



Mannering Colliery Monthly Website Report – November 2020

Site:	Mannering Colliery
Department:	Technical Services
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Summary

Environmental monitoring results are presented in this report for monitoring undertaken during the period of December 2020.

Introduction

Great Southern Energy Pty Ltd (trading as Delta Coal) operates the Manning Colliery, an underground coal mine at the southern end of Lake Macquarie.

Manning Colliery operates under the following regulatory instruments:

- Section 66(6) of the *Protection of the Environment Operations Act 1997*, to make monitoring data related to an Environment Protection Licence (EPL) publicly available;
- Condition 10 & 13, Schedule 5, of Project Approval 06_0311 (as modified) to provide details of monitoring results and environmental performance;
- An Environment Protection Licence (EPL 191) issued under the *Protection of the Environment Operations Act 1997*; and
- A Water Access Licence (WAL40461), Aquifer (Sydney Basin – North Coast Groundwater Source) for 450-unit shares (megalitres).

This report provides environmental monitoring data from Manning Colliery for the period 1st to 31st December 2020.

Details of the Manning Colliery EPL 191 are provided below.

Manning Colliery Information	
Premises name	Manning Colliery
Address	Ruttleys Road, Doyalson, NSW, 2262
Licensee	Great Southern Energy Pty Ltd
EPL #	191
EPL location	http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=50781&SYSUID=1&LICID=191

The overall purpose of this monthly report is to keep stakeholders informed of the environmental monitoring results at Manning Colliery and maintain a transparent and accountable reporting system.

Scope

This report presents the results from the various environmental monitoring programs undertaken for Manning Colliery. Results are presented monthly with annual data, averages and trends in data also shown where relevant.

Where applicable, the results of the monitoring programs are compared with the relevant criteria (from the EPL or Project Approval) to assess compliance.

Monitoring results presented include:

- Water – quality;
- Water – volume;
- Air Quality; and
- Weather data.

Definitions

g/m²/month – grams per square metre per month;

kL – kilolitre;

ML – megalitre;

mg/L – milligrams per litre;

TSS – total suspended solids;

µg/L – micrograms per litre; and

µS/cm – microSiemens per centimetre.

References

Project Approval 06_0311 (as modified)

Environment Protection Licence 191 (Licence version date: 25 November 2019)

Steel River Testing - Dust Deposition Report **December 2020**

Steel River Testing - Water Analysis Report **December 2020**

ALS – Water Analysis Report **December 2020**

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Monitoring Results

Water – Quality

Weekly water quality results for discharge point LDP001 are presented below. Monitoring of these parameters have reverted to weekly as per EPL PRP requirements.

December 2020			
EPL	191		
Licensee	Great Southern Energy Pty Ltd		
Premises	Manning Colliery		
Period	01-Dec-20	to	31-Dec-20
Location	LDP001 (EPA ID # 1)		
Date sampled	Weekly		
Date reported	Refer report date		
Monitoring requirement	Weekly		
pH limit	6.5 - 8.5		
TSS limit (mg/L)	50		
Oil and grease limit (mg/L)	10		
Exceedance (Yes/No)	No		
Water Quality Results			
Date	pH	TSS (mg/L)	Oil and grease (mg/L)
Thursday, 3 December 2020	7.7	2	<5
Tuesday, 8 December 2020	8.1	4	<5
Monday, 14 December 2020	7.7	2	<5
Monday, 21 December 2020	7.9	7	<5
Tuesday, 29 December 2020	7.8	4	<5
Average	7.8	3.8	<5
Minimum	7.7	2.0	<5
Maximum	8.1	7.0	<5

The water quality analytical results during the reporting period did not exceed the discharge water quality criteria within Project Approval MP06_0311. Monthly water quality results, primarily metals, at LDP001 are presented below for the period.

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Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	LDP001
				Sampling date / time	29-Dec-2020 11:15
Compound	CAS Number	LOR	Unit	ES2046037-001	
					Result
EA010P: Conductivity by PC Titrator					
Electrical Conductivity @ 25°C	---	1	µS/cm	25600	
ED040F: Dissolved Major Anions					
Sulfur as S	63705-05-5	1	mg/L	128	
Silicon as SiO ₂	14464-46-1	0.1	mg/L	12.5	
ED093T: Total Major Cations					
Calcium	7440-70-2	1	mg/L	265	
Magnesium	7439-95-4	1	mg/L	295	
Potassium	7440-09-7	1	mg/L	37	
EG020F: Dissolved Metals by ICP-MS					
Aluminium	7429-90-5	10	µg/L	<10	
Arsenic	7440-38-2	1	µg/L	2	
Beryllium	7440-41-7	1	µg/L	<1	
Cadmium	7440-43-9	0.1	µg/L	<0.1	
Chromium	7440-47-3	1	µg/L	<1	
Cobalt	7440-48-4	1	µg/L	<1	
Copper	7440-50-8	1	µg/L	<1	
Lead	7439-92-1	1	µg/L	<1	
Manganese	7439-96-5	1	µg/L	46	
Molybdenum	7439-98-7	1	µg/L	5	
Nickel	7440-02-0	1	µg/L	3	
Selenium	7782-49-2	10	µg/L	<10	
Silver	7440-22-4	1	µg/L	5	
Vanadium	7440-62-2	10	µg/L	<10	
Zinc	7440-66-6	5	µg/L	6	
EG020T: Total Metals by ICP-MS					
Aluminium	7429-90-5	10	µg/L	30	
Antimony	7440-36-0	1	µg/L	2	
Arsenic	7440-38-2	1	µg/L	3	
Beryllium	7440-41-7	1	µg/L	<1	
Barium	7440-39-3	1	µg/L	266	
Cadmium	7440-43-9	0.1	µg/L	<0.1	
Chromium	7440-47-3	1	µg/L	<1	
Cobalt	7440-48-4	1	µg/L	<1	
Copper	7440-50-8	1	µg/L	<1	
EG020T: Total Metals by ICP-MS - Continued					
Lead	7439-92-1	1	µg/L	<1	
Lithium	7439-93-2	1	µg/L	566	
Molybdenum	7439-98-7	1	µg/L	6	
Nickel	7440-02-0	1	µg/L	4	
Selenium	7782-49-2	10	µg/L	<10	
Silver	7440-22-4	1	µg/L	3	
Tin	7440-31-5	1	µg/L	<1	
Titanium	7440-32-6	10	µg/L	<10	
Vanadium	7440-62-2	10	µg/L	<10	
Zinc	7440-66-6	5	µg/L	7	
Boron	7440-42-8	50	µg/L	440	
Iron	7439-89-6	50	µg/L	<50	
EG035F: Dissolved Mercury by FIMS					
Mercury	7439-97-6	0.1	µg/L	<0.1	
EG035T: Total Recoverable Mercury by FIMS					
Mercury	7439-97-6	0.1	µg/L	<0.1	
EK055G: Ammonia as N by Discrete Analyser					
Ammonia as N	7664-41-7	0.01	mg/L	1.05	
EK067G: Total Phosphorus as P by Discrete Analyser					
Total Phosphorus as P	---	0.01	mg/L	0.07	

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Water – Volume

Monthly water volumes discharged via LDP001 at Manning Colliery are summarised below.

December 2020		
EPL	191	
Licensee	Great Southern Energy Pty Ltd	
Premises	Manning Colliery	
Date Sampled	Daily	
Date Reported	Refer report date	
Discharge volume limit	4000 kilolitres per day	
Sampling Point	LDP001 (EPA ID # 1)	
Day	Unit	Volume
01/12/2020	kL	998
02/12/2020	kL	959
03/12/2020	kL	966
04/12/2020	kL	112
05/12/2020	kL	468
06/12/2020	kL	900
07/12/2020	kL	666
08/12/2020	kL	468
09/12/2020	kL	524
10/12/2020	kL	708
11/12/2020	kL	63
12/12/2020	kL	1272
13/12/2020	kL	1328
14/12/2020	kL	1044
15/12/2020	kL	1171
16/12/2020	kL	481
17/12/2020	kL	1060
18/12/2020	kL	19
19/12/2020	kL	593
20/12/2020	kL	1789
21/12/2020	kL	1941
22/12/2020	kL	2588
23/12/2020	kL	721
24/12/2020	kL	1542
25/12/2020	kL	854
26/12/2020	kL	758
27/12/2020	kL	1623
28/12/2020	kL	1262
29/12/2020	kL	1246
30/12/2020	kL	1024
31/12/2020	kL	1179
Average	kL	978
Minimum	kL	19
Maximum	kL	2588

The daily water volumes discharged from LDP001 during November 2020 were below the relevant limit.

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Water – Groundwater Discharge

Groundwater discharged from underground workings to the MC Pollution Control Dams within the surface operational area has been detailed below. Delta Coal notes that MC does not have calibrated volume sensors on underground piping, as such, discharge from LDP001 is utilised to estimate groundwater extraction. Manning Colliery operates Water Access License permitting the extraction of 450 megalitres per financial year and reports annual use to the Water NSW, Water Accounting System (iWAS).

MC Groundwater Pumped to Surface Totals FY2019-2020		
Date (month)	Groundwater Discharge (ML)	Groundwater Discharge (Total ML Water Year to Date)
July 2020	26.83	26.83
August 2020	29.04	55.87
September 2020	17.09	72.96
October 2020	30.9	103.88
November 2020	28.03	131.91
December 2020	30.33	162.24
January 2021		
February 2021		
March 2021		
April 2021		
May 2021		
June 2021		

Air Quality

Monthly depositional dust results are shown below.

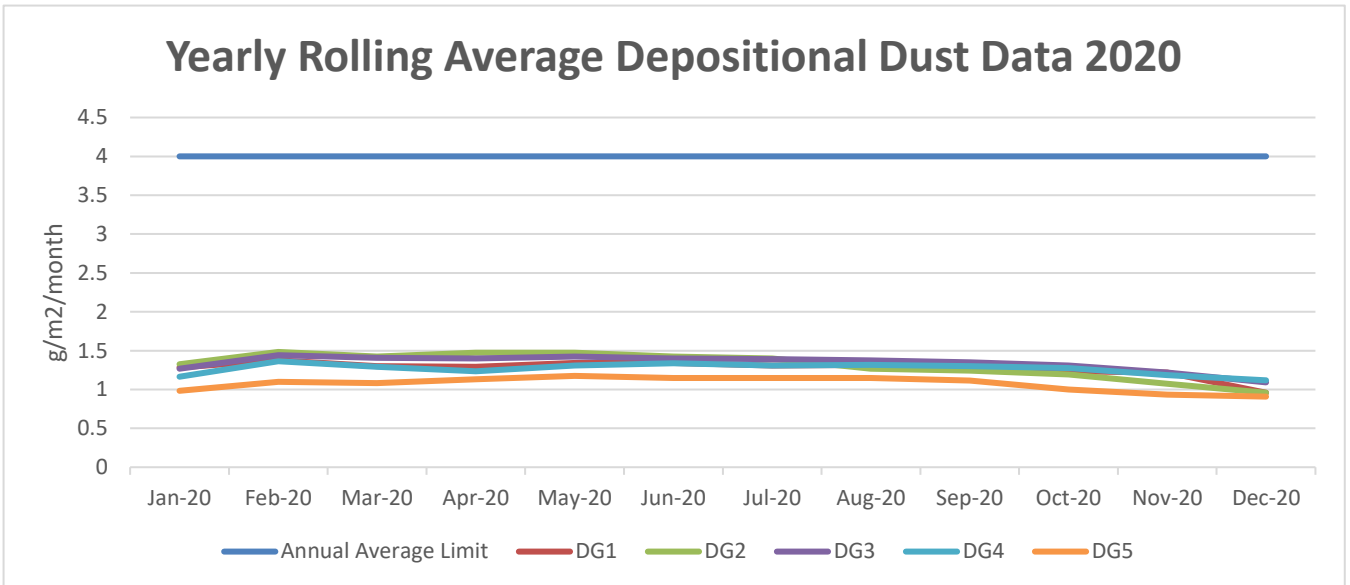
December 2020		
EPL Limit		191
	Max. total deposited dust level	4g/m ² /month
	Max. increase in deposited dust level	2g/m ² /month
Sampling Date		t 07/12/20 o 06/11/2020
EPA ID no.	Site	Insoluble Matter (g/m ² /month)
3	DG1	0.7
4	DG2	1.5
5	DG3	0.9
6	DG4	5.4
7	DG5	1.1
Notes: DG4 was deemed to contain approximately 70% contamination by the analytical laboratory.		

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There were no exceedances of the annual average air quality limits during the reporting period.

Rolling annual average depositional dust results



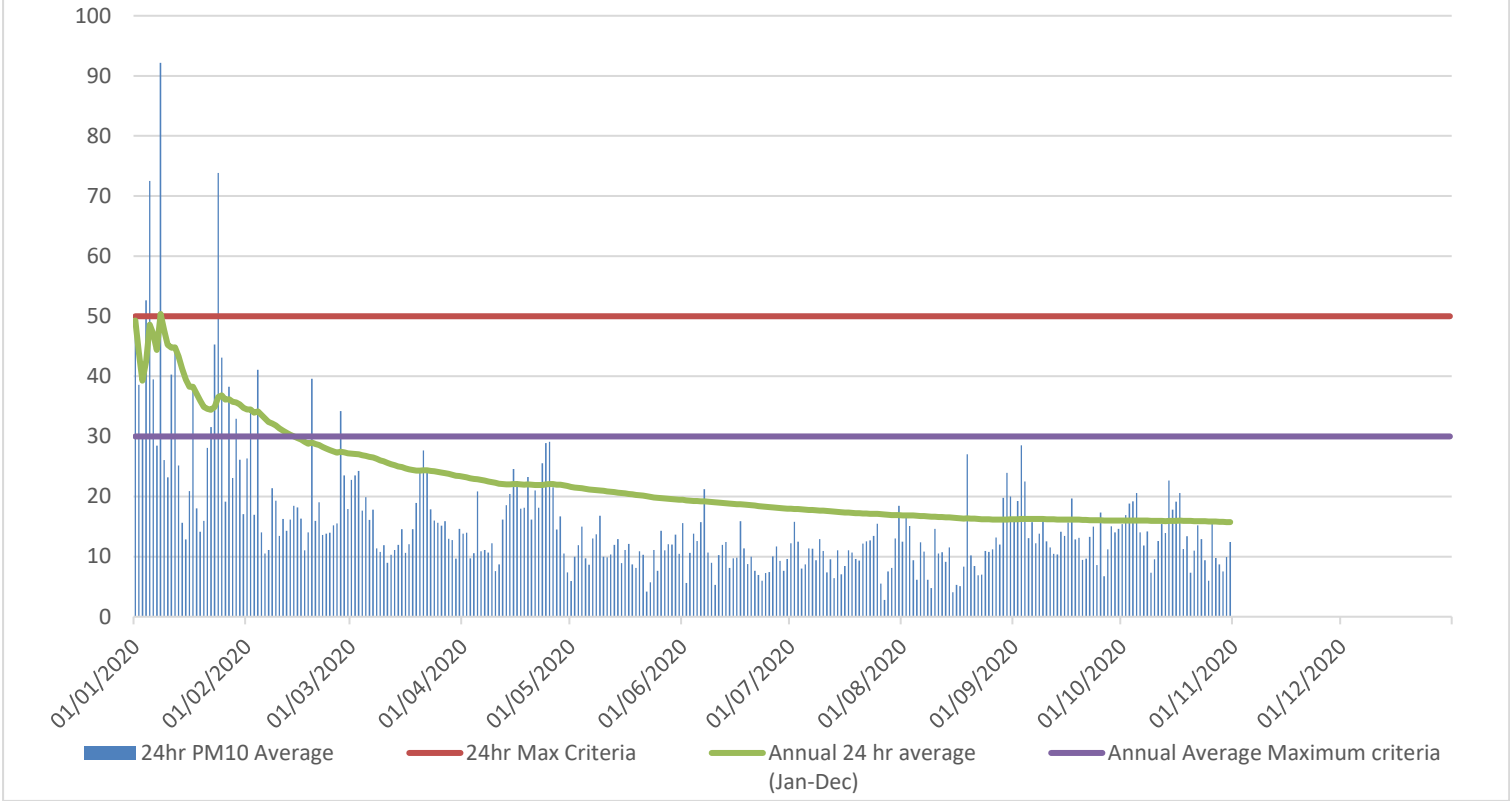
Air Quality – PM₁₀

The 24hr PM₁₀ average from Delta Coal's Tapered Element Oscillating Microbalance (TEOM) is presented below for the year to date.

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Chain Valley Colliery - 2020 TEOM PM10 (ug/m3)



Annual 24hr PM₁₀ average maximum criteria for the period is below the annual average maximum criteria limit. Data availability for the period is summarised as follows.

Variable	December	Total	Valid
A/C Temp	74.0%	8928	6609
A1	74.0%	8928	6609
A1_Scaled	74.0%	8928	6609
Bypass Flow	74.0%	8928	6609
Cap Temp	74.0%	8928	6609
Case Temp	74.0%	8928	6609
Config	74.0%	8928	6609
Dew Point	74.0%	8928	6609
Dig-In	74.0%	8928	6609
Dig-Latch	74.0%	8928	6609
ESN	74.0%	8928	6609
Filter Freq	74.0%	8928	6609
Filter Load	74.0%	8928	6609
Humidity	74.0%	8928	6609
MC	74.0%	8928	6609
MC 12Hr	74.0%	8928	6609
MC 1Hr	74.0%	8928	6609
MC 24Hr	74.0%	8928	6609
MC 30min	74.0%	8928	6609
MC 8Hr	74.0%	8928	6609
MC Total	74.0%	8928	6609
Mobile Signal	74.0%	8928	6609
Noise	74.0%	8928	6609
PM10 Flow	74.0%	8928	6609
Pressure	74.0%	8928	6609
Site	0.0%	8928	0
Temperature	74.0%	8928	6609
Tube Temp	74.0%	8928	6609
Vac Pressure	74.0%	8928	6609
Volts	74.0%	8928	6609

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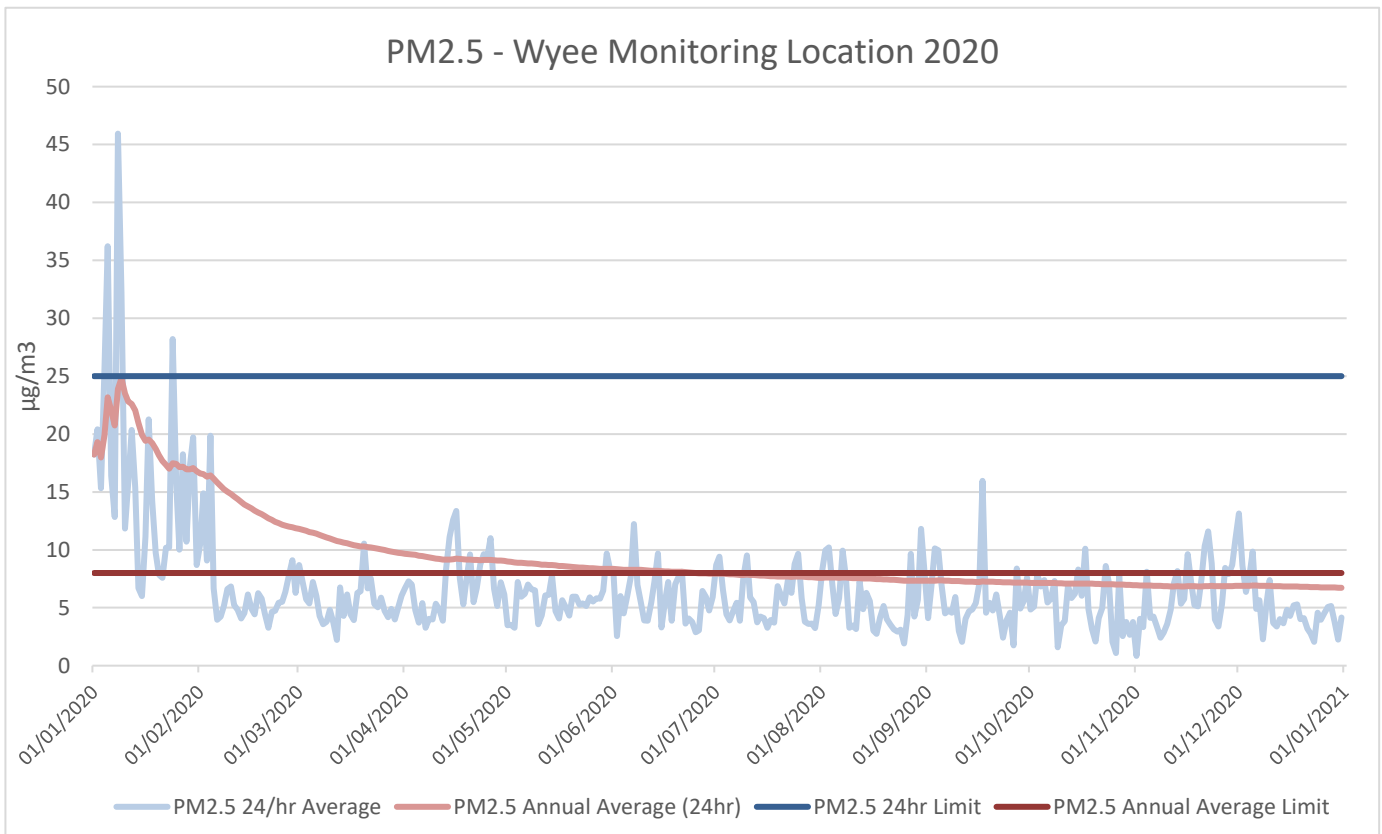
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Air Quality – PM_{2.5}

Delta Coal utilises PM_{2.5} data obtained from Vales Point Power Station owned and operated beta attenuation monitor (BAM). The PM_{2.5} monitor is located on Tingley Road, Wye. Delta Coal has been required to monitor PM_{2.5} concentration following the approval of Development Consent SSD-5465 Modification 3 and Project Approval MP06_0311 Modification 5 on the 26th June 2020.



Data obtained from PM_{2.5} monitoring indicates that through January and February of 2020 regional PM_{2.5} was impacted by extensive bush-fires, impacting the annual average value thereafter. For the period of December 2020, the 24-hr PM_{2.5} average concentration and annual average PM_{2.5} concentration did not exceed limits of 25 µg/m³ and 8 µg/m³ respectively.

PM_{2.5} data availability for the:

- December 2020 period was 98%; and
- 2020 period to current data availability has been 96%.

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Weather Data

A summary of weather data recorded by a meteorological monitoring station at the adjacent Manning Colliery is presented below for the year to date. (EPA ID no. 26).

Monthly Weather Data			
Licensee	Great Southern Energy Pty Ltd		
Location	Manning Colliery Meteorological station		
Date published	Refer report date		
Date sampled	Daily		
Date obtained	05/11/2020		
Month	Total Rainfall/Month mm	Min Temp	Max Temp
Jan-20	28	18	44
Feb-20	350	16	37
Mar-20	159	12	38
Apr-20	46	9	28
May-20	88	5	27
Jun-20	67.6	4.5	22.7
Jul-20	232.8	3.7	23.3
Aug-20	55.2	2.1	25.2
Sep-20	29.2	5.3	30.2
Oct-20	169.4	8.8	31.8
Nov-20	54.8	9.9	41.4
Dec-20	197.2	13.3	33.4

Variable	December	Total	Valid
10m Temp	100%	2976	2976
2m Temp	100%	2976	2976
A1	100%	2976	2976
A1_Scaled	100%	2976	2976
Assumed Temp	100%	2976	2976
Barometric	100%	2976	2976
Config	100%	2976	2976
Daily Evap	100%	2976	2976
Daily Rain	100%	2976	2976
Delta T	100%	2976	2976
Dew Point	100%	2976	2976
Dig-In	100%	2976	2976
Dig-Latch	100%	2976	2976
ESN	100%	2976	2976
FDI	100%	2976	2976
Heat Index	100%	2976	2976
Humidity	100%	2976	2976
Mobile Signal	100%	2976	2976
Rain	100%	2976	2976
Raw Evap	100%	2976	2976
S Class	100%	2976	2976
Scalar WS	100%	2976	2976
Sigma	100%	2976	2976
Site	0.0%	2976	0
Solar Radiation	100%	2976	2976
Vector WD	100%	2976	2976
Vector WS	100%	2976	2976
Volts	100%	2976	2976
Wind Chill	100%	2976	2976
Wind Direction	100%	2976	2976
Wind Speed	100%	2976	2976
WS Avg	100%	2976	2976
WS Gust	100%	2976	2976