

F3.3.6

Model-simulated Flow Changes Cumulative

Table F3.3.6-1A Model Simulated Flow Changes (Project Specific)

(Project Specific)					Proposed Action		
Flow System	Hydrographic Basin	Spring	Average Flow (Actual) in gpm	Model Simulated Average Flow (2005) in gpm	Incremental Change in Flow % (from No-Action)		
					Full Build-Out	75 years after Full Build-Out	200 years after Full Build-Out
White River	White River Valley (207)	Arnoldson Spring	1,608	946	0	0	-1
		Butterfield Spring	1,225	471	-1	-7	-18
		Cold Spring	582	503	0	0	-1
		Flag Springs 3	969	560	-1	-7	-17
		Hardy Springs	200	73	0	0	-1
		Hot Creek Spring	5,032	6,899	0	-1	-3
		Lund Spring	3,594	3,314	0	0	-1
		Moon River Spring	1,707	1,457	0	0	-1
		Moorman Spring	405	353	0	-1	-3
		Nicolas Spring	1,185	872	0	0	-1
	Preston Big Spring	3,572	3,794	0	0	-1	
	Pahranagat Valley (209)	Ash Springs	6,909	7,453	0	-1	-2
		Brownie Spring	224	277	0	0	0
		Crystal Springs	4,235	4,647	0	0	-1
		Hiko Spring	2,735	1,985	0	0	-2
	Muddy River Springs Area (219)	Muddy River near Moapa ¹	20,931	15,383	0	0	-1
Lower Moapa Valley (220)	Muddy River near Glendale ¹	19,565	14,895	0	0	-1	
Black Mountains Area (215)	Blue Point Spring	223	393	0	0	0	
	Rogers Spring	771	515	0	0	0	
Goshute Valley	Steptoe Valley (179)	Campbel Ranch Springs	2,746	2,088	0	0	0
		Currie Spring	2,181	1,419	0	0	0
		McGill Spring	4,783	2,074	0	0	0
		Monte Neva Hot Springs	649	280	0	0	-1
Great Salt Lake Desert	Spring Valley (184)	Keegan Spring	234	63	-58	-100	-100
		North Millick Spring	284	98	-31	-62	-75
		South Millick Spring	506	278	-55	-94	-99
	Snake Valley (195)	Big Springs	4,289	1,977	-2	-100	-100
		Foote Res. Spring	1,300	211	0	-1	-2
		Kell Spring	120	59	0	-1	-2
Warm Creek near Gandy, UT	7,426	2,697	0	0	-1		
Meadow Valley	Panaca Valley (203)	Panaca Spring	1,455	1,208	0	0	0

Source: SNWA 2010b

Notes: ¹ Simulated using Stream Flow Routing 2 package for MODFLOW

Table F3.3.6-2A Model Simulated Flow Changes (Project Specific)

(Project Specific)					Alternative A (Reduced Pumping)		
Flow System	Hydrographic Basin	Spring	Average Flow (Actual) in gpm	Model Simulated Average Flow (2005) in gpm	Incremental Change in Flow % (from No-Action)		
					Full Build-Out	75 years after Full Build-Out	200 years after Full Build-Out
White River	White River Valley (207)	Arnoldson Spring	1,608	946	0	0	0
		Butterfield Spring	1,225	471	0	-3	-8
		Cold Spring	582	503	0	0	-1
		Flag Springs 3	969	560	-1	-3	-8
		Hardy Springs	200	73	0	0	-1
		Hot Creek Spring	5,032	6,899	0	-1	-2
		Lund Spring	3,594	3,314	0	0	-1
		Moon River Spring	1,707	1,457	0	0	-1
		Moorman Spring	405	353	0	0	-1
		Nicolas Spring	1,185	872	0	0	0
	Preston Big Spring	3,572	3,794	0	0	-1	
	Pahranaagat Valley (209)	Ash Springs	6,909	7,453	0	0	-1
		Brownie Spring	224	277	0	0	0
		Crystal Springs	4,235	4,647	0	0	-1
		Hiko Spring	2,735	1,985	0	0	-1
	Muddy River Springs Area (219)	Muddy River near Moapa ¹	20,931	15,383	0	0	0
Lower Moapa Valley (220)	Muddy River near Glendale ¹	19,565	14,895	0	0	0	
Black Mountains Area (215)	Blue Point Spring	223	393	0	0	0	
	Rogers Spring	771	515	0	0	0	
Goshute Valley	Steptoe Valley (179)	Campbel Ranch Springs	2,746	2,088	0	0	0
		Currie Spring	2,181	1,419	0	0	0
		McGill Spring	4,783	2,074	0	0	0
		Monte Neva Hot Springs	649	280	0	0	0
Great Salt Lake Desert	Spring Valley (184)	Keegan Spring	234	63	-12	-28	-36
		North Millick Spring	284	98	-4	-9	-11
		South Millick Spring	506	278	-10	-21	-24
	Snake Valley (195)	Big Springs	4,289	1,977	-2	-100	-100
		Foote Res. Spring	1,300	211	0	-1	-1
		Kell Spring	120	59	0	-1	-1
		Warm Creek near Gandy, UT	7,426	2,697	0	0	0
Meadow Valley	Panaca Valley (203)	Panaca Spring	1,455	1,208	0	0	0

Source: SNWA 2010b

Notes: ¹ Simulated using Stream Flow Routing 2 package for MODFLOW

Table F3.3.6-3A Model Simulated Flow Changes (Project Specific)

(Project Specific)					Alternative B (Points of Diversion)		
Flow System	Hydrographic Basin	Spring	Average Flow (Actual) in gpm	Model Simulated Average Flow (2005) in gpm	Incremental Change in Flow % (from No-Action)		
					Full Build-Out	75 years after Full Build-Out	200 years after Full Build-Out
White River	White River Valley (207)	Arnoldson Spring	1,608	946	0	-1	-2
		Butterfield Spring	1,225	471	-20	-34	-45
		Cold Spring	582	503	0	-1	-2
		Flag Springs 3	969	560	-19	-29	-37
		Hardy Springs	200	73	-1	-2	-4
		Hot Creek Spring	5,032	6,899	-3	-5	-7
		Lund Spring	3,594	3,314	0	-1	-2
		Moon River Spring	1,707	1,457	-1	-2	-2
		Moorman Spring	405	353	-2	-4	-6
		Nicolas Spring	1,185	872	0	-1	-1
	Preston Big Spring	3,572	3,794	0	-1	-2	
	Pahranaagat Valley (209)	Ash Springs	6,909	7,453	0	-1	-2
		Brownie Spring	224	277	0	0	0
		Crystal Springs	4,235	4,647	0	0	-1
		Hiko Spring	2,735	1,985	0	-1	-2
	Muddy River Springs Area (219)	Muddy River near Moapa ¹	20,931	15,383	0	0	-1
Lower Moapa Valley (220)	Muddy River near Glendale ¹	19,565	14,895	0	0	-1	
Black Mountains Area (215)	Blue Point Spring	223	393	0	0	0	
	Rogers Spring	771	515	0	0	0	
Goshute Valley	Steptoe Valley (179)	Campbel Ranch Springs	2,746	2,088	0	0	0
		Currie Spring	2,181	1,419	0	0	0
		McGill Spring	4,783	2,074	0	0	0
		Monte Neva Hot Springs	649	280	0	0	0
Great Salt Lake Desert	Spring Valley (184)	Keegan Spring	234	63	0	-3	-5
		North Millick Spring	284	98	-2	-18	-42
		South Millick Spring	506	278	-8	-47	-99
	Snake Valley (195)	Big Springs	4,289	1,977	-7	-100	-100
		Foote Res. Spring	1,300	211	0	0	-1
		Kell Spring	120	59	0	0	-1
Warm Creek near Gandy, UT	7,426	2,697	0	0	0		
Meadow Valley	Panaca Valley (203)	Panaca Spring	1,455	1,208	0	0	0

Source: SNWA 2010b

Notes: ¹ Simulated using Stream Flow Routing 2 package for MODFLOW

Table F3.3.6-4A Model Simulated Flow Changes (Project Specific)

(Project Specific)					Alternative C (Intermittent Pumping)		
Flow System	Hydrographic Basin	Spring	Average Flow (Actual) in gpm	Model Simulated Average Flow (2005) in gpm	Incremental Change in Flow % (from No-Action)		
					Full Build-Out	75 years after Full Build-Out	200 years after Full Build-Out
White River	White River Valley (207)	Arnoldson Spring	1,608	946	0	0	0
		Butterfield Spring	1,225	471	0	-2	-5
		Cold Spring	582	503	0	0	0
		Flag Springs 3	969	560	-1	-2	-5
		Hardy Springs	200	73	0	0	0
		Hot Creek Spring	5,032	6,899	0	0	-1
		Lund Spring	3,594	3,314	0	0	0
		Moon River Spring	1,707	1,457	0	0	0
		Moorman Spring	405	353	0	0	-1
		Nicolas Spring	1,185	872	0	0	0
	Preston Big Spring	3,572	3,794	0	0	0	
	Pahranaagat Valley (209)	Ash Springs	6,909	7,453	0	0	-1
		Brownie Spring	224	277	0	0	0
		Crystal Springs	4,235	4,647	0	0	0
		Hiko Spring	2,735	1,985	0	0	-1
	Muddy River Springs Area (219)	Muddy River near Moapa ¹	20,931	15,383	0	0	0
Lower Moapa Valley (220)	Muddy River near Glendale ¹	19,565	14,895	0	0	0	
Black Mountains Area (215)	Blue Point Spring	223	393	0	0	0	
	Rogers Spring	771	515	0	0	0	
Goshute Valley	Steptoe Valley (179)	Campbel Ranch Springs	2,746	2,088	0	0	0
		Currie Spring	2,181	1,419	0	0	0
		McGill Spring	4,783	2,074	0	0	0
		Monte Neva Hot Springs	649	280	0	0	0
Great Salt Lake Desert	Spring Valley (184)	Keegan Spring	234	63	-12	-14	-15
		North Millick Spring	284	98	-4	-5	-5
		South Millick Spring	506	278	-10	-12	-11
	Snake Valley (195)	Big Springs	4,289	1,977	-2	-87	-100
		Foote Res. Spring	1,300	211	0	0	-1
		Kell Spring	120	59	0	-1	-1
Warm Creek near Gandy, UT	7,426	2,697	0	0	0		
Meadow Valley	Panaca Valley (203)	Panaca Spring	1,455	1,208	0	0	0

Source: SNWA 2010b

Notes: ¹ Simulated using Stream Flow Routing 2 package for MODFLOW

Table F3.3.6-5A Model Simulated Flow Changes (Project Specific)

(Project Specific)					Alternative D (LCCRDA)		
Flow System	Hydrographic Basin	Spring	Average Flow (Actual) in gpm	Model Simulated Average Flow (2005) in gpm	Incremental Change in Flow % (from No-Action)		
					Full Build-Out	75 years after Full Build-Out	200 years after Full Build-Out
White River	White River Valley (207)	Arnoldson Spring	1,608	946	0	0	0
		Butterfield Spring	1,225	471	0	-3	-9
		Cold Spring	582	503	0	0	0
		Flag Springs 3	969	560	0	-3	-9
		Hardy Springs	200	73	0	0	-1
		Hot Creek Spring	5,032	6,899	0	0	-2
		Lund Spring	3,594	3,314	0	0	-1
		Moon River Spring	1,707	1,457	0	0	-1
		Moorman Spring	405	353	0	0	-1
		Nicolas Spring	1,185	872	0	0	0
	Preston Big Spring	3,572	3,794	0	0	0	
	Pahranaagat Valley (209)	Ash Springs	6,909	7,453	0	0	-1
		Brownie Spring	224	277	0	0	0
		Crystal Springs	4,235	4,647	0	0	0
		Hiko Spring	2,735	1,985	0	0	-1
	Muddy River Springs Area (219)	Muddy River near Moapa ¹	20,931	15,383	0	0	0
Lower Moapa Valley (220)	Muddy River near Glendale ¹	19,565	14,895	0	0	0	
Black Mountains Area (215)	Blue Point Spring	223	393	0	0	0	
	Rogers Spring	771	515	0	0	0	
Goshute Valley	Steptoe Valley (179)	Campbel Ranch Springs	2,746	2,088	0	0	0
		Currie Spring	2,181	1,419	0	0	0
		McGill Spring	4,783	2,074	0	0	0
		Monte Neva Hot Springs	649	280	0	0	0
Great Salt Lake Desert	Spring Valley (184)	Keegan Spring	234	63	0	0	0
		North Millick Spring	284	98	0	0	0
		South Millick Spring	506	278	0	0	0
	Snake Valley (195)	Big Springs	4,289	1,977	-19	-100	-100
		Foote Res. Spring	1,300	211	0	0	0
		Kell Spring	120	59	0	0	0
Warm Creek near Gandy, UT	7,426	2,697	0	0	0		
Meadow Valley	Panaca Valley (203)	Panaca Spring	1,455	1,208	0	0	0

Source: SNWA 2010b

Notes: ¹ Simulated using Stream Flow Routing 2 package for MODFLOW

Table F3.3.6-6A Model Simulated Flow Changes (Project Specific)

(Project Specific)					Alternative E (Spring, Cave, Dry Lake, Delamar Only)		
Flow System	Hydrographic Basin	Spring	Average Flow (Actual) in gpm	Model Simulated Average Flow (2005) in gpm	Incremental Change in Flow % (from No-Action)		
					Full Build-Out	75 years after Full Build-Out	200 years after Full Build-Out
White River	White River Valley (207)	Arnoldson Spring	1,608	946	0	0	0
		Butterfield Spring	1,225	471	0	-3	-8
		Cold Spring	582	503	0	0	-1
		Flag Springs 3	969	560	-1	-3	-8
		Hardy Springs	200	73	0	0	-1
		Hot Creek Spring	5,032	6,899	0	-1	-2
		Lund Spring	3,594	3,314	0	0	-1
		Moon River Spring	1,707	1,457	0	0	-1
		Moorman Spring	405	353	0	0	-1
		Nicolas Spring	1,185	872	0	0	0
	Preston Big Spring	3,572	3,794	0	0	-1	
	Pahranaagat Valley (209)	Ash Springs	6,909	7,453	0	0	-1
		Brownie Spring	224	277	0	0	0
		Crystal Springs	4,235	4,647	0	0	-1
		Hiko Spring	2,735	1,985	0	0	-1
	Muddy River Springs Area (219)	Muddy River near Moapa ¹	20,931	15,383	0	0	0
	Lower Moapa Valley (220)	Muddy River near Glendale ¹	19,565	14,895	0	0	0
Black Mountains Area (215)	Blue Point Spring	223	393	0	0	0	
	Rogers Spring	771	515	0	0	0	
Goshute Valley	Steptoe Valley (179)	Campbel Ranch Springs	2,746	2,088	0	0	0
		Currie Spring	2,181	1,419	0	0	0
		McGill Spring	4,783	2,074	0	0	0
		Monte Neva Hot Springs	649	280	0	0	0
Great Salt Lake Desert	Spring Valley (184)	Keegan Spring	234	63	-12	-28	-36
		North Millick Spring	284	98	-4	-9	-11
		South Millick Spring	506	278	-10	-21	-24
	Snake Valley (195)	Big Springs	4,289	1,977	-2	-26	-78
		Foote Res. Spring	1,300	211	0	0	0
		Kell Spring	120	59	0	0	0
	Warm Creek near Gandy, UT	7,426	2,697	0	0	0	
Meadow Valley	Panaca Valley (203)	Panaca Spring	1,455	1,208	0	0	0

Source: SNWA 2010b

Notes: ¹ Simulated using Stream Flow Routing 2 package for MODFLOW

Table F3.3.6-7A Model Simulated Flow Changes (Project Specific)

(Project Specific)					No Action		
Flow System	Hydrographic Basin	Spring	Average Flow (Actual) in gpm	Model Simulated Average Flow (2005) in gpm	Incremental Change in Flow % (from Current Conditions)		
					Full Build-Out	75 years after Full Build-Out	200 years after Full Build-Out
White River	White River Valley (207)	Arnoldson Spring	1,608	946	-4	-6	-8
		Butterfield Spring	1,225	471	0	-1	-3
		Cold Spring	582	503	-3	-6	-8
		Flag Springs 3	969	560	0	-1	-3
		Hardy Springs	200	73	-1	-2	-2
		Hot Creek Spring	5,032	6,899	0	-1	-1
		Lund Spring	3,594	3,314	0	0	-1
		Moon River Spring	1,707	1,457	0	0	0
		Moorman Spring	405	353	0	-1	-1
		Nicolas Spring	1,185	872	-5	-7	-9
	Preston Big Spring	3,572	3,794	-2	-5	-7	
	Pahranaagat Valley (209)	Ash Springs	6,909	7,453	0	-1	-1
		Brownie Spring	224	277	0	0	0
		Crystal Springs	4,235	4,647	-1	-1	-2
		Hiko Spring	2,735	1,985	-1	-2	-3
	Muddy River Springs Area (219)	Muddy River near Moapa ¹	20,931	15,383	-4	-6	-9
Lower Moapa Valley (220)	Muddy River near Glendale ¹	19,565	14,895	-5	-7	-10	
Black Mountains Area (215)	Blue Point Spring	223	393	0	-1	-2	
	Rogers Spring	771	515	0	-1	-2	
Goshute Valley	Steptoe Valley (179)	Campbel Ranch Springs	2,746	2,088	0	0	-1
		Currie Spring	2,181	1,419	0	-1	-1
		McGill Spring	4,783	2,074	0	0	0
		Monte Neva Hot Springs	649	280	0	-1	-1
Great Salt Lake Desert	Spring Valley (184)	Keegan Spring	234	63	-2	-2	-2
		North Millick Spring	284	98	0	0	0
		South Millick Spring	506	278	-1	-1	-1
	Snake Valley (195)	Big Springs	4,289	1,977	-9	-13	-16
		Foote Res. Spring	1,300	211	0	0	0
		Kell Spring	120	59	0	0	0
Warm Creek near Gandy, UT	7,426	2,697	0	0	0		
Meadow Valley	Panaca Valley (203)	Panaca Spring	1,455	1,208	-2	-5	-7

Source: SNWA 2010b

Notes: ¹ Simulated using Stream Flow Routing 2 package for MODFLOW

Table F3.3.6-1B Model Simulated Flow Changes (Cumulative)

(Cumulative)					Proposed Action Cumulative		
Flow System	Hydrographic Basin	Spring	Average Flow (Actual) in gpm	Model Simulated Average Flow (2005) in gpm	Incremental Change in Flow % (from Current Conditions)		
					Full Build-Out	75 years after Full Build-Out	200 years after Full Build-Out
White River	White River Valley (207)	Arnoldson Spring	1,608	946	-4	-7	-9
		Butterfield Spring	1,225	471	-2	-8	-20
		Cold Spring	582	503	-3	-6	-10
		Flag Springs 3	969	560	-2	-9	-19
		Hardy Springs	200	73	-1	-2	-4
		Hot Creek Spring	5,032	6,899	0	-2	-4
		Lund Spring	3,594	3,314	0	-1	-1
		Moon River Spring	1,707	1,457	0	-1	-2
		Moorman Spring	405	353	-1	-2	-4
		Nicolas Spring	1,185	872	-5	-7	-9
	Preston Big Spring	3,572	3,794	-2	-5	-8	
	Pahranagat Valley (209)	Ash Springs ¹	6,909	7,453	-2	-3	-4
		Brownie Spring	224	277	0	0	-1
		Crystal Springs ¹	4,235	4,647	-1	-2	-3
		Hiko Spring ¹	2,735	1,985	-2	-3	-5
	Muddy River Springs Area (219)	Muddy River near Moapa ¹	20,931	15,383	-37	-54	-62
Lower Moapa Valley (220)	Muddy River near Glendale ¹	19,565	14,895	-39	-57	-66	
Black Mountains Area (215)	Blue Point Spring	223	393	-1	-2	-4	
	Rogers Spring	771	515	-1	-2	-3	
Goshute Valley	Steptoe Valley (179)	Campbel Ranch Springs	2,746	2,088	0	0	-1
		Currie Spring	2,181	1,419	-1	-3	-3
		McGill Spring	4,783	2,074	-1	-3	-3
		Monte Neva Hot Springs	649	280	-2	-3	-4
Great Salt Lake Desert	Spring Valley (184)	Keegan Spring	234	63	-64	-100	-100
		North Millick Spring	284	98	-32	-63	-76
		South Millick Spring	506	278	-55	-94	-100
	Snake Valley (195)	Big Springs ¹	4,289	1,977	-10	-100	-100
		Foote Res. Spring	1,300	211	0	-1	-3
		Kell Spring	120	59	0	-2	-2
		Warm Creek near Gandy, UT	7,426	2,697	0	0	-1
Meadow Valley	Panaca Valley (203)	Panaca Spring	1,455	1,208	-3	-6	-12

Source: SNWA 2010b

Notes: ¹ Simulated using Stream Flow Routing 2 package for MODFLOW

Table F3.3.6-2B Model Simulated Flow Changes (Cumulative)

(Cumulative)					Alternative A (Reduced Pumping) Cumulative		
Flow System	Hydrographic Basin	Spring	Average Flow (Actual) in gpm	Model Simulated Average Flow (2005) in gpm	Incremental Change in Flow % (from Current Conditions)		
					Full Build-Out	75 years after Full Build-Out	200 years after Full Build-Out
White River	White River Valley (207)	Arnoldson Spring	1,608	946	-4	-7	-9
		Butterfield Spring	1,225	471	-1	-5	-11
		Cold Spring	582	503	-3	-6	-9
		Flag Springs 3	969	560	-1	-5	-11
		Hardy Springs	200	73	-1	-2	-3
		Hot Creek Spring	5,032	6,899	0	-1	-3
		Lund Spring	3,594	3,314	0	0	-1
		Moon River Spring	1,707	1,457	0	0	-1
		Moorman Spring	405	353	0	-1	-3
		Nicolas Spring	1,185	872	-5	-7	-9
	Preston Big Spring	3,572	3,794	-2	-5	-8	
	Pahranagat Valley (209)	Ash Springs ¹	6,909	7,453	-2	-2	-3
		Brownie Spring	224	277	0	0	-1
		Crystal Springs ¹	4,235	4,647	-1	-2	-2
		Hiko Spring ¹	2,735	1,985	-2	-3	-4
Muddy River Springs Area (219)	Muddy River near Moapa ¹	20,931	15,383	-37	-54	-61	
Lower Moapa Valley (220)	Muddy River near Glendale ¹	19,565	14,895	-39	-57	-65	
Black Mountains Area (215)	Blue Point Spring	223	393	-1	-2	-4	
	Rogers Spring	771	515	-1	-2	-3	
Goshute Valley	Steptoe Valley (179)	Campbel Ranch Springs	2,746	2,088	0	0	-1
		Currie Spring	2,181	1,419	-1	-3	-3
		McGill Spring	4,783	2,074	-1	-3	-3
		Monte Neva Hot Springs	649	280	-2	-2	-3
Great Salt Lake Desert	Spring Valley (184)	Keegan Spring	234	63	-19	-39	-52
		North Millick Spring	284	98	-4	-10	-11
		South Millick Spring	506	278	-11	-21	-26
	Snake Valley (195)	Big Springs ¹	4,289	1,977	-10	-100	-100
		Foote Res. Spring	1,300	211	0	-1	-2
		Kell Spring	120	59	0	-1	-1
	Warm Creek near Gandy, UT	7,426	2,697	0	0	0	
Meadow Valley	Panaca Valley (203)	Panaca Spring	1,455	1,208	-3	-6	-12

Source: SNWA 2010b

Notes: ¹ Simulated using Stream Flow Routing 2 package for MODFLOW

Table F3.3.6-3B Model Simulated Flow Changes (Cumulative)

(Cumulative)					Alternative B (Points of Diversion) Cumulative		
Flow System	Hydrographic Basin	Spring	Average Flow (Actual) in gpm	Model Simulated Average Flow (2005) in gpm	Cumulative		
					Full Build-Out	75 years after Full Build-Out	200 years after Full Build-Out
White River	White River Valley (207)	Arnoldson Spring	1,608	946	-5	-7	-10
		Butterfield Spring	1,225	471	-21	-35	-46
		Cold Spring	582	503	-4	-7	-11
		Flag Springs 3	969	560	-19	-30	-39
		Hardy Springs	200	73	-1	-4	-6
		Hot Creek Spring	5,032	6,899	-3	-5	-8
		Lund Spring	3,594	3,314	0	-1	-3
		Moon River Spring	1,707	1,457	-1	-2	-3
		Moorman Spring	405	353	-3	-5	-7
		Nicolas Spring	1,185	872	-5	-8	-10
	Preston Big Spring	3,572	3,794	-3	-6	-9	
	Pahranagat Valley (209)	Ash Springs ¹	6,909	7,453	-2	-3	-4
		Brownie Spring	224	277	0	0	-1
		Crystal Springs ¹	4,235	4,647	-1	-2	-3
		Hiko Spring ¹	2,735	1,985	-2	-3	-5
	Muddy River Springs Area (219)	Muddy River near Moapa ¹	20,931	15,383	-37	-54	-62
Lower Moapa Valley (220)	Muddy River near Glendale ¹	19,565	14,895	-39	-57	-66	
Black Mountains Area (215)	Blue Point Spring	223	393	-1	-2	-4	
	Rogers Spring	771	515	-1	-2	-3	
Goshute Valley	Steptoe Valley (179)	Campbel Ranch Springs	2,746	2,088	0	0	-1
		Currie Spring	2,181	1,419	-1	-3	-3
		McGill Spring	4,783	2,074	-1	-3	-3
		Monte Neva Hot Springs	649	280	-2	-2	-3
Great Salt Lake Desert	Spring Valley (184)	Keegan Spring	234	63	-7	-11	-15
		North Millick Spring	284	98	-3	-19	-42
		South Millick Spring	506	278	-8	-47	-99
	Snake Valley (195)	Big Springs ¹	4,289	1,977	-15	-100	-100
		Foote Res. Spring	1,300	211	0	-1	-1
		Kell Spring	120	59	0	0	-1
	Warm Creek near Gandy, UT	7,426	2,697	0	0	0	
Meadow Valley	Panaca Valley (203)	Panaca Spring	1,455	1,208	-3	-6	-12

Source: SNWA 2010b

Notes: ¹ Simulated using Stream Flow Routing 2 package for MODFLOW

Table F3.3.6-4B Model Simulated Flow Changes (Cumulative)

(Cumulative)					Alternative C (Intermittent Pumping) Cumulative		
Flow System	Hydrographic Basin	Spring	Average Flow (Actual) in gpm	Model Simulated Average Flow (2005) in gpm	Incremental Change in Flow % (from Current Conditions)		
					Full Build-Out	75 years after Full Build-Out	200 years after Full Build-Out
White River	White River Valley (207)	Arnoldson Spring	1,608	946	-4	-7	-9
		Butterfield Spring	1,225	471	-1	-4	-8
		Cold Spring	582	503	-3	-6	-9
		Flag Springs 3	969	560	-1	-4	-8
		Hardy Springs	200	73	-1	-2	-2
		Hot Creek Spring	5,032	6,899	0	-1	-2
		Lund Spring	3,594	3,314	0	0	-1
		Moon River Spring	1,707	1,457	0	0	-1
		Moorman Spring	405	353	0	-1	-2
		Nicolas Spring	1,185	872	-5	-7	-9
	Preston Big Spring	3,572	3,794	-2	-5	-7	
	Pahranagat Valley (209)	Ash Springs ¹	6,909	7,453	-2	-2	-3
		Brownie Spring	224	277	0	0	-1
		Crystal Springs ¹	4,235	4,647	-1	-2	-2
		Hiko Spring ¹	2,735	1,985	-2	-3	-4
Muddy River Springs Area (219)	Muddy River near Moapa ¹	20,931	15,383	-37	-54	-61	
Lower Moapa Valley (220)	Muddy River near Glendale ¹	19,565	14,895	-39	-57	-65	
Black Mountains Area (215)	Blue Point Spring	223	393	-1	-2	-4	
	Rogers Spring	771	515	-1	-2	-3	
Goshute Valley	Steptoe Valley (179)	Campbel Ranch Springs	2,746	2,088	0	0	-1
		Currie Spring	2,181	1,419	-1	-3	-3
		McGill Spring	4,783	2,074	-1	-3	-3
		Monte Neva Hot Springs	649	280	-2	-2	-3
Great Salt Lake Desert	Spring Valley (184)	Keegan Spring	234	63	-19	-24	-27
		North Millick Spring	284	98	-4	-5	-6
		South Millick Spring	506	278	-11	-13	-12
	Snake Valley (195)	Big Springs ¹	4,289	1,977	-10	-89	-100
		Foote Res. Spring	1,300	211	0	-1	-1
		Kell Spring	120	59	0	-1	-1
	Warm Creek near Gandy, UT	7,426	2,697	0	0	0	
Meadow Valley	Panaca Valley (203)	Panaca Spring	1,455	1,208	-3	-6	-12

Source: SNWA 2010b

Notes: ¹ Simulated using Stream Flow Routing 2 package for MODFLOW

Table F3.3.6-5B Model Simulated Flow Changes (Cumulative)

(Cumulative)					Alternative D (LCCRDA) Cumulative		
Flow System	Hydrographic Basin	Spring	Average Flow (Actual) in gpm	Model Simulated Average Flow (2005) in gpm	Incremental Change in Flow % (from Current Conditions)		
					Full Build-Out	75 years after Full Build-Out	200 years after Full Build-Out
White River	White River Valley (207)	Arnoldson Spring	1,608	946	-4	-6	-9
		Butterfield Spring	1,225	471	-1	-5	-12
		Cold Spring	582	503	-3	-6	-9
		Flag Springs 3	969	560	-1	-5	-11
		Hardy Springs	200	73	-1	-2	-3
		Hot Creek Spring	5,032	6,899	0	-1	-3
		Lund Spring	3,594	3,314	0	0	-1
		Moon River Spring	1,707	1,457	0	0	-1
		Moorman Spring	405	353	0	-1	-3
		Nicolas Spring	1,185	872	-5	-7	-9
	Preston Big Spring	3,572	3,794	-2	-5	-7	
	Pahranagat Valley (209)	Ash Springs ¹	6,909	7,453	-2	-2	-3
		Brownie Spring	224	277	0	0	-1
		Crystal Springs ¹	4,235	4,647	-1	-2	-2
Hiko Spring ¹		2,735	1,985	-1	-3	-4	
Muddy River Springs Area (219)	Muddy River near Moapa ¹	20,931	15,383	-36	-53	-61	
Lower Moapa Valley (220)	Muddy River near Glendale ¹	19,565	14,895	-37	-56	-64	
Black Mountains Area (215)	Blue Point Spring	223	393	-1	-2	-4	
	Rogers Spring	771	515	-1	-2	-3	
Goshute Valley	Steptoe Valley (179)	Campbel Ranch Springs	2,746	2,088	0	0	0
		Currie Spring	2,181	1,419	-1	-3	-3
		McGill Spring	4,783	2,074	-1	-3	-3
		Monte Neva Hot Springs	649	280	-2	-2	-3
Great Salt Lake Desert	Spring Valley (184)	Keegan Spring	234	63	-6	-8	-10
		North Millick Spring	284	98	0	0	-1
		South Millick Spring	506	278	-1	-1	-1
	Snake Valley (195)	Big Springs ¹	4,289	1,977	-26	-100	-100
		Foote Res. Spring	1,300	211	0	0	0
		Kell Spring	120	59	0	0	0
		Warm Creek near Gandy, UT	7,426	2,697	0	0	0
Meadow Valley	Panaca Valley (203)	Panaca Spring	1,455	1,208	-2	-6	-12

Source: SNWA 2010b

Notes: ¹ Simulated using Stream Flow Routing 2 package for MODFLOW

Table F3.3.6-6B Model Simulated Flow Changes (Cumulative)

(Cumulative)					Alternative E (Spring, Cave, Dry Lake, Delamar Only) Cumulative		
Flow System	Hydrographic Basin	Spring	Average Flow (Actual) in gpm	Model Simulated Average Flow (2005) in gpm	Incremental Change in Flow % (from Current Conditions)		
					Full Build-Out	75 years after Full Build-Out	200 years after Full Build-Out
White River	White River Valley (207)	Arnoldson Spring	1,608	946	-4	-7	-9
		Butterfield Spring	1,225	471	-1	-5	-11
		Cold Spring	582	503	-3	-6	-9
		Flag Springs 3	969	560	-1	-5	-11
		Hardy Springs	200	73	-1	-2	-3
		Hot Creek Spring	5,032	6,899	0	-1	-3
		Lund Spring	3,594	3,314	0	0	-1
		Moon River Spring	1,707	1,457	0	0	-1
		Moorman Spring	405	353	0	-1	-3
		Nicolas Spring	1,185	872	-5	-7	-9
	Preston Big Spring	3,572	3,794	-2	-5	-8	
	Pahranagat Valley (209)	Ash Springs ¹	6,909	7,453	-2	-2	-3
		Brownie Spring	224	277	0	0	-1
		Crystal Springs ¹	4,235	4,647	-1	-2	-2
		Hiko Spring ¹	2,735	1,985	-2	-3	-4
Muddy River Springs Area (219)	Muddy River near Moapa ¹	20,931	15,383	-37	-54	-61	
Lower Moapa Valley (220)	Muddy River near Glendale ¹	19,565	14,895	-39	-57	-65	
Black Mountains Area (215)	Blue Point Spring	223	393	-1	-2	-4	
	Rogers Spring	771	515	-1	-2	-3	
Goshute Valley	Steptoe Valley (179)	Campbel Ranch Springs	2,746	2,088	0	0	-1
		Currie Spring	2,181	1,419	-1	-3	-3
		McGill Spring	4,783	2,074	-1	-3	-3
		Monte Neva Hot Springs	649	280	-2	-2	-3
Great Salt Lake Desert	Spring Valley (184)	Keegan Spring	234	63	-19	-39	-52
		North Millick Spring	284	98	-4	-10	-11
		South Millick Spring	506	278	-11	-21	-25
	Snake Valley (195)	Big Springs ¹	4,289	1,977	-10	-36	-82
		Foote Res. Spring	1,300	211	0	0	-1
		Kell Spring	120	59	0	0	0
		Warm Creek near Gandy, UT	7,426	2,697	0	0	0
Meadow Valley	Panaca Valley (203)	Panaca Spring	1,455	1,208	-3	-6	-12

Source: SNWA 2010b

Notes: ¹ Simulated using Stream Flow Routing 2 package for MODFLOW

Table F3.3.6-7B Model Simulated Flow Changes (Cumulative)

(Cumulative)					No Action Cumulative		
Flow System	Hydrographic Basin	Spring	Average Flow (Actual) in gpm	Model Simulated Average Flow (2005) in gpm	Incremental Change in Flow % (from Current Conditions)		
					Full Build-Out	75 years after Full Build-Out	200 years after Full Build-Out
White River	White River Valley (207)	Arnoldson Spring	1,608	946	-4	-6	-8
		Butterfield Spring	1,225	471	0	-1	-3
		Cold Spring	582	503	-3	-6	-9
		Flag Springs 3	969	560	0	-1	-3
		Hardy Springs	200	73	-1	-2	-2
		Hot Creek Spring	5,032	6,899	0	-1	-1
		Lund Spring	3,594	3,314	0	0	-1
		Moon River Spring	1,707	1,457	0	0	0
		Moorman Spring	405	353	0	-1	-1
		Nicolas Spring	1,185	872	-5	-7	-9
	Preston Big Spring	3,572	3,794	-2	-5	-7	
	Pahranagat Valley (209)	Ash Springs ¹	6,909	7,453	-2	-2	-2
		Brownie Spring	224	277	0	0	0
		Crystal Springs ¹	4,235	4,647	-1	-2	-2
		Hiko Spring ¹	2,735	1,985	-2	-3	-3
Muddy River Springs Area (219)	Muddy River near Moapa ¹	20,931	15,383	-37	-54	-61	
Lower Moapa Valley (220)	Muddy River near Glendale ¹	19,565	14,895	-39	-57	-65	
Black Mountains Area (215)	Blue Point Spring	223	393	-1	-2	-4	
	Rogers Spring	771	515	-1	-2	-3	
Goshute Valley	Steptoe Valley (179)	Campbel Ranch Springs	2,746	2,088	0	0	-1
		Currie Spring	2,181	1,419	-1	-3	-3
		McGill Spring	4,783	2,074	-1	-3	-3
		Monte Neva Hot Springs	649	280	-2	-2	-3
Great Salt Lake Desert	Spring Valley (184)	Keegan Spring	234	63	-7	-9	-10
		North Millick Spring	284	98	0	-1	-1
		South Millick Spring	506	278	-1	-1	-1
	Snake Valley (195)	Big Springs ¹	4,289	1,977	-9	-13	-16
		Foote Res. Spring	1,300	211	0	0	0
		Kell Spring	120	59	0	0	0
		Warm Creek near Gandy, UT	7,426	2,697	0	0	0
Meadow Valley	Panaca Valley (203)	Panaca Spring	1,455	1,208	-3	-6	-12

Source: SNWA 2010b

Notes: ¹ Simulated using Stream Flow Routing 2 package for MODFLOW