Appendix D: Preliminary Scenarios – Summary of Results

This appendix presents a summary of findings for preliminary scenario model runs. Results are presented for dissolved oxygen (DO), total organic carbon (TOC), and chlorophyll *a*. In-reservoir results tables present select result metrics for each simulation at HT-SPR, HT-DIX, and HT-SOL. Scenario simulations are described and discussed in Section 4.2 of the main report.

1 In-Reservoir Dissolved Oxygen

	Change in # days/yr Bottom = 0 mg/L DO	Change in # days/yr Bottom ≤2 mg/L DO	Change in # days/yr 15m <4 mg/L	Change in # days/yr Bottom = 0 mg/L DO	Change in # days/yr Bottom ≤2 mg/L DO	Change in # days/yr 15m <4 mg/L	Change in # days/yr Bottom = 0 mg/L DO	Change in # days/yr Bottom ≤2 mg/L DO	Change in # days/yr 15m <4 mg/L
Run Description	**HT-SPR**			**HT-DIX**			**HT-SOL**		
Increase NO3, NH3, PO4 90%	3.0	3.0	3.0	4.0	5.2	7.7	3.0	4.5	8.0
Decrease NO3, NH3, PO4 90%	-5.6	-6.8	-2.1	-4.0	-4.2	-3.7	-2.6	-7.3	-5.6
Increase NO3, NH3, PO4 50%	1.7	2.1	2.1	1.7	3.3	5.2	1.7	2.8	3.8
Decrease NO3, NH3, PO4 50%	-3.0	-3.7	-1.4	-1.7	-1.6	-2.3	-1.2	-3.8	-4.7
Increase NO3, NH3, PO4 10%	0.9	0.7	0.7	0.3	0.9	1.0	0.0	0.7	0.7
Decrease NO3, NH3, PO4 10%	-0.5	-0.7	-0.3	-0.2	-0.2	-0.9	-0.3	-0.3	-0.9
Increase NO3, NH3 50%	0.3	0.3	1.0	-0.2	0.9	1.9	0.0	0.9	1.6
Decrease NO3, NH3 50%	-1.9	-3.1	-1.4	-1.0	-0.9	-2.3	-1.0	-3.8	-4.7
Increase PO4 50%	1.0	0.9	0.7	1.6	1.4	1.0	0.3	0.9	0.3
Decrease PO4 50%	-2.1	-2.4	-0.7	-1.2	-1.2	-0.9	-0.9	-1.6	-2.8
20% Decrease in Inflow and Outflow Rates	0.5	0.1	0.5	-0.2	1.2	0.7	-0.1	-0.1	1.4
50% Decrease in Inflow and Outflow Rates	0.9	0.6	0.3	0.0	3.5	1.2	-0.7	-0.8	-0.3
TOC Inflow as 2006	-2.4	-3.7	-0.7	-1.2	-1.2	-0.7	-0.5	-1.7	-3.1
TOC inflow as 2010	2.3	1.4	-0.5	2.1	2.3	1.2	1.4	2.3	1.4

Summary Table of In-Reservoir Dissolved Oxygen Results for Preliminary Scenario Runs

2 In-Reservoir Total Organic Carbon

	% Change in Avg. TOC - TOP	% Change in Avg. TOC - Bottom	% Change in Avg. TOC - TOP	% Change in Avg. TOC - Bottom	% Change in Avg. TOC - TOP	% Change in Avg. TOC - Bottom
Run Description	HT-SPR		HT-DIX		HT-SOL	
Increase NO3, NH3, PO4 90%	4.1%	1.7%	4.2%	1.9%	4.2%	2.0%
Decrease NO3, NH3, PO4 90%	-5.3%	-2.5%	-5.5%	-2.7%	-5.5%	-3.0%
Increase NO3, NH3, PO4 50%	2.4%	1.0%	2.5%	1.1%	2.5%	1.2%
Decrease NO3, NH3, PO4 50%	-2.6%	-1.1%	-2.7%	-1.3%	-2.7%	-1.4%
Increase NO3, NH3, PO4 10%	0.5%	0.2%	0.5%	0.2%	0.5%	0.3%
Decrease NO3, NH3, PO4 10%	-0.5%	-0.2%	-0.5%	-0.2%	-0.5%	-0.2%
Increase NO3, NH3 50%	0.4%	0.1%	0.5%	0.2%	0.8%	0.2%
Decrease NO3, NH3 50%	-2.4%	-1.0%	-2.5%	-1.1%	-2.5%	-1.2%
Increase PO4 50%	0.8%	0.4%	0.8%	0.5%	0.6%	0.5%
Decrease PO4 50%	-1.7%	-0.9%	-1.8%	-0.9%	-1.7%	-1.0%
20% Decrease in Inflow and Outflow Rates	-2.2%	-2.3%	-2.2%	-2.0%	-2.2%	-2.3%
50% Decrease in Inflow and Outflow Rates	-7.3%	-7.5%	-7.3%	-6.6%	-7.2%	-7.3%
TOC Inflow as 2006	-6.5%	-5.3%	-6.0%	-4.6%	-5.6%	-4.3%
TOC inflow as 2010	9.5%	8.9%	9.2%	8.4%	9.0%	8.3%

Summary Table of In-Reservoir Total Organic Carbon Results for Preliminary Scenario Runs

3 In-Reservoir Chlorophyll *a*

	% Change in Avg Chl a Conc. - Annual	% Change in Avg Chl a Conc. - Mar-Nov	% Change in Avg Chl a Conc. - July-Sept	% Change in Avg Chl a Conc. - Annual	% Change in Avg Chl a Conc. - Mar-Nov	% Change in Avg Chl a Conc. - July-Sept	% Change in Avg Chl a Conc. - Annual	% Change in Avg Chl a Conc. - Mar-Nov	% Change in Avg Chl a Conc. - July-Sept
Run Description	HT-SPR			HT-DIX			HT-SOL		
Increase NO3, NH3, PO4 90%	25.0%	27.8%	38.1%	25.7%	28.0%	38.1%	25.8%	28.0%	38.4%
Decrease NO3, NH3, PO4 90%	-32.9%	-36.2%	-44.9%	-33.5%	-36.2%	-44.0%	-33.3%	-35.8%	-43.0%
Increase NO3, NH3, PO4 50%	14.6%	16.1%	21.7%	15.1%	16.4%	22.2%	15.2%	16.4%	22.2%
Decrease NO3, NH3, PO4 50%	-16.1%	-17.7%	-23.1%	-16.5%	-17.8%	-22.9%	-16.5%	-17.8%	-22.7%
Increase NO3, NH3, PO4 10%	3.1%	3.4%	4.6%	3.2%	3.5%	4.6%	3.2%	3.5%	4.5%
Decrease NO3, NH3, PO4 10%	-3.0%	-3.3%	-4.4%	-3.1%	-3.3%	-4.4%	-3.1%	-3.3%	-4.3%
Increase NO3, NH3 50%	2.4%	2.6%	3.7%	2.9%	3.2%	4.8%	3.5%	3.8%	6.5%
Decrease NO3, NH3 50%	-15.1%	-16.7%	-22.8%	-15.4%	-16.8%	-22.5%	-15.3%	-16.7%	-22.3%
Increase PO4 50%	5.1%	5.8%	6.8%	5.1%	5.7%	6.5%	4.9%	5.4%	5.8%
Decrease PO4 50%	-10.7%	-11.8%	-14.4%	-10.6%	-11.4%	-13.1%	-10.3%	-10.9%	-11.7%
20% Decrease in Inflow and Outflow Rates	-0.1%	-0.1%	-1.1%	-0.3%	-0.3%	-1.7%	-0.5%	-0.3%	-1.8%
50% Decrease in Inflow and Outflow Rates	-0.2%	-0.1%	-3.7%	-0.9%	-0.7%	-5.1%	-1.4%	-1.1%	-6.5%
TOC Inflow as 2006	-4.8%	-5.5%	-6.5%	-4.8%	-5.4%	-6.1%	-5.0%	-5.5%	-6.3%
TOC inflow as 2010	3.0%	3.2%	4.1%	3.0%	3.1%	4.0%	3.0%	3.1%	3.9%

Summary Table of In-Reservoir Chlorophyll *a* Results for Preliminary Scenario Runs

4 Total Organic Carbon and Dissolved Oxygen in Outflow from Soldier Canyon

	DO			TOC	
Run Description	Change in Avg. DO Concentration (mg/L)	Change in Min DO Concentration (mg/L)	Change in # Days per Year <2 mg/L DO	Change in Avg. TOC Concentration (mg/L)	Change in Max TOC Concentration (mg/L)
Increase NO3, NH3, PO4 90%	-0.1	-0.4	3.1	0.1	0.0
Decrease NO3, NH3, PO4 90%	0.2	0.7	-6.1	-0.1	-0.1
Increase NO3, NH3, PO4 50%	-0.1	-0.3	1.6	-0.1	-0.1
Decrease NO3, NH3, PO4 50%	0.1	0.3	-2.1	-3.3	-4.1
Increase NO3, NH3, PO4 10%	0.0	-0.1	0.2	0.0	0.0
Decrease NO3, NH3, PO4 10%	0.0	0.0	-0.7	0.0	0.0
Increase NO3, NH3 50%	0.0	0.0	0.2	0.0	0.0
Decrease NO3, NH3 50%	0.1	0.3	-1.9	0.0	0.0
Increase PO4 50%	0.0	-0.1	0.3	0.0	0.0
Decrease PO4 50%	0.0	0.2	-1.2	0.0	0.0
20% Decrease in Inflow and Outflow Rates	-0.1	-0.3	-0.9	-0.1	-0.2
50% Decrease in Inflow and Outflow Rates	-0.2	0.4	-4.7	-0.2	-0.7
TOC Inflow as 2006	0.1	0.1	-0.9	-0.1	-0.7
TOC inflow as 2010	0.0	-0.4	2.1	0.3	0.2

Summary Table of Total Organic Carbon and dissolved Oxygen Results in Soldier Canyon Outflow for Preliminary Scenario Runs

Results reported to one decimal place.