2% moisture 8.0 gal / cy)							0.1	1.1	1.1	0.3	0.3
30	South Portal Pad Excavation 39,778 cy (2% moisture 8.0 gal / cy)						1.0					
31	Aging Pads K, L, M Excavation K- (386,100 CY), L&M- (1,190,000 CY), N- (1,056,000 CY) (2% moisture 8.0 gal / cy)							9.5		29.2		7.2
32	North Portal Pad Structural Fill (3365574 yd3) - Facilities 196,600 + Mass 3,168,974 (22.3 gal./ yd3)							81.3	149.0			
33	South Portal Pad Structural Fill (245183 yd3) - Facilities 45183 + Mass 200,000 (22.3 gal./ yd3)						3.4	13.4				
34	Aging Pads K (113,300 CY), L&M (664,700 CY), N (584,700 CY) Structural Fill - (22.3 gal./ yd3)								4.2	3.5	14.7	17.6

SEIS WATER BALANCE
April 16, 2007
Revision 4

	A	M	N	O	P	Q	R	S	T	U
1	ACTIVITY/START YEAR	CY17	CY18	CY19	CY20	CY21-	CY22	CY23	CY24	TOTAL
2	REPOSITORY PHASE	OPERATIONS/CONSTRUCTION (5 years)					OPERATIONS (45 years)			
3	*Basis for Activities is SEIS Position Paper*									
4	**Subsurface Construction**									
5	Emplacement Drifts	17.1	18.4	13.7	13.0	12.8	13.9	14.8	16.6	196.7
6	Emplacement Drift Turnouts	2.0	2.6	2.2	2.2	2.2	2.2	2.3	2.8	31.3
7	25 Foot Diameter Ventilation Drift	24.2	22.4	25.6	28.4			25.1	28.1	179.4
8	18 Foot Diameter Drift									5.3
9	26 Foot Intake/Exhaust Shafts	0.6	1.9	0.1		1.7	1.8	1.6		11.3
10	Shaft Access, 26 x 26			0.8			2.2	2.9		6.8
11	Exhaust Shaft 3 N Construction Access		0.1							0.1
12	16 Foot Exhaust Shaft				0.7					1.7
13	Panel 1 Constr. Vent Raise to ECRB, 12'									0.1
14	Exhaust Raise Access, 16 x 16			0.1	0.6					1.0
15	Ventilation Drift, 23 x 23							0.9		1.8
16	Ventilation Drift, 12 x 12									0.2
17	Assembly and Disassembly Chambers		0.3	0.3				0.2		1.1
18	ECRB Ventilation Related Drifts			0.1						1.0
19	Intake Shaft Access					11.6				11.6
20	Performance Confirmation Facility									4.6
21	**Surface Construction**									
22	Surface Concrete	11.9	7.9	10.6	7.8	9.3	1.5			115.5
23	Concrete For Temporary Facilities									0.7
24	Muck Pile and Undocumented Fill Removal									48.1
25	General Site Dust Control	29.5	29.5							239.5
26	Excavation for Flood Control Channels	0.5								10.2
27	North Portal Pad Excavation 1,722,848 cy + 35,000 (IHF on North Portal Pad) = 1757848 cy 2% moisture 8.0 gal / cy)									41.1
28	North Portal Temporary Facilities Excavation 467,900 cy (2% moisture 8.0 gal / cy)									11.5
29	North Portal Pad Utilities Excavation 118,009 cy (2% moisture 8.0 gal / cy)									2.9
30	South Portal Pad Excavation 39,778 cy (2% moisture 8.0 gal / cy)									1.0
31	Aging Pads K, L, M Excavation K- (386,100 CY), L&M- (1,190,000 CY), N- (1,056,000 CY) (2% moisture 8.0 gal / cy)	18.7								64.6
32	North Portal Pad Structural Fill (3365574 yd3) - Facilities 196,600 + Mass 3,168,974 (22.3 gal./ yd3)									230.3
33	South Portal Pad Structural Fill (245183 yd3) - Facilities 45183 + Mass 200,000 (22.3 gal./ yd3)									16.8
34	Aging Pads K (113,300 CY), L&M (664,700 CY), N (584,700 CY) Structural Fill - (22.3 gal./ yd3)	27.4	15.5	10.3						93.3

SEIS WATER BALANCE
April 16, 2007
Revision 4

	A	B	C	D	E	F	G	H	I	J	K	L
1	ACTIVITY/START YEAR	CY06	CY07	CY08	CY09	CY10	CY11	CY12	CY13	CY14	CY15	CY16
2	REPOSITORY PHASE							CONSTRUCTION (5 years Oct 2011 to Mar. 2017)				
35	IHF ON North Portal Pad Structural Fill (12,000 yd3) (22.3 gal./ yd3)									0.8		
36	Aging Pads Roads Sub Base 673,620 cy (22.3 gal./ yd3)							1.6	10.2	9.5	9.2	3.7
37	Miscellaneous (Janitorial Activities, Washdowns etc..)						0.9	3.7	3.7	3.7	3.7	3.7
38	Hydrotesting (Allotment)							0.5	0.5	1.5		
39	**Novada Transportation**											
40	Rail and End of Line Construction on NTS					350.0	172.0	30.0	20.0			
41	Rail and End of Line Facility Operation							6.0	6.0	6.0	6.0	6.0
42	**Roads**											
43	On-site Roads 246,700 CY (22.3 gal./ yd3) unpaved								1.5	9.0	2.6	0.7
44	Construction Haul Roads 198,000 CY (22.3 gal./ yd3)						3.2	10.3				
45	Other Access Roads (1,604,840 CY)						71.6	30.8	30.8	30.8	10.3	
46	South Portal Access Road Upgrade (14,950 CY)								0.6	0.4		
47	New North Portal Access Road (20,000 CY)											
48	Site Access Road - First two Lanes				80.0	80.0						
49	Site Access Road 2nd two Lanes/Interchange (503,570 CY)						17.1	58.4	16.9			
50	Crest Road - 10 miles					40.0	40.0					
51	**Three Batch Plants**											
52	Operation							18.0	27.0	27.0	27.0	27.0
53	Installation							2.0	1.0			
54	**138/230 kV Power**											
55	Construct access route, and control dust					6.0						

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	A	M	N	O	P	Q	R	S	T	U
1	ACTIVITY/START YEAR	CY17	CY18	CY19	CY20	CY21	CY22	CY23	CY24	TOTAL
2	REPOSITORY PHASE	OPERATIONS/CONSTRUCTION (5 years)					OPERATIONS (45 years)			
35	IHF ON North Portal Pad Structural Fill (12,000 yd3) (22.3 gal./ yd3)									0.8
36	Aging Pads Roads Sub Base 673,620 cy (22.3 gal./ yd3)	8.7	3.3							46.1
37	Miscellaneous (Janitorial Activities, Washdowns etc..)	3.7	3.7	3.7	3.7					34.1
38	Hydrotesting (Allotment)									2.5
39	**Nevada Transportation**									
40	Rail and End of Line Construction on NTS									572.0
41	Rail and End of Line Facility Operation	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	78.0
42	**Roads**									
43	On-site Roads 246,700 CY (22.3 gal./ yd3) unpaved		1.1	0.4						15.3
44	Construction Haul Roads 198,000 CY (22.3 gal./ yd3)									13.6
45	Other Access Roads (1,604,840 CY)									174.3
46	South Portal Access Road Upgrade (14,950 CY)									1.0
47	New North Portal Access Road (20,000 CY)			0.9	0.5					1.4
48	Site Access Road - First two Lanes									160.0
49	Site Access Road 2nd two Lanes/Interchange (503,570 CY)									92.5
50	Crest Road - 10 miles									80.0
51	**Three Batch Plants**									
52	Operation	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	342.0
53	Installation									3.0
54	**138/230 kV Power**									
55	Construct access route, and control dust									6.0

SEIS WATER BALANCE
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	A	B	C	D	E	F	G	H	I	J	K	L
1	ACTIVITY/START YEAR	CY06	CY07	CY08	CY09	CY10	CY11	CY12	CY13	CY14	CY15	CY16
2	REPOSITORY PHASE							CONSTRUCTION (5 years Oct 2011 to Mar. 2017)				
56	Central Operations Area (Lower Muck Yard)											
57	Surface Concrete				1.2	0.1	0.3					
58	General Site Dust Control				13.0	13.0	7.4					
59	Excavation						5.1					
60	Structural and Mass Fill				4.7	2.0	37.9					
61	ON-SITE Road Sub-base						2.9					
62	OFF-SITE Road Sub-base				2.1	5.3	3.4					
63	Hydrotesting (Allotment)				0.5	0.5	1.5					
64	Gate 510											
65	Construction				20.0							
66	Repository Facility Boreholes											
67	Drilling, Road and Pad Construction - Phase I	1.6	2.4									
68	Drilling, Road and Pad Construction Phase II		12.3									
69	Igneous Anomaly Drilling											
70	Drilling	0.3										
71	Reclamation		0.6									
72	Topsoil Stockpile Relocation											
73	Move stockpile from location near South Portal						3.0					
74	Well Sampling at Select H and WT Boreholes											
75	Sample 7 boreholes				0.3	0.3						
76	Status Quo - Ongoing Operations											
77	Dust Control/Road Maintenance/Permit Compliance	9.8	10.0	10.0	10.0	10.0	15.0	20.0	20.0	20.0	20.0	20.0
78	Potable Water											
79	Potable Water for Showering Construction Worker					1.4	19.8	34.5	48.4	73.9	40.5	45.4
80	Potable Water for non-Showering Construction Worker					0.1	0.9	3.0	2.4	3.1	3.0	3.5
81	Lower Muck Yard Operations					4.7	4.7	4.7	4.7	4.7	4.7	4.7
82	Repository Operations								2.0	5.0	5.0	5.0
83	Rail End of Line Facility Operations							1.0	1.0	1.0	1.0	1.0
84	Potable Water for Ongoing operations	1.3	2.0	2.0	2.0							
85	Annual acre-feet	13	28	12.0	147	526	465	400	453	328	222	209

SEIS WATER BALANCE
April 16, 2007
Revision 4

	A	M	N	O	P	Q	R	S	T	U
1	ACTIVITY/START YEAR	CY17	CY18	CY19	CY20	CY21	CY22	CY23	CY24	TOTAL
2	REPOSITORY PHASE	OPERATIONS/CONSTRUCTION (5 years)					OPERATIONS (45 years)			
56	**Central Operations Area (Lower Muck Yard)**									
57	Surface Concrete									1.6
58	General Site Dust Control									33.3
59	Excavation									5.1
60	Structural and Mass Fill									44.6
61	ON-SITE Road Sub-base									2.9
62	OFF-SITE Road Sub-base									10.9
63	Hydrotesting (Allotment)									2.5
64	**Gate 510**									
65	Construction									20.0
66	**Repository Facility Boreholes**									
67	Drilling, Road and Pad Construction - Phase I									4.0
68	Drilling, Road and Pad Construction Phase II									12.3
69	**Igneous Anomaly Drilling**									
70	Drilling									0.3
71	Reclamation									0.6
72	**Topsoil Stockpile Relocation**									
73	Move stockpile from location near South Portal									3.0
74	**Well Sampling at Select H and WT Boreholes**									
75	Sample 7 boreholes									0.6
76	**Status Quo - Ongoing Operations**									
77	Dust Control/Road Maintenance/Permit Compliance	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	324.8
78	**Potable Water**									
79	Potable Water for Showering Construction Worker	47.6	52.0	48.7	45.2	43.4	43.6	33.8	19.1	597.2
80	Potable Water for non-Showering Construction Worker	3.2	3.0	2.9	3.0	1.9	0.4			30.4
81	Lower Muck Yard Operations	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	70.5
82	Repository Operations	16.0	15.6	16.0	17.5	18.4	20.3	20.8	20.8	162.4
83	Rail End of Line Facility Operations	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	13.0
84	Potable Water for Ongoing operations									7.3
85	**Annual acre-feet**	270	236	195	181	160	145	161	146	4299.2

Cell: H2
Comment: mauld:
Five-year period. This period would begin upon receipt of a Construction Authorization (CA) from the NRC and include site preparation, infrastructure construction, construction of the repository surface facilities presented in the License Application construction Phase 1 (as defined in Surface Construction comment) and initial construction of the repository subsurface facilities.

Cell: M2
Comment: mauld:
Operations Phase begins with receipt of a license amendment to receive and process waste and would include receipt, handling, aging, emplacement, and monitoring of waste. During the operations period, Surface Construction Phases 2, 3, and 4 as described in the License Application, would be completed, and subsurface construction would continue until complete. The operations period would last for up to 50 years and end upon emplacement of the last waste package.

Cell: B3
Comment: mauld:
1 acre-feet = 325,851 gallons

Cell: A4
Comment: Water usage schedule for underground repository construction is based on the new layout and incorporates the thicker emplacement drift ballast (81 percent more ballast). Spikes in water usage are cause by 25' TBM development drives and shaft sinking activities. Construction schedule is reduced from 25 years to 23 years. Water needs data for Subsurface Construction from John Beesely 3/1/07.

Assumption/Schedule Used to Develop Underground Water Use Schedule as follows:

Year 1
No emplacement drifts.
Turnouts: 1-1, 1-2, 1-3, 1-4 (318 x 4 feet).
The ECRB Exhaust Shaft (500' of 1,306 feet) starts.
Panel 1 connector drift (189 feet) is complete in year 1.
ECRB access to raise (88 feet) for Panel 3.
ECRB widening (1042 feet) for Panel 3.

Year 2
Emplacement drifts: 1-1, 1-2, 1-3 (1664, 1955, 1959 feet).
Turnouts: 1-5, 1-6, 2-1, 2-2, 2-3 (318 x 5 feet).
The PC drift and alcove (3,186 and 131) start.
The cross drift to panel 4 (2,951 feet) is completed.
The Panel 1 Exhaust Main (1,820 feet) is completed.
TBM disassembly chamber at end of Cross Drift (70 feet)
Shaft access (237 feet) to the bottom of the Exhaust Shaft #1 is completed.
The ECRB Exhaust Shaft (806' of 1,306 feet) is completed.
Exhaust Shaft #1 (300' of 1,167 feet) is started.

Year 3
Emplacement drifts: 1-4, 1-5, 1-6, 2-1 (1959, 1959, 1959, 2557 feet).
Turnouts: 2-4, 2-5, 2-6, 2-7, 2-8 (318 x 5 feet).
The PC drift and alcove (3,186 and 131 feet) are completed.
Ventilation raise accesses to ECRB raise (150 feet) are completed.
Vent raise to the ECRB (95 feet) is completed.
Exhaust Shaft #1 (867' of 1,167 feet) is completed.
A TBM assembly chamber (70 feet) is completed
The Panel 2 Exhaust Main (6,000' of 9,998 feet) is started.

Year 4
Emplacement drifts: 2-2, 2-3, 2-4, 2-5, 2-6 (2557, 2554, 2544, 2533, 2523 feet)
Turnouts: 2-9, 2-10, 2-11, 2-12, 2-13 (318 x 5 feet)
Access to Intake Shaft #2 (358) is completed.
Intake Shaft #2 (600' of 814 feet) is started.
The Panel 2 Exhaust Main (3,998' of 9,998 feet) is completed.
ECRB Exhaust Shaft Access (299 feet) is completed.
A TBM disassembly chamber (70 feet) is completed.

Year 5
Emplacement drifts: 2-7, 2-8, 2-9, 2-10, 2-11 (2512, 2502, 2491, 2481, 2460 feet)
Turnouts: 2-14, 2-15, 2-16, 2-17, 2-18 (318 x 5 feet)
Intake Shaft #2 (214' of 814 feet) is completed.
Year 6
Emplacement drifts: 2-12, 2-13, 2-14, 2-15, 2-16 (2439, 2419, 2398, 2377, 2356 feet)
Turnouts: 2-19, 2-20, 2-21, 2-22, 2-23 (318 x 5 feet)
Access main offset drift (469 feet) is completed.
Exhaust Shaft #2 Access Drift (66 feet) is completed.
Exhaust Shaft # 2 (500' of 958 feet) is started.
North Construction Portal is built.

Year 7
Emplacement drifts: 2-17, 2-18, 2-19, 2-20, 2-21 (2336, 2315, 2294, 2273, 2253 feet)
Turnouts: 2-24, 2-25, 2-26, 2-27 (318, 318, 349, 498 feet)
Exhaust Shaft #2 (458' of 958 feet) is completed.
North Construction Ramp (9,462) is completed.

Year 8
Emplacement drifts: 2-22, 2-23, 2-24, 2-25, 2-26, 2-27 (2232, 2211, 2190, 2150, 1914, 1591 feet)
Turnouts: 3E-18, 3E-19, 3W-23, 3W-24, 3W-25, 3W-26 (318 x 6 feet)
Complete Panel 3 Access Main (8759 feet).
TBM disassembly chamber (70 feet) completed.

TBM assembly chamber (70 feet) is completed, 3 East Exhaust.
TBM assembly chamber (70 feet) is completed, Panel 3 West Exhaust
Shaft 3N (1404 feet) completed.
Exhaust Shaft #3N construction access (102 feet) completed.

Year 9
Emplacement drifts: 3W-23, 3W-24, 3W-25, 3W-26, 3E-19 (1954, 1954, 1954, 1954, 1350 feet)
Turnouts: 3E-16, 3E-17, 3W-20, 3W-21, 3W-22 (318 x 5 feet)
Panel 3 Exhaust Main (10,000' of 21,127 feet) is started.
TBM disassembly chamber (70 feet) completed, 3 East Exhaust Main
TBM disassembly chamber (70 feet) completed, 3 West Exhaust Main
TBM disassembly chamber (70 feet) completed, Panel 4 Dual Exhaust Main
Exhaust Shaft 3N West Access (387 feet) completed.
Exhaust Shaft 3N East Access (348 feet) completed.
Access to Exhaust Shaft #1 (72 feet) completed.
Access to ECRB Raise (99 feet) completed
Ventilation Raise (95 feet) to ECRB completed.

Year 10
Emplacement drifts: 3W-20, 3W-21, 3W-22, 3E-17, 3E-18 (1954, 1954, 1954, 1453, 1402 feet)
Turnouts: 3E-14, 3E-15, 3W-17, 3W-18, 3W-19 (318 x 5 feet)
Panel 3 Exhaust Main (11,127' of 21,127 feet) is completed.
Exhaust Shaft 3S shaft access drift completed (417 feet)
Exhaust Shaft 3S completed (915 feet)
Year 11
Emplacement drifts: 3W-18, 3W-19, 3E-14, 3E-15, 3E-16 (1954, 1954, 1614, 1556, 1505 feet)
Turnouts: 3W-15, 3W-16, 3E-11, 3E-12, 3E-13 (318 x 5 feet)
Intake Shaft #4 Access Drift (4,541 feet)
Intake Shaft #4 completed (1,240 feet)

Year 12
Emplacement drifts: 3W-15, 3W-16, 3W-17, 3E-12, 3E-13 (1954, 1954, 1954, 1774, 1659 feet)
Turnouts: 3W-12, 3W-13, 3W-14, 3E-9, 3E-10 (318 x 5 feet)
Exhaust Shaft #4 Access Drift (1,962 feet)
Complete Exhaust Shaft #4 (1,329 feet)

Year 13
Emplacement Drifts: 3W-12, 3W-13, 3W-14, 3E-10, 3E-11 (1954, 1954, 1954, 2102, 1938)
Turnouts: 3W-10, 3W-11, 3E-6, 3E-7, 3E-8 (315, 318, 394, 318, 318 feet)
Complete Intake Shaft #3 Access Drift (2,526 feet)
Complete Intake Shaft #3 (1,148 feet)

Cell: A21
Comment:

Surface construction water needs and schedule provided by Steve Novak, 3/1/07. The water usage schedule for nuclear surface facilities construction. This spreadsheet is based on the following:
Phase 1 (IHF, CRCF#1, WHF and BOP Phase 1, Aging Pad K revised smaller layout)
Phase 2 (Receipt Facility and related BOP)
Phase 3 (CRCF#2, Aging Pad L&M revised smaller layout, related BOP)
Phase 4 (CRCF#3, Aging Pad N revised smaller layout, related BOP)
In addition, the schedule includes potable water for surface and subsurface personnel.

Cell: G23
Comment: mauld:

Nokak's value for this year is 10,000 gallons or 0.03 acre-feet. For the purpose of this Water Balance the number was increased to 32,585 gallons or 0.1 acre-feet, in order to maintain consistent number formatting of one decimal place.

Cell: A37
Comment: mauld:

Assumed that Surface Construction Miscellaneous water needs start in 2011. Miscellaneous water for other construction occurring prior to 2011 is addressed in the Ongoing Operations water need.

Cell: A40
Comment: mauld:

Does not include proposed Withdrawal area in Crater Flat, does include End of Line Facility and Rail construction on NTS (which is approximately the work that occurs in Basin 227A). Construction schedule and water need are detailed in Construction Plan, Caliente Rail Corridor, Rev 02, dated March 2, 2007, Document Number NRP-R-SYSW-CP-0008-02. 572 acre-feet total water need for rail and End of Line divided by the 24-month construction period, August 2011 through July 2013. (DFM).

Included in the 572 acre-feet is the estimated dust control water need of 600,000 gallons of water per mile (Table 4.4 of Construction Plan, Caliente Rail Corridor.)

Revision 4 Basis for Change in construction schedule:
MarkVandeberg, Greg Fasano, Delane Fitzpatrick-Maul, and Kurt Ratenstrauch met to discuss modifying the schedule for rail-construction water use in Basin 227 to minimize impacts on the water budget for repository and rail construction. The current version of that budget predicts an excess over the target of 430 acre-feet (af) of 226 af in 2012 and 169 af in 2013.

Shifting the start of rail construction in that basin to 2010 will reduce the problem, but cannot eliminate it because the total demand for all construction activities in 2010 to 2013 is 1844 af, about 125 af more than the 1720 af that would be available if 430 af annually were permitted.

This schedule is intended to allow most or all rail-line roadbed construction in 2010, roadbed and facility construction at the EOL in 2011, and dust control and personnel support in 2012 and 2013 for remaining work.

2010 - 350 af
2011 - 172 af

2012 - 30 af
2013 - 20 af

Cell: A41
Comment: mauld:
Operational water need from Facilities-Design Analysis Report, Caliente Rail Corridor, Rev 2, Document Number NRP-R-SYSW-FA-0001-02.

Potable water requirement for operational phase in the Potable Water section of this table.

Cell: A42
Comment: Onsite Roads, Construction Haul Roads, Other Access Roads, South Portal Access Road Upgrade, and New North Portal Access Road water demand from Steve Novak , 3/1/07.

Water estimates for Site Access Road - First Two Lanes and Crest Road from other sources.

Assume a maximum of 30 miles of unpaved construction haul roads, including roads to the shafts, that are 12-foot wide and 2-lanes. (Peter Glover March 13, 2007)

Cell: A43
Comment: Includes construction haul roads, GROA roads, roads to borrow areas. These roads would be unpaved during the Construction period. GROA roads would be paved upon completion of Construction. (per Steve Novak, 3/9/07)

Cell: A44
Comment: These unpaved Construction Haul Roads would be used by trucks supporting earthwork, concrete work, and other construction related needs.

Cell: A45
Comment: mauld:
Includes access roads to the Shafts, these are unpaved.

Cell: A48
Comment: Assumes that construction of first two lanes uses more water than second two lanes. Site Access Road Water demand for CY09 and CY10 are based on 2004 Water Calculation assumption 6.3.1.2 (this assumption is based on a 4-lane roadway). The estimated demand per mile for the 4-lane road is 16 acre-feet/mile. The construction period is assumed to be one year. [* 2004 MGR Overall Water Balance Calculation. ACC:ENG.20040709.0017]

Assume that water for dust control during construction is included in this estimate. (Delane Fitzpatrick-Maul)

Cell: A49
Comment: mauld:
This water need represents compaction of base course and coarse materials and dust control water (described below) during construction of the roadway. Water need (from Steve Novak's original data , refer to Worksheet titled NOVAK) is based on compaction requirements for construction of the Interchange at U.S. 95 (1,178,100 cubic yards)and the first two lanes of Site Access road (20,000 cubic yards), for a combined total of 1,198,100 cubic yards. Dust control for the Site Access road is

included in the Surface Construction dust control numbers. Dust control for the Interchange has not been provided.

Dust control water needs on construction haul roads are assumed to be 53 acre-feet for 20 months, based on the use of 40,000 gallons per day, at 5-days a week. Construction is assumed to progress at 1 mile per month. This amount also captures the dust control water need for roads to the borrow areas, assuming that the borrow area is within 2.5 miles of the North Portal Pad. Per discussion between Tom Pysto, Steve Novak, Peter Glover, and Delane Fitzpatrick-Maul on March 13, 2007.

Water Need for Interchange and Reach A of Site Access Road is NOT included in this Water Balance table:
(1) The amount of water needed to construct the interchange is approximately 80 acre-feet, based on Steve Novak's March 1, 2007 Surface Construction Water needs table. (2) Water to support Highway Interchange, as well as Reach A of Site Access Road would come from Basin 230, Amargosa Valley.

Cell: A50
Comment: mauld:
Crest Road water demand for CY10 and CY11 are based on 2004 Water Calculation assumption 6.3.1.2 (this assumption is based on a 4-lane roadway). The estimated demand per mile for the 4-lane road is 16 acre-feet/mile. Assume that construction of a two lane roadway to the Crest uses 8 acre-feet of water/mile. The construction period is assumed to occur over a two-year period. It is assumed that an 10-mile long, 2-lane Crest Road would be constructed. Dust control water needs are also assumed to be included in this amount (Delane Fitzpatrick-Maul) [* 2004 MGR Overall Water Balance Calculation. ACC:ENG.20040709.0017]

Cell: A52
Comment: mauld:
Assumed production per batch plant is 50 to 75 cu yd/hour (8-hours/day*75 cu yd), 100 days/year, and 50 gal/cu yd.

Two batch plants will be installed and operational in 2012, a third batch plant will be installed and operational in 2013. The third batch plant will support aging pad construction, and will operate sporadically. The two plants installed in 2012 will support construction of the Repository surface facilities and tunnel construction.

Per Andrea Randall, Feb. 13, 2007, add dust control water for use on aggregate piles and pad area. This amount is approximately 1/2 amount necessary for daily operation. The basis for the dust control water need is the NV. Transportation/Rail water need for concrete batch plant operation.

Cell: A53
Comment: mauld:
mauld:
Assumed 1 acre-foot for site preparation and compaction per each batch plant installation. Based on discussion with Andrea Randall February 2007.

Cell: A55
Comment: mauld:
Water need from Draft EA. Assumes a 20-mile long power line and road. Assumed water need is 6 acre-feet.

Cell: A56
Comment: mauld:
Information for Central Operations Area construction water needs provided by Peter Glover 10/5/06.

Cell: A64
Comment: mauld:
According to Lee Morton, Gate 510 is Categorically Excluded from NEPA (Environmental Baseline Review 05-020, ACC: MOL.20060109.0289)

Cell: A65
Comment: mauld:
The Gate 510 Security Complex water demand estimate is 20 acre-feet of water for one year. When a preliminary design is developed for the Gate 510 Security Complex, this value could be reevaluated. (Delane Fitzpatrick-Maul)

Cell: A67
Comment: mauld:
Based on letter to State Engineer describing 1.3 million gallons necessary to conduct Phase I drilling of RF Boreholes, dtd 2/17/05 (ACC: MOL.20050301.0303).

Cell: A73
Comment: mauld:
based on 3/28/06 e-mail from Catherine
Tharin.

2/16/07, based on discussion with Ron Green, relocation of topsoil stockpile is depends upon future use of that location. No current Biological requirement to move topsoil stockpile.

Cell: A75
Comment: mauld:
Assume 20,000 gallons per sample event, which is amount necessary to obtain representative sample of aquifer. Sample 3 wells first year and 4 wells second year. Water was not sampled when wells were originally installed. Per Alan Mitchell, 2/20/2007

Cell: A77
Comment: mauld:
Current operational non-potable water needs to support pre-Construction road maintenance , dust control on existing roads, testing, and Site support through 2010. Water need increase at 2011 throughout the Operations phase accounts for new roads that will require maintenance and stormwater permit compliance. (based on conversation between Andrea Randall and Delane Fitzpatrick-Maul, 3/15/07)

Cell: A79
Comment:
Numbers from Steve Novak for Repository Surface and Subsurface Construction Crew water/shower needs. March 1, 2007.

Cell: A80
Comment:
Numbers from Steve Novak for Repository Surface and Subsurface Construction Crew water/shower needs. March 1, 2007.

Cell: A81
Comment: mauld:
Lower Muck Yard operational water needs based on modified LEED Fixture Usage, and subcontract documents listing occupancy. Original document provided by Tracy Johnson September 2006, subsequently modified by Delane Fitzpatrick-Maul October 2006 and February 2007.

Cell: A82
Comment: mauld:
Based on full time employee equivalent (FTE) staffing projections for GROA - nuclear facilities, balance of planned, administration, exclusive of Lower Muck Yard. Data provided by Gerhard Tauss, 2/22/2007 and verified by Clarence Smith 3/14/07. Basis for FTE data is the TSLCC update for 120 metric tons scenario, document 2006_TSLCC_BNA_111706.DOC. Assumes each FTE uses 15 gallons per day, for 365 days each year.

Cell: A83
Comment: mauld: The following taken from NRP-R-SYSW-FA-0001-02, Facilities-Design Analysis Report, Caliente Rail Corridor

Operational water needs based on the following: (1) 40 employees (Table 3-A) for the End of Line (EOL) facility; (2) page 3-4 of Facilities report, assuming a 365-day operation; and (3) the Repository facility potable water operational need assumption of 15 gallons per day per person. Using this set of assumptions, the annual potable water operational need is 0.67 acre-feet, for the purpose of this water balance it is rounded up to 1 acre-foot annually. This leaves 6 acre-feet of other operational water needs for the EOL (refer to Table 3-B of Facilities report).

Cell: A84
Comment: mauld:
Values based on current needs through 2009. Assume that in 2010 the Central Operations facilities become operational. The annual water needs includes water necessary to perform periodic system maintenance.

Cell: A85
Comment: mauld:
Water needs for Basin 227A, Jackass Flats. Refer to Site Access Road Second 2 Lanes and Interchange for additional water needs in Basin 230, Amargosa Valley.