

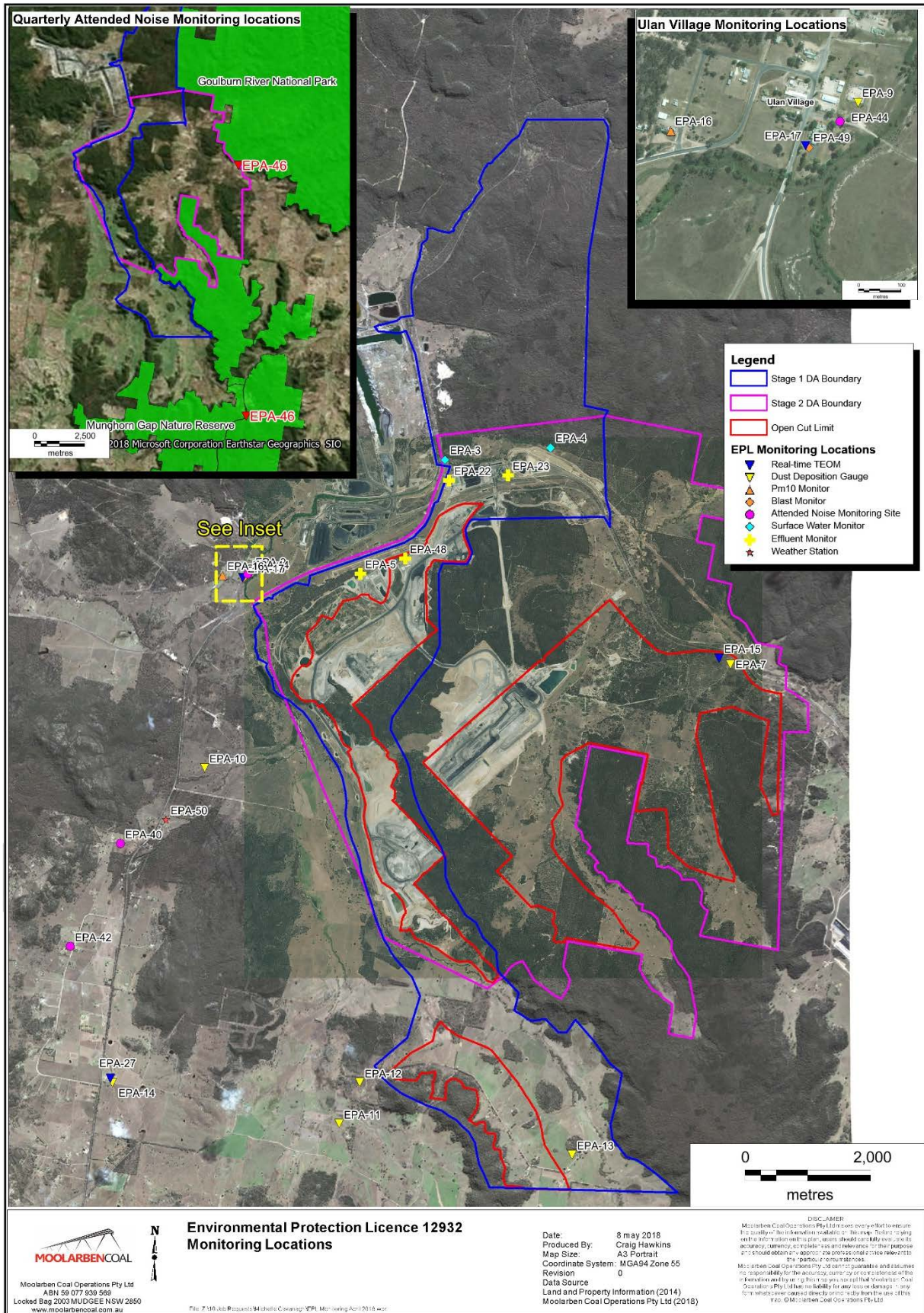


Monthly Environmental Monitoring Report

For the Month Ending 31 March 2019

Name of Operation	Moolarben Coal Complex
Name of License Holder	Moolarben Coal Operations Pty Ltd
Premises	Moolarben Coal Mine 12 Ulan-Wollar Rd, Ulan NSW 2850
Environmental Protection Licence Number	12932
EPL Link	http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=75423&SYSUID=1&LICID=12932
Premises	Moolarben Coal Mine
Reporting Period	1 March 2019 to 31 March 2019
Date last sampled data obtained	30 April 2019
Publication Date	1 May 2019
Version	1
Author	M. Yeatman
Approver	G. Chase

EPL 12932 MCO Environmental Monitoring Network



Concentration Monitoring Summary

Air Quality Monitoring

EPL ID	Location	Pollutant	Unit of Measure	EPL Monitoring Frequency	No. of Samples collected and analysed	Date Sampled	Value	Annual Average (Rolling)	Annual 100%ile concentration limit
6	DG01	Particulates – Deposited Matter	g/m ² /month	Monthly	1	27/02/2019	4.7c*	1.05	4.0
7	DG12	Particulates – Deposited Matter	g/m ² /month	Monthly	1	27/02/2019	1.8	2.17	4.0
9	DG04	Particulates – Deposited Matter	g/m ² /month	Monthly	1	27/02/2019	2.8	1.61	4.0
10	DG05	Particulates – Deposited Matter	g/m ² /month	Monthly	1	27/02/2019	0.9	1.88	4.0
11	DG06	Particulates – Deposited Matter	g/m ² /month	Monthly	1	27/02/2019	1.1	1.72	4.0
12	DG07	Particulates – Deposited Matter	g/m ² /month	Monthly	1	27/02/2019	1.1	1.58	4.0
13	DG08	Particulates – Deposited Matter	g/m ² /month	Monthly	1	27/02/2019	3.2	1.93	4.0
14	DG09	Particulates – Deposited Matter	g/m ² /month	Monthly	1	27/02/2019	3.1	2.07	4.0
N/A	DG13	Particulates – Deposited Matter	g/m ² /month	N/A	1	27/02/2019	2.2	1.88	4.0

c* - sampled contaminated and not included in annual average

EPL ID	Location	Pollutant	Unit of Measure	No. of Samples collected and analysed	EPL Monitoring Frequency	12 mth rolling average			Annual 100%ile concentration limit
						Min Value	Mean Value	Max Value	
15	TEOM 6	PM10	µg/m ³	96.5%	Continuous	15.60	15.89	16.13	30
16	PM01	PM10	µg/m ³	5	Every 6 days	16.0	16.27	16.51	30
N/A	PM02	PM10	µg/m ³	5	Every 6 days	17.91	18.15	18.42	30
17	TEOM 1	PM10	µg/m ³	99.7%	Continuous	15.3	15.44	15.6	30
27	TEOM 7	PM10	µg/m ³	96.9%	Continuous	16.6	16.73	17.0	30
N/A	TEOM 4	PM10	µg/m ³	100%	Continuous	19.05	19.22	19.39	30

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EPL ID	Location	Pollutant	Unit of Measure	EPL Monitoring Frequency	No. of Samples collected and analysed	Min Value	Mean Value	Max Value	100%ile concentration limit
15	TEOM 6	PM10	µg/m ³	Continuous (24 Hr Average)	96.5%	2.99	18.19	49.27 (102.5*)	50
16	PM01	PM10	µg/m ³	Every 6 days	5	14.0	22.4	29.0	50
N/A	PM02	PM10	µg/m ³	N/A	5	16.0	25.2	35.0	50
17	TEOM 1	PM10	µg/m ³	Continuous (24 Hr Average)	99.7%	7.87	17.9	30.42 (101.4*)	50
27	TEOM 7	PM10	µg/m ³	Continuous (24 Hr Average)	96.9%	5.15	17.86	45.77 (78.7*)	50
N/A	TEOM 4	PM10	µg/m ³	N/A (24 Hr Average)	100%	9.47	23.16	39.26 (95.7*)	50

*Elevated readings excluded based on exceptional event (dust storm)

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Surface Water Quality Monitoring

EPL ID	Location	Pollutant	Unit of Measure	No. of samples required by Licence	No. of Samples collected and analysed	Date Sampled	Min Value	Mean Value	Max Value
N/A	SW01	Conductivity	µS/cm	N/A	1	11/03/2019	779	779	779
		pH	pH	N/A	1	11/03/2019	7.19	7.19	7.19
		Total Suspended Solids	mg/L	N/A	1	11/03/2019	7	7	7
N/A	SW02	Conductivity	µS/cm	N/A	1	11/03/2019	780	780	780
		pH	pH	N/A	1	11/03/2019	7.38	7.38	7.38
		Total Suspended Solids	mg/L	N/A	1	11/03/2019	7	7	7
N/A	SW04	Conductivity	µS/cm	N/A	0	11/03/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	11/03/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	11/03/2019	No Flow	No Flow	No Flow
N/A	SW05	Conductivity	µS/cm	N/A	1	11/03/2019	626	626	626
		pH	pH	N/A	1	11/03/2019	6.84	6.84	6.84
		Total Suspended Solids	mg/L	N/A	1	11/03/2019	28	28	28
N/A	SW07	Conductivity	µS/cm	N/A	0	11/03/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	11/03/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	11/03/2019	No Flow	No Flow	No Flow
N/A	SW08	Conductivity	µS/cm	N/A	1	11/03/2019	4320	4320	4320
		pH	pH	N/A	1	11/03/2019	6.98	6.98	6.98
		Total Suspended Solids	mg/L	N/A	1	11/03/2019	10	10	10
N/A	SW09	Conductivity	µS/cm	N/A	1	11/03/2019	4180	4180	4180
		pH	pH	N/A	1	11/03/2019	6.77	6.77	6.77
		Total Suspended Solids	mg/L	N/A	1	11/03/2019	8	8	8
4	SW10	Conductivity	µS/cm	Special Frequency 1	0	11/03/2019	Dry	Dry	Dry
		Oil and Grease	mg/L	Special Frequency 1	0	11/03/2019	Dry	Dry	Dry
		pH	pH	Special Frequency 1	0	11/03/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	Special Frequency 1	0	11/03/2019	Dry	Dry	Dry
3	SW11	Conductivity	µS/cm	Special Frequency 1	0	11/03/2019	Dry	Dry	Dry
		Oil and Grease	mg/L	Special Frequency 1	0	11/03/2019	Dry	Dry	Dry
		pH	pH	Special Frequency 1	0	11/03/2019	Dry	Dry	Dry

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EPL ID	Location	Pollutant	Unit of Measure	No. of samples required by Licence	No. of Samples collected and analysed	Date Sampled	Min Value	Mean Value	Max Value
		Total Suspended Solids	mg/L	Special Frequency 1	0	11/03/2019	Dry	Dry	Dry
N/A	SW12	Conductivity	µS/cm	N/A	1	11/03/2019	595	595	595
		pH	pH	N/A	1	11/03/2019	7.2	7.2	7.2
		Total Suspended Solids	mg/L	N/A	1	11/03/2019	10	10	10
N/A	SW15	Conductivity	µS/cm	N/A	0	11/03/2019	Dry	Dry	Dry
		pH	pH	N/A	0	11/03/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	11/03/2019	Dry	Dry	Dry
N/A	SW16	Conductivity	µS/cm	N/A	0	11/03/2019	Dry	Dry	Dry
		pH	pH	N/A	0	11/03/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	11/03/2019	Dry	Dry	Dry
N/A	SW17	Conductivity	µS/cm	N/A	0	11/03/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	11/03/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	11/03/2019	No Flow	No Flow	No Flow
N/A	SW18	Conductivity	µS/cm	N/A	0	11/03/2019	Dry	Dry	Dry
		pH	pH	N/A	0	11/03/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	11/03/2019	Dry	Dry	Dry
N/A	SW19	Conductivity	µS/cm	N/A	0	11/03/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	11/03/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	11/03/2019	No Flow	No Flow	No Flow
N/A	SW20	Conductivity	µS/cm	N/A	0	11/03/2019	Dry	Dry	Dry
		pH	pH	N/A	0	11/03/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	11/03/2019	Dry	Dry	Dry

Blasting

EPL ID	Location	Pollutant	Unit of Measure	Frequency	No. of Blasts during the reporting period	Min Value	Mean Value	Max Value	Limits dBL
49	BM1 Ulan School	Blast Overpressure	dBL	Every Blast	14	90	97.84	107	115 (95% of Blasts) 120 (100% of Blasts)
		Ground Vibration	mm/s	Every Blast		0.11	0.2	0.34	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)
N/A	BM5 Ridge Rd	Blast Overpressure	dBL	Every Blast	14	90.1	97.51	108.7	115 (95% of Blasts) 120 (100% of Blasts)
		Ground Vibration	mm/s	Every Blast		0.06	0.16	0.28	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)

Noise

Location	Start Date and Time ¹	Measured Level ² L _{A1,1minute} dB	Measured Level ² L _{Aeq} dB	Limit(s) ³	Weather ⁴	Observation	(Potential) Non-Compliance/Breach ⁵
NA1	02/04/2019 11:24	NA	IA	Daytime (07:00 – 18:00) L _{Aeq,15minute} : 43 dB	Cloud Cover 7/8, wind at 10m 4.1m/s, Stability Class D	<p>Attended monitoring, nomination of noise sources: Continuum and impacts from the nearby industrial area primarily generated all measured noise levels. Road traffic noise, breeze in the foliage and insects contributed to the measured L_{A1}, L_{A10}, L_{A50}, and L_{Aeq}. Birds, aircraft and breeze on the microphone were also noted.</p> <p>Estimate of contribution of subject noise source: MCO was inaudible.</p>	Nil
NA6	01/04/2019 22:23	33	<30	Night time (22:00 – 07:00) L _{Aeq,15minute} : 37 dB L _{A1,1minute} : 45 dB	Cloud Cover 3/8, wind at 10m 3.2m/s, Stability Class D	<p>Attended monitoring, nomination of noise sources: Road traffic tyre and engine noise generated the L_{A1} and contributed to the measured L_{A10} and L_{Aeq}. Breeze in the foliage and the continuum from MCO generated the measured L_{A90} and contributed to the measured L_{A90}.</p> <p>A rattling fence was also noted.</p> <p>Estimate of contribution of subject noise source:</p>	Nil

Location	Start Date and Time ¹	Measured Level ² L _{A1,1minute} dB	Measured Level ² L _{Aeq} dB	Limit(s) ³	Weather ⁴	Observation	(Potential) Non-Compliance/Breach ⁵
						A continuum from MCO was audible throughout the measurement and generated the site only L _{Aeq} of less than 30 dB and L _{A1,1minute} of 33dB.	
NA12	01/04/2019 22:00	32	<30	Night time (22:00 – 07:00) L _{Aeq,15minute} : 35 dB L _{A1,1minute} : 45 dB	Cloud Cover 4/8, wind at 10m 3.2m/s, Stability Class D	<p>Attended monitoring, nomination of noise sources:</p> <p>Aircraft generated the measured L_{A1} and contributed to the measured L_{Aeq}. Insects generated the measured L_{A90} and, with Road traffic tyre noise, contributed to the measured L_{A10} and L_{Aeq}.</p> <p>Estimate of contribution of subject noise source:</p> <p>A continuum from MCO was audible throughout the measurement and generated the site only L_{Aeq} of less than 30 dB and L_{A1,1minute} of 32 dB.</p>	Nil

Notes:

1. Measurement period is 15 minutes;
2. Levels in these columns are MCO only;
3. As detailed in the EPL, noise emission limits apply under all meteorological conditions except:
 - Wind speeds greater than 3 m/s at 10 metres above ground level; or
 - Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or
 - Stability class G temperature inversions;
4. Cloud cover from field sheet observations. Wind speed, wind direction and stability class based on WCM weather station data; and
5. NA in last column means atmospheric conditions outside those specified in EPL and so criterion is not applicable.

Effluent Discharge Points

EPL ID	Pollutant	Unit of Measure	No. of samples required by Licence	No. of Samples collected and analysed	Date Sampled	Min Value	Mean Value	Max Value
5	BOD	mg/L	Quarterly					
	Nitrogen (total)	mg/L	Quarterly					
	Oil and Grease	mg/L	Quarterly					
	pH	pH	Quarterly					
	Phosphorus (total)	mg/L	Quarterly					
	Total Suspended Solids	mg/L	Quarterly					
22	BOD	mg/L	Quarterly					
	Nitrogen (total)	mg/L	Quarterly					
	Oil and Grease	mg/L	Quarterly					
	pH	pH	Quarterly					
	Phosphorus (total)	mg/L	Quarterly					
	Total Suspended Solids	mg/L	Quarterly					
23	BOD	mg/L	Quarterly					
	Nitrogen (total)	mg/L	Quarterly					
	Oil and Grease	mg/L	Quarterly					
	pH	pH	Quarterly					
	Phosphorus (total)	mg/L	Quarterly					
	Total Suspended Solids	mg/L	Quarterly					
48	BOD	mg/L	Quarterly					
	Nitrogen (total)	mg/L	Quarterly					
	Oil and Grease	mg/L	Quarterly					
	pH	pH	Quarterly					
	Phosphorus (total)	mg/L	Quarterly					
	Total Suspended Solids	mg/L	Quarterly					

Discharge Points

Moolarben Coal did not have any licensed discharges during the period.

EPL ID	Pollutant	Unit of Measure	No. of samples required by Licence	No. of Samples collected and analysed	Date Sampled	Min Value	Mean Value	Max Value	100%ile concentration limit
1	Conductivity	µS/cm	Continuous during discharge	0					900
	Iron	mg/L	Daily During Discharge	0					
	Oil and Grease	mg/L	Daily During Discharge	0					10
	pH	pH	Continuous during discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Continuous during discharge	0					25
	Zinc	mg/L	Daily During Discharge	0					
	Discharge Volume	Megalitres per day	Continuous during discharge	0					10
2	Conductivity	µS/cm	Continuous during discharge	0					900
	Iron	mg/L	Daily During Discharge	0					
	Oil and Grease	mg/L	Daily During Discharge	0					10
	pH	pH	Continuous during discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Continuous during discharge	0					25
	Zinc	mg/L	Daily During Discharge	0					
	Discharge Volume	Megalitres per day	Continuous during discharge	0					10
24	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25
26	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5

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	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25
28	Conductivity	µS/cm	Continuous during discharge	0					900
	Iron	mg/L	Daily During Discharge	0					
	Oil and Grease	mg/L	Daily During Discharge	0					10
	pH	pH	Continuous during discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Continuous during discharge	0					25
	Zinc	mg/L	Daily During Discharge	0					
	Discharge Volume	Kilolitres per day	Continuous during discharge	0					1
29	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25
30	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25
31	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25
33	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5

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	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25
35	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25