

Hardison, Cember, NMENV

From: Hardison, Cember, NMENV
Sent: Wednesday, March 09, 2016 1:19 PM
To: 'Blankenship, Bill'
Cc: Samaniego, Robert, NMENV; Olson, Kirby, NMENV; Schooley, Ted, NMENV
Subject: RE: LANL SVE Air Emission Report
Attachments: Final Report MDA L SVE Air Emission Report.pdf

Bill:

We have reviewed the attached Soil Vapor Extraction (SVE) system air emissions report and agree with the methods used to determine potential and actual ton per year air emission rates.

We also verified that the report meets the requirements, and the intent, of permit condition A113 in Title V Permit P100-R2 which was to verify whether or not the SVE system is Title V Insignificant.

The report and supporting data confirms that the SVE system is a Title V Insignificant Activity per items 1a and 1b of the list, and that the SVE system was not subject to a new source review (preconstruction) permit. According to the report, emissions of all regulated air pollutants from the SVE system are less than 1 ton per year.

Thank you,

Cember Hardison
Air Quality Bureau - PSD Permit Program Manager
Ph: 505-476-4346 | Fx: 505-476-4375 | ember.hardison@state.nm.us
525 Camino de los Marquez, Suite 1, Santa Fe, NM 87505 | <https://www.env.nm.gov/aqb/>

From: Blankenship, Bill [mailto:bblankenship@lanl.gov]
Sent: Wednesday, March 09, 2016 10:55 AM
To: Schooley, Ted, NMENV <ted.schooley@state.nm.us>
Cc: Hardison, Cember, NMENV <Cember.Hardison@state.nm.us>; Samaniego, Robert, NMENV <robert.samaniego@state.nm.us>
Subject: LANL SVE Air Emission Report

Ted –

Here is a signed e-copy of the 1 year emission report for the LANL Soil Vapor Extraction system. The report is required by Condition A113 of our Title V permit, which also requires the report to be sent to the Permit Manager. I will be dropping off the original by the end of today.

Bill

Bill Blankenship
LANL Air Quality Team
(505) 665-0823



Environment Safety & Health

PO Box 1663, MS K491
Los Alamos, New Mexico 87545
(505) 667-4218/Fax (505) 665-3811

Date: MAR 09 2016
Symbol: ADESH-16-036
LA-UR: 16-21296
Locates Action No.: N/A

Mr. Ted Schooley
Permit Program Manager
New Mexico Environment Department
525 Camino de los Marquez, Suite 1
Santa Fe, NM 87505-1816

Dear Mr. Schooley:

**Subject: Air Emissions Report Material Disposal Area L Soil Vapor Extraction System
Facility ID 856 – Los Alamos National Laboratory**

Los Alamos National Laboratory's (LANL) Title V operating permit requires submittal of a report regarding air emissions from a soil vapor extraction (SVE) system. Permit Condition A113 – Other Provisions of Permit P100-R2 requires the report to be submitted to the Permit Programs Manager within 45 days of the first 12 months of operation. This report fulfills this requirement.

The SVE system located at Material Disposal Area (MDA) L began full operation on January 26, 2015. The system is intended to diminish contaminant concentrations from former disposal units at the site which are present in soil pore gas. The SVE system was selected as a RCRA interim measure to remediate the area. The NMED has previously determined this system did not require a New Source Review permit and issued No Permit Required (NPR) determination 2195L-R1 on May 29, 2014. During review of the five-year Title V renewal application for Permit P100-R2, NMED reviewed a LANL determination that the system was a Title V insignificant activity and agreed with the determination. LANL agreed at the request of NMED to Permit Condition A113 to monitor and report emissions for the system to provide additional assurance the operation is a Title V insignificant activity.

From the start of operation in January 2015, the system ran at full capacity 24 hours per day with minimal downtime (less than 1% of total time) until November 18, 2015. At that time, the system was shut down due to excessive water condensation occurring in cold weather. It is anticipated the system will run 1-2 days at a time every two months in calendar year 2016. It may return to full operation in March 2017.

During the period of operation, air emissions were collected in Summa canisters and analyzed using EPA test method TO-15. Monthly monitoring records were kept for each month of operation. Total air emissions from the monitoring results are as follows:

- 422.4 pounds volatile organic compounds (VOC)

- 1089.8 pounds hazardous air pollutants (HAP)
- 541.0 pounds 1,1,1-trichloroethane (highest single HAP)

The monitoring data show a steady and downward trend in emissions as predicted during the period of operation. A rapid decrease in measured exhaust concentrations occurred following the first 1-2 months of operation. This trend in emissions shown by canister sampling was also demonstrated by measurements from a stack monitor during the period of operation.

In this report, a comparison is made between measured emission rates and the applicable criteria in NMED's *Operating Permit Program List of Insignificant Criteria*, Criteria 1.a and 1.b. In general, these mass-based criteria are 1 ton per year of total VOCs or 1 ton per year of any single HAP. Measured emissions were 21.1% of the VOC criteria and 27.1% of the highest single HAP criteria. Thus, the conclusion of the report is the SVE system is a Title V insignificant activity as predicted prior to the start of operation.

If you have any questions or comments regarding this submittal or would like to discuss this submittal in greater detail, please contact Bill Blankenship at (505) 665-0823.

Sincerely,



Michael T. Brandt, DrPH, CIH
Associate Director
Environment, Safety, and Health
Los Alamos National Laboratory

Enclosure: (1) Air Emission Report MDA L Soil Vapor Extraction System

Cy: Hai Shen, EM-SG, (E-File)
Craig S. Leasure, PADOPS, (E-File)
William Mairson, PADOPS, (E-File)
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ENV-CP Title V Permit File, J978

Title V Report Certification Form

I. Report Type

Annual Compliance Certification

Semi-Annual Monitoring Report

Other Specify: Permit Condition A113 Air Emission Report for MDA L SVE System

II. Identifying Information

Facility Name: Los Alamos National Laboratory

Facility Address: P.O. Box 1663, MS J978, Los Alamos

State: NM

Zip: 87545

Responsible Official (RO): Michael T. Brandt

Phone: 505-667-4218

Fax: 505-665-3811

RO Title: Associate Director, Environmental, Safety & Health

RO e-mail: mtbrandt@lanl.gov

Permit No. P100-R2

Date Permit Issued: February 27, 2015

Report Due Date (as required by the permit): 3/12/2016

Permit AI number: 856

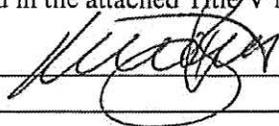
Time period covered by this Report: From: 1/26/2015

To: 1/26/2016

III. Certification of Truth, Accuracy, and Completeness

I am the Responsible Official indicated above. I, (Michael T. Brandt) certify that I meet the requirements of 20.2.70.7.AD NMAC. I certify that, based on information and belief formed after reasonable inquiry, the statements and information contained in the attached Title V report are true, accurate, and complete.

Signature _____



Date: _____

3/8/16

Air Emission Report

Material Disposal Area L Soil Vapor Extraction System

The current Los Alamos National Laboratory (LANL) Title V operating permit P100-R2 was issued on February 27, 2015. Permit Condition A113 – Other Provisions requires a report regarding air emissions from a soil vapor extraction (SVE) system located at Material Disposal Area (MDA L) following the initial 12-months of operation of the system. This report fulfills the requirements of the permit condition.

SVE System Background

LANL used MDA L from the early 1960s until 1985 as the designated disposal area for containerized and uncontainerized liquid chemical wastes, including chlorinated solvents. All of the former disposal units are covered by asphalt and/or chemical waste storage structures. Subsurface vapor phase hydrocarbons were detected during the mid-1980s, and the existence of a hydrocarbon vapor plume was verified during the Resource Conservation and Recovery Act (RCRA) Phase I characterization of MDA L.

A soil vapor extraction (SVE) system was selected as the RCRA interim measure for in situ remediation of the volatile contaminants in the vadose zone (unsaturated) soils. This operation is intended to diminish contaminant concentrations in soil pore gas and assure the contaminant plume will not increase in size. SVE is a proven technology for the physical treatment of soil contaminants. The technology uses vacuum blowers and extraction wells to induce gas flow through the subsurface before being exhausted to the air. Over time and continuous operation of the unit, contaminants are removed and concentrations in soil pore gas are diminished. Two extraction wells have been utilized to reduce existing organic soil vapors. The wells are designated SVE East and SVE West. SVE West began operation on January 9, 2015. SVE East began operation on January 26, 2015, being the date of the start of full system operation.

The SVE system ran continuously 24-hours per day at full capacity with minimal periods of downtime, estimated to be approximately one percent of total potential run time. On November 18, 2015 the system was shut down due to excessive water condensation occurring in cold weather. Future operation of the system is uncertain but current plans for calendar year 2016 are to run the system 1-2 days at a time every two months and observe organic vapor removal rates compared to rates during operation in 2015. The system could again run continuously from March to November 2017 but this is not a final decision.

Air Regulatory Requirements

Based on maximum potential emissions, LANL determined a New Source Review (NSR) permit was not required under 20.2.72 NMAC – Construction Permits for construction and operation of the SVE system. To confirm this determination, LANL utilized the voluntary assistance provided by the New Mexico Environment Department (NMED) termed a No Permit Required (NPR) determination. The NPR process allows regulated facilities to submit for review and a formal NMED determination whether a permit is

required for a new process. LANL submitted an NPR application for the SVE system to NMED on April 30, 2014. NMED responded on May 29, 2014 confirming an NSR permit was not required.

During review of the five-year operating permit renewal application resulting in Permit P100-R2, NMED reviewed and agreed to the LANL determination that the SVE system qualifies as a Title V insignificant activity. EPA and NMED Title V regulations do not require an insignificant activity to be placed within or regulated by a Title V permit. In general, an insignificant activity is a small source, defined either by emission rates or rated capacity, which also has no applicable air quality regulatory requirements such as emission limits or performance standards.

In order to provide additional verification regarding the insignificant activity status of the SVE system, NMED requested LANL agree to a Title V permit condition requiring a one-time report of measured emissions during the first 12-months of SVE operation. LANL agreed to this request and Permit Condition A113 requiring this report was included in the Title V Operating Permit P100-R2.

SVE Emission Monitoring

Formal monitoring of exhaust gas for contaminants was accomplished by periodic sampling using Summa canisters. A Summa canister is a stainless steel electro polished passivated vessel used to collect an air sample. Air sampling with this type of canister is a preferred method to obtain a representative air sample for analysis. To collect a sample, gas was withdrawn from the SVE exhaust into canisters which were closed and sent to a laboratory for analysis. Samples were analyzed by an independent laboratory, Eurofins Air Toxics, Inc. using EPA test method TO-15: Determination of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS). This method provides an accurate concentration value for all TO-15 compounds. The sample analysis was quality assured including unique sample IDs for each sample and chain of custody documentation.

During the operating period, 92 Summa samples were collected and analyzed using test method TO-15 for all compounds present. At the start of operation when contaminant concentrations were the highest, multiple samples were collected in a single day. During the months of operation, as concentrations were reduced sample frequency was also reduced from daily, to weekly and monthly. All Summa sampling results are posted to the public website Intellus New Mexico located at www.intellusnm.com. This site contains environmental monitoring data provided by LANL and the New Mexico Environment Department (NMED) DOE Oversight Bureau (DOE OB).

Additional monitoring was conducted using an in-stack monitor as a field screening tool to measure real-time contaminant concentrations. This type of monitoring was used as an indicator only for trends of gas concentrations. Results from these monitors are specifically not used to assess performance of the system for RCRA purposes as the Summa data is preferred and required by the NMED-Hazardous Waste Bureau. As such, data from these monitors is presented in this report to validate trends in Summa measurements only. The monitors used can measure four organic compounds at a time. The four compounds measured, including 1,1,1-trichloroethane or TCA, represent approximately 85% of total organic emissions. At the start of operation when contaminant concentrations were highest, multiple

monitor readings were recorded per day. During the months of operation, as concentrations were reduced, recorded monitor readings were also reduced from daily to weekly.

In-stack monitoring was initially conducted with a Bruel and Kjaer (B & K) multi-gas monitor model 1302 which was replaced in May 2015 with a LumaSense Technologies Photoacoustic Gas Monitors model Innova 1412i (Innova). The Innova unit is based on a similar measurement principle as the B & K monitor which is a photoacoustic infrared detection method. As with the B & K, the Innova measures four compounds at a time by using an optical filter specific to each compound. Unlike the B & K monitor, the Innova unit can compensate for interference between the measured field gases, using a unique cross-compensation feature.

Emission Monitoring Results

Monthly records were maintained of SVE air emissions based on laboratory analysis of Summa canister sampling. Contaminant concentrations in Summa samples were converted to emission results by interpolation between measurements applied to the total exhaust gas flow rate which occurred. Table 1 – MDA L SVE Monthly Cumulative Emission Summary shows the cumulative emission totals for operation during 2015 by compound and by designated pollutant group's volatile organic compounds (VOCs) and hazardous air pollutants (HAPs). Note the monthly values shown are cumulative totals up to a given month, and not values for individual months. The figure shows for each compound whether it is a designated VOC or HAP. Some compounds such as trichloroethene (TCE) are both a HAP and a VOC and these emissions are included in both group totals. For this reason, the sum of total VOCs and total HAPs is higher than the total organic compounds emitted. The designation as to whether or not a compound is a VOC is found at 40 CFR 51.100 (s).

Operation of both SVE units from January through November resulted in:

- 1217.5 pounds total organics;
- 1089.8 pounds total HAPs; and
- 422.4 pounds total VOCs.

The five highest single compounds emitted were:

- 541.0 pounds TCA;
- 259.5 pounds TCE;
- 117.2 pounds 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113);
- 110.6 pounds tetrachloroethene (PCE); and
- 46.2 pounds 1,2-dichloroethane (DCE).

Table 1

MDA L SVE Cumulative Emission Summary

Compound	HAP	VOC	Pounds through 2/18/2015	Pounds through 3/18/2015	Pounds through 4/18/2015	Pounds through 5/18/2015	Pounds through 6/18/2015	Pounds through 7/18/2015	Pounds through 8/18/2015	Pounds through 9/18/2015	Pounds through 10/18/2015	Pounds through 11/18/2015
Acetone	--	--	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Benzene	x	x	0.117	0.222	0.315	0.392	0.476	0.556	0.636	0.710	0.780	0.850
Carbon Tetrachloride	x	x	0.582	0.916	1.222	1.492	1.718	1.915	2.104	2.269	2.415	2.555
Chlorobenzene	x	x	0	0.004	0.004	0.007	0.018	0.032	0.046	0.056	0.062	0.071
Chloroform	x	x	5.390	8.511	11.195	13.526	15.650	17.589	19.466	21.117	22.621	24.118
Dichlorodifluoromethane	--	--	0.477	0.740	0.962	1.154	1.333	1.502	1.673	1.822	1.947	2.059
1,1-Dichloroethane	x	x	4.157	6.365	8.287	9.972	11.472	12.746	13.939	15.003	15.996	16.983
1,2-Dichloroethane	x	x	12.161	17.475	22.521	27.030	31.057	34.660	38.122	41.048	43.631	46.191
1,1-Dichloroethene	x	x	5.838	9.729	13.304	16.496	19.820	23.107	26.268	28.851	31.151	33.997
1,2-Dichloropropane	x	x	4.128	8.081	11.500	14.621	17.498	19.996	22.351	24.515	26.610	28.704
1,4-Dioxane	x	x	0.221	0.603	1.147	1.729	2.394	3.042	3.670	4.236	4.785	5.381
Ethanol	--	x	0.007	0.007	0.028	0.050	0.050	0.050	0.050	0.114	0.234	0.308
Hexane	x	x	0.046	0.046	0.046	0.046	0.046	0.058	0.079	0.090	0.090	0.090
Isooctane	x	x	0.017	0.133	0.133	0.144	0.174	0.187	0.187	0.187	0.187	0.187
Methylene Chloride	x	--	2.519	4.629	6.639	8.515	10.266	11.828	13.331	14.717	16.053	17.412
n-Heptane	--	x	0.022	0.022	0.022	0.022	0.022	0.039	0.070	0.088	0.091	0.091
Tetrachloroethene	x	--	20.102	33.023	45.666	57.129	67.949	77.263	85.973	94.186	102.156	110.626
Tetrahydrofuran	--	x	0.114	0.235	0.349	0.467	0.611	0.739	0.865	0.999	1.133	1.253
Toluene	x	x	0.201	0.430	0.659	0.884	1.108	1.286	1.440	1.606	1.789	1.970
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	21.395	37.134	50.753	62.633	73.575	83.644	93.001	101.168	109.008	117.163
1,1,1-Trichloroethane	x	--	116.254	187.313	250.500	305.426	354.801	399.418	441.793	477.933	510.087	540.981
Trichloroethene	x	x	65.870	97.694	125.946	150.782	173.685	193.446	211.319	227.650	243.632	259.452
Trichlorofluoromethane	--	--	1.238	2.133	2.945	3.650	4.275	4.860	5.433	5.932	6.376	6.822
1,3-Xylene + 1,4-Xylene	x	x	0.017	0.031	0.046	0.056	0.071	0.110	0.164	0.197	0.207	0.211
Total all Compounds (lbs)			260.883	415.487	554.199	676.234	788.078	888.081	981.991	1064.501	1141.051	1217.485
Total HAPs (lbs)	Total HAPs		237.619	375.205	499.129	608.248	708.202	797.238	880.889	954.369	1022.252	1089.780
Total VOC (lbs)	Total VOC		98.888	150.505	196.723	237.718	275.869	309.556	340.776	368.734	395.416	422.412

In-Stack Monitor Results

Air emission estimates from in-stack monitors used as real-time emission indicators are shown in Table 2 – In-Stack Monitor Emission Estimates. It was found that the more modern Innova monitor correlated well with Summa canister monitoring results. The B & K monitor showed higher measurements than Summa monitoring results, possibly due to the interference from other gases. Total emission estimates are therefore somewhat higher than Summa monitoring results due to the B & K values influencing estimates until the Innova unit was brought on-line in May 2015 by the Innova monitor.

Table 2
In-Stack Monitor Emission Estimates

Monitor	TCA lbs	TCA, TCE, PCE, CFC-11 lbs
B & K (to 5/27/15)	1021.0	1267.7
Innova (5/27/15 to 11/18/15)	220.0	338.5
Totals	1241.0	1606.2

Emission Trends

The NPR application for the SVE system described emission estimates using a three-dimensional multiphase numerical model of the vapor plume in the subsurface. LANL developed this site-scale model to evaluate the nature and extent of the subsurface contaminant TCA associated with waste disposal. TCA is the predominant organic contaminant found in soil pore gas at the site. At the time of the NPR application, the model predicted a 1 year operation at full capacity for both SVE boreholes would result in a conservative estimate of 1 ton total organic emissions with 70% of the total plume being TCA. A downward trend in removal rates throughout the year was predicted as the system lowered existing concentrations in the ground.

Figures 1 and 2 are graphs showing measured TCA concentrations from Summa canister sampling over the operating period of the system for SVE East and SVE West. As shown, there is a steady and continuous downward trend in concentrations as measured in part per billion by volume (ppbv). There is a rapid decrease in measured concentrations following the first 1-2 months of operation. SVE East showed TCA concentrations of approximately 70,000 ppbv at the start of operation and 30,000 ppbv in March 2015. SVE West had TCA concentrations approaching 100,000 ppbv at the start of operation followed by less than 20,000 ppbv in March 2015. At the conclusion of operation in November 2015, TCA concentrations were approximately 10,000 to 15,000 ppbv at each site.

Figures 3 and 4 show TCA concentrations in SVE East and SVE West as measured by both Summa canisters and the B & K and Innova monitors through July 2015 at which time emission rates had been greatly diminished from the time of startup. The B & K monitor shows emissions trending downwards in a similar fashion to Summa measurements but at higher concentrations levels. It is thought this older monitor was subject to interferences from gases present. However, as an indicator of performance it

Figure 1

SVE West TCA Measured Concentrations, ppbv

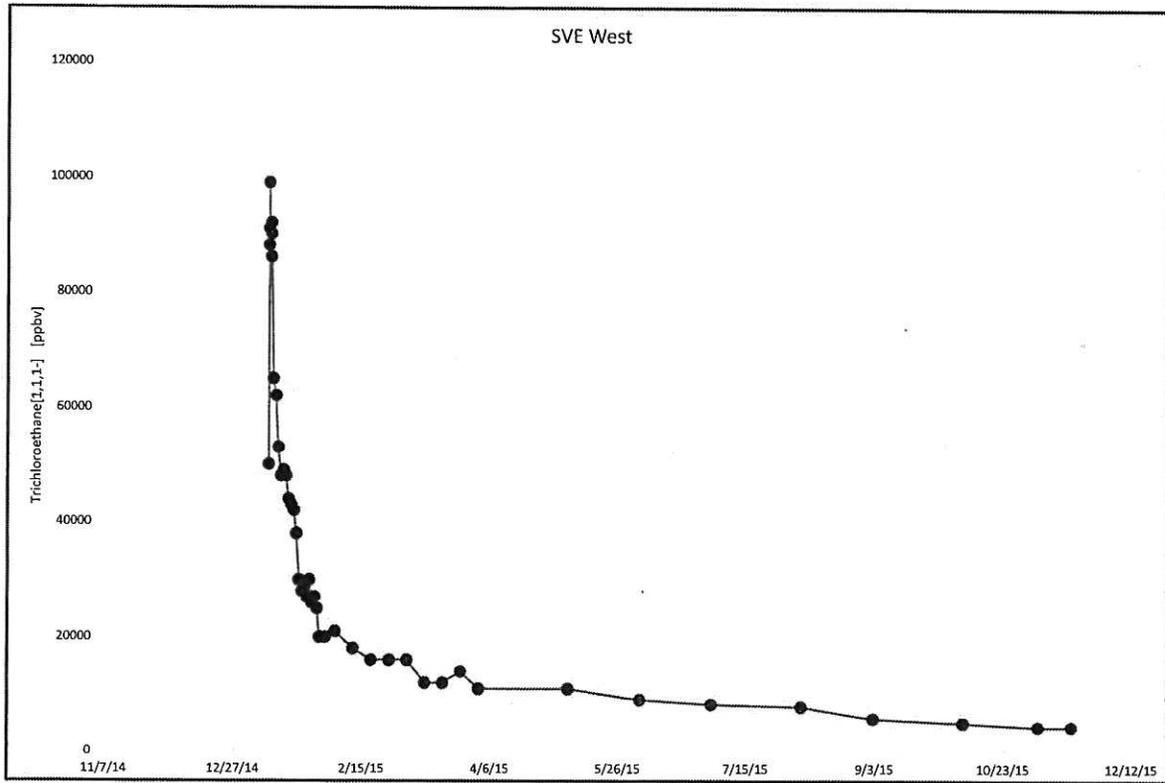


Figure 2
SVE East Measured TCA Concentrations, ppbv

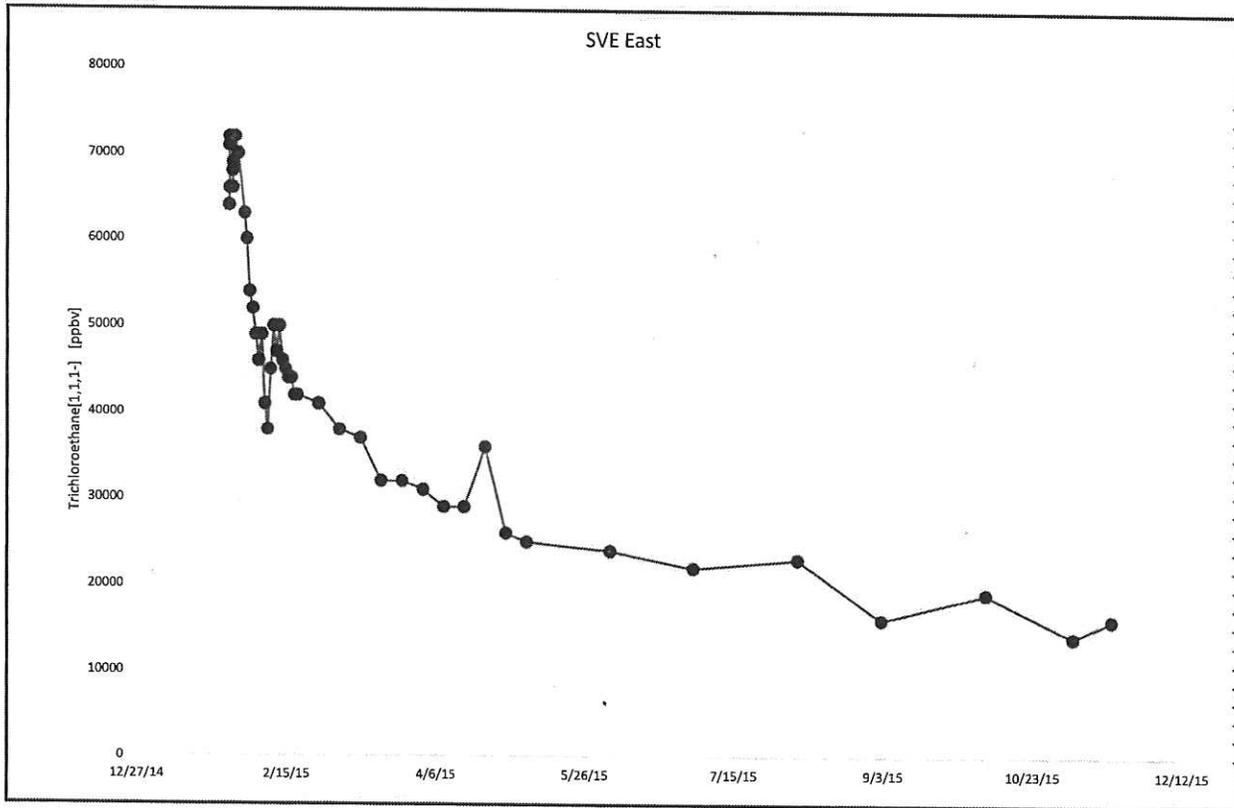


Figure 3

SVE West TCA Summa and Stack Monitor Comparison, ppmv

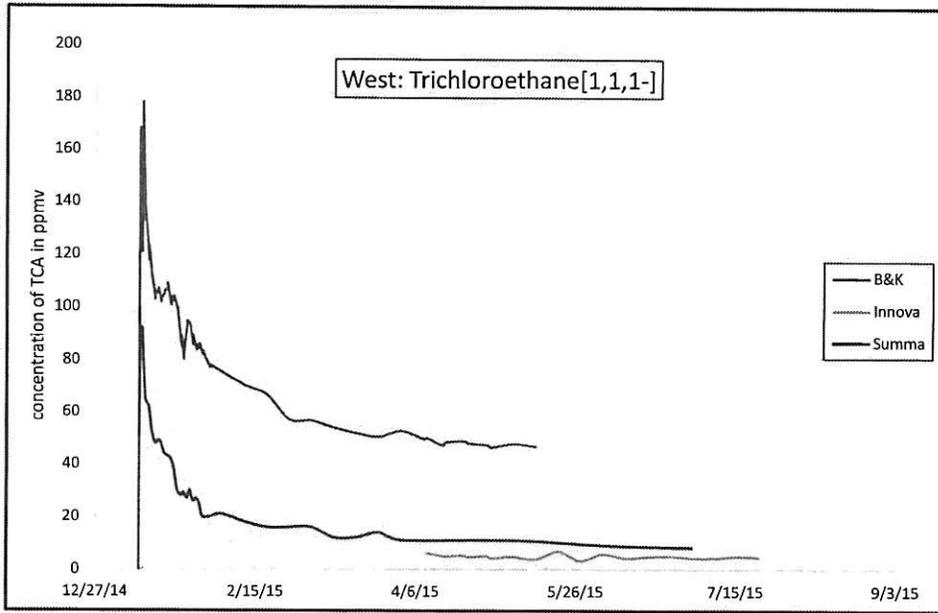
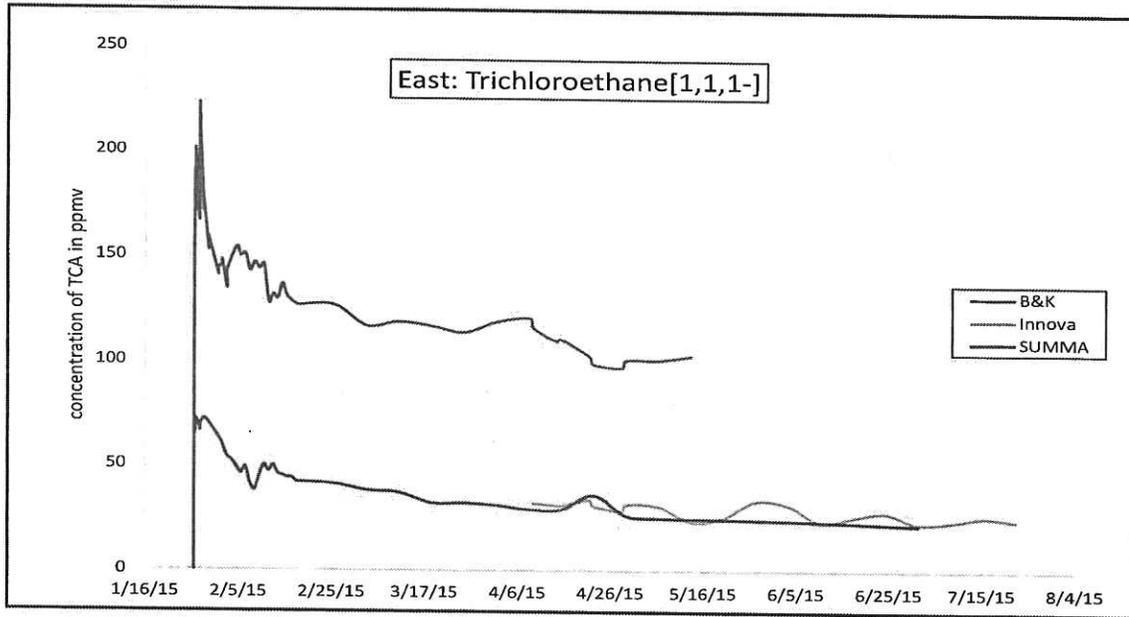


Figure 4

SVE East TCA Summa and Stack Monitor Comparison, ppmv



was reliable in showing the downward trend in concentrations measured. As shown in the figures, the more modern Innova instrument closely correlated with Summa canister monitoring results. Data from all measurements confirms the downward trend emissions from the start of operation.

Comparison to NMED Title V Insignificant Activity Criteria

Title V Permit Condition A113 requires this report to verify the insignificant activity status of the SVE system. Specifically, the condition requires a comparison with the specific criteria LANL has previously indicated are applicable to the operation. These are Criteria 1.a and 1.b in NMED's *Operating Permit Program List of Insignificant Activities*. Unlike other criteria which are listed based on rated capacity of equipment or specific uses, Criteria 1.a and 1.b apply to any operation with emissions below the expressed mass thresholds. In general, the emission threshold for 1.a is 1 ton per year of any regulated air pollutant (other than HAP). Criteria 1.b applies to HAP emissions only and the criteria is also 1 ton per year of any HAP. As discussed below, in certain instances the threshold may be less than 1 ton.

Criteria 1.a is as follows:

- 1.a. Any emissions unit, operation or activity that has the potential to emit no more than one (1) ton per year of any regulated air pollutant, excluding 112(b) hazardous air pollutants (see item 1.b), but including 112(r) flammable and toxic regulated pollutants that are not listed in Sections 500 – 502 of 20.2.72 NMAC. Regulated 112(r) pollutants that are listed in Sections 500 – 502 of 20.2.72 NMAC are insignificant if they are emitted in quantities less than the threshold (pound per hour) of that regulation.

Regulated air pollutants include all compounds controlled by an emission regulation such as a New Source Performance Standard, a National Ambient Air Quality Standard or the Clean Air Act Title VI program for stratospheric ozone protection. The criteria includes compounds regulated under the federal 112 (r) risk management planning program. If a 112 (r) compound is present, a review must be done to determine what the criteria threshold is. In the monitoring results shown in Figure 1, only 1 compound is regulated under 112(r). The compound is 1,2 dichloroethane. The criteria threshold for this compound is 1 ton per year since it is not listed in 20.2.72 NMAC as a New Mexico toxic air pollutant.

NMED interprets criteria 1.a to include total VOCs as defined at 40 CFR 51.100 (s) as a class of compounds subject to a threshold of 1 ton per year. Certain organic compounds, including TCA, PCE, and CFCs are excluded from the VOC definition at 40 CFR 51.100 (s). Three compounds detected by monitoring are neither a VOC nor HAP but are regulated compounds because each is an ozone depleting substance regulated under Title VI. These are dichlorodifluoromethane (CFC-12), 1, 1, 2-trichloro-1,2,2-trifluoroethane (CFC-11), and trichlorofluoromethane (CFC-113). All other compounds detected by monitoring are VOCs subject to the 1 ton per year threshold as a group total. Table 3 compares emissions from Summa monitoring with the criteria 1.a thresholds.

Table 3**Comparison of SVE Emissions with Insignificant Criteria 1.a**

Compound	Total Emissions, lbs	Criteria Threshold, lbs	Percent of Threshold
VOCs	422.4	2000	21.1%
CFCs 11,12,113	126.0	2000	6.3%

Criteria 1.b is as follows:

1.b. Any emissions unit, operation or activity that has the potential to emit no more than the lesser of either one (1) ton per year or the de minimis level of any 112(b) hazardous air pollutants listed in the U.S. EPA document "Documentation of De Minimis Rates for Proposed 40 CFR part 63 subpart B", EPA-453/R-93-035 or de minimis levels established under subsequent rulemaking for 112(g).

Applying these criteria to detected HAPs, there are 3 compounds which have a de minimis level less than 1 ton per year in the referenced EPA document. All other detected HAPs have a de minimis level equal to or greater than 1 ton per year. For example, TCA, TCE and PCE have de minimis levels of 10 tons per year. Each individual HAP has a Criteria 1.b threshold of 1 ton per year, except for the 3 compounds with a smaller threshold. Table 4 compares emissions from Summa monitoring with the criteria 1.b thresholds.

Table 4**Comparison of SVE Emissions with Insignificant Criteria 1.b**

Compound	Total Emissions, lbs	Criteria Threshold, lbs	Percent of Threshold
Benzene	0.9	2000	0.05%
Carbon Tetrachloride	2.6	2000	0.1%
Chlorobenzene	0.1	2000	0.005%
Chloroform	24.1	1800	1.3%
1,1-Dichloroethane	17.0	2000	0.8%
1,2-Dichloroethane	46.2	1600	2.9%
1,1-Dichloroethene	34.0	800	4.3%
1,2-Dichloropropane	28.7	2000	1.4%
1,4-Dioxane	5.4	2000	0.3%
Hexane	0.1	2000	0.01%
Isooctane	0.2	2000	0.01%
Methylene Chloride	17.4	2000	0.9%
Tetrachloroethene	110.6	2000	5.5%
Toluene	2.0	2000	0.1%
1,1,1-Trichloroethane	541.0	2000	27.1%
Trichloroethene	259.5	2000	13.0%

Compound	Total Emissions, lbs	Criteria Threshold, lbs	Percent of Threshold
1,3-Xylene + 1,4-Xylene	0.2	2000	0.01%

A comparison to insignificant activity criteria can also be made from the in-stack monitor records. Although this data is considered to be useful as an indicator only of SVE performance, it is worth noting all results show the operation is a Title V insignificant activity as the Summa data does. Table 5 compares stack monitor data with Criteria 1.a and Table 6 shows the comparison to Criteria 1.b.

Table 5

Comparison of Stack Monitor Results with Insignificant Criteria 1.a

Compound	Total Emissions, lbs	Criteria Threshold, lbs	Percent of Threshold
VOCs	116.2	2000	5.8%
CFC-11	58.7	2000	2.9%

Table 6

Comparison of Stack Monitor Results with Insignificant Criteria 1.b

Compound	Total Emissions, lbs	Criteria Threshold, lbs	Percent of Threshold
Tetrachloroethene	190.2	2000	9.5%
1,1,1-Trichloroethane	1241.0	2000	62.1%
Trichloroethene	116.2	2000	5.8%

Conclusions

Air emissions from the MDA L SVE system were extensively monitored over a 10 month period with the system at full capacity 24 hours per day. Monitoring results show maximum air emission rates are well below the mass-based Criteria 1.a and 1.b in the NMED insignificant activity list. Total VOC emissions were 21% of the Criteria 1.a threshold. TCA, the most prominent contaminant, had emission rates which were 27.1% of the Criteria 1.b threshold. It is extremely improbable that continued operation for an additional 2 months would have significantly changed these values given the downward trend in emission rates shown for the period of operation. Thus, monitoring further demonstrates the SVE system is a Title V insignificant activity.