



6. ***Lumped Segments 5 & 6 Response to New Hope, Northeast, and Morgan Creek Load Reductions (volume-weighted average growing season chlorophyll a concentrations).*** Created concentration response figure and accompanying table (average growing season concentration) for aggregated segments 5-6, volume weighted, in response to Upper New Hope reductions. A new iteration set was created to produce this, in which volume weighting was applied as the results were tabulated. Segment volumes, calculated from the project GIS at normal pool and including any underlying segments, are shown in the following table:

<b>Wasp</b>	<b>Surface Area</b>	<b>Average Depth</b>	<b>Volume</b>
<b>Segmt</b>	<b>(acres)</b>	<b>(feet)</b>	<b>(ac-ft)</b>
1	599.63	3.00	1,798.88
2	846.60	9.00	7,329.88
3	657.81	3.00	1,973.44
4	1,206.60	10.87	12,997.00
5	843.03	13.25	10,428.09
6	1,103.40	19.33	20,004.06
7	633.05	13.43	8,906.77
8	668.41	22.25	14,350.32
9	773.00	20.62	15,691.29
10	345.17	10.40	3,957.47
11	1,167.15	11.17	12,813.04
12	2,097.36	26.50	53,631.19
13	597.55	24.33	14,382.42
14	922.96	31.77	28,392.48
15	867.42	11.94	10,392.27
Total	13,329.14	16.23	217,048.60

7. ***Lumped Segments 5 & 6 Response to Haw River Load Reductions (volume-weighted average growing season chlorophyll a concentrations).*** Created concentration response figure and accompanying table (average growing season concentration) for aggregated segments 5-6, volume weighted, in response to Haw River reductions. A new iteration set was created to produce this, in which volume weighting was applied as the results were tabulated.
8. ***Lumped Segments 8, 9, & 12 Response to New Hope, Northeast, and Morgan Creek Load Reductions (volume-weighted average growing season chlorophyll a concentrations).*** Created concentration response figure and accompanying table (average growing season concentration) for aggregated segments 8, 9, and 12, volume weighted, in response to Upper New Hope reductions.
9. ***Lumped Segments 8, 9, & 12 Response to Haw River Load Reductions (volume-weighted average growing season chlorophyll a concentrations).*** Created concentration response figure and accompanying table (average growing season concentration) for aggregated segments 8, 9, and 12, volume weighted, in response to Haw River load reductions.
10. ***Lumped Segments 1-4 Response to New Hope, Northeast, and Morgan Creek Load Reductions (volume-weighted average growing season frequency of excursions).*** Figure is an alternate view of the lumped response Figure 48 shown in the report. Frequencies of excursion of the 40 µg/L target were re-calculated with volume weighting, and are thus dominated by Segment 4. The recalculations were done with a new iteration set in which the count of excursions in each segment was weighted by the relative volume and the number of

segments. A 100-percent frequency for a given time period would correspond to excursions in all four segments simultaneously.

11. ***Lumped Segments 14 & 15 Response to Haw River Load Changes (volume-weighted average growing season frequency of excursions).*** Figure is an alternate view of the lumped response Figure 52 shown in the report (and corrected with this memo). The recalculations were done with a new iteration set in which the count of excursions in each segment was weighted by the relative volume and the number of segments. A 100-percent frequency for a given time period would correspond to excursions in both segments simultaneously.

Results tables for each of the figures are reproduced below.

**Table 1. Segments 14 and 15 Aggregated Response to Haw River Load (Growing Season Average) - Updated Table B-22**

		Percent of Chlorophyll a Excursions										
		0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
Fraction of Existing Total P Load	1.5	0.00	1.24	4.05	6.47	10.78	17.45	22.68	28.17	32.16	34.44	36.21
	1.4	0.00	1.24	4.05	6.47	10.72	17.52	22.29	27.26	31.11	33.40	35.16
	1.3	0.00	1.24	4.05	6.47	10.65	17.39	21.83	26.47	30.20	32.42	33.99
	1.2	0.00	1.24	4.05	6.47	10.65	16.80	20.78	25.36	28.63	30.85	32.09
	1.1	0.00	1.24	4.05	6.34	10.52	16.01	19.67	23.59	27.06	29.02	30.26
	1.0	0.00	1.24	4.05	6.14	9.80	14.18	17.65	21.18	24.31	25.69	26.99
	0.9	0.00	1.24	4.05	6.08	8.63	12.81	15.56	18.43	21.05	22.61	23.01
	0.8	0.00	1.24	4.05	5.88	8.17	12.03	14.38	16.34	18.17	19.48	19.61
	0.7	0.00	1.24	4.05	5.75	7.45	10.72	11.83	12.81	13.27	13.46	13.46
	0.6	0.00	1.18	3.86	5.03	6.67	9.41	10.52	10.59	10.52	10.59	10.59
	0.5	0.00	1.18	3.07	3.66	4.31	5.82	5.82	5.82	5.82	5.82	5.82
		0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
		Fraction of Existing Total N Load										

**Table 2. Worst Case Aggregate Response of Segments 1-4 to New Hope, Northeast, and Morgan Creek Load Reductions (Maximum Annual)**

		Percent of Chlorophyll a Excursions									
Fraction of Existing Total P Load	1.0	0.48	1.78	3.97	5.96	7.67	14.45	20.14	25.82	28.90	
	0.9	0.48	1.78	3.90	5.96	7.74	14.38	20.07	25.75	28.70	
	0.8	0.48	1.78	3.84	5.89	7.74	14.32	20.14	25.34	28.29	
	0.7	0.48	1.78	3.84	5.69	7.60	14.25	20.21	25.48	28.01	
	0.6	0.48	1.71	3.84	5.55	7.60	13.49	19.73	25.27	27.74	
	0.5	0.48	1.71	3.63	5.21	7.06	13.43	18.56	24.66	26.71	
	0.4	0.48	1.58	3.49	4.73	6.71	11.78	16.37	20.41	24.73	
	0.3	0.48	1.51	2.81	3.77	5.21	8.49	12.19	16.99	21.58	
	0.2	0.48	1.30	1.85	3.22	4.59	7.26	10.21	14.45	18.56	
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
		Fraction of Existing Total N Load									

**Table 3. Worst Case Aggregate Response of Segments 1-4 to New Hope, Northeast, and Morgan Creek Load Reductions (Maximum Growing Season)**

		Percent of Chlorophyll a Excursions									
Fraction of Existing Total P Load	1.0	1.14	4.25	9.48	14.22	18.30	32.68	45.43	57.84	64.54	
	0.9	1.14	4.25	9.31	14.22	18.46	32.68	45.43	57.84	64.38	
	0.8	1.14	4.25	9.15	14.05	18.46	32.52	45.92	57.19	63.89	
	0.7	1.14	4.25	9.15	13.56	18.14	32.68	45.75	57.68	63.73	
	0.6	1.14	4.09	9.15	13.24	18.14	32.19	45.26	58.50	64.22	
	0.5	1.14	4.09	8.66	12.42	16.83	32.03	44.28	58.01	62.91	
	0.4	1.14	3.76	8.33	11.28	16.01	28.11	39.05	48.69	58.99	
	0.3	1.14	3.60	6.70	8.99	12.42	20.26	29.09	40.52	51.47	
	0.2	1.14	3.11	4.41	7.68	10.95	17.32	24.35	34.48	44.28	
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
		Fraction of Existing Total N Load									

**Table 4. Worst Case Aggregate Response of Segments 14 & 15 to Haw River Load Changes (Maximum Annual)**

		Percent of Chlorophyll a Excursions										
Fraction of Existing Total P Load	1.5	0.00	2.60	6.85	9.73	13.70	20.69	23.01	25.62	27.81	28.77	29.18
	1.4	0.00	2.60	6.85	9.73	13.70	20.69	22.88	25.62	27.67	28.49	28.77
	1.3	0.00	2.60	6.85	9.73	13.56	20.69	22.88	25.62	27.53	28.36	28.49
	1.2	0.00	2.60	6.85	9.73	13.56	20.69	22.88	25.75	27.12	27.95	28.08
	1.1	0.00	2.60	6.85	9.73	13.56	20.96	22.88	25.34	26.58	27.12	27.26
	1.0	0.00	2.60	6.85	9.73	13.56	20.27	22.47	24.38	25.48	25.89	26.16
	0.9	0.00	2.60	6.85	9.59	13.43	20.14	22.06	23.43	24.80	25.48	25.48
	0.8	0.00	2.60	6.85	9.18	13.15	19.86	21.51	22.19	23.56	23.97	23.97
	0.7	0.00	2.60	6.71	8.90	12.06	18.49	20.00	20.27	20.41	20.41	20.41
	0.6	0.00	2.47	6.30	7.53	10.69	16.44	18.63	18.77	18.77	18.90	18.90
0.5	0.00	2.47	4.66	5.07	6.30	9.45	9.45	9.45	9.45	9.45	9.45	
		0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
		Fraction of Existing Total N Load										

**Table 5. Worst Case Aggregate Response of Segments 14 & 15 to Haw River Load Changes (Maximum Growing Season)**

		Percent of Chlorophyll a Excursions										
Fraction of Existing Total P Load	1.5	0.00	6.21	16.34	23.20	32.68	49.35	54.90	61.11	66.34	66.99	67.32
	1.4	0.00	6.21	16.34	23.20	32.68	49.35	54.58	61.11	66.01	66.34	66.67
	1.3	0.00	6.21	16.34	23.20	32.35	49.35	54.58	61.11	65.69	66.01	66.34
	1.2	0.00	6.21	16.34	23.20	32.35	49.35	54.58	61.44	64.71	65.36	65.36
	1.1	0.00	6.21	16.34	23.20	32.35	50.00	54.58	60.46	63.40	64.05	64.05
	1.0	0.00	6.21	16.34	23.20	32.35	48.37	53.60	58.17	60.78	61.77	62.42
	0.9	0.00	6.21	16.34	22.88	32.03	48.04	52.61	55.88	59.15	60.78	60.78
	0.8	0.00	6.21	16.34	21.90	31.37	47.39	51.31	52.94	56.21	57.19	57.19
	0.7	0.00	6.21	16.01	21.24	28.76	44.12	47.71	48.37	48.69	48.69	48.69
	0.6	0.00	5.88	15.03	17.97	25.49	39.22	44.44	44.77	44.77	45.10	45.10
0.5	0.00	5.88	11.11	12.09	15.03	22.55	22.55	22.55	22.55	22.55	22.55	
		0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
		Fraction of Existing Total N Load										

**Table 6. Aggregate Concentration Response of Segments 5 & 6 to New Hope, Northeast, and Morgan Creek Load Reductions (Volume-Weighted Growing Season Average)**

		Chlorophyll a Concentrations (µg/l)								
Fraction of Existing Total P Load	1.0	14.40	15.40	16.36	17.36	18.44	19.49	20.55	21.75	22.95
	0.9	14.40	15.40	16.36	17.37	18.45	19.51	20.57	21.76	22.90
	0.8	14.41	15.40	16.37	17.38	18.47	19.55	20.60	21.70	22.82
	0.7	14.41	15.40	16.37	17.39	18.49	19.55	20.61	21.64	22.77
	0.6	14.41	15.40	16.37	17.41	18.50	19.52	20.56	21.61	22.71
	0.5	14.40	15.40	16.38	17.42	18.46	19.48	20.50	21.50	22.45
	0.4	14.38	15.39	16.39	17.39	18.42	19.38	20.30	21.10	21.84
	0.3	14.37	15.37	16.35	17.35	18.24	18.99	19.58	20.10	20.60
	0.2	14.33	15.31	16.23	16.99	17.58	18.07	18.47	18.81	19.35
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
		Fraction of Existing Total N Load								

**Table 7. Aggregate Concentration Response of Segments 5 & 6 to Haw River Load Reductions (Volume-Weighted Growing Season Average)**

		Chlorophyll a Concentrations (µg/l)								
Fraction of Existing Total P Load	1.0	20.41	20.67	20.94	21.21	21.51	21.85	22.21	22.63	22.95
	0.9	20.41	20.68	20.94	21.22	21.52	21.86	22.22	22.61	22.93
	0.8	20.41	20.68	20.95	21.23	21.52	21.87	22.23	22.59	22.91
	0.7	20.42	20.69	20.96	21.24	21.54	21.88	22.22	22.57	22.88
	0.6	20.43	20.70	20.97	21.25	21.56	21.89	22.21	22.55	22.86
	0.5	20.43	20.71	20.99	21.27	21.57	21.88	22.19	22.53	22.90
	0.4	20.45	20.72	21.01	21.28	21.56	21.86	22.18	22.55	22.92
	0.3	20.46	20.75	21.02	21.28	21.55	21.86	22.20	22.57	22.91
	0.2	20.48	20.76	21.02	21.27	21.55	21.88	22.25	22.58	22.88
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
		Fraction of Existing Total N Load								

**Table 8. Aggregate Concentration Response of Segments 8, 9, & 12 to New Hope, Northeast, and Morgan Creek Load Reductions (Volume-Weighted Growing Season Average)**

		Chlorophyll a Concentrations (µg/l)								
Fraction of Existing Total P Load	1.0	16.92	17.48	17.99	18.52	19.17	19.70	20.24	20.82	21.40
	0.9	16.92	17.48	17.99	18.52	19.16	19.69	20.22	20.80	21.39
	0.8	16.92	17.47	17.98	18.52	19.14	19.67	20.21	20.77	21.37
	0.7	16.92	17.47	17.98	18.53	19.13	19.66	20.23	20.77	21.46
	0.6	16.91	17.46	17.99	18.53	19.11	19.66	20.23	20.89	21.54
	0.5	16.90	17.45	17.99	18.52	19.11	19.66	20.25	20.98	21.63
	0.4	16.89	17.43	17.98	18.53	19.13	19.71	20.43	21.08	21.69
	0.3	16.92	17.42	17.99	18.58	19.21	19.89	20.57	21.13	21.58
	0.2	16.90	17.44	18.06	18.70	19.40	20.07	20.60	21.03	21.45
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
		Fraction of Existing Total N Load								

**Table 9. Aggregate Concentration Response of Segments 8, 9, & 12 to Haw River Load Reductions (Volume-Weighted Growing Season Average)**

		Chlorophyll a Concentrations (µg/l)								
Fraction of Existing Total P Load	1.0	14.81	15.54	16.26	17.00	17.80	18.71	19.66	20.60	21.40
	0.9	14.81	15.54	16.27	17.01	17.80	18.70	19.62	20.47	21.26
	0.8	14.81	15.55	16.27	17.01	17.80	18.67	19.52	20.34	21.10
	0.7	14.82	15.55	16.28	17.01	17.78	18.59	19.38	20.17	20.88
	0.6	14.82	15.56	16.28	17.00	17.72	18.47	19.23	19.96	20.58
	0.5	14.83	15.56	16.27	16.94	17.61	18.31	19.02	19.65	20.10
	0.4	14.83	15.55	16.22	16.83	17.45	18.08	18.69	19.11	19.39
	0.3	14.83	15.50	16.10	16.65	17.21	17.74	18.11	18.35	18.47
	0.2	14.77	15.36	15.89	16.39	16.81	17.10	17.28	17.38	17.44
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
		Fraction of Existing Total N Load								

**Table 10. Aggregate Response of Segments 1-4 to New Hope, Northeast, and Morgan Creek Load Reductions (Volume-Weighted Growing Season Average)**

		Percent of Chlorophyll a Excursions									
Fraction of Existing Total P Load	1.0	0.10	0.39	1.18	2.83	4.64	10.75	19.56	29.77	39.39	
	0.9	0.10	0.39	1.14	2.86	4.68	10.73	19.57	29.73	38.98	
	0.8	0.10	0.39	1.13	2.79	4.58	10.66	19.55	29.08	38.69	
	0.7	0.10	0.39	1.13	2.70	4.48	10.59	19.46	28.38	37.23	
	0.6	0.10	0.38	1.17	2.71	4.49	10.30	18.68	28.16	36.08	
	0.5	0.10	0.38	1.09	2.58	4.27	10.00	17.19	26.49	32.90	
	0.4	0.10	0.36	1.05	2.07	3.90	8.73	14.52	20.88	29.30	
	0.3	0.10	0.36	0.69	1.54	3.22	6.47	9.97	13.47	18.06	
	0.2	0.10	0.28	0.50	0.97	2.22	4.61	7.33	11.42	18.17	
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
		Fraction of Existing Total N Load									



**Table 11. Aggregate Response of Segments 14 & 15 to Haw River Load Reductions (Volume-Weighted Growing Season Average)**

		Percent of Chlorophyll a Excursions										
		0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
Fraction of Existing Total P Load	1.5	0.00	0.67	2.17	3.77	8.81	17.06	22.65	29.41	34.64	37.45	39.91
	1.4	0.00	0.67	2.17	3.77	8.72	17.15	22.26	28.32	33.36	36.22	38.62
	1.3	0.00	0.67	2.17	3.77	8.68	17.02	21.77	27.35	32.26	35.09	37.20
	1.2	0.00	0.67	2.17	3.77	8.68	16.28	20.42	25.90	30.20	33.03	34.73
	1.1	0.00	0.67	2.17	3.64	8.61	15.38	19.10	23.81	28.33	30.84	32.35
	1.0	0.00	0.67	2.17	3.47	7.80	13.12	16.74	20.93	25.16	26.81	28.24
	0.9	0.00	0.67	2.17	3.44	6.26	11.41	14.34	18.01	21.11	22.86	23.43
	0.8	0.00	0.67	2.17	3.27	5.71	10.75	13.35	15.85	18.17	19.84	19.97
	0.7	0.00	0.67	2.17	3.20	5.08	9.57	10.89	12.02	12.69	12.92	12.92
	0.6	0.00	0.63	2.07	2.70	4.30	8.32	9.83	9.92	9.89	9.98	9.98
0.5	0.00	0.63	1.65	1.96	2.61	4.39	4.39	4.39	4.39	4.39	4.39	
		0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5
		Fraction of Existing Total N Load										