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February 26, 2016

Louisiana Department of Environmental Quality
Office of Environmental Services
602 North Fifth Street
Baton Rouge, Louisiana 70802
Attn: Ms. Tegan Treadaway
Administrator

Re: CLECO Power, LLC
Dolet Hills Power Station (AI No. 585)
SO₂ Ambient Monitoring Quarterly Report
Period: October 23, 2015 – January 31, 2016

Dear Ms. Treadaway,

On behalf of CLECO Power, LLC (CLECO), CB&I Environmental & Infrastructure (CB&I) is submitting this SO₂ Ambient Monitoring Quarterly Report for the Reporting Period October 23, 2015 – January 31, 2016 for the ambient monitoring station near the Dolet Hills Power Station (DHPS). The Report provides data for the Reporting Period of October 23, 2015 through January 31, 2016.

Should you have any questions regarding this report, please feel free to contact me at [\(225\) 987-7719](tel:2259877719) or chris.howard@cbi.com.

Sincerely,
CB&I Environmental & Infrastructure, Inc.

Chris Howard, PE
Project Manager



**SO₂ Ambient Monitoring for Quarterly Report
Period: October 23, 2015 – January 31, 2016
Dolet Hills Power Station**

Agency Interest Number 585

CLECO Power LLC
Pineville, Louisiana



Submitted to:
Louisiana Department of Environmental Quality
Baton Rouge, Louisiana

Prepared by:
CB&I
2500 City West Boulevard, Suite 1700
Houston, Texas 77042

CB&I Project No. 154165
February 22, 2016



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List of Acronyms and Abbreviations

CLECO	CLECO Power LLC
CFR	Code of Federal Regulations
Deg	Degrees
Deg F	Degree Fahrenheit
DHPS	Dolet Hills Power Station
in Hg	inches of Mercury
LDEQ	Louisiana Department of Environmental Quality
m	meters
mph	miles per hour
NAAQS	National Ambient Air Quality Standard
ppb	parts per billion
SO ₂	sulfur dioxide
USEPA	U.S. Environmental Protection Agency



1.0 Background

The U.S. Environmental Protection Agency (USEPA) issued the final primary National Ambient Air Quality Standard (NAAQS) for 1-hour sulfur dioxide (SO₂) on June 2, 2010 (2010 SO₂ standard). On August 5, 2013, the USEPA published a notice announcing designation of nonattainment for the 2010 SO₂ standards, based on certified ambient air quality monitoring data for the years 2009-2011 that showed these areas exceeding the standard. For all other areas, the USEPA developed and proposed a Data Requirement Rule that would require states to gather and submit additional information characterizing SO₂ in areas with larger SO₂ emissions. The information will be used by the USEPA for future area designations.

Separately, in a consent decree signed with the Sierra Club in the District Court in Northern California on March 2, 2015, the USEPA is required to complete area designations with available monitoring data within 16 months of date of the consent decree. Also, for areas without adequate monitoring data, the area designations are to be completed in two phases by December 31, 2020.

The Dolet Hills Power Station (DHPS) in Desoto Parish, Louisiana, owned by CLECO Power LLC (CLECO) has been identified as one of the large sources of SO₂ emissions affected by the consent decree. In addition, the DHPS is the largest SO₂ emissions source in Desoto Parish, and consequently, its impact in the vicinity may decide the area designation under the 2010 SO₂ standard.

CLECO has installed one (1) SO₂ ambient monitoring station near the facility to gather ambient monitoring data in the vicinity of the DHPS to provide supporting information to both the Louisiana Department of Environmental Quality (LDEQ) and the USEPA Region 6 (USEPA R6) in the area designation process for 1-hour SO₂ NAAQS. Justification of the siting location and details of the monitoring station was submitted to LDEQ in August 2015. **Figure 1-1** shows the location and **Figure 1-2** shows a photograph of the SO₂ monitoring station as installed.

CLECO has also installed one (1) meteorological station at the facility to support analysis of the monitored data from the SO₂ monitoring station. **Figure 1-3** shows the location and **Figure 1-4** shows a photograph of the meteorological monitoring station.

The design, implementation, operation, quality assurance, and data reporting for the ambient monitoring station and the meteorological station meet the applicable requirements included in the following regulations and guidance documents:

- USEPA, "Quality Assurance Handbook for Air Pollution Measurement Systems, Volume I – Principles," EPA-600/9-76-005, Office of Research and Development, Research Triangle Park, North Carolina, January 1976.
- USEPA, "Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II – Ambient Air Specific Methods," EPA-600/4-77-027a, Office of Research and Development, Research Triangle Park, North Carolina, May 1977.
- USEPA, "Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV – Meteorological Measurements," EPA-600/4-82-060, Office of Research and Development, Research Triangle Park, North Carolina, August 1989.
- USEPA, "Meteorological Monitoring Guidance for Regulatory Modeling Applications," EPA-454/R-99-005, Office of Air Quality Planning and Standards, Research Triangle Park, NC, February 2000.



- USEPA, "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans," EPA-600/4-83-004, Office of Research and Development, Research Triangle Park, North Carolina, February 1983.
- USEPA "SO₂ NAAQS Designations Source-Oriented Monitoring Technical Assistance Document (TAD)," EPA-450/4-87-007, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, December 2013, Draft.
- USEPA 40 CFR part 58 – "Ambient Air Quality Surveillance," Appendices A, C, and E.
- USEPA 40 CFR part 51 – "Data Requirements Rule for the 1-Hour SO₂ Primary National Ambient Air Quality Standards (NAAQS)," May 2014, Proposed Rule.
- USEPA Automated Equivalent Method: EQSA-0495-100 UV Fluorescence Detection of SO₂.
- LDEQ "Ambient Air Quality Standards," Chapter 7 of LAC 33:III

The monitoring started on October 23, 2015. This report covers the first quarter of the monitoring data during the period October 23, 2015 through January 31, 2016.



2.0 Reported Data

The following data gathered from the SO₂ monitoring station and the meteorological monitoring station are included in this report.

- **Appendix 1:** Hourly meteorological data including the following parameters:
 - Ambient temperature at 10 meters (m) height in degrees Fahrenheit (Deg F);
 - Ambient temperature at 2m in Deg F;
 - Barometric pressure in inch Hg;
 - Delta Temperature in Deg F;
 - Rainfall in inches;
 - Sigma Theta in Degrees (Deg);
 - Solar radiation in Langley's;
 - Wind direction in Deg; and
 - Wind speed in miles per hour (MPH)
- **Appendix 2:** Hourly ambient SO₂ concentration at the monitoring station with corresponding wind speed and wind direction.
- **Appendix 3:** Monthly and quarterly data recovery report showing percent of data capture for each monitored parameter
- **Appendix 4:** Weekly inspection reports for both monitoring station and meteorological station
- **Appendix 5:** System Audit and Calibration reports



3.0 Results

3.1 Missing Data Summary

Table 3-1 shows the missing data summary for this quarter.

Table 3-1: Missing Data Summary

Monitoring Parameters	Missing Data Period	Reason for Missing data
SO ₂ Concentration	Hour 23 of each day	Daily calibration
	10/23/15 hours 08 and 10	Power outage
	11/18/15 hours 12 and 13	Audits performed by CB&I
	12/08/15 hours 10 and 11	Cylinder gas change out and calibration check
	12/15/15 hour 15	Replacement of analyzer filter and analyzer span check
Meteorological Data	10/25/15 hour 22	Rainfall, data acquisition failure
	11/18/15 hour 10 (All but rainfall)	Calibration of the 10-meter temperature sensor
	12/13/15 hour 12 through 12/15/15 hour 13	Logger lockup probably caused by thunderstorm induced power surge
	12/21/15 hours 07-17; 12/22/15 hours 07-16; 12/23/15 hours 07-17; 12/24/15 hours 07-12; 01/11 hours 07 – 14; 01/12 hours 07 – 14; 01/13 hours 10 – 17; 01/14 hours 11 – 17; 01/16 hour 10 – 01/18 hour 19 (precipitation also missing for 01/16 hour 09); and 01/19 hours 09 – 20	Power outage
	01/18 hour 20 – 01/19 hour 08 (except precipitation)	Malfunction of the 8872 data logger voltage module
	01/19 hour 21 – 01/22 hour 14 (except precipitation)	Malfunction of the 8872 data logger voltage module
	01/22 hour 15	Replacement of the 8872 data logger voltage module



3.2 Meteorological Data Summary

Figure 3-1 shows the windrose for the 3 months of monitoring in this quarter. The wind from southwest to southeast and from northwest to northeast were both approximately 42.8% of the time. The highest wind speed was <23 miles mph, predominantly from the south.

Table 3-2 shows the statistical summary of the meteorological parameters during this quarter.

Table 3-2: Statistical Summary of Hourly Meteorological Parameters

Meteorological Parameters	Unit	Maximum	Minimum	Average	Data Recovery (%)
Wind Speed	Mph	22.3	Calm	5.2	88.86
Ambient Temperature (10m)	Deg F	82.4	25.8	55.8	88.86
Ambient Temperature (2m)	Deg F	82.8	24.9	55.2	88.86
Barometric Pressure	Inch Hg	30.27	29.22	29.80	88.86
Rainfall	Inch	1.19	0	0.01	92.08
Solar Radiation	Langleys	1.08	0	0.14	88.86

3.3 Ambient Hourly SO₂ Concentration Data Summary

Figure 3-2 shows the pollution rose for this quarter. Figure 3-3 shows the distribution of the daily maximum 1-hour concentration for the quarter.

The 1-hour SO₂ NAAQS is based on 99th percentile of daily maximum 1-hour SO₂ concentration. Table 3-3 shows the statistical summary of the daily maximum 1-hour ambient SO₂ concentration during this quarter.

Table 3-3: Statistical Summary of Daily Maximum 1-hour Ambient SO₂ Concentration

Monitoring Parameter	Unit	Highest Daily Maximum 1-Hour Concentration	Lowest Daily Maximum 1-Hour Concentration	Average Daily Maximum 1-Hour Concentration	99 th Percentile Daily Maximum 1 Hour Concentration ⁽¹⁾	Data Recovery ⁽²⁾ (%)
Hourly SO ₂ Concentration	ppb	32.6	0.3	3.5	25.6	99.83

(1) 99th percentile for the quarter is the 2nd highest daily maximum 1-hour value based on 105 data points. NAAQS for 1-hour SO₂ is 75 ppb and represented as 99th percentile of daily maximum 1-hour concentration

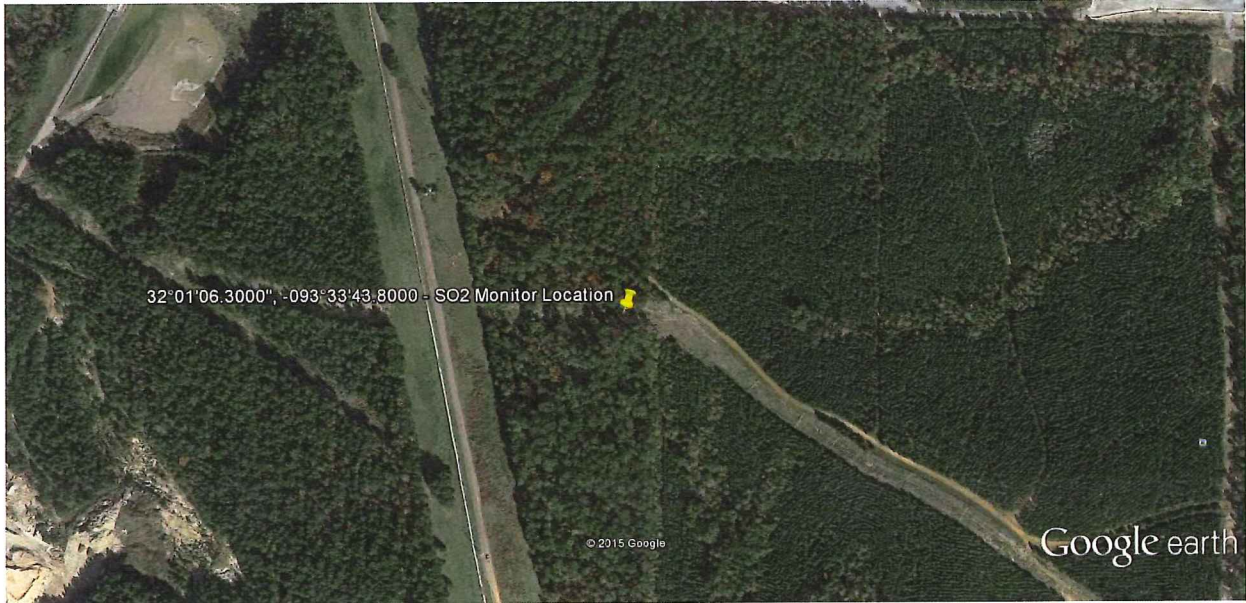
(2) Counting calibration checks as valid data



Figures



Figure 1-1: Location of SO₂ Monitoring Station



Lat/Long of SO₂ Monitoring Station: 32°01'06.3000\", -093°33'43.8000



Figure 1-2: Photographs of SO₂ Monitoring Station

Photograph #1

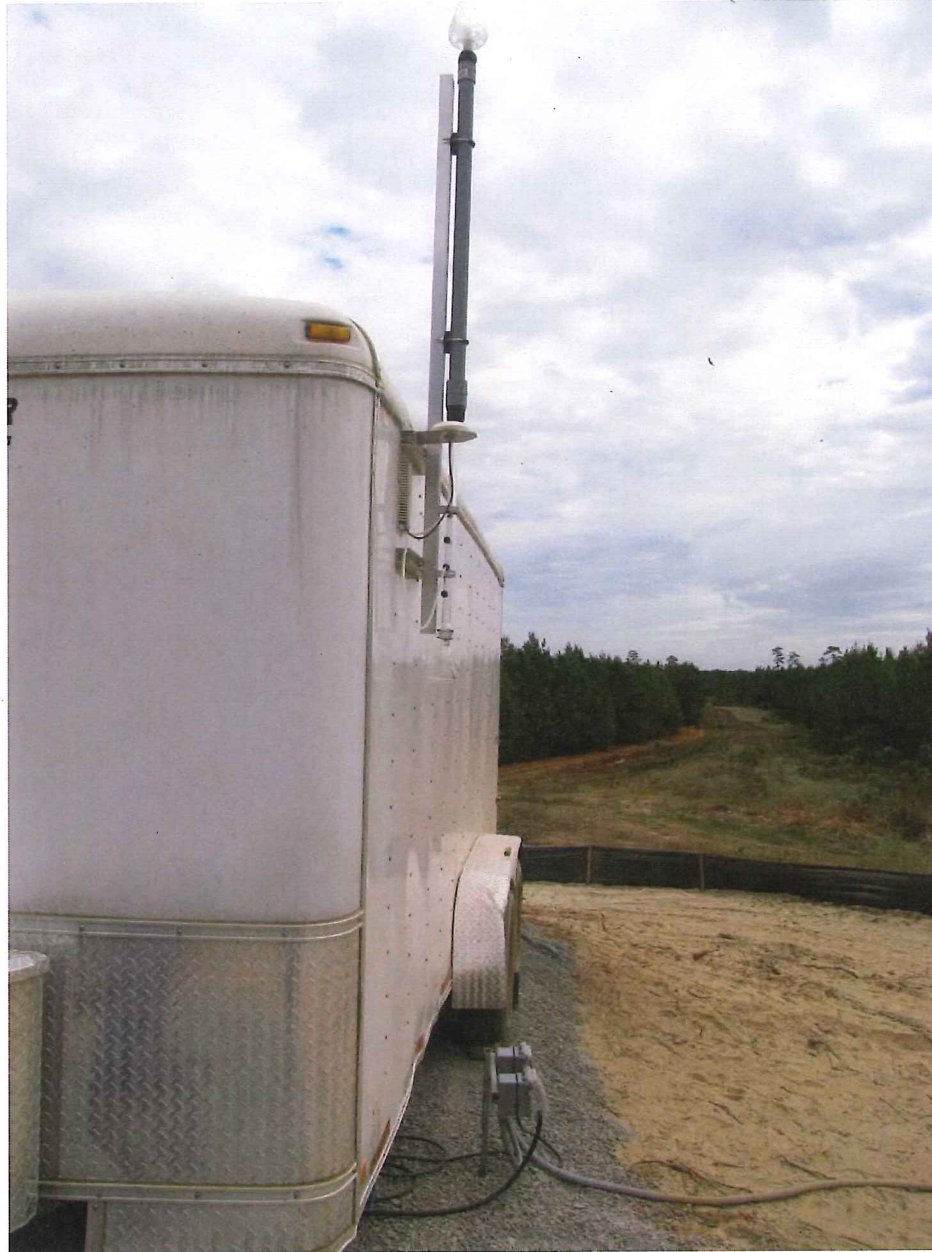


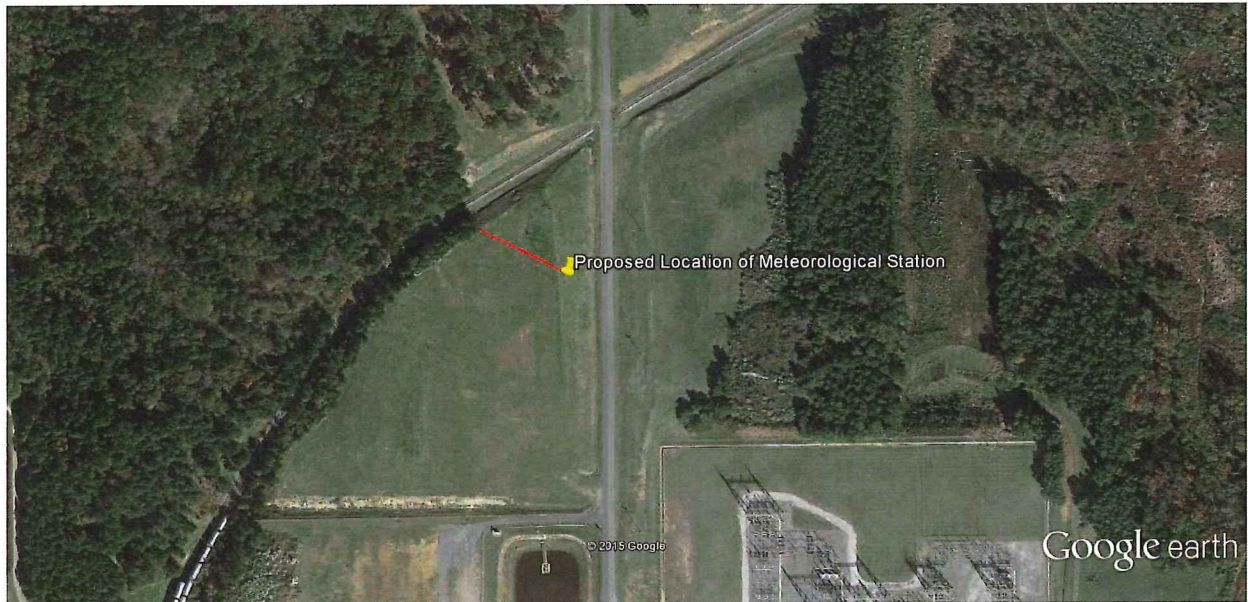
Figure 1-2: Photographs of SO₂ Monitoring Station

Photograph #2





Figure 1-3: Location of Meteorological Monitoring Station



Lat/Long of Meteorological Station: 32°02'13.7400", -093°34'16.9799

Figure 1-4: Photograph of Meteorological Monitoring Station

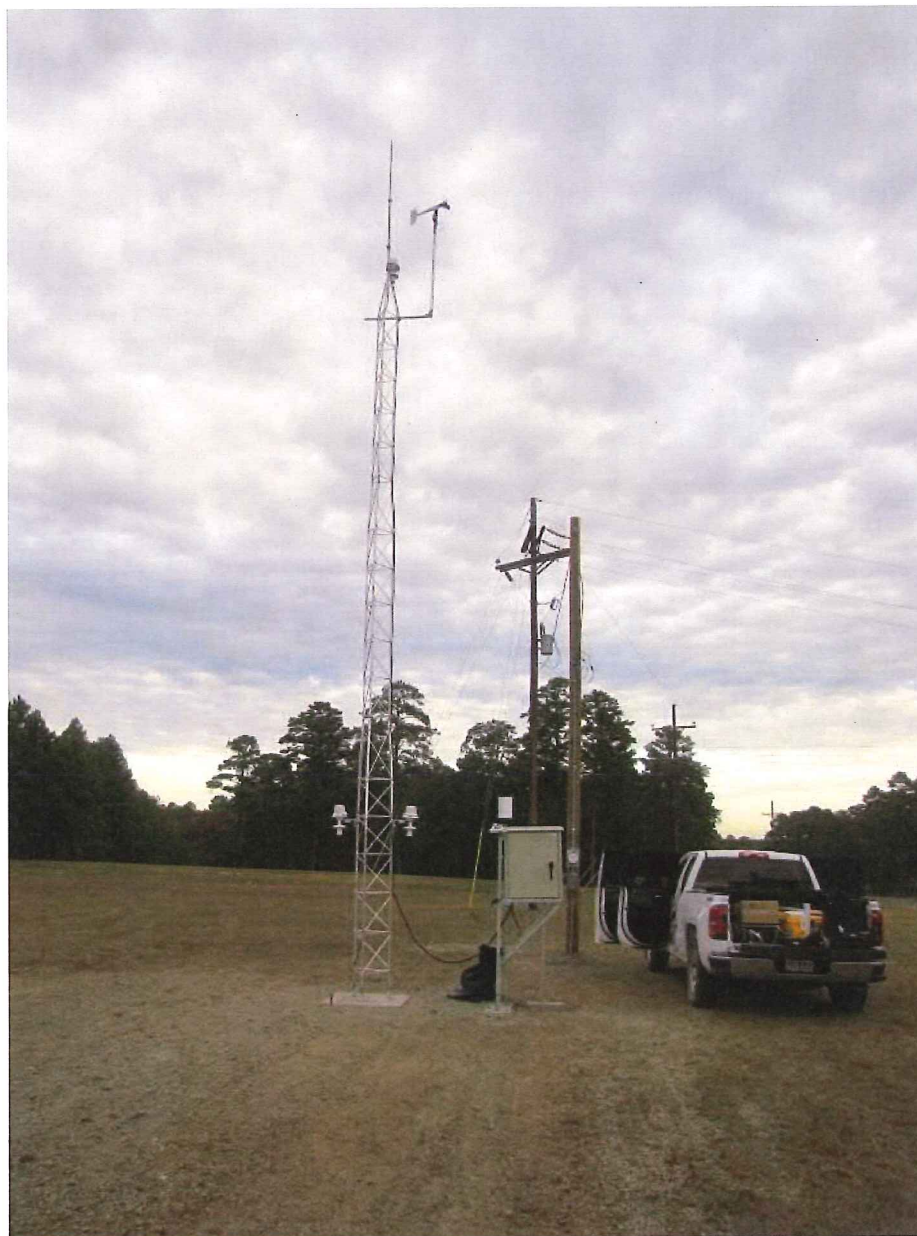
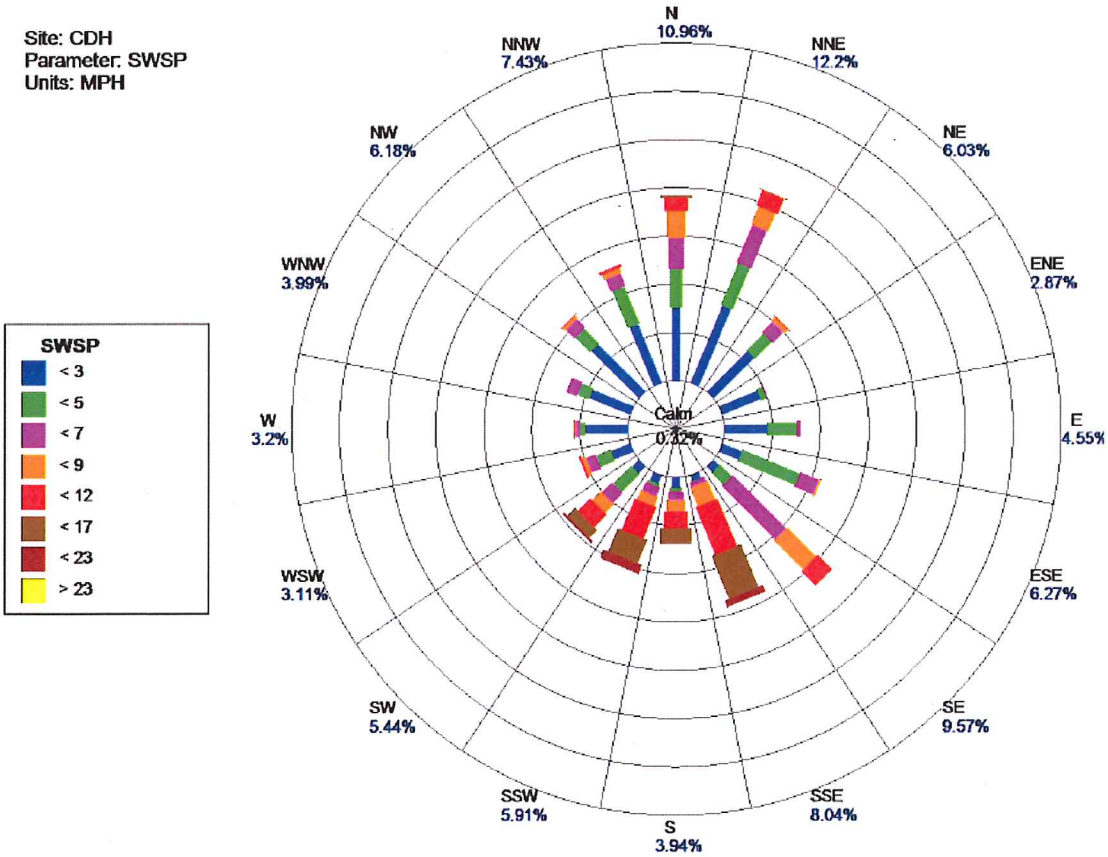




Figure 3-1: Wind Rose – October 23, 2015 to January 31, 2016



Period: 10/23/2015-1/31/2016



Figure 3-2: Pollution Rose – October 23, 2015 to January 31, 2016

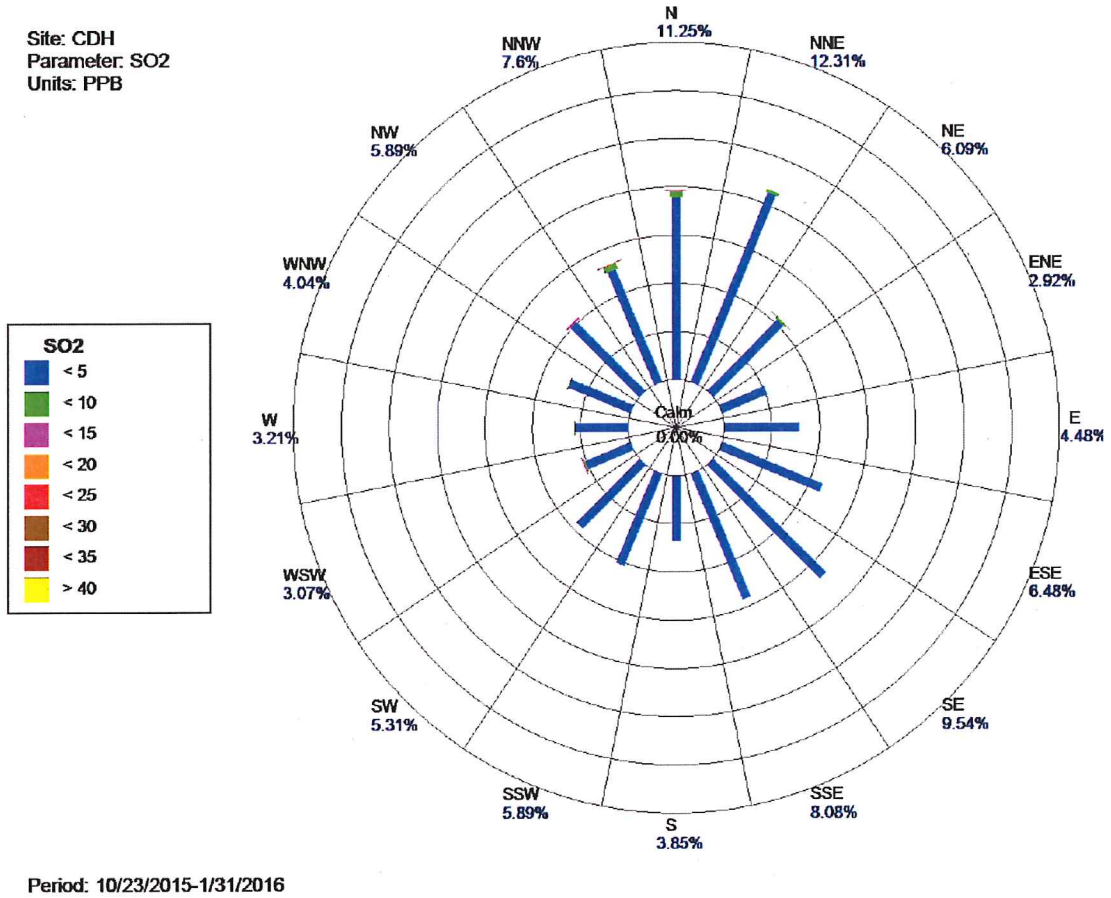
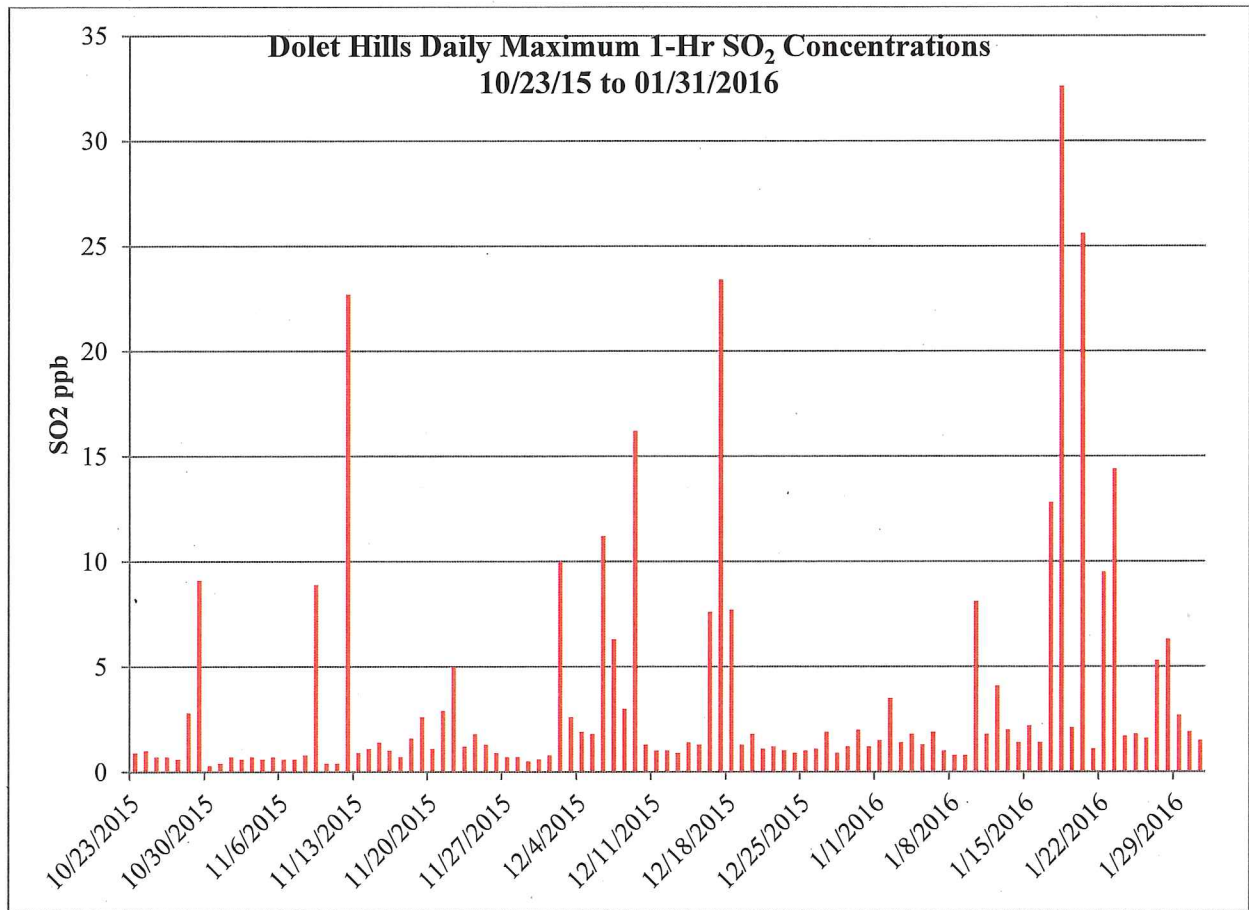




Figure 3-3 Daily Maximum 1-hour SO₂ Concentrations





Appendices

- Appendix 1 Hourly Meteorological Data**
- Appendix 2 Hourly Ambient SO₂ Concentration Data**
- Appendix 3 Data Recovery Reports**
- Appendix 4 Weekly Inspection Reports**
- Appendix 5 System Audit and Calibration Reports**

(All On USB Drive)

CLECO EQUIPMENT TESTING EVALUATION

Service Period - 01/2013 thru 12/2013

Testing protocol entails evaluating oil-filled equipment that does not have nameplate data indicating non-PCB. Salvage and disposal operations facilities will accept only nameplate equipment at designated value. Equipment with only the regulatory blue tag requires confirmatory testing. The data below reflects that requirement:

General analysis

In-service equipment not labeled (Total Tested/Total Issued)	43.24%
PCB equipment tested (Total Disposed/Total Tested)	10.56%
PCB equipment in service (Total Disposed/Total Issued)	4.10%

This is not a true statistical evaluation. The only know values are the total units tested and the results of that testing. General analysis is based on the following assumptions:

1. There is no particular set of standards or assumptions;
2. The selected period cannot be confirmed as 'typical' as no data evaluation of this type has been done by Cleco;
3. Equipment issued is not verified as one-to-one replacement (probably includes swaps, upgrades, new construction, etc.);
4. Testing includes ancillary articles (bushings, capacitors, tankage, etc.);
5. No actual account was made for tagged equipment that tested as PCB.

CLECO EQUIPMENT TESTING EVALUATION

Service Period - 01/2013 thru 12/2013

Breakout by Equipment Type

- **Transformers tested** during this period (pole-top, pad mount) 1,625
- **Total managed** as per PCB Regulations 93
 - Units >499 ppm 7
 - Units 50 ppm to 499 ppm 79
 - Units 45 ppm to 49 ppm (5% rule) 7

General analysis

Equipment managed as PCB (Total Managed/Total Tested) 5.72%

~~~~~

- **Other equipment tested** during this period (regulators, capacitors, bushings, etc) 608
- **Total managed** as per PCB Regulations 212
  - Units >499 ppm 48
  - Units 50 ppm to 499 ppm 154
  - Units 45 ppm to 49 ppm (5% rule) 10

### General analysis

Equipment managed as PCB (Total Managed/Total Tested) 34.87%

# CLECO EQUIPMENT TESTING EVALUATION

Service Period - 01/2014 thru 12/2014

Testing protocol entails evaluating oil-filled equipment that does not have nameplate data indicating non-PCB. Salvage and disposal operations facilities will accept only nameplate equipment at designated value. Equipment with only the regulatory blue tag requires confirmatory testing. The data below reflects that requirement:



## General analysis

|                                                              |        |
|--------------------------------------------------------------|--------|
| In-service equipment not labeled (Total Tested/Total Issued) | 39.10% |
| PCB equipment tested (Total Managed/Total Tested)            | 7.40%  |
| PCB equipment in service (Total Managed/Total Issued)        | 2.89%  |

This is not a true statistical evaluation. The only know values are the total units tested and the results of that testing. General analysis is based on the following assumptions:

1. There is no particular set of standards or assumptions; **Total Issued** is a best query of typical oil-filled equipment issued through Stores around the State;
2. Equipment issued is not verified as one-to-one replacement (probably includes swaps, upgrades, new construction, etc.);
3. The selected period cannot be confirmed as 'typical' as no data evaluation of this type has been done by Cleco;
4. Testing includes ancillary articles (bushings, capacitors, tankage, etc.);
5. No actual account was made for equipment tagged Non-PCB that tested as PCB.



# CLECO EQUIPMENT TESTING EVALUATION

Service Period - 01/2014 thru 12/2014

## Breakout by Equipment Type

- **Transformers tested** during this period (pole-top, pad mount) 1,625
- **Total managed** as per PCB Regulations 93
  - Units >499 ppm 7
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