



February 25, 2015

Mr. Chris Hines
Environmental Specialist
Encana Oil and Gas, Inc.
143 Diamond Avenue
Parachute, Colorado 81635

RE: Quarterly Remediation Update – 4th Quarter 2014
A28 Pad
Garfield County, Colorado
North Parachute Ranch

Dear Mr. Hines:

LT Environmental, Inc. (LTE), under the direction of Encana Oil and Gas, Inc. (Encana), conducted remedial action activities at the A28 Pad (Site) located within the North Parachute Ranch in Garfield County, Colorado. This correspondence is a summary of the remediation activities completed during the fourth quarter of 2014.

Remediation System Description, Operations and Maintenance

From January 21, 2013 through January 29, 2013, LTE installed 14 passive soil vapor extraction (SVE) wells at depths ranging from 15 to 35 feet below ground surface associated within a soil remediation cell. Vent turbines were secured to top of each SVE well for the purpose of remediating residual hydrocarbon concentrations. The SVE system is designed to volatilize petroleum constituents adsorbed onto soil particles and promote bio-attenuation of residual hydrocarbons.

On November 9, 2014, active SVE MicroBlowers from Tersus Environmental were installed at SVE01, SVE04, SVE07, SVE08, and SVE10. The MicroBlowers are designed to operate on a 24 volt direct current system, charged via solar panels, and utilizing a 24 hour timer to control run times based on charging needs and potential overheating issues during summer months. Currently the operating schedule allows the blowers at SVE07, SVE08, and SVE10 to operate for one hour and rest for the following half hour. However, it was determined that SVE04 and SVE01 did not charge as efficiently; therefore, they are operating for one hour and resting for one hour. Adjustments to these schedules will be made as necessary as conditions fluctuate at the site.

Monthly measurements of flow, temperature, and gas concentrations are collected at each SVE well. A Site Diagram (Attachment A) has been included along with a summary of these measurements presented as Table 1. SVE measurements, including all gas concentrations and hours of operation for the active SVE MicroBlowers, are presented in Table 2. Attachment B graphically illustrates the gas concentrations of each SVE well.



Summary and Conclusions

LTE, under the direction of Encana, will continue to operate and maintain the SVE system while maximizing the potential run times of the blowers. Current gas concentrations are similar to previously observed concentrations across the Site. As gas concentrations stabilize, LTE will evaluate conditions with the goal of obtaining analytical results in compliance with applicable COGCC Table 910-1 allowable concentrations standards.

LTE appreciates the opportunity to provide environmental services to Encana. Please call us at 970-285-9985 if you have any questions or comments regarding this report.

Sincerely,

LT ENVIRONMENTAL, INC.

A handwritten signature in blue ink, appearing to read "Chris McKisson".

Chris McKisson
Project Manager

A handwritten signature in blue ink, appearing to read "Gavin Casson".

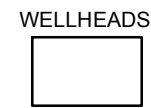
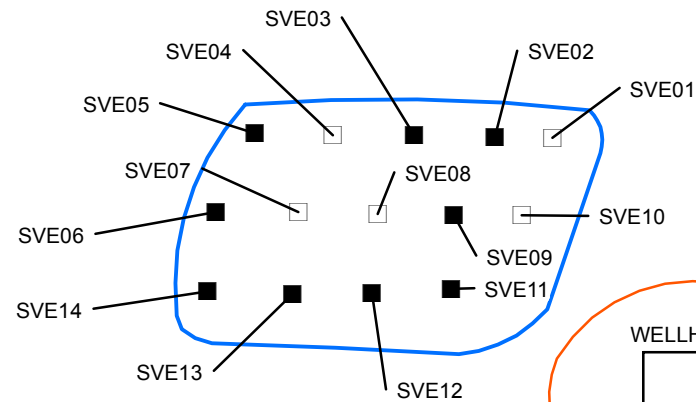
Gavin Casson, E.I.T.
Staff Engineer

Attachments

Attachment A:	Site Diagram
Attachment B:	Gas Concentration Graphs
Table 1:	SVE Operation and Maintenance Field Parameters
Table 2:	Active SVE Operation and Maintenance Field Parameters

ATTACHMENT A
SITE DIAGRAM





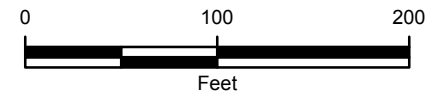
EDGE OF WORKING SURFACE

LEGEND

■ PASSIVE SOIL VAPOR EXTRACTION WELL

□ ACTIVE SOIL VAPOR EXTRACTION WELL

SOIL REMEDIATION CELL



SITE DIAGRAM
A28 PAD
GARFIELD COUNTY, COLORADO

ENCANA OIL & GAS (USA) INC.



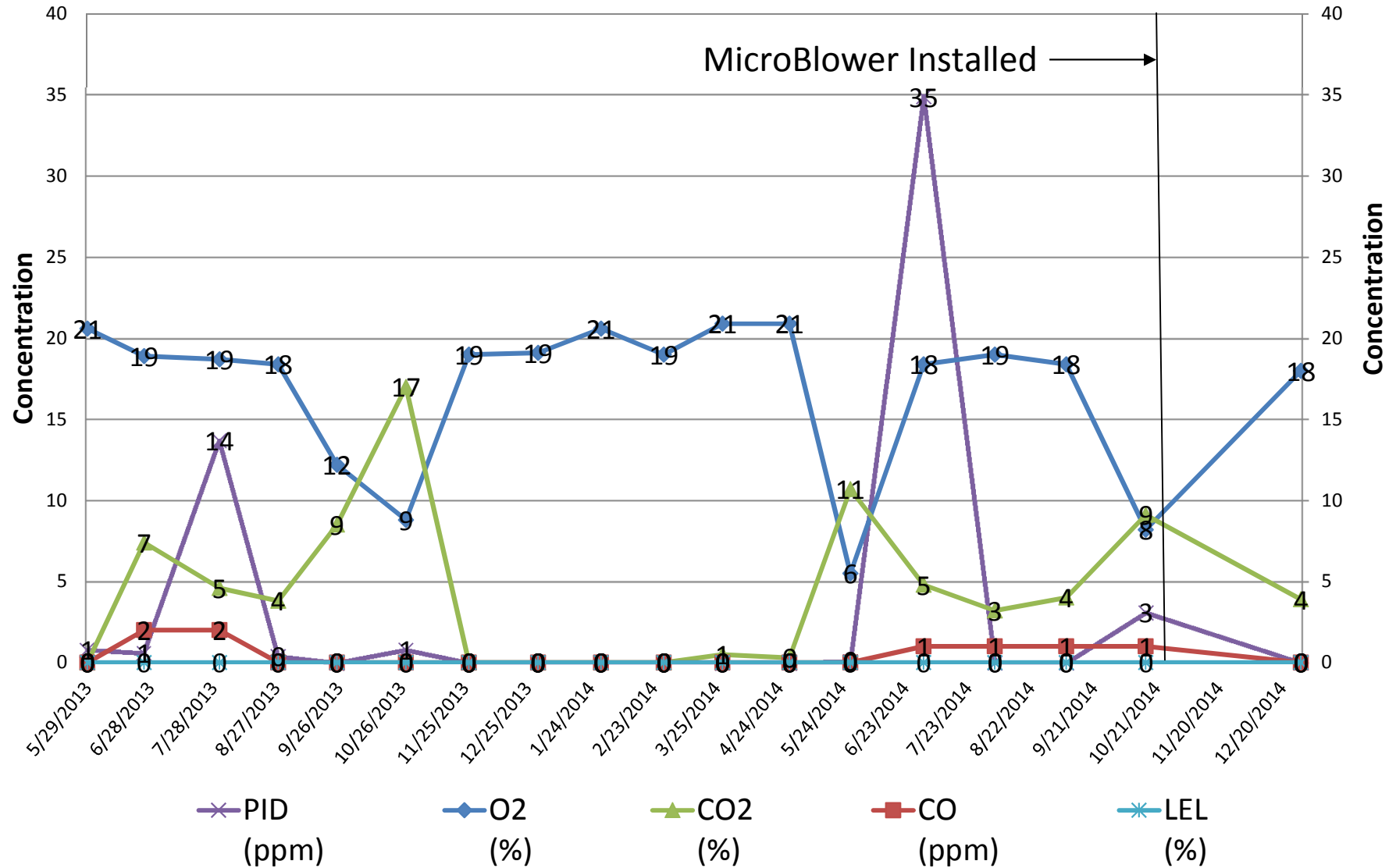
ATTACHMENT B
GAS CONCENTRATION GRAPHS



ENCANA A28 PAD

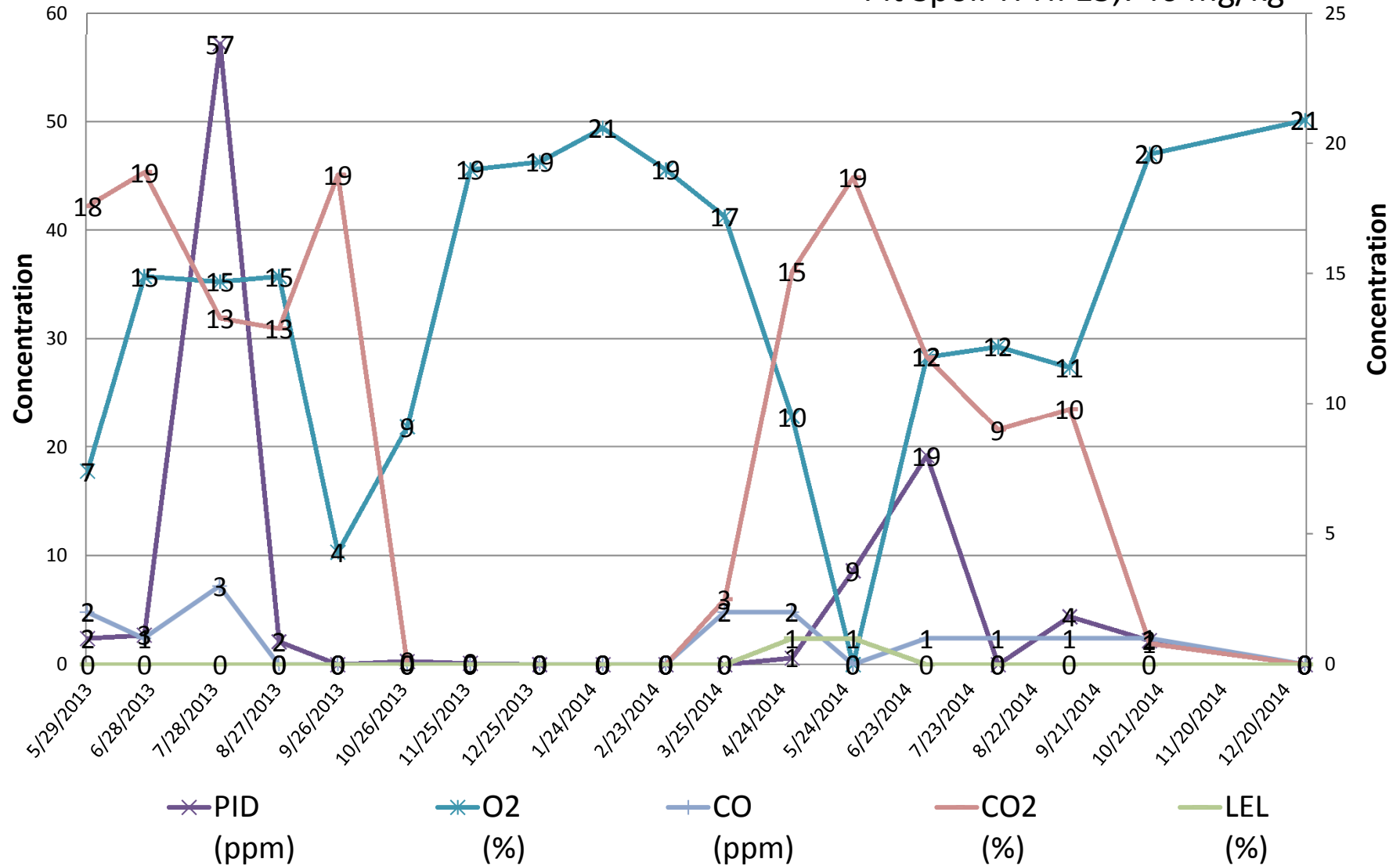
SVE01

Pit Spoil TPH: 15,746 mg/kg



ENCANA A28 PAD SVE02

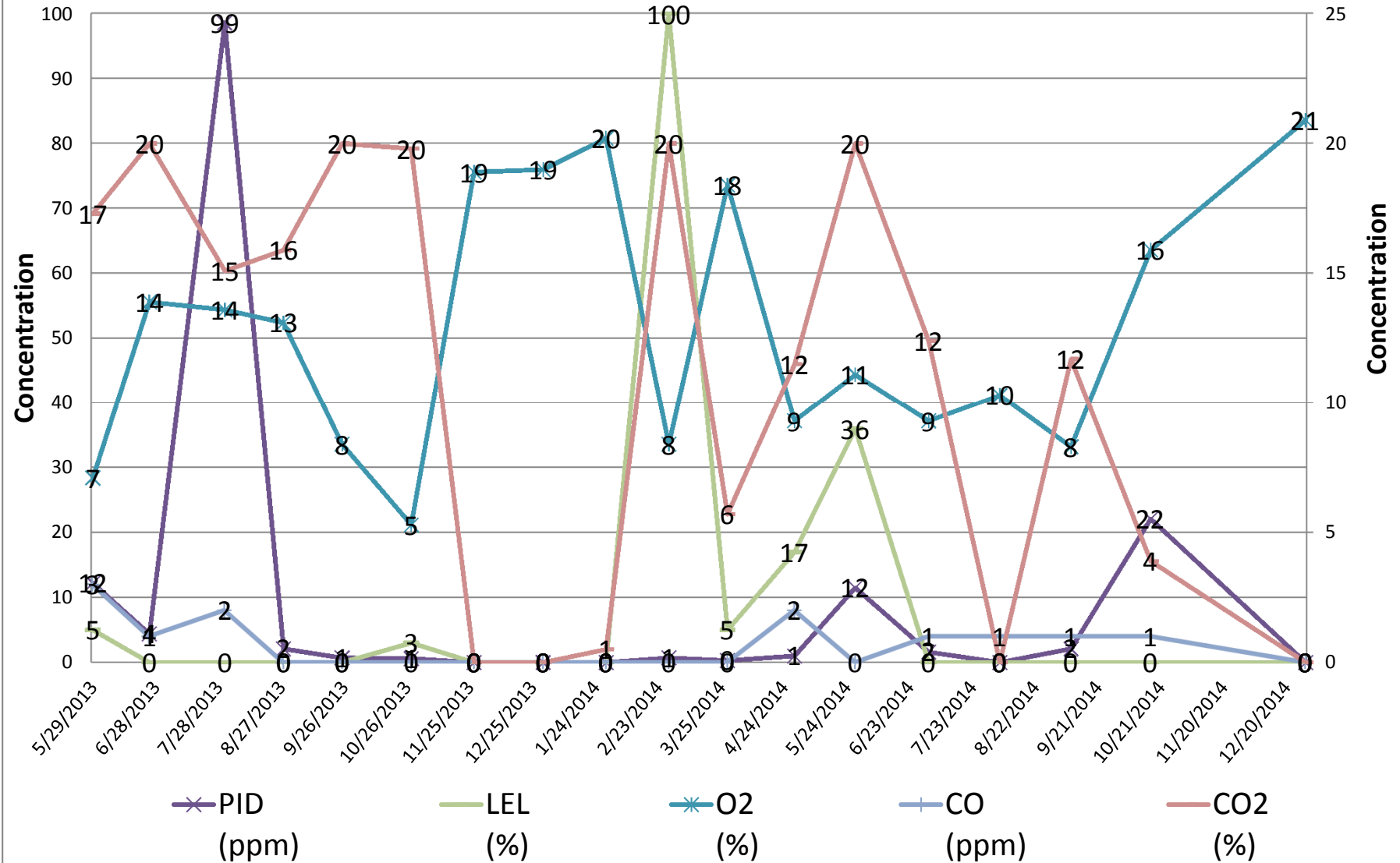
Pit Spoil TPH: 15,746 mg/kg



ENCANA A28 PAD

SVE03

Pit Spoil TPH: 15,746 mg/kg

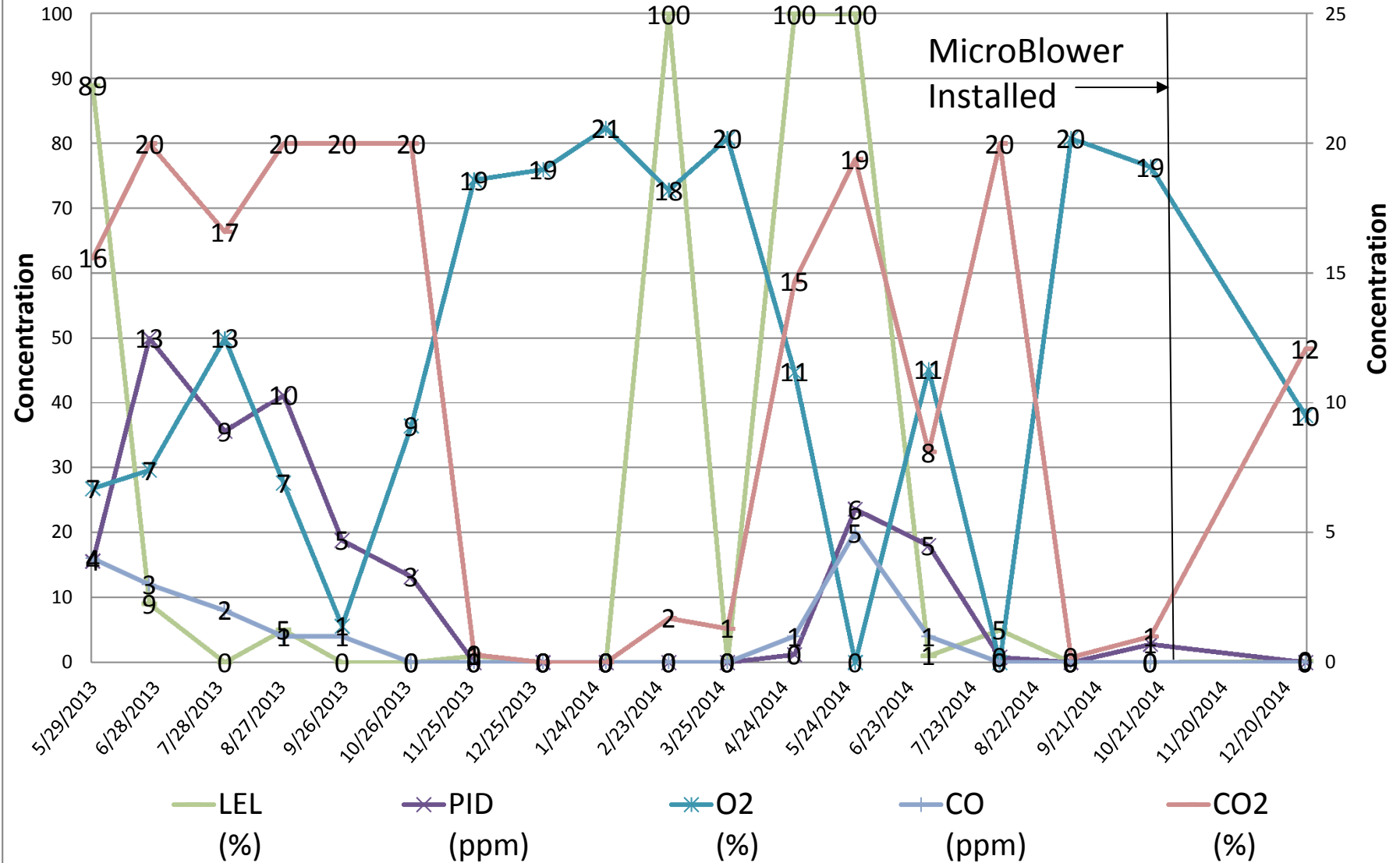


ENCANA A28 PAD

SVE04

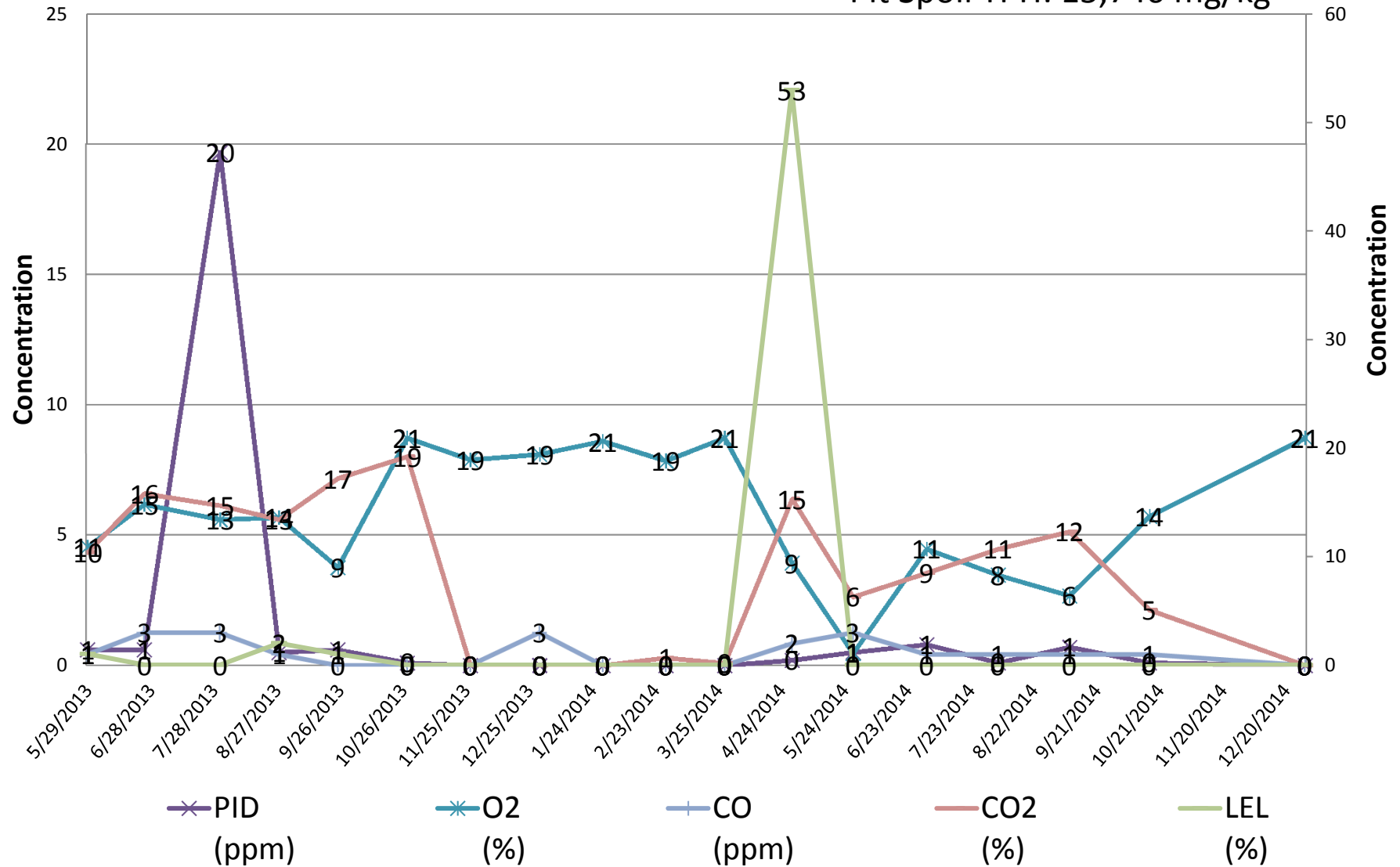
Pit Spoil TPH: 15,746 mg/kg

MicroBlower
Installed →



ENCANA A28 PAD SVE05

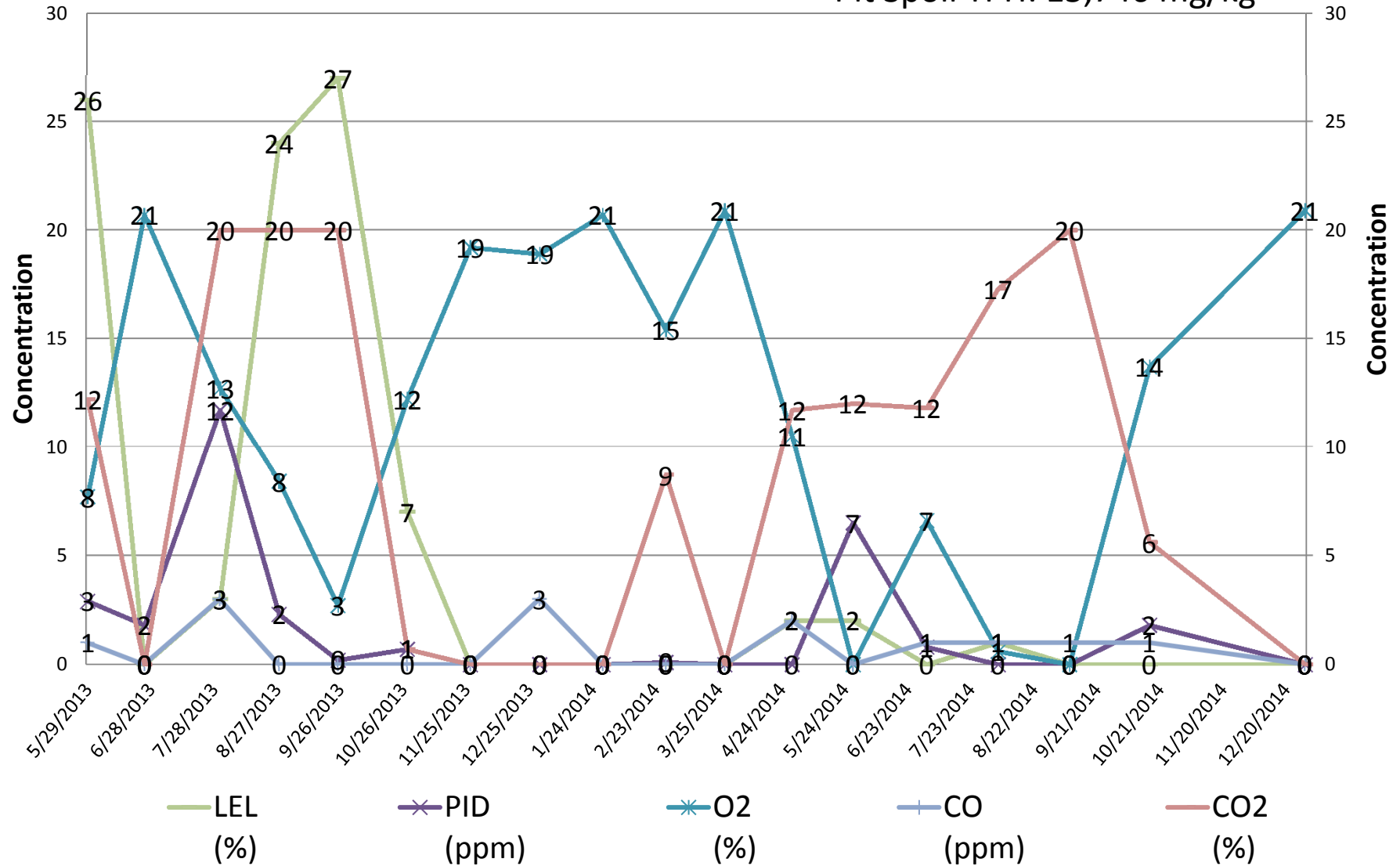
Pit Spoil TPH: 15,746 mg/kg



ENCANA A28 PAD

SVE06

Pit Spoil TPH: 15,746 mg/kg

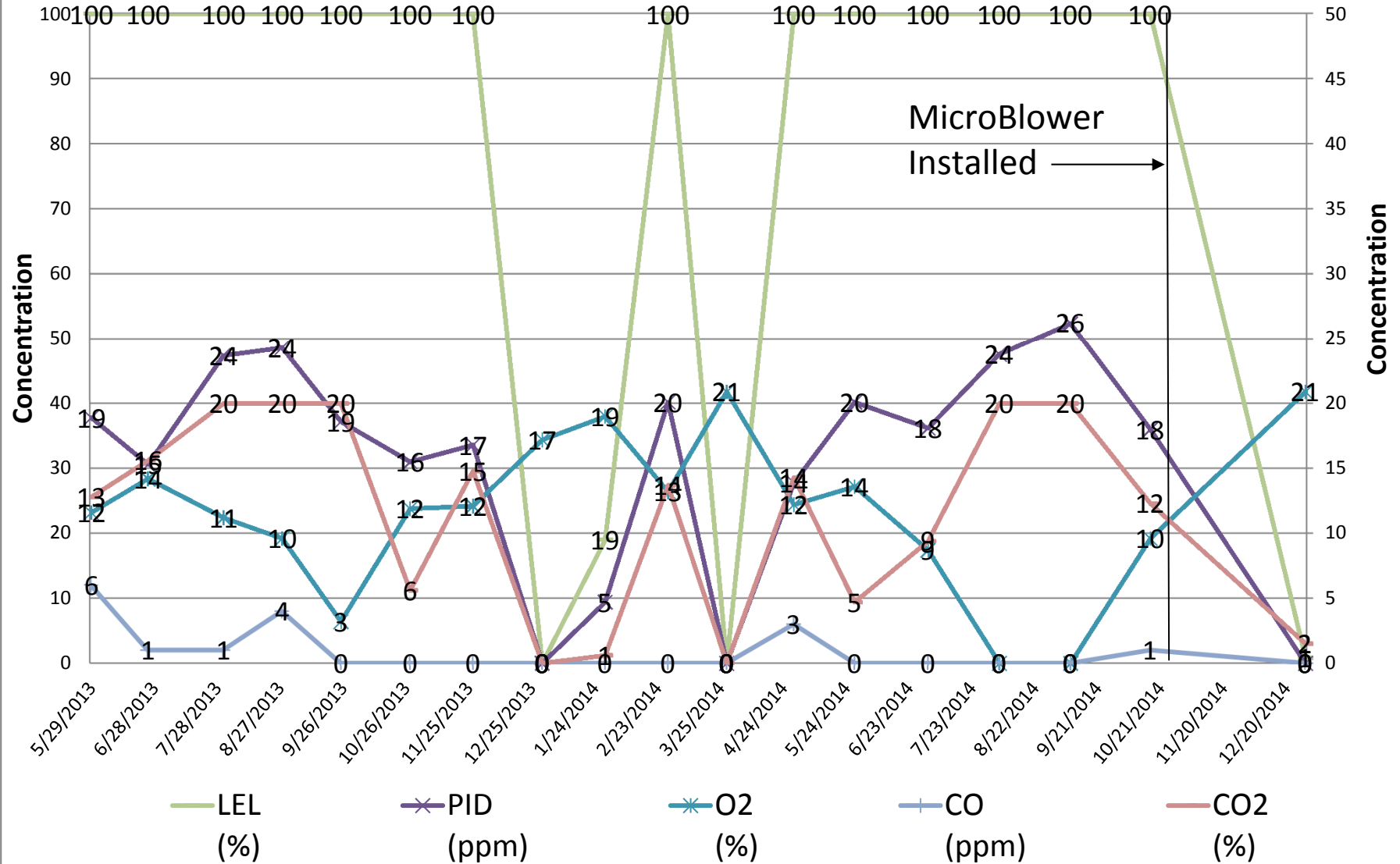


ENCANA A28 PAD

SVE07

Pit Spoil TPH: 15,746 mg/kg

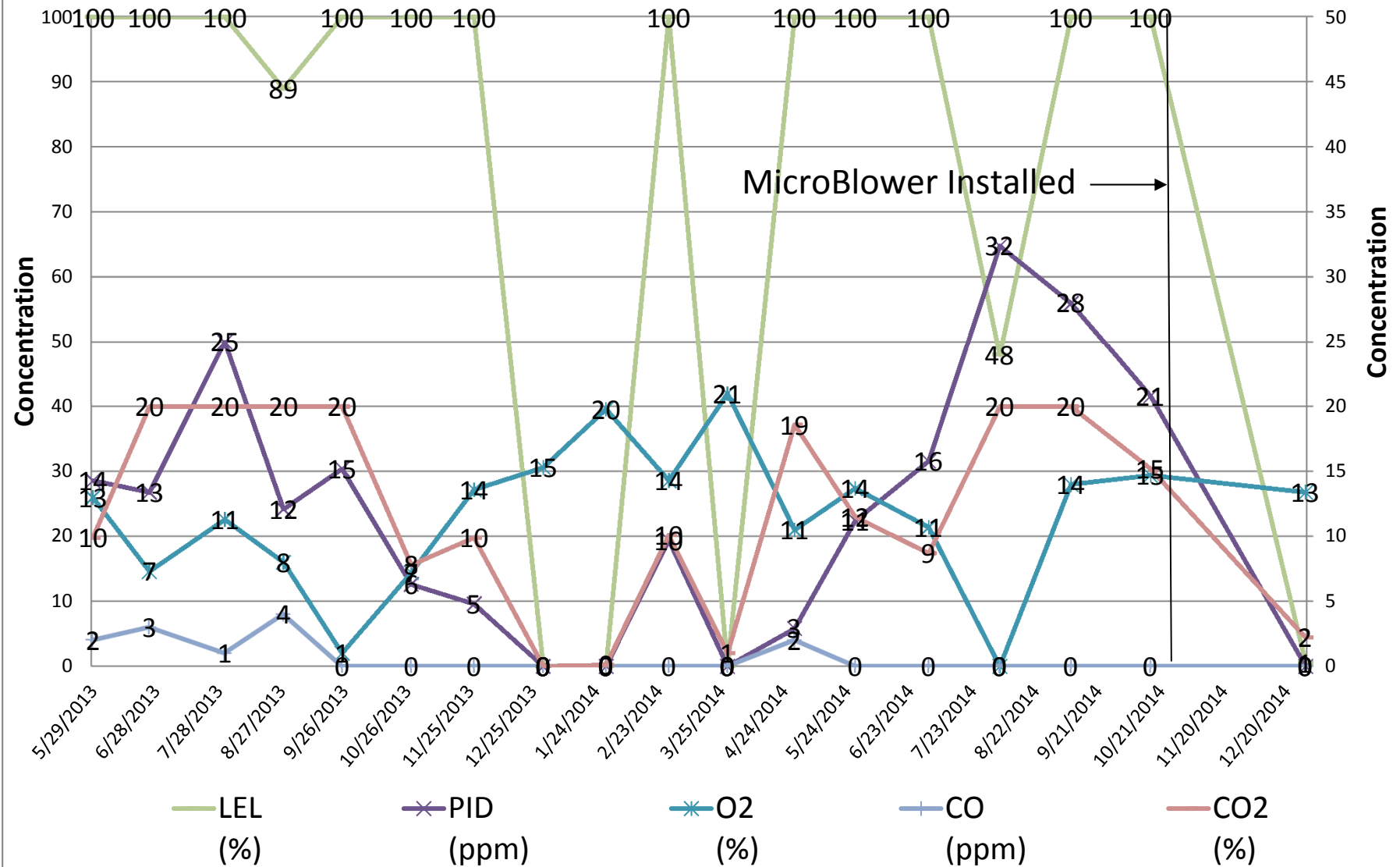
MicroBlower
Installed →



ENCANA A28 PAD

SVE08

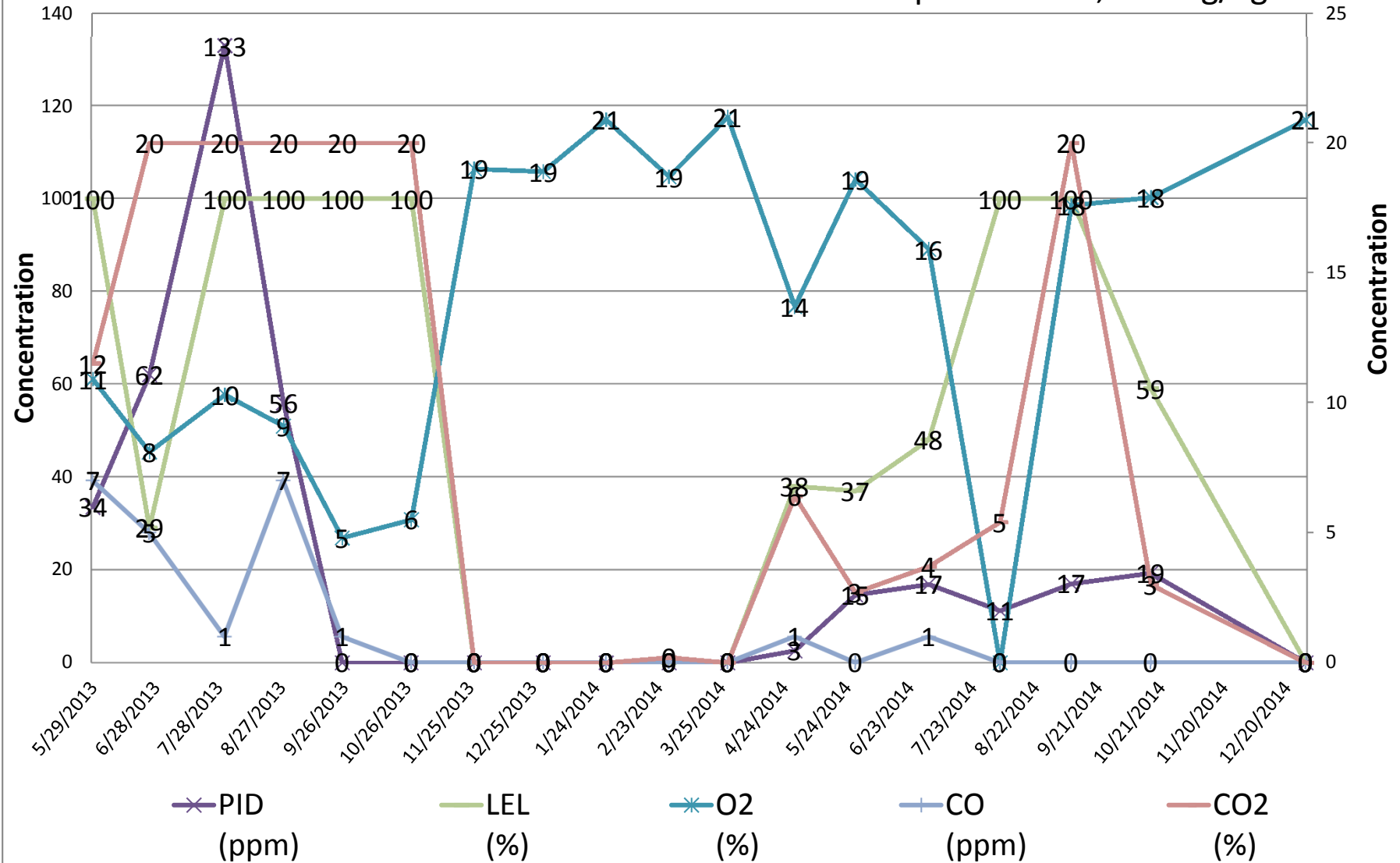
Pit Spoil TPH: 15,746 mg/kg



ENCANA A28 PAD

SVE09

Pit Spoil TPH: 15,746 mg/kg

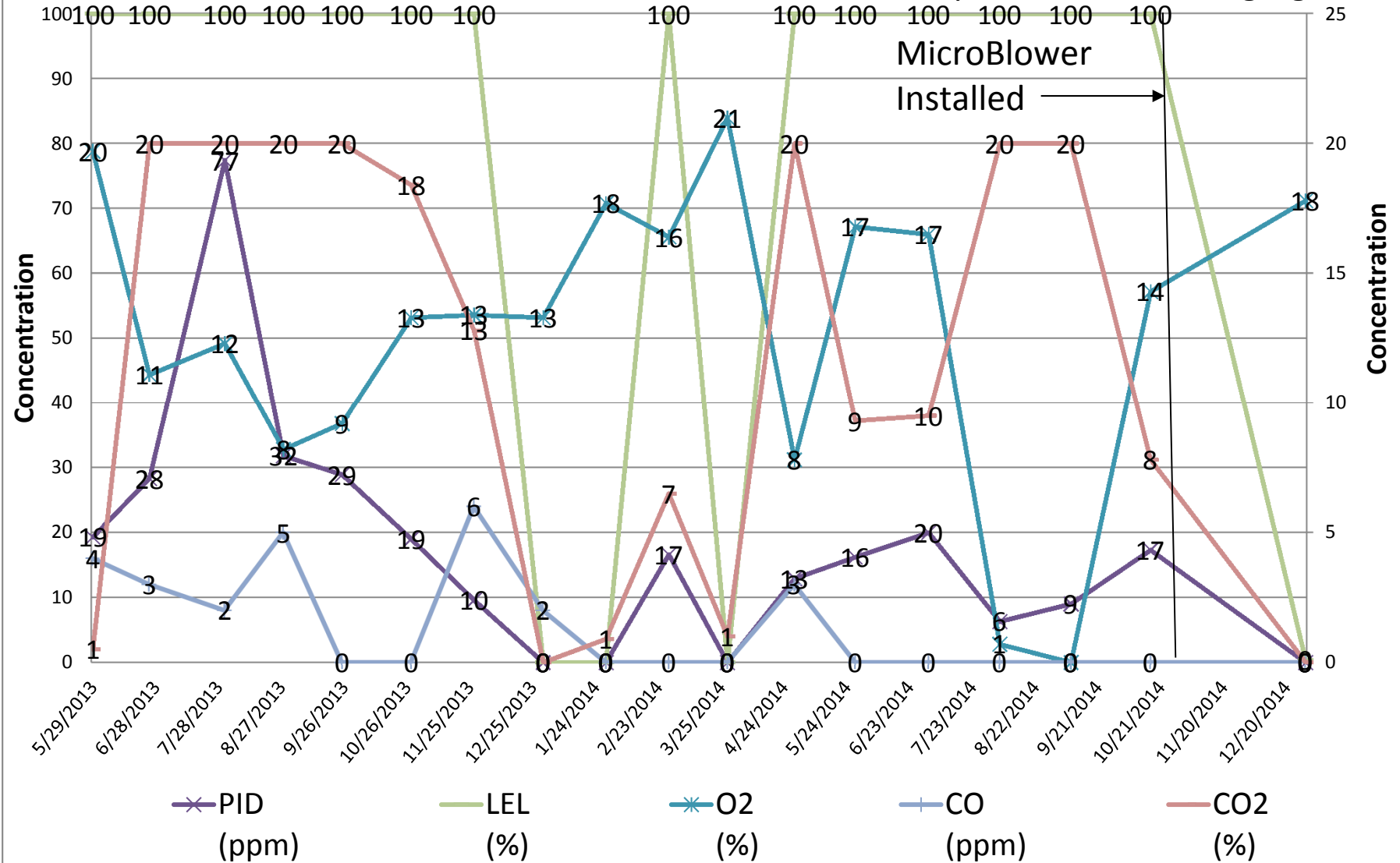


ENCANA A28 PAD

SVE10

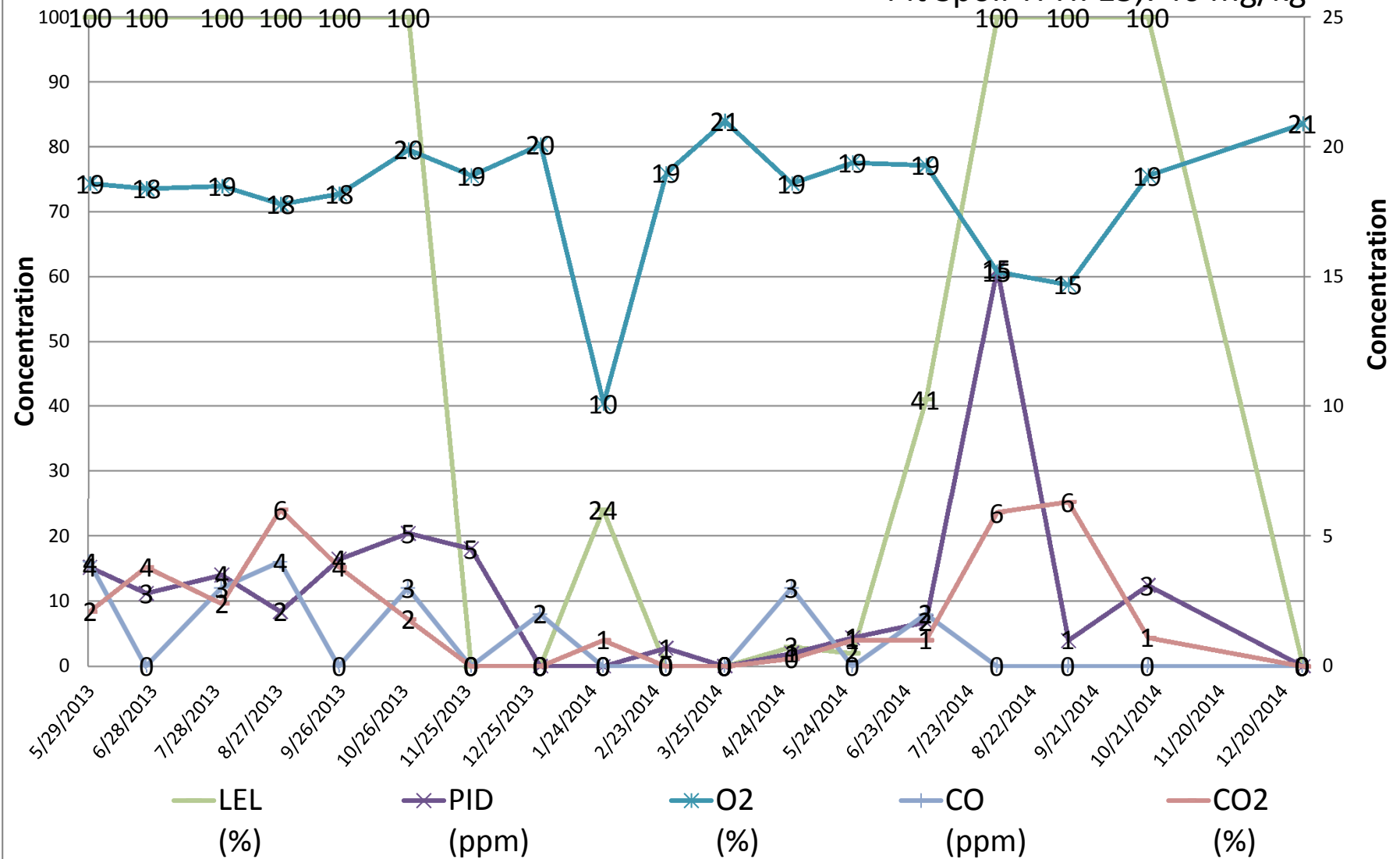
Pit Spoil TPH: 15,746 mg/kg

MicroBlower
Installed →



ENCANA A28 PAD SVE11

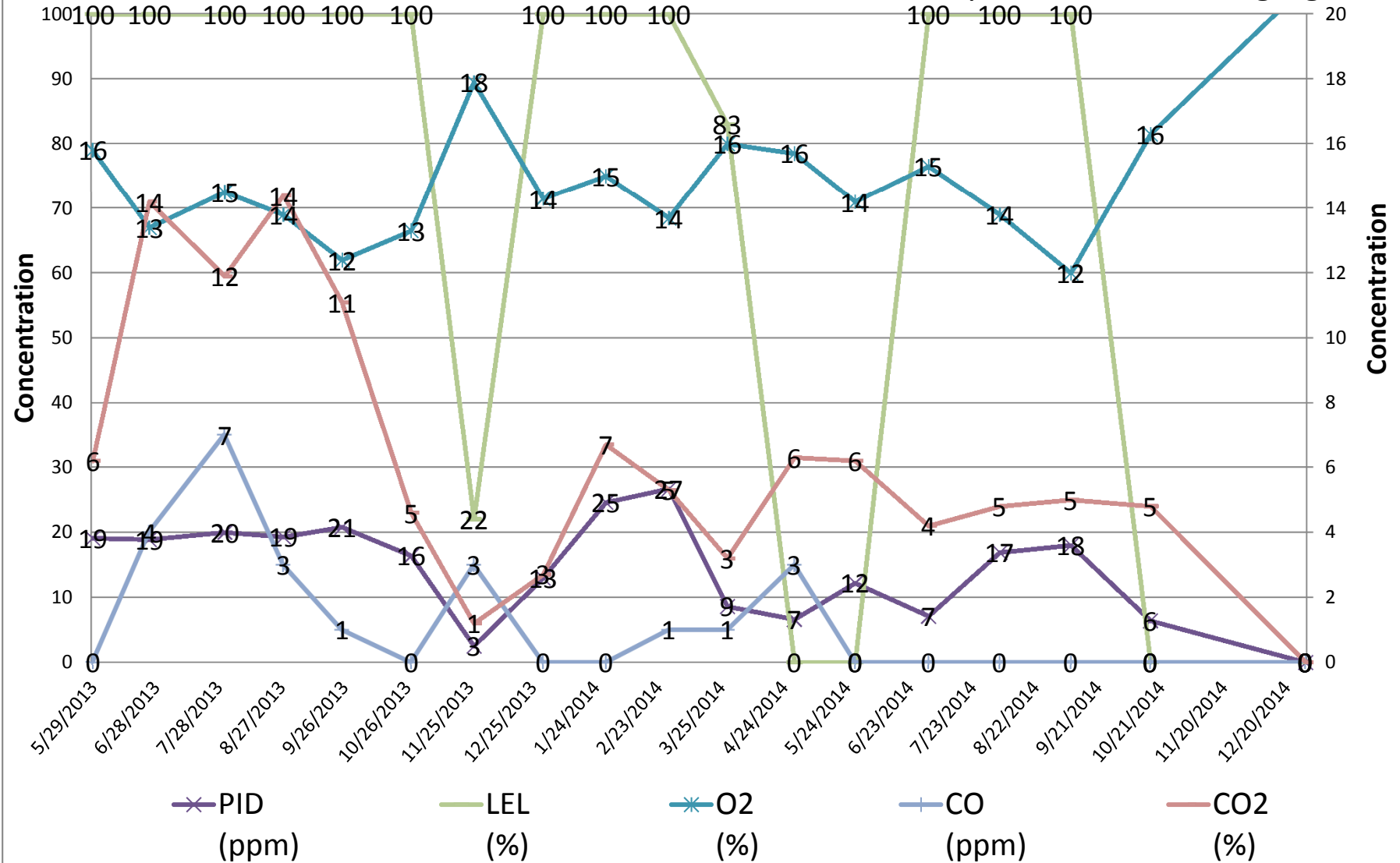
Pit Spoil TPH: 15,746 mg/kg



ENCANA A28 PAD

SVE12

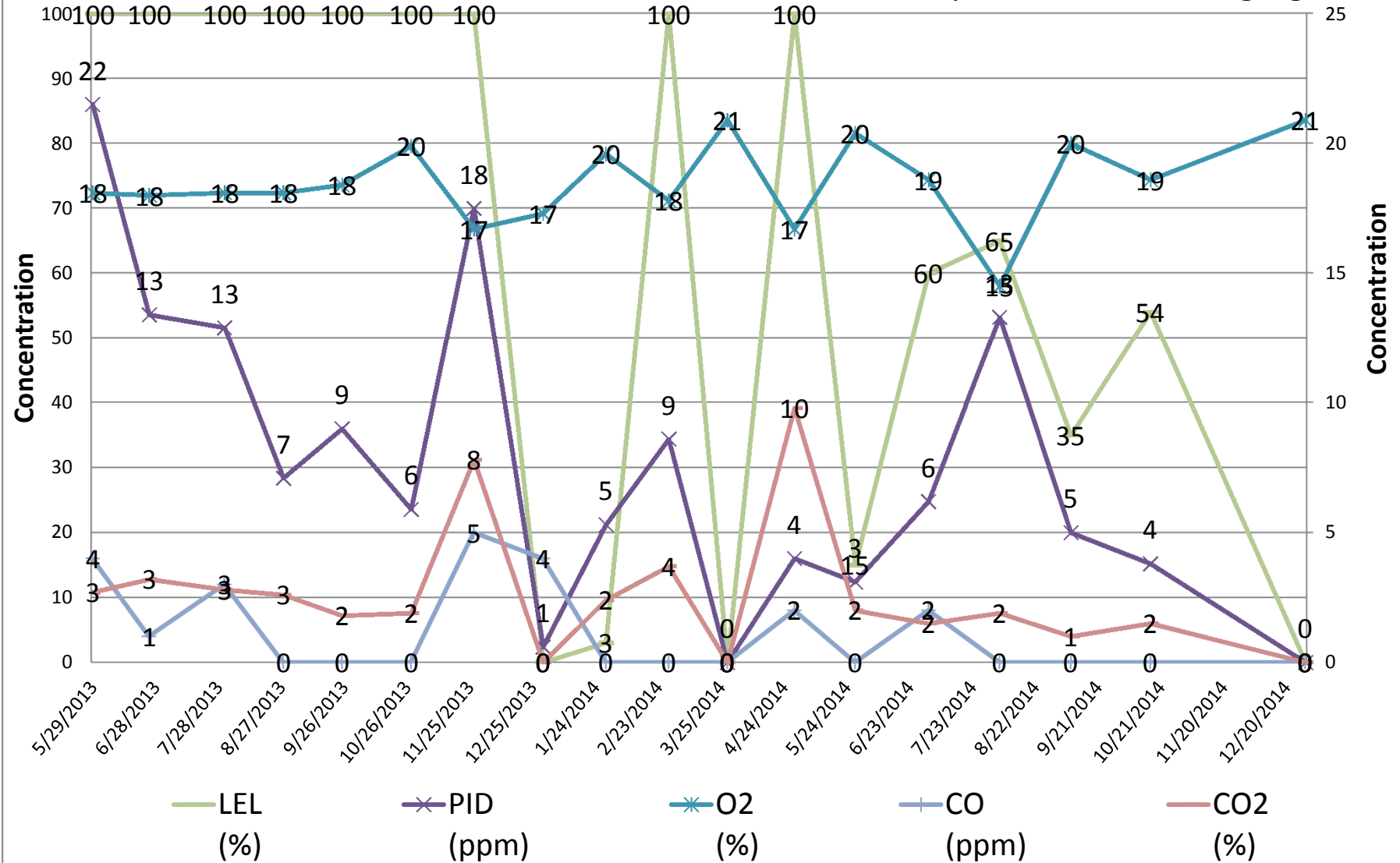
Pit Spoil TPH: 15,746 mg/kg



ENCANA A28 PAD

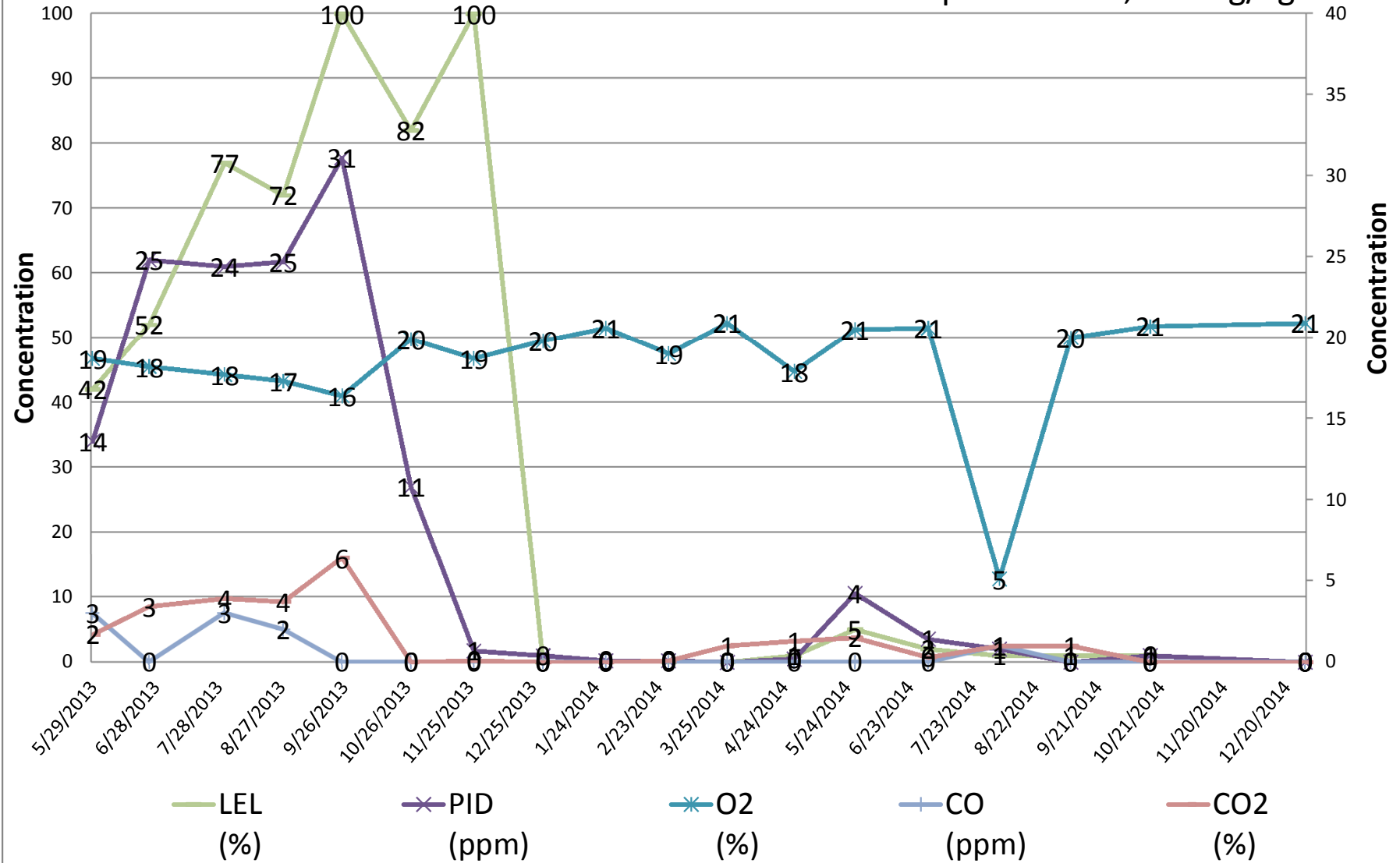
SVE13

Pit Spoil TPH: 15,746 mg/kg



ENCANA A28 PAD SVE14

Pit Spoil TPH: 15,746 mg/kg



TABLES

TABLE 1
OPERATION AND MAINTENANCE FIELD PARAMETERS
A28 WELL PAD
ENCANA OIL AND GAS (USA) INC.
GARFIELD COUNTY, COLORADO

Well ID	Date	Velocity (fpm)	Flow (cfm)	Temperature (°F)	PID (ppm)	O ₂ (%)	H ₂ S (ppm)	CO (ppm)	CO ₂ (%)	LEL (%)
SVE01	5/29/2013	14	1.53	65.3	0.8	20.6	0.0	0.0	0.0	0.0
	6/25/2013	37	0.61	100.1	0.6	18.9	0.0	2.0	7.4	0.0
	7/31/2013	12	0.44	93.6	13.7	18.7	0.0	2.0	4.6	0.0
	8/28/2013	22	0.53	105.9	0.4	18.4	0.0	0.0	3.8	0.0
	9/25/2013	30	0.64	75.1	0.0	12.2	0.0	0.0	8.5	0.0
	10/28/2013	57	0.74	64.0	0.8	8.8	0.0	0.0	17.0	0.0
	11/27/2013	26	0.50	40.7	0.0	19.0	0.0	0.0	0.0	0.0
	12/30/2013	4	0.28	38.0	0.0	19.1	0.0	0.0	0.0	0.0
	1/29/2014	3	0.02	35.8	0.0	20.6	0.0	0.0	0.0	0.0
	2/28/2014	29	0.50	53.2	0.0	19.0	0.0	0.0	0.0	0.0
	3/28/2014	2	0.09	49.6	0.0	20.9	0.0	0.0	0.5	0.0
	4/29/2014	30	0.64	59.8	0.0	20.9	0.0	0.0	0.3	0.0
	5/28/2014	3	0.02	95.4	0.1	5.5	0.0	0.0	10.7	0.0
	7/2/2014	27	0.53	88.7	34.9	18.4	0.0	1.0	4.8	0.0
	8/5/2014	9	0.11	89.9	0.0	19.0	0.0	1.0	3.2	0.0
	9/8/2014	15	0.18	78.5	0.0	18.4	0.0	1.0	4.0	0.0
	10/16/2014	5	0.04	80.8	3.1	8.2	0.0	1.0	9.1	0.0
	12/29/2014	281	7.35	46.8	0.0	18.0	0.0	0.0	3.9	0.0
SVE02	5/29/2013	8	0.74	68.2	2.4	7.4	0.0	2.0	17.6	0.0
	6/25/2013	2	0.19	98.4	2.7	14.9	0.0	1.0	18.9	0.0
	7/31/2013	2	0.66	93.6	57.2	14.7	0.0	3.0	13.3	0.0
	8/28/2013	20	0.50	99.6	2.1	14.9	0.0	0.0	12.9	0.0
	9/25/2013	63	1.23	75.4	0.0	4.3	0.0	0.0	18.8	0.0
	10/28/2013	38	0.88	65.6	0.3	9.1	0.0	0.0	0.0	0.0
	11/27/2013	29	0.51	37.3	0.1	19.0	0.0	0.0	0.0	0.0
	12/30/2013	3	0.02	55.1	0.0	19.3	0.0	0.0	0.0	0.0
	1/29/2014	13	0.55	33.7	0.0	20.6	0.0	0.0	0.0	0.0
	2/28/2014	25	0.51	54.1	0.0	19.0	0.0	0.0	0.0	0.0
	3/28/2014	3	0.02	55.0	0.0	17.2	0.0	2.0	2.5	0.0
	4/29/2014	29	0.61	53.1	0.6	9.5	0.0	2.0	15.1	1.0
	5/28/2014	23	0.31	84.2	8.6	0.0	0.0	0.0	18.7	1.0
	7/2/2014	23	0.50	89.1	19.2	11.8	0.0	1.0	11.8	0.0
	8/5/2014	8	0.11	87.0	0.0	12.2	0.0	1.0	9.0	0.0
	9/8/2014	13	0.22	76.4	4.4	11.4	0.0	1.0	9.8	0.0
	10/16/2014	1	0.02	76.5	2.2	19.6	0.0	1.0	0.8	0.0
	12/29/2014	0	0.00	32.8	0.0	20.9	0.0	0.0	0.0	0.0



TABLE 1
OPERATION AND MAINTENANCE FIELD PARAMETERS
A28 WELL PAD
ENCANA OIL AND GAS (USA) INC.
GARFIELD COUNTY, COLORADO

Well ID	Date	Velocity (fpm)	Flow (cfm)	Temperature (°F)	PID (ppm)	O ₂ (%)	H ₂ S (ppm)	CO (ppm)	CO ₂ (%)	LEL (%)
SVE03	5/29/2013	9	0.38	78.3	12.2	7.1	0.0	3.0	17.3	5.0
	6/25/2013	127	0.04	94.8	4.4	13.9	0.0	1.0	>20	0.0
	7/31/2013	7	0.33	92.8	98.6	13.6	0.0	2.0	15.1	0.0
	8/28/2013	40	1.07	98.6	2.1	13.1	0.0	0.0	15.9	0.0
	9/25/2013	25	0.80	78.3	0.7	8.4	0.0	0.0	>20	0.0
	10/28/2013	54	0.81	65.5	0.6	5.3	0.0	0.0	19.8	3.0
	11/27/2013	38	0.60	40.7	0.0	18.9	0.0	0.0	0.0	0.0
	12/30/2013	1	0.09	38.3	0.0	19.0	0.0	0.0	0.0	0.0
	1/29/2014	15	0.15	32.7	0.0	20.2	0.0	0.0	0.5	0.0
	2/28/2014	29	0.72	50.4	0.7	8.4	0.0	0.0	>20	>100
	3/28/2014	27	0.59	56.1	0.3	18.4	0.0	0.0	5.7	5.0
	4/29/2014	49	0.55	48.6	1.0	9.3	0.0	2.0	11.5	17.0
	5/28/2014	21	0.57	86.7	11.5	11.1	0.0	0.0	>20	36.0
	7/2/2014	55	0.64	85.1	1.6	9.3	0.0	1.0	12.4	0.0
	8/5/2014	9	0.33	86.3	0.0	10.3	0.0	1.0	0.0	0.0
	9/8/2014	0	0.00	73.6	2.1	8.3	0.0	1.0	11.7	0.0
	10/16/2014	1	0.02	75.2	22.1	15.9	0.0	1.0	3.9	0.0
	12/29/2014	0	0.00	32.8	0.0	20.9	0.0	0.0	0.0	0.0
SVE04	5/29/2013	4	0.66	76.4	3.9	6.7	0.0	4.0	15.6	89.0
	6/25/2013	91	1.79	92.1	12.5	7.4	0.0	3.0	>20	9.0
	7/31/2013	3	0.11	91.3	8.9	12.5	0.0	2.0	16.6	0.0
	8/28/2013	68	1.53	94.6	10.3	6.9	0.0	1.0	>20	5.0
	9/25/2013	25	0.94	77.2	4.7	1.4	0.0	1.0	>20	0.0
	10/28/2013	37	1.13	65.4	3.3	9.1	0.0	0.0	>20	0.0
	11/27/2013	42	0.13	42.8	0.0	18.6	0.0	0.0	0.3	1.0
	12/30/2013	1	0.02	40.5	0.0	19.0	0.0	0.0	0.0	0.0
	1/29/2014	20	0.22	32.9	0.0	20.6	0.0	0.0	0.0	0.0
	2/28/2014	20	0.50	53.7	0.0	18.2	0.0	0.0	1.7	>100
	3/28/2014	26	0.44	48.9	0.0	20.2	0.0	0.0	1.3	0.0
	4/29/2014	14	0.16	46.6	0.3	11.2	0.0	1.0	14.7	>100
	5/28/2014	4	0.09	85.1	5.9	0.0	0.0	5.0	19.4	>100
	7/2/2014	18	0.44	86.8	4.5	11.3	0.0	1.0	8.1	1.0
	8/5/2014	6	0.09	83.4	0.2	0.0	0.0	0.0	>20	5.0
	9/8/2014	4	0.04	73.8	0.0	20.2	0.0	0.0	0.2	0.0
	10/16/2014	1	0.02	76.3	0.7	19.1	0.0	0.0	1.0	0.0
	12/29/2014	57	1.00	33.0	0.0	9.5	0.0	0.0	12.1	5.0



TABLE 1
OPERATION AND MAINTENANCE FIELD PARAMETERS
A28 WELL PAD
ENCANA OIL AND GAS (USA) INC.
GARFIELD COUNTY, COLORADO

Well ID	Date	Velocity (fpm)	Flow (cfm)	Temperature (°F)	PID (ppm)	O ₂ (%)	H ₂ S (ppm)	CO (ppm)	CO ₂ (%)	LEL (%)
SVE05	5/29/2013	87	1.57	65.3	0.6	10.9	0.0	1.0	10.4	1.0
	6/25/2013	32	0.61	91.8	0.6	14.8	0.0	3.0	15.8	0.0
	7/31/2013	3	0.02	96.1	19.7	13.4	0.0	3.0	14.7	0.0
	8/28/2013	50	1.04	98.5	0.5	13.6	0.0	1.0	13.4	2.0
	9/25/2013	58	1.03	79.7	0.6	9.0	0.0	0.0	17.2	1.0
	10/28/2013	43	1.18	65.3	0.1	20.9	0.0	0.0	19.2	0.0
	11/27/2013	61	0.79	42.5	0.0	18.9	0.0	0.0	0.0	0.0
	12/30/2013	1	0.02	38.2	0.0	19.4	0.0	3.0	0.0	0.0
	1/29/2014	3	0.15	32.3	0.0	20.6	0.0	0.0	0.0	0.0
	2/28/2014	22	0.31	53.1	0.0	18.8	0.0	0.0	0.7	0.0
	3/28/2014	1	0.02	53.8	0.0	20.9	0.0	0.0	0.2	0.0
	4/29/2014	27	0.51	46.2	0.2	9.4	0.0	2.0	15.3	53.0
	5/28/2014	4	0.04	86.4	0.5	1.1	0.0	3.0	6.3	0.0
	7/2/2014	90	2.93	86.3	0.8	10.7	0.0	1.0	8.5	0.0
	8/5/2014	0	0.00	91.7	0.1	8.3	0.0	1.0	10.7	0.0
	9/8/2014	1	0.02	78.5	0.7	6.4	0.0	1.0	12.3	0.0
	10/16/2014	1	0.02	77.2	0.1	13.7	0.0	1.0	5.1	0.0
	12/29/2014	0	0.00	34.0	0.0	20.9	0.0	0.0	0.0	0.0
SVE06	5/29/2013	22	0.53	72.9	2.9	7.7	0.0	1.0	12.2	26.0
	6/25/2013	33	1.16	93.1	1.8	20.7	0.0	0.0	0.0	0.0
	7/31/2013	1	0.02	99.1	11.7	12.7	0.0	3.0	>20	3.0
	8/28/2013	7	0.11	101.4	2.3	8.4	0.0	0.0	>20	24.0
	9/25/2013	18	0.50	81.7	0.2	2.7	0.0	0.0	>20	27.0
	10/28/2013	42	0.77	65.7	0.7	12.2	0.0	0.0	0.7	7.0
	11/27/2013	38	0.66	42.3	0.0	19.2	0.0	0.0	0.0	0.0
	12/30/2013	1	0.07	45.0	0.0	18.9	0.0	3.0	0.0	0.0
	1/29/2014	3	0.02	35.6	0.0	20.7	0.0	0.0	0.0	0.0
	2/28/2014	29	0.66	53.1	0.1	15.4	0.0	0.0	8.7	0.0
	3/28/2014	3	0.04	55.6	0.0	20.9	0.0	0.0	0.0	0.0
	4/29/2014	31	0.48	48.3	0.0	10.5	0.0	2.0	11.7	2.0
	5/28/2014	1	0.02	84.9	6.5	0.0	0.0	0.0	12.0	2.0
	7/2/2014	108	1.13	87.2	0.8	6.6	0.0	1.0	11.8	0.0
	8/5/2014	3	0.44	87.3	0.0	0.6	0.0	1.0	17.3	1.0
	9/8/2014	0	0.00	79.6	0.0	0.0	0.0	1.0	>20	0.0
	10/16/2014	0	0.00	77.1	1.8	13.7	0.0	1.0	5.6	0.0
	12/29/2014	0	0.00	28.0	0.0	20.9	0.0	0.0	0.0	0.0



TABLE 1
OPERATION AND MAINTENANCE FIELD PARAMETERS
A28 WELL PAD
ENCANA OIL AND GAS (USA) INC.
GARFIELD COUNTY, COLORADO

Well ID	Date	Velocity (fpm)	Flow (cfm)	Temperature (°F)	PID (ppm)	O ₂ (%)	H ₂ S (ppm)	CO (ppm)	CO ₂ (%)	LEL (%)
SVE07	5/29/2013	8	0.11	73.6	18.9	11.6	8.0	6.0	12.8	>100
	6/25/2013	200	7.10	93.5	15.3	14.2	4.0	1.0	15.6	>100
	7/31/2013	37	0.70	97.3	23.7	11.2	1.0	1.0	>20	>100
	8/28/2013	35	1.00	99.0	24.3	9.6	6.0	4.0	>20	>100
	9/25/2013	53	1.46	84.5	18.6	3.2	4.0	0.0	>20	>100
	10/28/2013	25	0.52	65.5	15.5	11.9	8.0	0.0	5.6	>100
	11/27/2013	28	0.66	43.8	16.8	12.1	2.0	0.0	14.8	>100
	12/30/2013	0	0.00	41.5	0.0	17.2	0.0	0.0	0.0	0.0
	1/29/2014	2	0.02	33.5	4.7	19.0	0.0	0.0	0.6	19.0
	2/28/2014	34	0.94	53.5	20.1	13.2	0.0	0.0	13.7	>100
	3/28/2014	16	0.57	59.8	0.0	20.9	0.0	0.0	0.0	0.0
	4/29/2014	44	0.66	45.7	13.9	12.2	0.0	3.0	14.3	>100
	5/28/2014	30	0.68	88.6	20.1	13.6	0.0	0.0	4.7	>100
	7/2/2014	75	1.33	84.5	18.1	8.7	2.0	0.0	9.4	>100
	8/5/2014	22	0.37	89.4	23.8	0.0	2.0	0.0	>20	>100
	9/8/2014	1	0.02	80.2	26.2	0.0	3.0	0.0	>20	>100
	10/16/2014	1	0.02	72.3	18.0	9.6	2.0	1.0	12.3	>100
	12/29/2014	190	4.30	29.7	0.0	20.9	0.0	0.0	1.5	16.0
SVE08	5/29/2013	30	0.77	76.3	14.3	13.0	3.0	2.0	9.9	>100
	6/25/2013	32	0.13	90.1	13.4	7.3	3.0	3.0	>20	>100
	7/31/2013	4	0.19	96.3	25.0	11.3	1.0	1.0	>20	>100
	8/28/2013	2	0.05	98.7	12.1	8.0	6.0	4.0	>20	89.0
	9/25/2013	27	0.78	80.7	15.2	1.0	1.0	0.0	>20	>100
	10/28/2013	3	0.15	69.9	6.3	7.2	3.0	0.0	7.8	>100
	11/27/2013	23	0.44	42.1	4.8	13.6	0.0	0.0	9.9	>100
	12/30/2013	1	0.02	45.4	0.0	15.3	0.0	0.0	0.0	0.0
	1/29/2014	11	0.35	39.2	0.0	19.8	0.0	0.0	0.1	0.0
	2/28/2014	22	0.64	54.2	9.7	14.3	0.0	0.0	10.1	>100
	3/28/2014	31	0.44	56.1	0.0	20.9	0.0	0.0	0.5	0.0
	4/29/2014	45	0.66	43.7	2.9	10.5	0.0	2.0	18.6	>100
	5/28/2014	20	0.43	81.5	11.2	13.7	0.0	0.0	11.5	>100
	7/2/2014	70	1.05	86.6	15.8	10.7	3.0	0.0	8.7	>100
	8/5/2014	25	0.55	85.6	32.4	0.0	8.0	0.0	>20	48.0
	9/8/2014	0	0.00	75.5	27.8	14.2	2.0	0.0	>20	>100
	10/16/2014	1	0.02	74.2	20.8	14.7	1.0	0.0	15.2	>100
	12/29/2014	165	3.47	35.0	0.0	13.4	0.0	0.0	2.2	10.0



TABLE 1
OPERATION AND MAINTENANCE FIELD PARAMETERS
A28 WELL PAD
ENCANA OIL AND GAS (USA) INC.
GARFIELD COUNTY, COLORADO

Well ID	Date	Velocity (fpm)	Flow (cfm)	Temperature (°F)	PID (ppm)	O ₂ (%)	H ₂ S (ppm)	CO (ppm)	CO ₂ (%)	LEL (%)
SVE09	5/29/2013	7	0.47	72.0	33.5	10.9	8.0	7.0	11.5	>100
	6/25/2013	21	0.92	91.7	62.0	8.1	4.0	5.0	>20	29.0
	7/31/2013	22	0.66	96.1	133.0	10.3	5.0	1.0	>20	>100
	8/28/2013	13	0.28	100.1	55.9	9.1	8.0	7.0	>20	>100
	9/25/2013	144	2.90	78.8	36.7	4.8	7.0	1.0	>20	>100
	10/28/2013	30	0.28	76.3	15.7	5.5	5.0	0.0	>20	>100
	11/27/2013	10	0.18	45.0	0.1	19.0	0.0	0.0	0.0	0.0
	12/30/2013	2	0.02	38.8	0.0	18.9	0.0	0.0	0.0	0.0
	1/29/2014	2	0.02	37.8	0.0	20.9	0.0	0.0	0.0	0.0
	2/28/2014	12	0.20	53.6	0.0	18.7	0.0	0.0	0.2	0.0
	3/28/2014	14	0.33	55.5	0.0	20.9	0.0	0.0	0.0	0.0
	4/29/2014	38	0.50	45.6	2.6	13.7	0.0	1.0	6.4	38.0
	5/28/2014	6	0.09	83.7	14.6	18.6	0.0	0.0	2.7	37.0
	7/2/2014	23	0.35	93.8	16.9	15.9	1.0	1.0	3.7	48.0
	8/5/2014	3	0.04	89.7	11.2	0.0	7.0	0.0	5.4	>100
	9/8/2014	1	0.02	75.0	17.1	17.6	0.0	0.0	>20	>100
	10/16/2014	0	0.00	72.9	19.3	17.9	0.0	0.0	2.9	59.0
	12/29/2014	0	0.00	34.1	0.0	20.9	0.0	0.0	0.0	0.0
SVE10	5/29/2013	49	2.20	65.8	19.3	19.7	7.0	4.0	0.5	>100
	6/25/2013	23	0.55	93.5	28.3	11.1	6.0	3.0	>20	>100
	7/31/2013	1	0.44	95.7	77.4	12.3	6.0	2.0	>20	>100
	8/28/2013	43	1.09	99.8	31.8	8.2	7.0	5.0	>20	>100
	9/25/2013	64	1.48	77.9	28.9	9.2	6.0	0.0	>20	>100
	10/28/2013	33	0.51	67.6	19.0	13.3	38.0	0.0	18.4	>100
	11/27/2013	22	0.64	44.9	9.6	13.4	2.0	6.0	12.8	>100
	12/30/2013	1	0.02	46.4	0.0	13.3	0.0	2.0	0.0	0.0
	1/29/2014	1	0.02	38.7	0.0	17.7	0.0	0.0	0.9	0.0
	2/28/2014	8	0.11	51.2	16.6	16.4	0.0	0.0	6.5	>100
	3/28/2014	2	0.02	49.7	0.0	20.9	0.0	0.0	0.0	0.0
	4/29/2014	30	0.63	42.7	12.9	7.8	0.0	3.0	>20	>100
	5/28/2014	7	0.07	83.4	16.2	16.8	0.0	0.0	9.3	>100
	7/2/2014	27	0.43	92.3	20.0	16.5	6.0	0.0	9.5	>100
	8/5/2014	6	0.11	85.1	6.3	0.7	7.0	0.0	>20	>100
	9/8/2014	16	0.31	79.4	8.7	0.0	11.0	0.0	>20	>100
	10/16/2014	1	0.02	71.5	17.3	14.3	1.0	0.0	7.8	>100
	12/29/2014	155	3.77	42.0	0.0	17.8	0.0	0.0	0.0	7.0



TABLE 1
OPERATION AND MAINTENANCE FIELD PARAMETERS
A28 WELL PAD
ENCANA OIL AND GAS (USA) INC.
GARFIELD COUNTY, COLORADO

Well ID	Date	Velocity (fpm)	Flow (cfm)	Temperature (°F)	PID (ppm)	O ₂ (%)	H ₂ S (ppm)	CO (ppm)	CO ₂ (%)	LEL (%)
SVE11	5/29/2013	19	0.72	57.9	3.8	18.6	0.0	4.0	2.1	>100
	6/25/2013	0	0.00	90.4	2.8	18.4	0.0	0.0	3.8	>100
	7/31/2013	1	0.02	97.1	3.5	18.5	0.0	3.0	2.4	>100
	8/28/2013	27	0.55	97.4	2.1	17.8	0.0	4.0	6.0	>100
	9/25/2013	29	0.53	75.1	4.1	18.2	0.0	0.0	3.8	>100
	10/28/2013	30	0.63	64.7	5.1	19.9	0.0	3.0	1.8	>100
	11/27/2013	9	0.31	45.8	4.5	18.9	0.0	0.0	0.0	0.0
	12/30/2013	1	0.02	38.6	0.0	20.1	0.0	2.0	0.0	0.0
	1/29/2014	1	0.02	38.1	0.0	18.1	0.0	0.0	1.0	24.0
	2/28/2014	1	0.02	50.4	0.7	19.0	0.0	0.0	0.0	0.0
	3/28/2014	14	0.13	51.0	0.0	20.9	0.0	0.0	0.0	0.0
	4/29/2014	26	0.55	47.6	0.5	18.6	0.0	3.0	0.3	3.0
	5/28/2014	13	0.15	83.6	1.1	19.4	0.0	0.0	1.0	2.0
	7/2/2014	12	0.01	91.4	1.7	19.3	0.0	2.0	1.0	41.0
	8/5/2014	4	0.07	84.8	15.3	15.2	1.0	0.0	5.9	>100
	9/8/2014	3	0.04	74.6	0.6	14.7	1.0	0.0	6.3	>100
	10/16/2014	0	0.00	70.2	3.1	18.9	1.0	0.0	1.1	>100
	12/29/2014	0	0.00	32.1	0.0	20.9	0.0	0.0	0.0	0.0
SVE12	5/29/2013	15	0.52	59.9	19.1	15.8	0.0	0.0	6.2	>100
	6/25/2013	26	0.13	93.8	18.9	13.4	3.0	4.0	14.2	>100
	7/31/2013	7	0.37	97.4	20.0	14.5	4.0	7.0	11.9	>100
	8/28/2013	29	0.66	98.1	19.3	13.8	6.0	3.0	14.4	>100
	9/25/2013	27	0.55	78.4	20.8	12.4	4.0	1.0	11.1	>100
	10/28/2013	14	0.53	68.6	16.4	13.3	1.0	0.0	4.6	>100
	11/27/2013	8	0.20	43.8	2.5	17.9	0.0	3.0	1.2	22.0
	12/30/2013	1	0.02	48.6	13.0	14.3	0.0	0.0	2.7	>100
	1/29/2014	0	0.00	36.8	24.6	15.0	0.0	0.0	6.7	>100
	2/28/2014	25	0.55	56.8	26.7	13.7	0.0	1.0	5.3	>100
	3/28/2014	1	0.02	52.9	8.6	16.0	0.0	1.0	3.2	83
	4/29/2014	23	0.55	45.8	6.6	15.7	0.0	3.0	6.3	>100
	5/28/2014	3	0.04	86.5	12.2	14.2	0.0	0.0	6.2	>100
	7/2/2014	32	0.53	89.9	7.1	15.3	0.0	0.0	4.2	>100
	8/5/2014	12	0.24	88.1	16.9	13.8	2.0	0.0	4.8	>100
	9/8/2014	2	0.02	79.0	17.5	11.9	3.0	0.0	4.8	>100
	10/16/2014	1	0.02	69.6	6.4	16.3	2.0	0.0	4.8	>100
	12/29/2014	0	0.00	34.1	0.0	20.9	0.0	0.0	0.0	0.0



TABLE 1
OPERATION AND MAINTENANCE FIELD PARAMETERS
A28 WELL PAD
ENCANA OIL AND GAS (USA) INC.
GARFIELD COUNTY, COLORADO

Well ID	Date	Velocity (fpm)	Flow (cfm)	Temperature (°F)	PID (ppm)	O ₂ (%)	H ₂ S (ppm)	CO (ppm)	CO ₂ (%)	LEL (%)
SVE13	5/29/2013	24	0.53	60.5	21.5	18.1	0.0	4.0	2.7	>100
	6/25/2013	30	0.53	94.3	13.4	18.0	0.0	1.0	3.2	>100
	7/31/2013	32	0.53	95.2	12.9	18.1	0.0	3.0	2.8	>100
	8/28/2013	24	0.53	98.2	7.1	18.1	2.0	0.0	2.6	>100
	9/25/2013	30	0.68	82.2	9.0	18.4	0.0	0.0	1.8	>100
	10/28/2013	20	0.43	65.0	5.9	19.9	0.0	0.0	1.9	>100
	11/27/2013	38	0.85	47.8	17.5	16.7	4.0	5.0	7.8	>100
	12/30/2013	1	0.02	43.5	0.6	17.3	0.0	4.0	0.0	0.0
	1/29/2014	0	0.00	36.1	5.3	19.6	0.0	0.0	2.4	3.0
	2/28/2014	22	0.37	53.1	8.6	17.8	0.0	0.0	3.7	>100
	3/28/2014	3	0.02	48.5	0.0	20.9	0.0	0.0	0.1	0.0
	4/29/2014	29	0.53	41.9	4.0	16.7	0.0	2.0	9.8	>100
	5/28/2014	2	0.04	85.7	3.1	20.4	0.0	0.0	2.0	15.0
	7/2/2014	70	1.40	85.7	6.2	18.6	0.0	2.0	1.5	60.0
	8/5/2014	13	0.28	86.2	13.3	14.5	0.0	0.0	1.9	65.0
	9/8/2014	3	0.04	74.3	5.1	19.9	0.0	0.0	1.3	35.0
	10/16/2014	0	0.00	70.1	3.8	18.6	0.0	0.0	1.5	54.0
	12/29/2014	0	0.00	32.0	0.0	20.9	0.0	0.0	0.0	0.0
SVE14	5/29/2013	1	0.04	60.1	13.6	18.7	0.0	3.0	1.7	42.0
	6/25/2013	58	3.73	93.8	24.8	18.2	0.0	0.0	3.4	52.0
	7/31/2013	14	0.48	97.9	24.4	17.7	0.0	3.0	3.9	77.0
	8/28/2013	3	0.04	97.9	24.7	17.3	0.0	2.0	3.7	72.0
	9/25/2013	110	2.06	79.1	31.1	16.4	0.0	0.0	6.4	>100
	10/28/2013	44	0.81	63.9	10.8	19.9	0.0	0.0	0.0	82.0
	11/27/2013	33	0.52	43.7	0.7	18.7	0.0	0.0	0.1	>100
	12/30/2013	2	0.07	50.4	0.4	19.8	0.0	0.0	0.0	0.0
	1/29/2014	0	0.00	36.6	0.1	20.6	0.0	0.0	0.0	0.0
	2/28/2014	19	0.15	54.7	0.1	19.0	0.0	0.0	0.1	0.0
	3/28/2014	1	0.02	49.6	0.0	20.9	0.0	0.0	0.0	0.0
	3/28/2014	1	0.02	49.6	0.0	20.9	0.0	0.0	0.0	0.0
	4/29/2014	44	0.61	43.9	0.2	17.9	0.0	0.0	1.3	1.0
	5/28/2014	2	0.02	81.6	4.2	20.5	0.0	0.0	1.5	5.0
	7/2/2014	32	0.53	90.9	1.4	20.6	0.0	0.0	0.3	2.0
	8/5/2014	3	0.04	87.5	0.8	5.1	0.0	1.0	1.0	1.0
	9/8/2014	2	0.02	78.0	0.0	19.3	0.0	0.0	0.5	1.0
	10/16/2014	1	0.02	70.7	0.4	20.7	0.0	0.0	0.0	1.0
	12/29/2014	0	0.00	29.5	0.0	20.9	0.0	0.0	0.0	0.0

Notes:

fpm - feet per minute

cfm - cubic feet per minute

PID - photoionization detector

ppm - parts per million

O₂ - oxygen

H₂S - hydrogen sulfide

CO - carbon monoxide

CO₂ - carbon dioxide

CH₄ - methane

°F - degrees Fahrenheit

> - greater than

mg/kg - milligrams per kilogram

TPH - total petroleum hydrocarbons

Range of Spoil Samples exceeding the COGCC TPH standard of 500 mg/kg

Sample ID	Date	TPH (mg/kg)
pit spoil	6/8/2009	15746.0
spoil 1	9/13/2011	510.0

Solar powered MicroBlowers were installed on November 9, 2014 at SVE01, SVE04, SVE07, SVE08, and SVE10



TABLE 2
ACTIVE SVE OPERATION AND MAINTENANCE FIELD PARAMETERS
A28 WELL PAD
ENCANA OIL AND GAS (USA) INC.
GARFIELD COUNTY, COLORADO

Well ID	Date	Time	Hours	Battery (Volts)	Vacuum (in H2O)	Velocity (fpm)	Flow (cfm)	Temperature (°F)	PID (ppm)	O ₂ (%)	H ₂ S (ppm)	CO (ppm)	CO ₂ (%)	LEL (%)
SVE01	11/26/2014	10:50	552.8	NM	0.0	313	7.35	54.2	0.8	14.0	0.0	0.0	4.8	2.0
	12/3/2014	NM	653.9	8.0	1.0	300	8.00	55.0	NM	11.1	0.0	2.0	NM	8.0
	12/9/2014	NM	686.0	7.4	1.0	238	5.60	48.5	NM	15.2	0.0	0.0	NM	14.0
	12/29/2014	11:10	783.8	11.8	0.0	281	7.35	46.8	0.0	18.0	0.0	0.0	3.9	0.0
SVE04	11/26/2014	11:10	559.6	NM	3.0	587	11.60	56.9	20.5	9.4	0.0	0.0	0.8	0.0
	12/3/2014	NM	655.7	6.5	1.5	NM	NM	NM	NM	11.0	0.0	0.0	NM	12.0
	12/9/2014	NM	685.0	7.5	4.0	600	14.00	62.3	NM	15.0	0.0	0.0	NM	15.0
	12/29/2014	11:25	766.9	9.2	0.0	57	1.00	33.0	0.0	9.5	0.0	0.0	12.1	5.0
SVE7	11/26/2014	10:45	578.2	NM	7.0	148	6.70	50.1	164.2	0.0	5.0	0.0	>20	32.0
	12/3/2014	NM	691.6	11.7	8.0	NM	NM	NM	NM	0.0	3.0	0.0	NM	100.0
	12/9/2014	NM	788.3	12.4	8.5	232	5.40	53.0	NM	7.7	3.5	0.0	NM	66.0
	12/29/2014	11:35	1009.0	11.8	8.5	190	4.30	29.7	0.0	20.9	0.0	0.0	1.5	16.0
SVE8	11/26/2014	10:35	565.8	NM	0.0	1110	24.60	28.9	70.4	0.0	0.0	0.0	6.4	18.0
	12/3/2014	NM	679.1	11.5	6.0	580	12.00	56.0	NM	0.0	1.0	0.0	NM	99.0
	12/9/2014	NM	776.4	12.3	6.0	197	4.40	57.4	NM	12.6	0.0	0.0	NM	32.0
	12/29/2014	11:45	978.0	11.2	8.0	165	3.47	35.0	0.0	13.4	0.0	0.0	2.2	10.0
SVE10	11/26/2014	10:25	564.9	NM	9.0	2960	47.40	37.0	160.7	0.0	5.2	0.0	8.0	40.0
	12/3/2014	NM	677.9	11.6	8.0	1100	29.00	52.0	NM	0.0	7.0	0.0	NM	100.0
	12/9/2014	NM	775.3	11.8	8.0	113	2.22	47.8	NM	4.6	4.4	0.0	NM	76.0
	12/29/2014	12:00	954.0	12.0	7.0	155	3.77	42.0	0.0	17.8	0.0	0.0	0.0	7.0

Notes:

fpm - feet per minute

cfm - cubic feet per minute

PID - photoionization detector

ppm - parts per million

O₂ - oxygen

H₂S - hydrogen sulfide

CO - carbon monoxide

CO₂ - carbon dioxide

CH₄ - methane

°F - degrees Fahrenheit

> - greater than

mg/kg - milligrams per kilogram

TPH - total petroleum hydrocarbons

Range of Spoil Samples exceeding the COGCC TPH standard of 500 mg/kg

Sample ID	Date	TPH (mg/kg)
pit spoil	6/8/2009	15746.0
spoil 1	9/13/2011	510.0

