

Review of Baseline Data against Pre-established Action Level for Same-Day Control

Existing Updated EM&A Manual specifies Action and Limit Level for same-day control as being 120% and 130% of control station respectively. The tables below show the existing difference between upstream and downstream stations from baseline data. The data shows a significant percentage of both Turbidity and SS results already exceeding the arbitrary 120% Action Level relative to control station, which implies that the specified 120% and 130% Action and Limit Levels are inappropriate for this site.

Turbidity (NTU) - Tung Chung Stream (West)

Date		Upstream (control)	Mid / Down stream (impact)	% Difference
09/08/21	WQM4 vs midstream (WQM2)	1.4	0.4	29%
11/08/21		1.3	1.5	115%
13/08/21		2	3.5	175%
16/08/21		1.5	0.8	53%
18/08/21		1.8	1.5	83%
20/08/21		2.3	1.7	74%
23/08/21		1.6	1.7	106%
25/08/21		2	1.6	80%
27/08/21		2.7	2.3	85%
30/08/21		3.1	3.9	126%
01/09/21		4.8	6.4	133%
03/09/21		3.4	3.4	100%
09/08/21		WQM4 vs downstream (WQM6)	1.4	0.9
11/08/21	1.3		1.1	85%
13/08/21	2		1.9	95%
16/08/21	1.5		1.3	87%
18/08/21	1.8		1.5	83%
20/08/21	2.3		1.9	83%
23/08/21	1.6		1.7	106%
25/08/21	2		1.6	80%
27/08/21	2.7		3.2	119%
30/08/21	3.1		3.1	100%
01/09/21	4.8		29.9	623%
03/09/21	3.4		3.3	97%

Total % baseline data exceeding 120% difference between upstream and downstream 17%

Turbidity (NTU) - Tung Chung Stream (East)

Date		Upstream (control)	Mid / Down stream (impact)	% Difference
09/08/21	WQM5A vs midstream (WQM3A)	1.2	1.7	142%
11/08/21		1.1	1.2	109%
13/08/21		2.5	2.1	84%
16/08/21		2	1.4	70%
18/08/21		2	1.6	80%
20/08/21		1.9	2.1	111%
23/08/21		1.8	2.8	156%
25/08/21		1.7	1.8	106%
27/08/21		2.6	2.9	112%
30/08/21		3.1	3.2	103%
01/09/21		10	13.1	131%
03/09/21		2.7	4.4	163%
09/08/21		WQM5A vs downstream (WQM7)	1.2	1
11/08/21	1.1		1.6	145%
13/08/21	2.5		1.9	76%
16/08/21	2		1.7	85%
18/08/21	2		2	100%
20/08/21	1.9		1.8	95%
23/08/21	1.8		1.8	100%
25/08/21	1.7		1.4	82%
27/08/21	2.6		3.1	119%
30/08/21	3.1		2.8	90%
01/09/21	10		21.7	217%
03/09/21	2.7		3.1	115%

Total % baseline data exceeding 120% difference between upstream and downstream 25%

SS (mg/L) - Tung Chung Stream (West)

Date		Upstream (control)	Mid / Down stream (impact)	% Difference
09/08/21	WQM4 vs midstream (WQM2)	0.5	1	200%
11/08/21		2.2	1.3	59%
13/08/21		0.7	1	143%
16/08/21		0.5	0.9	180%
18/08/21		0.5	1.3	260%
20/08/21		0.7	0.8	114%
23/08/21		0.6	1.2	200%
25/08/21		0.7	1.2	171%
27/08/21		0.9	1.8	200%
30/08/21		0.7	2.2	314%
01/09/21		1.3	4.2	323%
03/09/21		0.8	0.9	113%
09/08/21		WQM4 vs downstream (WQM6)	0.5	1
11/08/21	2.2		1.2	55%
13/08/21	0.7		1.3	186%
16/08/21	0.5		1	200%
18/08/21	0.5		0.8	160%
20/08/21	0.7		0.8	114%
23/08/21	0.6		1.2	200%
25/08/21	0.7		1.2	171%
27/08/21	0.9		1.7	189%
30/08/21	0.7		0.9	129%
01/09/21	1.3		20.5	1577%
03/09/21	0.8		0.8	100%

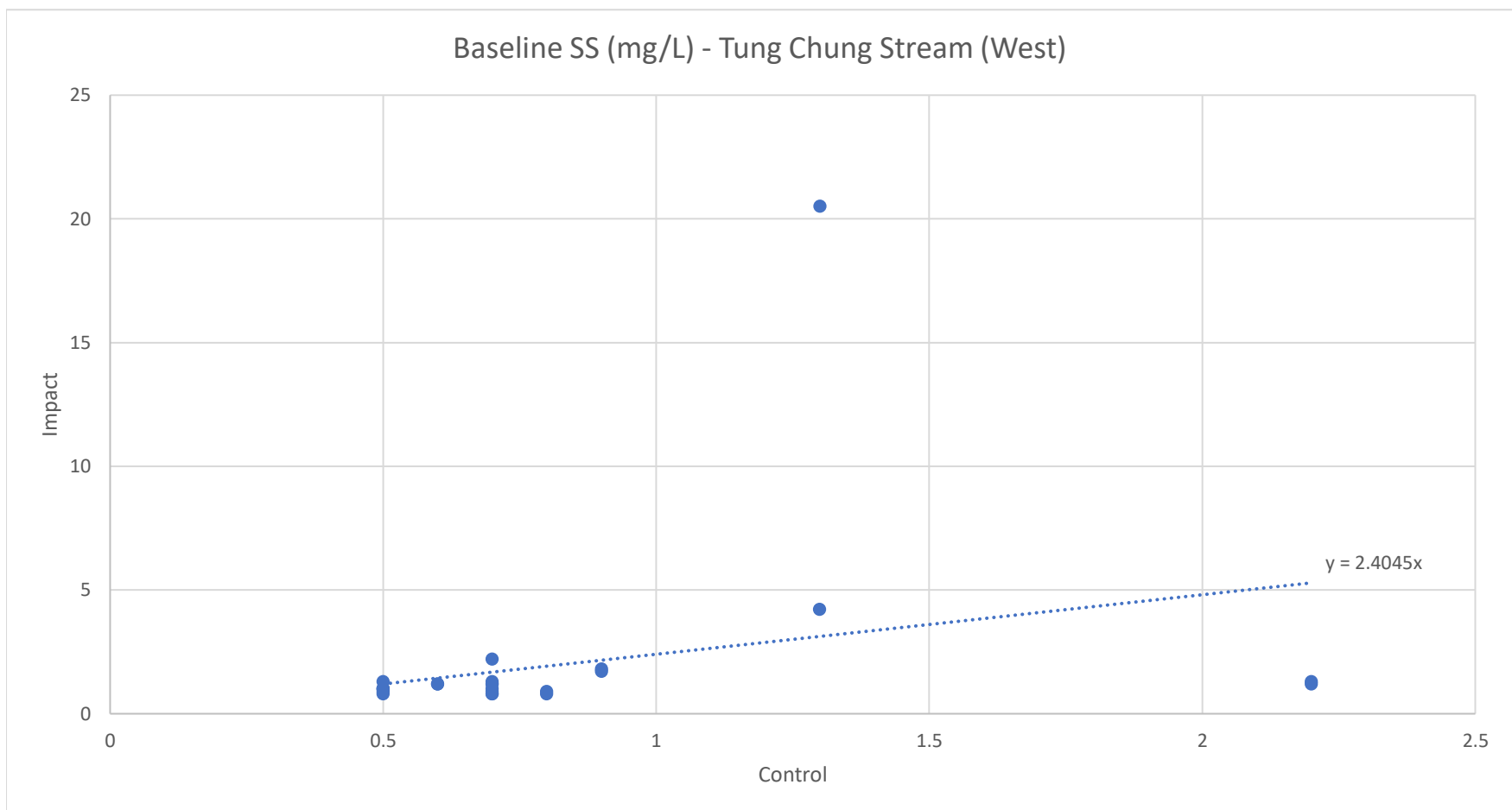
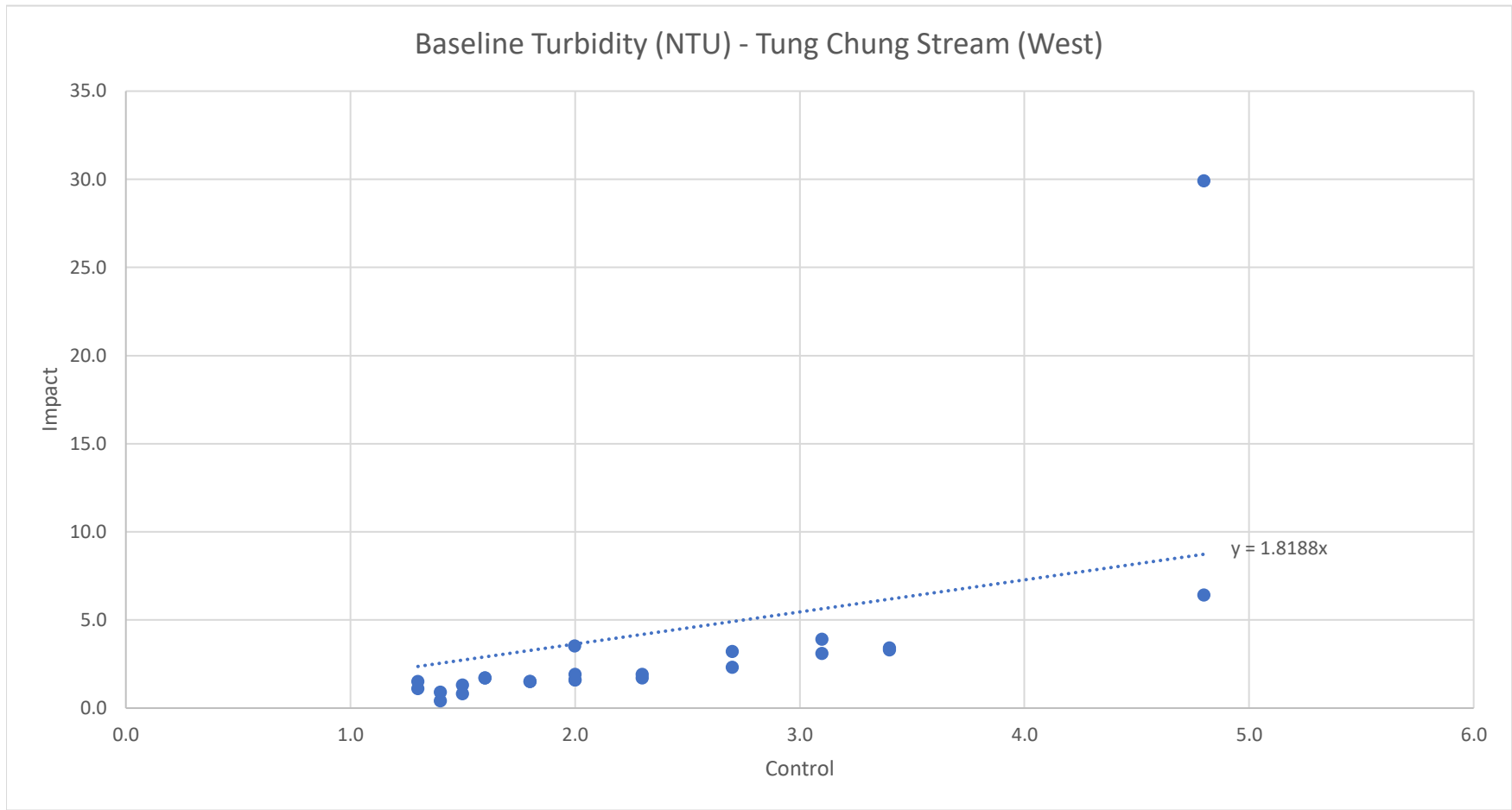
Total % baseline data exceeding 120% difference between upstream and downstream 75%

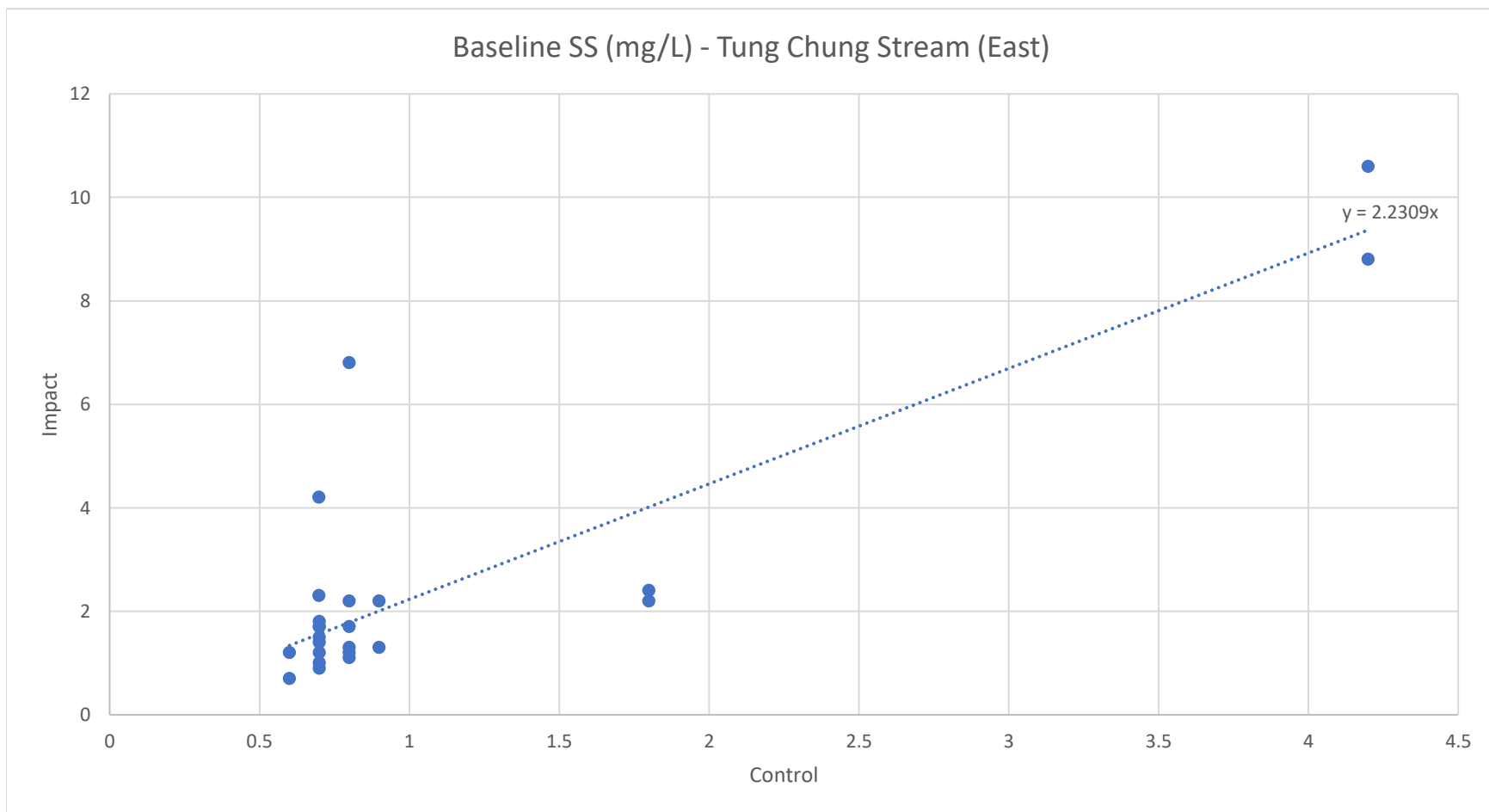
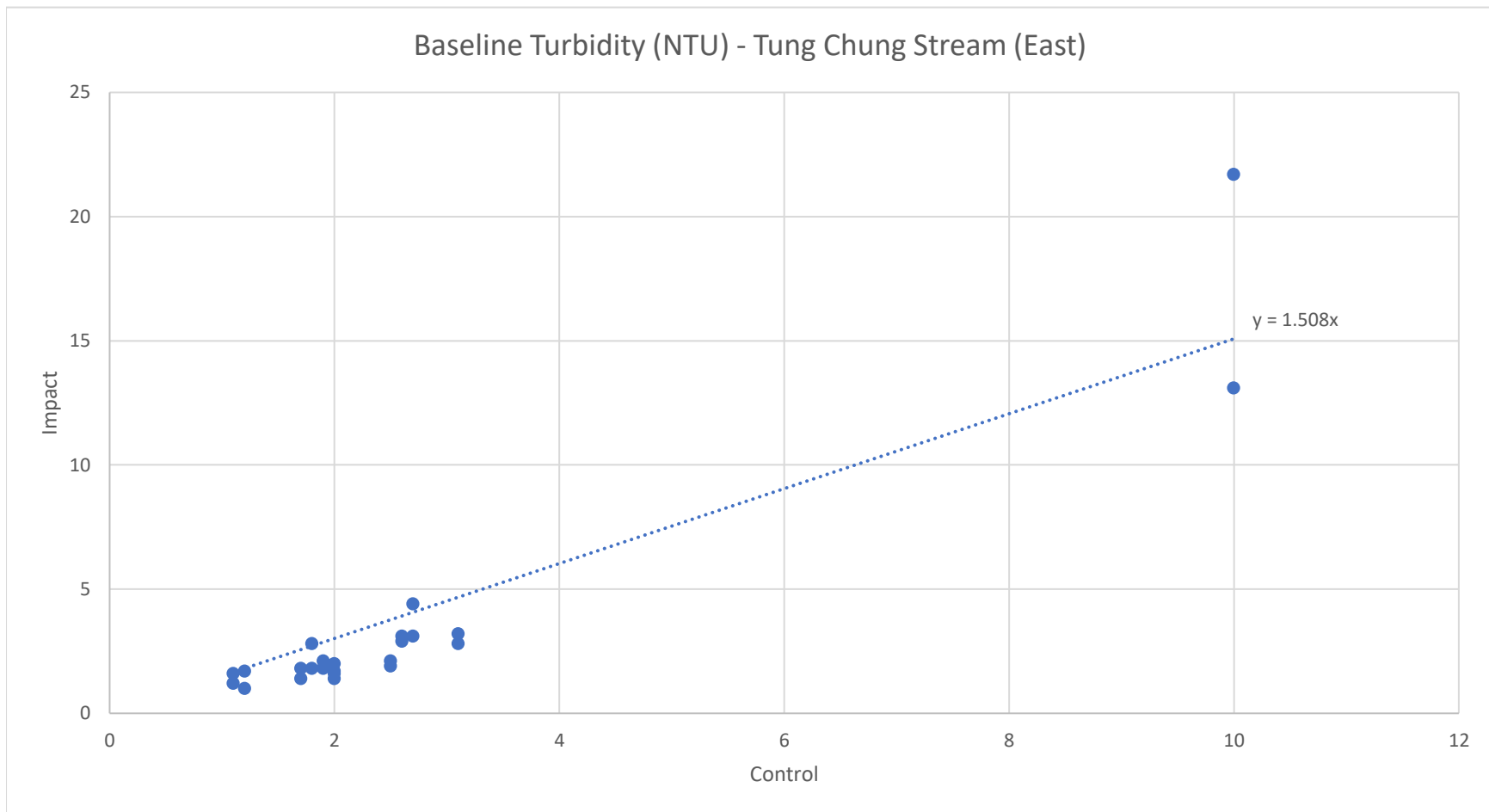
SS (mg/L) - Tung Chung Stream (East)

Date		Upstream (control)	Mid / Down stream (impact)	% Difference
09/08/21	WQM5A vs midstream (WQM3A)	0.9	1.3	144%
11/08/21		0.8	6.8	850%
13/08/21		1.8	2.4	133%
16/08/21		0.7	1.7	243%
18/08/21		0.6	1.2	200%
20/08/21		0.8	1.7	213%
23/08/21		0.7	2.3	329%
25/08/21		0.7	1.7	243%
27/08/21		0.8	2.2	275%
30/08/21		0.7	1.4	200%
01/09/21		4.2	10.6	252%
03/09/21		0.7	0.9	129%
09/08/21		WQM5A vs downstream (WQM7)	0.9	2.2
11/08/21	0.8		1.2	150%
13/08/21	1.8		2.2	122%
16/08/21	0.7		1	143%
18/08/21	0.6		0.7	117%
20/08/21	0.8		1.3	163%
23/08/21	0.7		1.2	171%
25/08/21	0.7		1.5	214%
27/08/21	0.8		1.1	138%
30/08/21	0.7		4.2	600%
01/09/21	4.2		8.8	210%
03/09/21	0.7		1.8	257%

Total % baseline data exceeding 120% difference between upstream and downstream 96%

*Highlighted cells show values > 120%





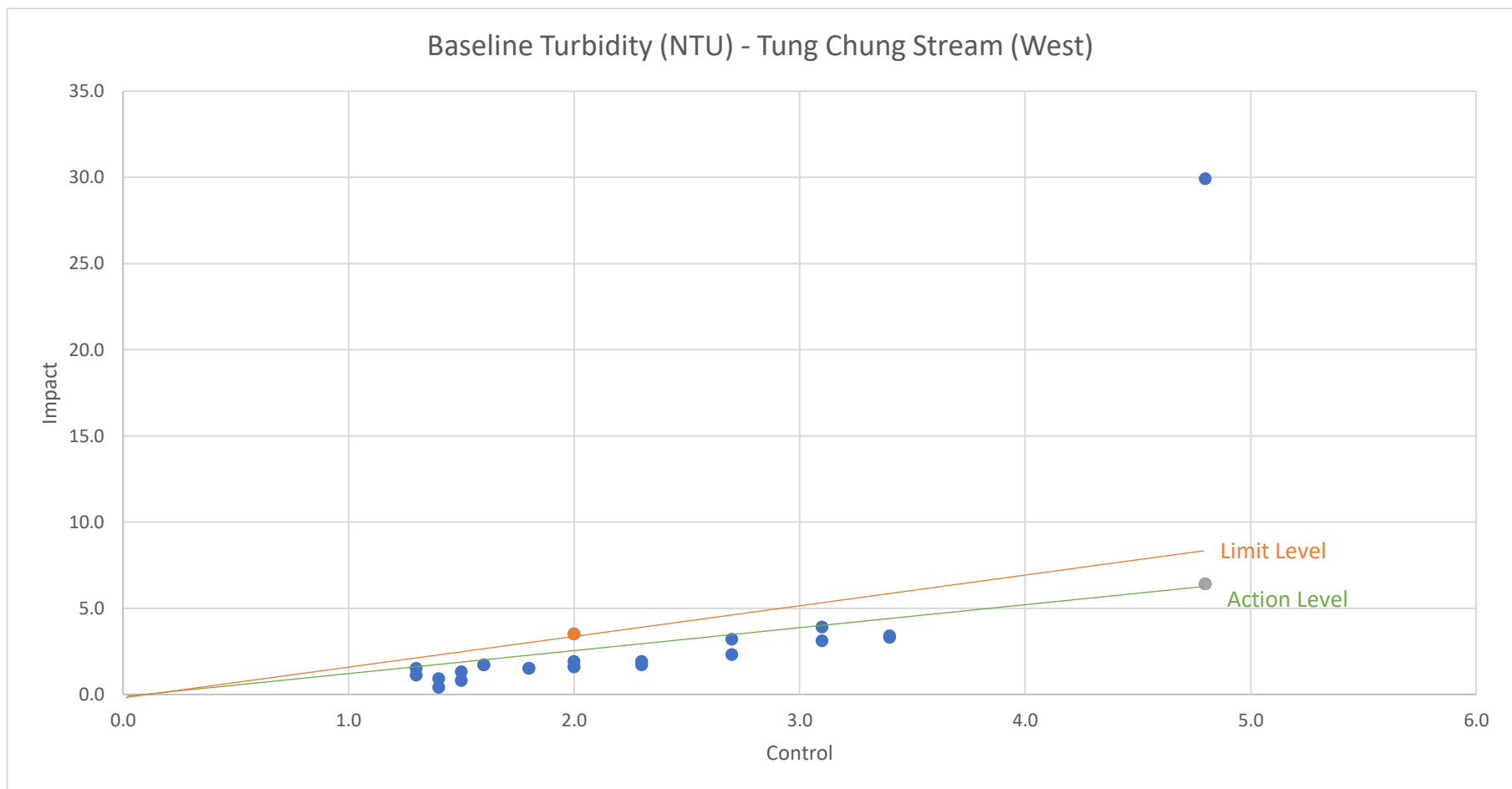
Proposed Action and Limit Level for same-day control (derived from Baseline Data)

Action Level = Maximum percentage difference between control and impact stations for data points within 95 percentile range

Limit Level = Maximum percentage difference between control and impact stations for data points within 99 percentile range

Turbidity (NTU) - Tung Chung Stream (West)

Date		Upstream (control)	Mid / Down stream (impact)	Difference (as %)	Data values < 95 percentile	Data values < 99 percentile	
09/08/21	WQM4 vs midstream (WQM2)	1.4	0.4	29%	29%	29%	
11/08/21		1.3	1.5	115%	115%	115%	
13/08/21		2.0	3.5	175%		175%	
16/08/21		1.5	0.8	53%	53%	53%	
18/08/21		1.8	1.5	83%	83%	83%	
20/08/21		2.3	1.7	74%	74%	74%	
23/08/21		1.6	1.7	106%	106%	106%	
25/08/21		2.0	1.6	80%	80%	80%	
27/08/21		2.7	2.3	85%	85%	85%	
30/08/21		3.1	3.9	126%	126%	126%	
01/09/21		4.8	6.4	133%	133%	133%	
03/09/21		3.4	3.4	100%	100%	100%	
09/08/21		WQM4 vs downstream (WQM6)	1.4	0.9	64%	64%	64%
11/08/21			1.3	1.1	85%	85%	85%
13/08/21	2.0		1.9	95%	95%	95%	
16/08/21	1.5		1.3	87%	87%	87%	
18/08/21	1.8		1.5	83%	83%	83%	
20/08/21	2.3		1.9	83%	83%	83%	
23/08/21	1.6		1.7	106%	106%	106%	
25/08/21	2.0		1.6	80%	80%	80%	
27/08/21	2.7		3.2	119%	119%	119%	
30/08/21	3.1		3.1	100%	100%	100%	
01/09/21	4.8		29.9	623%			
03/09/21	3.4		3.3	97%	97%	97%	
			MAX	623%	133%	175%	
				95 percentile	169%	(Proposed Action Level)	
			99 percentile	520%	(Proposed Limit Level)		



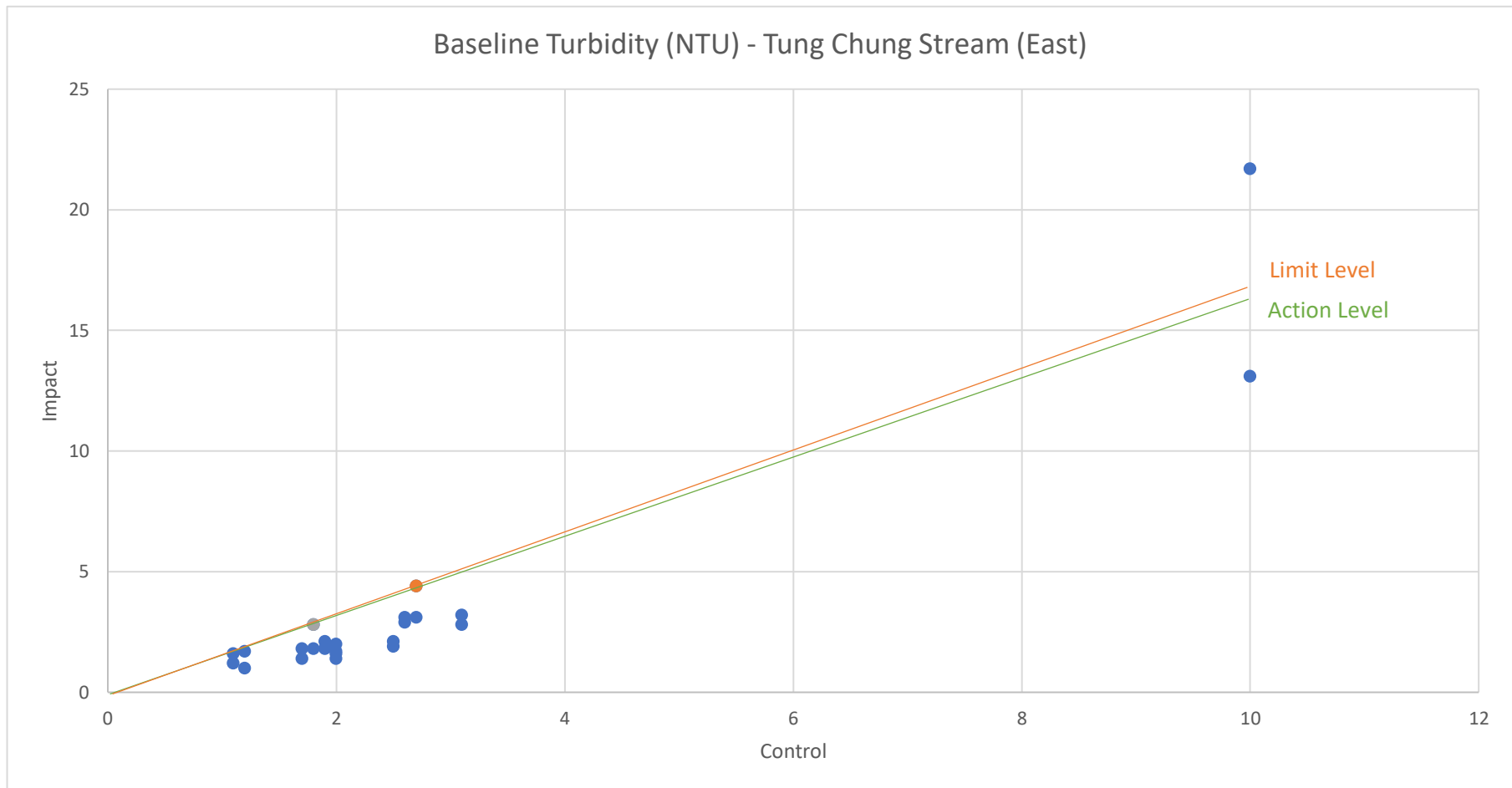
Proposed Action and Limit Level for same-day control (derived from Baseline Data)

Action Level = Maximum percentage difference between control and impact stations for data points within 95 percentile range

Limit Level = Maximum percentage difference between control and impact stations for data points within 99 percentile range

Turbidity (NTU) - Tung Chung Stream (East)

Date		Upstream (control)	Mid / Down stream (impact)	Difference (as %)	Data values < 95 percentile	Data values < 99 percentile
09/08/21	WQM5A vs midstream (WQM3A)	1.2	1.7	142%	142%	142%
11/08/21		1.1	1.2	109%	109%	109%
13/08/21		2.5	2.1	84%	84%	84%
16/08/21		2	1.4	70%	70%	70%
18/08/21		2	1.6	80%	80%	80%
20/08/21		1.9	2.1	111%	111%	111%
23/08/21		1.8	2.8	156%	156%	156%
25/08/21		1.7	1.8	106%	106%	106%
27/08/21		2.6	2.9	112%	112%	112%
30/08/21		3.1	3.2	103%	103%	103%
01/09/21		10	13.1	131%	131%	131%
03/09/21		2.7	4.4	163%		163%
09/08/21		WQM5A vs downstream (WQM7)	1.2	1	83%	83%
11/08/21	1.1		1.6	145%	145%	145%
13/08/21	2.5		1.9	76%	76%	76%
16/08/21	2		1.7	85%	85%	85%
18/08/21	2		2	100%	100%	100%
20/08/21	1.9		1.8	95%	95%	95%
23/08/21	1.8		1.8	100%	100%	100%
25/08/21	1.7		1.4	82%	82%	82%
27/08/21	2.6		3.1	119%	119%	119%
30/08/21	3.1		2.8	90%	90%	90%
01/09/21	10		21.7	217%		
03/09/21	2.7		3.1	115%	115%	115%
			MAX	217%	156%	163%
		95 percentile	162%	(Proposed Action Level)	(Proposed Limit Level)	
		99 percentile	205%			



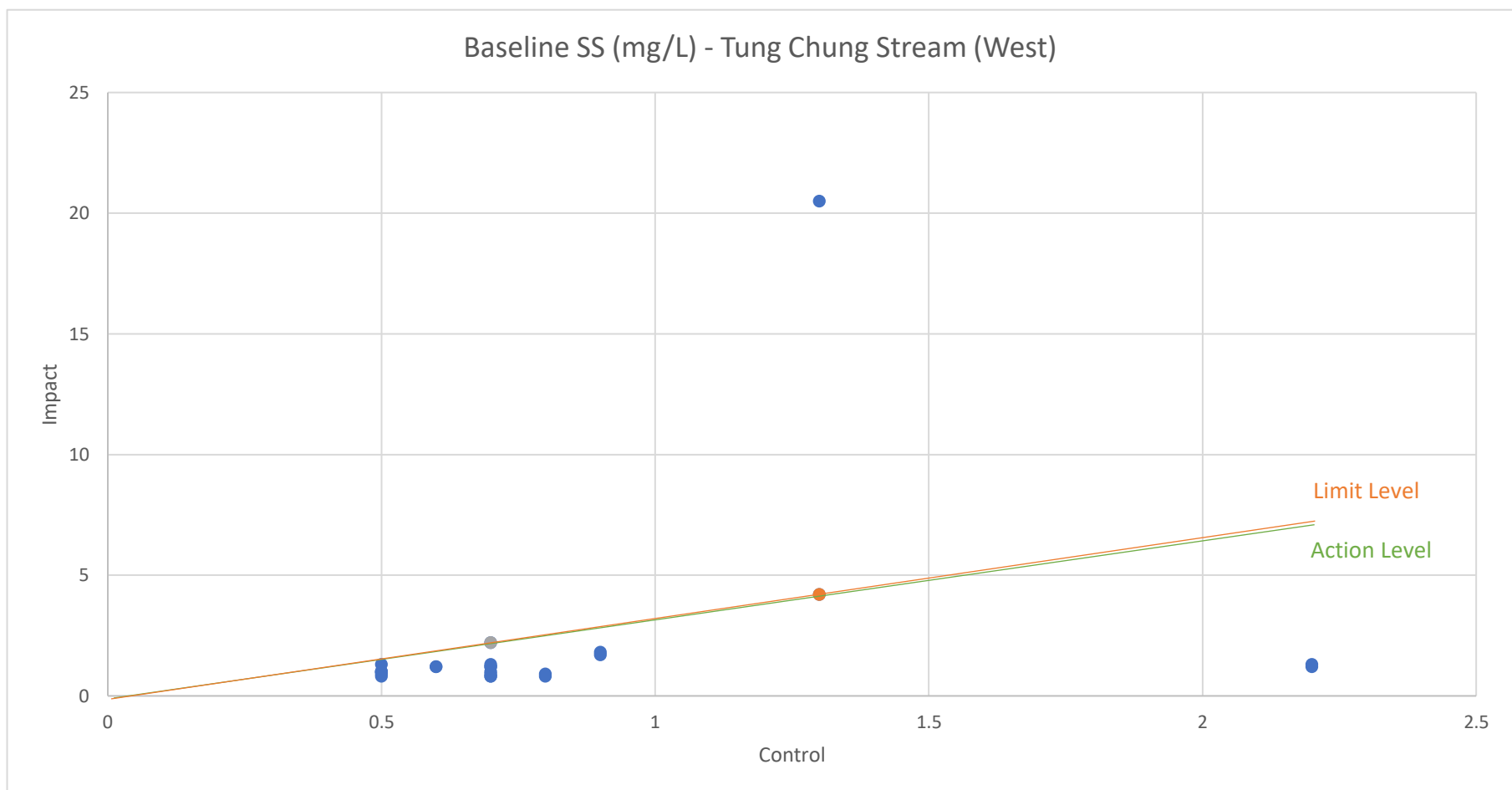
Proposed Action and Limit Level for same-day control (derived from Baseline Data)

Action Level = Maximum percentage difference between control and impact stations for data points within 95 percentile range

Limit Level = Maximum percentage difference between control and impact stations for data points within 99 percentile range

SS (mg/L) - Tung Chung Stream (West)

Date		Upstream (control)	Mid / Down stream (impact)	Difference (as %)	Data values < 95 percentile	Data values < 99 percentile	
09/08/21	WQM4 vs midstream (WQM2)	0.5	1	200%	200%	200%	
11/08/21		2.2	1.3	59%	59%	59%	
13/08/21		0.7	1	143%	143%	143%	
16/08/21		0.5	0.9	180%	180%	180%	
18/08/21		0.5	1.3	260%	260%	260%	
20/08/21		0.7	0.8	114%	114%	114%	
23/08/21		0.6	1.2	200%	200%	200%	
25/08/21		0.7	1.2	171%	171%	171%	
27/08/21		0.9	1.8	200%	200%	200%	
30/08/21		0.7	2.2	314%	314%	314%	
01/09/21		1.3	4.2	323%		323%	
03/09/21		0.8	0.9	113%	113%	113%	
09/08/21		WQM4 vs downstream (WQM6)	0.5	1	200%	200%	200%
11/08/21			2.2	1.2	55%	55%	55%
13/08/21	0.7		1.3	186%	186%	186%	
16/08/21	0.5		1	200%	200%	200%	
18/08/21	0.5		0.8	160%	160%	160%	
20/08/21	0.7		0.8	114%	114%	114%	
23/08/21	0.6		1.2	200%	200%	200%	
25/08/21	0.7		1.2	171%	171%	171%	
27/08/21	0.9		1.7	189%	189%	189%	
30/08/21	0.7		0.9	129%	129%	129%	
01/09/21	1.3		20.5	1577%			
03/09/21	0.8		0.8	100%	100%	100%	
			MAX	1577%	314%	323%	
				95 percentile	322%	(Proposed Action Level)	
			99 percentile	1289%	(Proposed Limit Level)		



Proposed Action and Limit Level for same-day control (derived from Baseline Data)

Action Level = Maximum percentage difference between control and impact stations for data points within 95 percentile range

Limit Level = Maximum percentage difference between control and impact stations for data points within 99 percentile range

SS (mg/L) - Tung Chung Stream (East)

Date		Upstream (control)	Mid / Down stream (impact)	Difference (as %)	Data values < 95 percentile	Data values < 99 percentile	
09/08/21	WQM5A vs midstream (WQM3A)	0.9	1.3	144%	144%	144%	
11/08/21		0.8	6.8	850%			
13/08/21		1.8	2.4	133%	133%	133%	
16/08/21		0.7	1.7	243%	243%	243%	
18/08/21		0.6	1.2	200%	200%	200%	
20/08/21		0.8	1.7	213%	213%	213%	
23/08/21		0.7	2.3	329%	329%	329%	
25/08/21		0.7	1.7	243%	243%	243%	
27/08/21		0.8	2.2	275%	275%	275%	
30/08/21		0.7	1.4	200%	200%	200%	
01/09/21		4.2	10.6	252%	252%	252%	
03/09/21		0.7	0.9	129%	129%	129%	
09/08/21		WQM5A vs downstream (WQM7)	0.9	2.2	244%	244%	244%
11/08/21			0.8	1.2	150%	150%	150%
13/08/21	1.8		2.2	122%	122%	122%	
16/08/21	0.7		1	143%	143%	143%	
18/08/21	0.6		0.7	117%	117%	117%	
20/08/21	0.8		1.3	163%	163%	163%	
23/08/21	0.7		1.2	171%	171%	171%	
25/08/21	0.7		1.5	214%	214%	214%	
27/08/21	0.8		1.1	138%	138%	138%	
30/08/21	0.7		4.2	600%		600%	
01/09/21	4.2		8.8	210%	210%	210%	
03/09/21	0.7		1.8	257%	257%	257%	
			MAX	850%	329%	600%	
				95 percentile	559%	(Proposed Action Level)	
			99 percentile	793%	(Proposed Limit Level)		

