



Environmental Protection Division
Environmental Compliance Programs (ENV-CP)
PO Box 1663, K490
Los Alamos, New Mexico 87545
(505) 667-0666

Date: APR 30 2014
Symbol: ENV-DO-14-0098
LAUR: 14-22478

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: No Permit Required Determination – TA 54 MDA L Soil Vapor Extraction

Los Alamos National Laboratory (LANL) is requesting review and approval of this No Permit Required (NPR) determination. LANL intends to install and operate two (2) soil vapor extraction systems to remediate hydrocarbon vapors in soil surrounding a legacy waste disposal site. This site is located within Technical Area (TA) 54 and is designated Material Disposal Area (MDA) L. We have evaluated in a conservative manner maximum air emissions which could be emitted from this operation, and determined an air quality construction or New Source Review (NSR) permit is not required under 20.2.72 NMAC – Construction Permits. This letter summarizes our determination. All required permit application forms for an NPR request are included in the attached enclosure.

LANL used MDA L from the early 1960s until 1985 as the designated disposal area for non-radiological, 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 RCRA Phase I characterization of MDA L. Ongoing monitoring of the hydrocarbon plume is done by soil pore-gas sampling and has been conducted for many years. Concentrations of most hydrocarbons within the pore gas are less than 1 ppmv but several exceed 1,000 ppmv near the intended extraction wells.

A soil vapor extraction (SVE) system has been selected as a RCRA interim measure for in situ remediation of the volatile contaminants in the vadose zone (unsaturated) soils. This is intended to assure the contaminant plume will not increase 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 to collection and potential treatment aboveground before being exhausted to the air. This technology can be implemented with minimum site disturbance and standard off-the-shelf equipment

aboveground. Two extraction wells will be utilized to collect and contain organic soil vapors. The wells are designated MDA L SVE East and MDA L SVE West.

Maximum air emissions have been estimated for full operation of the two SVE units on an annual continuous basis. Emissions have been estimated using contaminant soil pore-gas measurements from the most recent year with full sampling. In reality, soil pore-gas concentrations used in emission estimates are over-estimates since pore-gas will be diluted due to air mixing by the extraction system prior to being exhausted to the outside air. It is also anticipated pore-gas contaminant concentrations will become lower during operation of the SVE process from those present today.

The organic vapors emitted have been characterized as volatile organic compounds (VOC) and/or hazardous air pollutants (HAP). These are the only pollutants emitted. The SVE system has no fuel burning equipment associated with it. All emission estimates provided assume there is no control of emissions prior to discharge.

Table 1 below provides a summary of maximum emission estimates. HAP emission estimates are higher than VOCs because several chlorinated contaminants are HAPs, but have negligible photochemical reactivity (are not contributors to ground-level ozone formation) and are excluded from the U.S. EPA definition of volatile organic compounds.

Table 1
Maximum Emission Rates TA-54 MDA L SVE

SVE Unit	VOC (pounds per hour)	VOC (tons per year)	HAP (tons per year)
SVE – East	1.39	1.43	3.78
SVE - West	1.39	1.13	2.70
Total	2.79	2.57	6.48

20.2.72 NMAC does not require a permit for a VOC-only source such as this. HAP emissions also do not require a permit under 20.2.72 NMAC. The exception would be if HAP emissions for this operation exceeded 25 tons per year, the major source threshold for HAP sources, which is not the case here. Emissions of individual toxic air pollutants (TAPs) are all well below permit threshold levels in 20.2.72 NMAC. There are no New Source Performance Standards (NSPS) or National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories which would apply to this operation.

In addition to the maximum emission rates shown in Table 1, a second estimate of annual emissions was made. A three-dimensional multiphase numerical model of a volatile organic compound (VOC) vapor plume in the subsurface at LANL was developed using a site-scale numerical model. The site-scale numerical model evolved over many years (1999–2006) and has been used to evaluate the nature and extent of the subsurface contaminant 1,1,1-trichloroethane (TCA) associated with waste disposal. This model was refined to include a 2006 soil-vapor extraction (SVE) pilot test and calibrated permeabilities for the site were developed to match flow-rate versus pressure drop and concentrations in the exhaust gas. A blind validation simulation that begins with the pre-SVE test in 2006 and predicts present day (2010) plume concentrations yields a data/model correlation coefficient (r^2) for over 150 data model pairs that is

greater than 90% in the year 2010. The ability of the model to align with data after four years that include two active SVE demonstration tests provides confidence that the model captures the dominant physical transport processes at this site, and can thus be used with confidence to explore future scenarios of site behavior. For the air quality estimate of VOC removal, the model was run from 2010 to 2014 assuming both SVE boreholes are pumped at maximum capacity for 1 year. Given that TCA is typically close to 70% of the total plume mass, a conservative estimate of expected effluent from the SVE units for the year is on the order of 1 ton.

It should be noted that NMED approved an NPR determination for a similar SVE unit which LANL proposed for use in MDA L. That leased unit was used in a pilot study and is no longer on site. The approved NPR was designated 2195-L and was issued on January 6, 2005. In that request, LANL estimated maximum VOC emissions for one SVE unit to be 1.7 tons per year. HAP emissions were estimated to be 5.1 tons per year.

Please contact Bill Blankenship at (505) 665-0823 of the Environmental Compliance Programs (ENV-CP) if you have questions. Thank you for consideration of this request.

Sincerely,



Anthony R. Grieggs
Group Leader
Environmental Compliance Programs (ENV-CP)
Los Alamos National Security, LLC

ARG:BB/lm

Enclosure: Permit Application Forms

Cy: Hai Shen, NA-LA (E-File)
Carl A. Beard, PADOPS, (E-File to aosburn@lanl.gov)
Michael T. Brandt, ADESH, (E-File)
Alison M. Dorries, ENV-DO, (E-File)
Stephani F. Swickley, CAP, (E-File)
Phillip H. Stauffer, EES-16, (E-File)
Kay H. Birdsell, EES-16, (E-File)
Steven L. Story, ENV-CP, (E-File)
Bill Blankenship, ENV-CP, (E-File)
Margie B. Stockton, ENV-CP, (E-File)
lasomailbox@nnsa.doe.gov, (E-File)
locatesteam@lanl.gov, (E-File)
env-correspondence@lanl.gov, (E-File)

ENCLOSURE 1

Permit Application Forms

ENV-DO-14-0098

LAUR-14-22478

Date: APR 30 2014

√Mail Application To: New Mexico Environment Department Air Quality Bureau Permits Section 525 Camino de los Marquez, Suite 1 Santa Fe, New Mexico, 87505 Phone: (505) 476-4300 Fax: (505) 476-4375 www.nmenv.state.nm.us/aqb		For Department use only: AIRS No.:
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Universal Air Quality Permit Application

Use this application for NOI, NSR, or Title V sources.

Use this application for: the initial application, modifications, technical revisions, and renewals. For technical revisions, complete Sections, 1-A, 1-B, 2-E, 3, 9 and any other sections that are relevant to the requested action; coordination with the Air Quality Bureau permit staff prior to submittal is encouraged to clarify submittal requirements and to determine if more or less than these sections of the application are needed. Use this application for streamline permits as well. For NOI applications, submit the entire UA1, UA2, and UA3 applications on a single CD (no copies are needed). For NOIs, hard copies of UA1, Tables 2A, 2D & 2F, Section 3 and the signed Certification Page are required.

This application is being submitted as (check all that apply): Request for a No Permit Required Determination (no fee)
 Updating an application currently under NMED review. Include this page and all pages that are being updated (no fee required).
 Construction Status: Not Constructed Existing Permitted (or NOI) Facility Existing Non-permitted (or NOI) Facility
 Minor Source: a NOI 20.2.73 NMAC 20.2.72 NMAC application/revision 20.2.72.300 NMAC Streamline application
 Title V Source: Title V (new) Title V renewal TV minor mod. TV significant mod. TV Acid Rain: New Renewal
 PSD Major Source: PSD major source (new) minor modification to a PSD source a PSD major modification

Acknowledgements: I acknowledge that a pre-application meeting is available to me upon request NPR (no fee)
 \$500 NSR Permit Filing Fee enclosed **OR** The full permit fee associated with 10 fee points (required w/ streamline applications).
 Check No.: _____ in the amount of _____ (Fee not required for Title V) This facility meets the applicable requirements to register as a Small Business and a check for 50% of the normal fee is enclosed (only applicable provided that NMED has a Small Business Certification Form from your company on file found at: http://www.nmenv.state.nm.us/aqb/permit/app_form.html).

Citation: Please provide the low level citation under which this application is being submitted: **20.2.XX.XXX.X.X NMAC** (i.e. an example of an application for a new minor source would be 20.2.72.200.A NMAC, one example of a low level cite for a Technical Revision could be: 20.2.72.219.B.1.b NMAC, or a Title V acid rain cite would be: 20.2.70.200.C NMAC)

Synthetic Minor Source Information: A source is synthetic minor if its uncontrolled emissions are above major source applicability thresholds, but the facility is minor because it has federally enforceable requirements (federal requirements or permit conditions) that limit controlled emissions below major source thresholds. Facilities can be synthetic minor for either Title V (20.2.70 NMAC) or PSD (20.2.74 NMAC) or both. The Department tracks synthetic minor sources that are within 20% of either TV or PSD major source thresholds, referring to these as Synthetic Minor 80 Sources (abbreviated SM80). Please check all that apply:
 Prior to this permitting action this source is a TV major source, a TV synthetic minor source, a TV SM80 source.
 Prior to this permitting action this source is a PSD major source, a PSD synthetic minor source, a PSD SM80 source.
 This permitting action results in a TV synthetic minor source and/or PSD synthetic minor source.

Section 1 – Facility Information

Section 1-A: Company Information		AI # (if known): 35-028-0001	Updating Permit/NOI #: N/A
1	Facility Name: Los Alamos National Laboratory	Plant primary SIC Code (4 digits): 8733	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): The Laboratory is bounded by the towns of Los Alamos and White Rock, NM		
2	Plant Operator Company Name: Los Alamos National Security	Phone/Fax: (505) 665-8855/(505) 665-8858	
a	Plant Operator Address: P.O. Box 1663, MS J978, Los Alamos, NM 87545		
b	Plant Operator's New Mexico Corporate ID or Tax ID: 03059304002		
3	Plant Owner(s) name(s): DOE, National Nuclear Security Administration	Phone/Fax: (505) 667-6691	

a	Plant Owner(s) Mailing Address(s): 3747 West Jemez Road, Los Alamos, NM 87544	
4	Bill To (Company): N/A	Phone/Fax: N/A
a	Mailing Address: N/A	E-mail: N/A
5	<input checked="" type="checkbox"/> Preparer: Bill Blankenship <input type="checkbox"/> Consultant:	Phone/Fax: (505) 665-0823/(505) 665-8858
a	Mailing Address: P.O. Box 1663, MS J978, Los Alamos, NM 87545	E-mail: bblankenship@lanl.gov
6	Plant Operator Contact: Tony Grieggst	Phone/Fax: (505) 665-0451
a	Address: P.O. Box 1663, MS K490, Los Alamos, NM 87545	E-mail: grieggst@lanl.gov
7	Air Permit Contact: Tony Grieggst	Title: Group Leader, ENV-CP
a	E-mail: grieggst@lanl.gov	Phone/Fax: (505) 665-0451
b	Mailing Address: P.O. Box 1663, MS K490, Los Alamos, NM 87545	

Section 1-B: Current Facility Status

1.a	Has this facility already been constructed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.b If yes to question 1.a, is it currently operating in New Mexico? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2	If yes to question 1.a, was the existing facility subject to a Notice of Intent (NOI) (20.2.73 NMAC) before submittal of this application? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes to question 1.a, was the existing facility subject to a construction permit (20.2.72 NMAC) before submittal of this application? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
3	Is the facility currently shut down? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, give month and year of shut down (MM/YY):
4	Was this facility constructed before 8/31/1972 and continuously operated since 1972? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
5	If Yes to question 3, has this facility been modified (see 20.2.72.7.P NMAC) or the capacity increased since 8/31/1972? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
6	Does this facility have a Title V operating permit (20.2.70 NMAC)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, the permit No. is: P-100-R1-M3
7	Has this facility been issued a No Permit Required (NPR)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, the NPR No. is: 2195A,2195Q,2195S,2195U
8	Has this facility been issued a Notice of Intent (NOI)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, the NOI No. is:
9	Does this facility have a construction permit (20.2.72 NMAC)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, the permit No. is: 632,634,1081,2195,2195B,2195F,2195H,2195L,2195N,2195P
10	Is this facility registered under a General permit (GCP-1, GCP-2, etc.)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, the register No. is: GCP-3-2195G

Section 1-C: Facility Input Capacity & Production Rate - Soil Vapor Extraction Units

1	What is the facility's maximum input capacity, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly:	Daily:	Annually:
b	Proposed	Hourly: 15,480 scf¹	Daily: 371,520 scf¹	Annually: 1.36 x 10⁸ scf¹
2	What is the facility's maximum production rate, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly:	Daily:	Annually:
b	Proposed	Hourly: 15,480 scf¹	Daily: 371,520 scf¹	Annually: 1.36 x 10⁸ scf¹

¹Values are based on maximum capacity of soil vapor extraction system to extract 129 scfm of soil pore-gas for treatment from each of 2 units 24 hour/day, 365 days per year.

Section 1-D: Facility Location Information – Soil Vapor Extraction Units

1	Section: 36	Range: 6E	Township: 19N	County: Los Alamos	Elevation (ft): 6690
2	UTM Zone: <input type="checkbox"/> 12 or <input checked="" type="checkbox"/> 13			Datum: <input type="checkbox"/> NAD 27 <input checked="" type="checkbox"/> NAD 83 <input type="checkbox"/> WGS 84	
a	UTM E (in meters, to nearest 10 meters): 386940			UTM N (in meters, to nearest 10 meters): 3966490	
b	AND Latitude (deg., min., sec.): 35 50 10			Longitude (deg., min., sec.): 106 15 7	
3	Name and zip code of nearest New Mexico town: White Rock, NM				
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): Turn west at intersection of State Road 4 and Pajarito Road. Proceed 3 miles to Mesita del Buey Road. Note Pajarito Road is not open to the public.				
5	The facility is 1.9 (distance) miles west (direction) of White Rock, NM (nearest town).				
6	Status of land at facility (check one): <input type="checkbox"/> Private <input type="checkbox"/> Indian/Pueblo <input type="checkbox"/> Federal BLM <input type="checkbox"/> Federal Forest Service <input checked="" type="checkbox"/> Other Federal Department of Energy				
7	List all municipalities, Indian tribes, and counties within a ten (10) mile radius (20.2.72.203.B.2 NMAC) of the property on which the facility is proposed to be constructed or operated: Los Alamos County, Sandoval County, Santa Fe County, Rio Arriba County, City of Espanola, San Ildefonso Pueblo, Santa Clara Pueblo, Jemez Pueblo, Pojoaque Pueblo, Cochiti Pueblo				
8	20.2.72 NMAC applications only: Will the property on which the facility is proposed to be constructed or operated be closer than 50 km (31 miles) to other states, Bernalillo County, or a Class I area (see www.nmenv.state.nm.us/aqb/modeling/classIareas.html)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (20.2.72.206.A.7 NMAC) If yes, list all with corresponding distances in kilometers: 6.3 km from Bandelier Wilderness Area				
9	Name nearest Class I area: Bandelier Wilderness Area (the wilderness portion of Bandelier National Monument)				
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): 6.3 km				
11	Distance (meters) from the perimeter of the Area of Operations (AO is defined as the plant site inclusive of all disturbed lands, including mining overburden removal areas) to nearest residence, school or occupied structure: N/A				
12	Method(s) used to delineate the Restricted Area: N/A "Restricted Area" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area.				
13	Does the owner/operator intend to operate this source as a portable stationary source as defined in 20.2.72.7.X NMAC? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No A portable stationary source is not a mobile source, such as an automobile, but a source that can be installed permanently at one location or that can be re-installed at various locations, such as a hot mix asphalt plant that is moved to different job sites.				
14	Will this facility operate in conjunction with other air regulated parties on the same property? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, what is the name and permit number (if known) of the other facility?				

Section 1-E: Proposed Operating Schedule - Soil Vapor Extraction Units

1	Facility maximum operating ($\frac{\text{hours}}{\text{day}}$): 24	($\frac{\text{days}}{\text{week}}$): 7	($\frac{\text{weeks}}{\text{year}}$): 52	($\frac{\text{hours}}{\text{year}}$): 8760
2	Facility's maximum daily operating schedule (if less than 24 $\frac{\text{hours}}{\text{day}}$)? Start:	<input type="checkbox"/> AM <input type="checkbox"/> PM	End:	<input type="checkbox"/> AM <input type="checkbox"/> PM
3	Month and year of anticipated start of construction: September 2014			
4	Month and year of anticipated construction completion: September 2014			
5	Month and year of anticipated startup of new or modified facility: September 2014			
6	Will this facility operate at this site for more than one year? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			

Table 2-B: Insignificant Activities¹ (20.2.70 NMAC) OR Exempted Equipment (20.2.72 NMAC)

All 20.2.70 NMAC (Title V) applications must list all Insignificant Activities in this table. All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 6, Calculations. Equipment and activities exempted under 20.2.72.202 NMAC may not necessarily be Insignificant under 20.2.70 NMAC (and vice versa). Unit & stack numbering must be consistent throughout the application package. Per Exemptions Policy 02-012.00 (see http://www.nmenv.state.nm.us/aqb/permit/aqb_pol.html), 20.2.72.202.B NMAC Exemptions do not apply, but 20.2.72.202.A NMAC exemptions do apply to NOI facilities under 20.2.73 NMAC. List 20.2.72.301.D.4 NMAC Auxiliary Equipment for Streamline applications in Table 2-A. The List of Insignificant Activities (for TV) can be found online at <http://www.nmenv.state.nm.us/aqb/forms/InsignificantListTitleV.pdf>. TV sources may elect to enter both TV Insignificant Activities and Part 72 Exemptions on this form.

Unit Number	Source Description	Manufacturer	Model No.	Max Capacity	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5)	Date of Manufacture /Reconstruction ²	For Each Piece of Equipment, Check One
			Serial No.	Capacity Units	Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Installation /Construction ²	
TA-54-SVE-East	Soil Vapor Extraction	Catalytic Combustion Corporation	4L	129	N/A - Minor VOC only source	2010	<input type="checkbox"/> Existing (unchanged) <input type="checkbox"/> To be Removed <input checked="" type="checkbox"/> New/Additional <input type="checkbox"/> Replacement Unit <input type="checkbox"/> To Be Modified <input type="checkbox"/> To be Replaced
			0408-B10945	SCFM	N/A	Sep-14	
TA-54-SVE-West	Soil Vapor Extraction	Catalytic Combustion Corporation	4L	129	N/A - Minor VOC only source	TBD	<input type="checkbox"/> Existing (unchanged) <input type="checkbox"/> To be Removed <input checked="" type="checkbox"/> New/Additional <input type="checkbox"/> Replacement Unit <input type="checkbox"/> To Be Modified <input type="checkbox"/> To be Replaced
			TBD	SCFM	N/A	TBD	
							<input type="checkbox"/> Existing (unchanged) <input type="checkbox"/> To be Removed <input type="checkbox"/> New/Additional <input type="checkbox"/> Replacement Unit <input type="checkbox"/> To Be Modified <input type="checkbox"/> To be Replaced
							<input type="checkbox"/> Existing (unchanged) <input type="checkbox"/> To be Removed <input type="checkbox"/> New/Additional <input type="checkbox"/> Replacement Unit <input type="checkbox"/> To Be Modified <input type="checkbox"/> To be Replaced
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							<input type="checkbox"/> Existing (unchanged) <input type="checkbox"/> To be Removed <input type="checkbox"/> New/Additional <input type="checkbox"/> Replacement Unit <input type="checkbox"/> To Be Modified <input type="checkbox"/> To be Replaced

¹ Insignificant activities exempted due to size or production rate are defined in 20.2.70.300.D.6, 20.2.70.7.Q NMAC, and the NMED/A reported, unless specifically requested.

² Specify date(s) required to determine regulatory applicability.

Hourly Emission Estimates TA-54 MDA L Soil Vapor Extraction

Input Parameters

Maximum capacity SVE	129 scfm	Each SVE unit
Conversion factors	1 pound	453.6 g
	1 cubic foot	0.02832 cu meter

Maximum Emissions, lb/hr

CAS #	Analyte	Maximum Pore-Gas Conc. (µg/m ³)	Maximum Pore-Gas Conc. (grams/m ³)	Maximum Pore-Gas Conc. (lb/ft ³)	SVE East (lb/hr)	SVE West (lb/hr)	Total for 2 Systems (lbs/hr)	HAP	TAP	VOC
71-43-2	Benzene	3300	3.30E-03	2.06E-07	1.59E-03	1.59E-03	0.003	x		x
71-36-3	Butanol[1-]	1,700	1.70E-03	1.06E-07	8.22E-04	8.22E-04	0.002		x	x
56-23-5	Carbon Tetrachloride	13,000	1.30E-02	8.12E-07	6.28E-03	6.28E-03	0.013	x		x
108-90-7	Chlorobenzene	1,400	1.40E-03	8.74E-08	6.77E-04	6.77E-04	0.001	x		x
67-63-3	Chloroform	120,000	1.20E-01	7.49E-06	5.80E-02	5.80E-02	0.116	x		x
110-82-7	Cyclohexane	39,000	3.90E-02	2.43E-06	1.88E-02	1.88E-02	0.038		x	x
75-34-3	Dichloroethane[1,1-]	71,000	7.10E-02	4.43E-08	3.43E-02	3.43E-02	0.069	x		x
107-06-2	Dichloroethane[1,2-]	600,000	6.00E-01	3.75E-05	2.90E-01	2.90E-01	0.580	x		x
75-35-4	Dichloroethene[1,1-]	69,000	6.90E-02	4.31E-06	3.33E-02	3.33E-02	0.067	x		x
156-60-5	Dichloroethene[trans-1,2-]	1,800	1.80E-03	1.12E-07	8.70E-04	8.70E-04	0.002		x	x
78-87-5	Dichloropropane[1,2-]	280,000	2.80E-01	1.75E-05	1.35E-01	1.35E-01	0.271	x	x	x
123-91-1	Dioxane[1,4-]	11,000	1.10E-02	6.87E-07	5.32E-03	5.32E-03	0.011	x		x
64-17-5	Ethanol	8,300	8.30E-03	5.18E-07	4.01E-03	4.01E-03	0.008			x
100-41-4	Ethylbenzene	5,000	5.00E-03	3.12E-07	2.42E-03	2.42E-03	0.005	x		x
622-96-8	Ethyltoluene(4-)	13,000	1.30E-02	8.12E-07	6.28E-03	6.28E-03	0.013			x
110-54-3	Hexane	9700	9.70E-03	6.06E-07	4.69E-03	4.69E-03	0.009	x		x
1634-04-4	Methyl tert-Butyl Ether	1,000	1.00E-03	6.24E-08	4.83E-04	4.83E-04	0.001	x		x
75-09-2	Methylene chloride	150,000	1.50E-01	9.37E-06	7.25E-02	7.25E-02	0.145	x		
142-82-5	n-Heptane	4,300	4.30E-03	2.68E-07	2.08E-03	2.08E-03	0.004			x
115-07-1	Propylene	74	7.40E-05	4.62E-09	3.58E-05	3.58E-05	0.000			x
12-71-84	Tetrachloroethene	760,000	7.60E-01	4.74E-05	3.67E-01	3.67E-01	0.735	x		
109-99-9	Tetrahydrofuran	44,000	4.40E-02	2.75E-06	2.13E-02	2.13E-02	0.043			x
108-88-3	Toluene	17,000	1.70E-02	1.06E-06	8.22E-03	8.22E-03	0.016	x		x
71-55-6	Trichloroethane[1,1,1-]	2,800,000	2.80E+00	1.75E-04	1.35E+00	1.35E+00	2.706	x		
79-005	Trichloroethane[1,1,2-]	2,100	2.10E-03	1.31E-07	1.01E-03	1.01E-03	0.002	x		x
79-01-6	Trichloroethene	1,500,000	1.50E+00	9.37E-05	7.25E-01	7.25E-01	1.450	x		x
95-63-6	Trimethylbenzene[1,2,4-]	16,000	1.60E-02	9.99E-07	7.73E-03	7.73E-03	0.015		x	x
108-67-8	Trimethylbenzene[1,3,5-]	5,300	5.30E-03	3.31E-07	2.56E-03	2.56E-03	0.005		x	x
75-01-4	Vinyl Chloride	800	8.00E-04	4.99E-08	3.87E-04	3.87E-04	0.001	x		
95-47-6	Xylene[1,2-]	11,000	1.10E-02	6.87E-07	5.32E-03	5.32E-03	0.011	x		x
108-38-3										
108-42-3	Xylene[1,3-]+xylene[1,4-]	33,000	3.30E-02	2.06E-06	1.59E-02	1.59E-02	0.032	x		x
Total HAPs + VOCs					3.19	3.19	6.37			
Total VOCs only					1.39	1.39	2.79			
Total HAPs only					3.12	3.12	6.24			

Notes

- 1 The maximum pore-gas concentration used is the highest value measured from any sample.
- 2 Pore-gas samples used are from vapor-monitoring boreholes closest to the two extraction wells for SVE use.
- 3 Data from the last full year of sampling (2011) is used. Vapor plume is at near steady-state conditions and sample data is representative of 2014 conditions.
- 4 Estimated emissions are conservative over-estimates. Pore-gas concentrations will lower during remediation. Pore-gas is mixed with air during the extraction process and concentrations in exhaust are lower than represented here.
- 5 All TAP lb/hr estimates are below permit threshold values in 20.2.72 NMAC.

Annual Emission Estimates TA-54 MDA L Soil Vapor Extraction

Input Data

Maximum capacity SVE unit	129 scfm
Conversion factors	
1 pound	453.6 g
1 cubic foot	0.02832 cu meter

Maximum Emissions, tpy, MDA L SVE West

CAS #	Analyte	Average Pore-Gas Conc. ($\mu\text{g}/\text{m}^3$)	Average Pore-Gas Conc. (grams/m^3)	Average Pore-Gas Conc. (lb/ft^3)	(lb/hr)	(ton/yr)	HAP	VOC
71-43-2	Benzene	727	7.27E-04	4.54E-08	3.51E-04	0.002	x	x
56-23-5	Carbon Tetrachloride	1,734	1.73E-03	1.08E-07	8.38E-04	0.004	x	x
108-90-7	Chlorobenzene	1,105	1.11E-03	6.90E-08	5.34E-04	0.002	x	x
67-63-3	Chloroform	6,820	6.82E-03	4.26E-07	3.30E-03	0.014	x	x
110-82-7	Cyclohexane	12,465	1.25E-02	7.78E-07	6.02E-03	0.026		x
75-34-3	Dichloroethane[1,1-]	19,603	1.96E-02	1.22E-06	9.47E-03	0.041	x	x
107-06-2	Dichloroethane[1,2-]	107,167	1.07E-01	6.69E-06	5.18E-02	0.227	x	x
75-35-4	Dichloroethene[1,1-]	12,525	1.25E-02	7.82E-07	6.05E-03	0.027	x	x
78-87-5	Dichloropropane[1,2-]	1,971	1.97E-03	1.23E-07	9.52E-04	0.004	x	x
123-91-1	Dioxane[1,4-]	ND	ND	ND	ND	ND	x	x
100-41-4	Ethylbenzene	ND	ND	ND	ND	ND	x	x
110-54-3	Hexane	1125	1.13E-03	7.02E-08	5.44E-04	0.002	x	x
1634-04-4	Methyl tert-Butyl Ether	ND	ND	ND	ND	ND	x	x
75-09-2	Methylene chloride	6,571	6.57E-03	4.10E-07	3.18E-03	0.014	x	
12-71-84	Tetrachloroethene	84,165	8.42E-02	5.25E-06	4.07E-02	0.178	x	
109-99-9	Tetrahydrofuran	610	6.10E-04	3.81E-08	2.95E-04	0.001		x
108-88-3	Toluene	ND	ND	ND	ND	ND	x	x
71-55-6	Trichloroethane[1,1,1-]	661,984	6.62E-01	4.13E-05	3.20E-01	1.401	x	
79-005	Trichloroethane[1,1,2-]	1,900	1.90E-03	1.19E-07	9.18E-04	0.004	x	x
79-01-6	Trichloroethene	368,082	3.68E-01	2.30E-05	1.78E-01	0.779	x	x
75-01-4	Vinyl Chloride	ND	ND	ND	ND	ND	x	x
95-47-6	Xylene[1,2-]	ND	ND	ND	ND	ND	x	x
108-38-3 106-42-3	Xylene[1,3-]+xylene[1,4-]	ND	ND	ND	ND	ND	x	x

Total HAPs + VOCs 2.73
Total VOCs only 1.13
Total HAPs only 2.70

Maximum Emissions, tpy, MDA L SVE East

CAS #	Analyte	Average Pore-Gas Conc. ($\mu\text{g}/\text{m}^3$)	Average Pore-Gas Conc. (grams/m ³)	Average Pore-Gas Conc (lb/ft ³)	(lb/hr)	(ton/yr)	HAP	VOC
71-43-2	Benzene	1301	1.30E-03	8.12E-08	6.29E-04	0.003	x	x
56-23-5	Carbon Tetrachloride	4,714	4.71E-03	2.94E-07	2.28E-03	0.010	x	x
108-90-7	Chlorobenzene	1,233	1.23E-03	7.70E-08	5.96E-04	0.003	x	x
67-63-3	Chloroform	32,256	3.23E-02	2.01E-06	1.56E-02	0.068	x	x
110-82-7	Cyclohexane	29,500	2.95E-02	1.84E-06	1.43E-02	0.062		x
75-34-3	Dichloroethane[1,1-]	25,155	2.52E-02	1.57E-06	1.22E-02	0.053	x	x
107-06-2	Dichloroethane[1,2-]	81,297	8.13E-02	5.08E-06	3.93E-02	0.172	x	x
75-35-4	Dichloroethene[1,1-]	36,595	3.66E-02	2.28E-06	1.77E-02	0.077	x	x
156-60-5	Dichloroethene[trans-1,2-]	1,033	1.03E-03	6.45E-08	4.99E-04	0.002		x
78-87-5	Dichloropropane[1,2-]	94,987	9.50E-02	5.93E-06	4.59E-02	0.201	x	x
123-91-1	Dioxane[1,4-]	7225	7.23E-03	4.51E-07	3.49E-03	0.015	x	x
64-17-5	Ethanol	1000	1.00E-03	6.24E-08	4.83E-04	0.002		x
100-41-4	Ethylbenzene	1,100	1.10E-03	6.87E-08	5.32E-04	0.002	x	x
622-96-8	Ethyltoluene(4-)	6,700	6.70E-03	4.18E-07	3.24E-03	0.014		x
110-54-3	Hexane	1,387	1.39E-03	8.66E-08	6.70E-04	0.003	x	x
1634-04-4	Methyl tert-Butyl Ether	840	8.40E-04	5.24E-08	4.06E-04	0.002	x	x
75-09-2	Methylene chloride	35,974	3.60E-02	2.25E-06	1.74E-02	0.076	x	
12-71-84	Tetrachloroethene	52,877	5.29E-02	3.30E-06	2.56E-02	0.112	x	
109-99-9	Tetrahydrofuran	10,879	1.09E-02	6.79E-07	5.26E-03	0.023		x
108-88-3	Toluene	2,214	2.21E-03	1.38E-07	1.07E-03	0.005	x	x
71-55-6	Trichloroethane[1,1,1-]	1,081,458	1.08E+00	6.75E-05	5.23E-01	2.289	x	
79-005	Trichloroethane[1,1,2-]	1,500	1.50E-03	9.37E-08	7.25E-04	0.003	x	x
79-01-6	Trichloroethene	318,060	3.18E-01	1.99E-05	1.54E-01	0.673	x	x
95-63-6	Trimethylbenzene[1,2,4-]	10,000	1.00E-02	6.24E-07	4.83E-03	0.021		x
108-67-8	Trimethylbenzene[1,3,5-]	2,800	2.80E-03	1.75E-07	1.35E-03	0.006		x
75-01-4	Vinyl Chloride	ND	ND	ND	ND	ND	x	x
95-47-6	Xylene[1,2-]	1,940	1.94E-03	1.21E-07	9.37E-04	0.004	x	x
108-38-3 106-42-3	Xylene[1,3-]+xylene[1,4-]	2,754	2.75E-03	1.72E-07	1.33E-03	0.006	x	x

Total HAPs + VOCs 3.91
 Total VOCs only 1.43
 Total HAPs only 3.78

Maximum Emissions, tpy, MDA L SVE East and SVE West Totals

Totals (tpy)	
HAPs + VOCs	6.64
VOCs only	2.57
HAPS only	6.48

Notes

- 1 The annual average pore-gas concentration is used to estimate annual emissions.
- 2 Pore-gas samples used are from vapor-monitoring boreholes closest to each extraction well for SVE use.
- 3 Data from the last full year of sampling (2011) is used. Vapor plume is at near steady-state conditions and sample data is representative of 2014 conditions.
- 4 Estimated emissions are conservative over-estimates. Pore-gas concentrations will lower during remediation. Pore-gas is mixed with air during the extraction process and concentrations in exhaust are lower than represented here.
- 5 All TAP lb/hr estimates are below permit threshold values in 20.2.72 NMAC.

Section 3

Application Summary

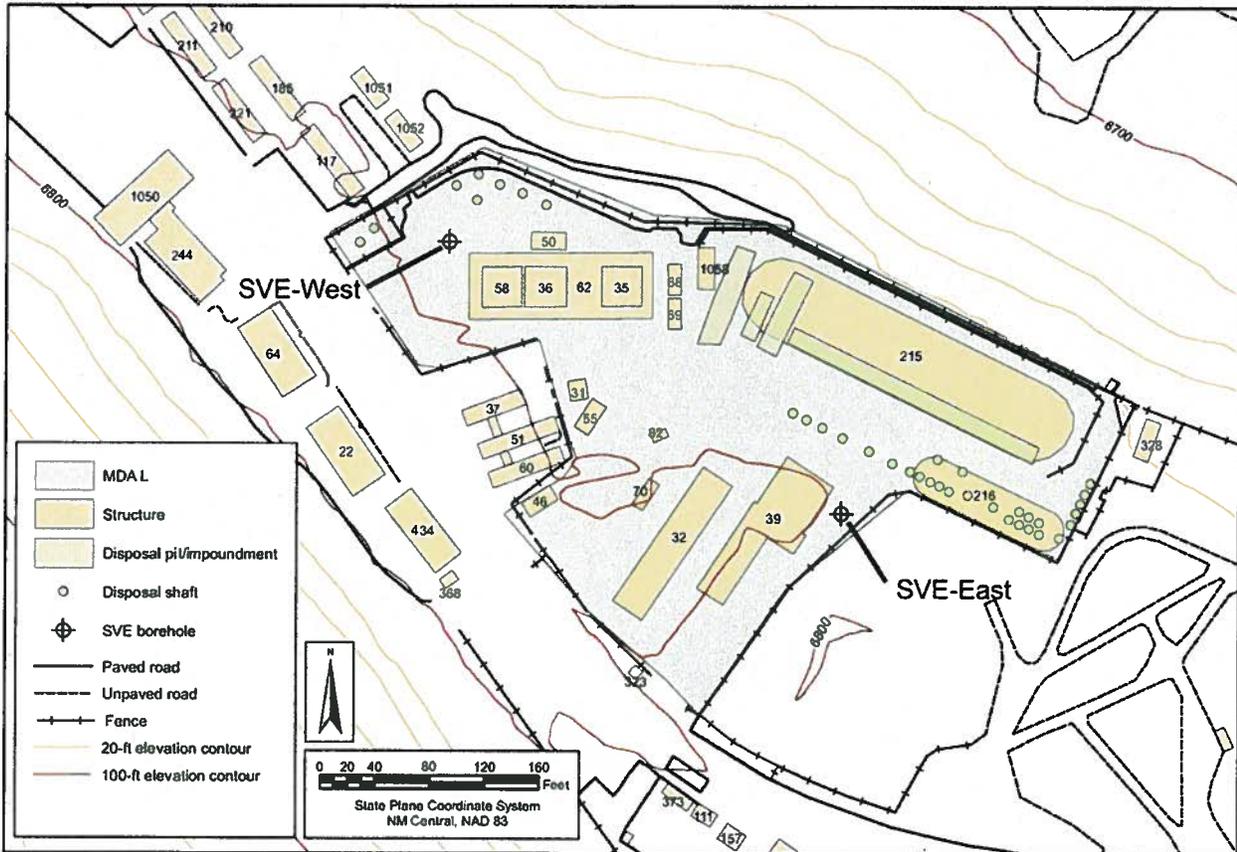
The **Application Summary** shall include a brief description of the facility and its process, the type of permit application, the applicable regulation (i.e. 20.2.72.200.A.X, or 20.2.73 NMAC) under which the application is being submitted, and any air quality permit numbers associated with this site. If this facility is to be collocated with another facility, provide details of the other facility including permit number(s). In case of a revision or modification to a facility, provide the lowest level regulatory citation (i.e. 20.2.72.219.B.1.d NMAC) under which the revision or modification is being requested. Also describe the proposed changes from the original permit, how the proposed modification will effect the facility's operations and emissions, de-bottlenecking impacts, and changes to the facility's major/minor status (both PSD & Title V).

Routine or predictable emissions during Startup, Shutdown, and Maintenance (SSM): Provide an overview of how SSM emissions are accounted for in this application. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.nmenv.state.nm.us/aqb/permit/app_form.html) for more detailed instructions on SSM emissions.

LANL used Material Disposal Area (MDA) L from the early 1960s until 1985 as the designated disposal area for non-radiological, containerized and uncontainerized liquid chemical wastes, including chlorinated solvents. Located at Technical Area (TA) 54, MDA L consists of an elongated pit, three impoundments and 34 shafts. Area L is the asphalted area atop MDA L and is currently used for RCRA-permitted chemical waste storage and treatment, and for mixed waste storage under interim status authority. 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 RCRA Phase I characterization of MDA L. Ongoing monitoring of the hydrocarbon plume is done by soil pore-gas sampling and has been conducted for many years. Concentrations of most hydrocarbons within the pore gas are less than 1 ppmv but several exceed 1,000 ppmv near the intended source areas.

A soil vapor extraction (SVE) system has been selected as a RCRA interim measure for in situ remediation of the volatile contaminants in the vadose zone (unsaturated) soils. This is intended to assure the contaminant plume will not increase 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 to collection and potential treatment aboveground before being exhausted to the air. This technology can be implemented with minimum site disturbance and standard off-the-shelf equipment aboveground.

Two extraction wells will be utilized to collect and contain organic soil vapors. The wells are designated MDA L SVE East and MDA L SVE West. A plot plan is attached. LANL intends to install two identical SVE systems with one at each well. The systems are manufactured by the Catalytic Combustion Corporation and are designated Model 4L. A diagram of the system is attached. For air permit purposes, the maximum capacity of the exhaust fan is used in conjunction with soil pore-gas measurement to estimate maximum emissions. As shown on the diagram, the fan capacity is rated at 129 scfm.



SVE locations within TA-54 MDA L



**CATALYTIC COMBUSTION CORPORATION
OWNER'S MANUAL**

Model 4L SVE with Heat Exchanger

**Customer
Catalytic Combustion Corporation
Rental #131**

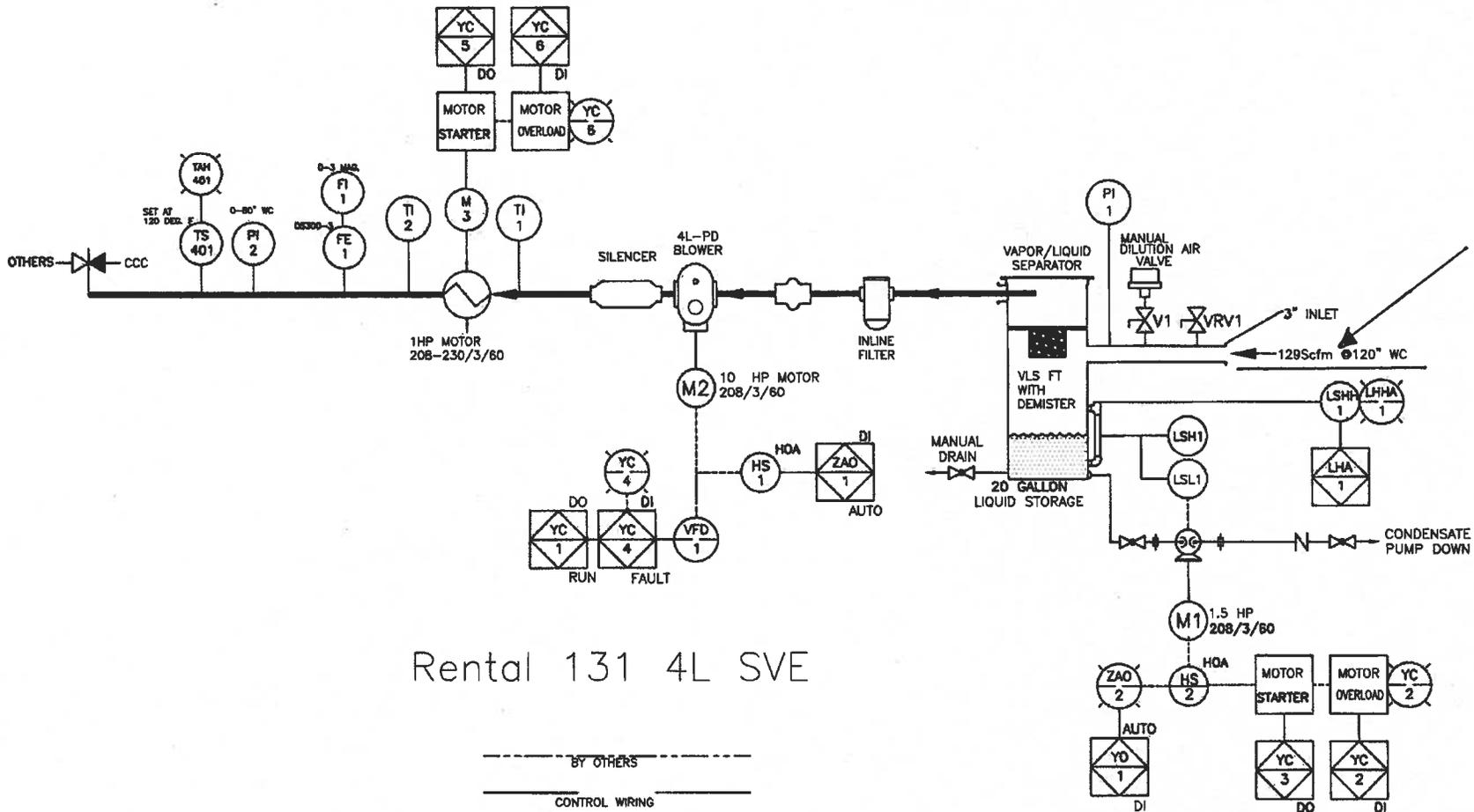
CCC Project No. WO12460

READ THIS MANUAL
for important safety, installation, operation
and maintenance instructions.
Keep this manual with the unit
at all times.

Issued: May, 2010

**Catalytic Combustion Corporation
709 21st Avenue
Bloomer, WI 54724**

**Phone: (715) 568-2882
Fax: (715) 568-2884**



REV	DESCRIPTION	DATE	BY	DRAWING STATUS	DATE	BY	MAT'L	WEIGHT	TOLERANCES	INCH [mm]	DATE:	CUSTOMER:
A	ADDED HEAT EXCHANGER & TS401	4/29/10	DDH	PRELIMINARY	.	.	SEE BDM				4/29/10	CATALYTIC COMBUSTION CORPORATION
B	CHANGED INLET VACUUM AND FLOW	5/4/10	DDH	FOR APPROVAL	.	.	N/A				NTS	RENTAL 131
.				APPROVED FOR FAB	.	.					DDH	TITLE: 4L SVE PACKAGE W/ HX PROCESS & INSTRUMENTATION DIAGRAM
.				AS BUILT	.	.					CHECKED BY:	PROJECT/PRODUCT
.				AS FIELD MODIFIED	.	.					CB	DRAWING
											WD12460	REV
											500	SIZE
											B	
											B	



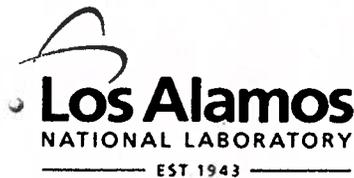
CATALYTIC COMBUSTION

Catalytic Combustion Corporation
 709 - 21st Avenue
 Bloomer, WI 54724

Telephone: 715-368-2882
 Fax: 715-368-2884
www.catalyticcombustion.com

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Environmental Protection Division
Environmental Compliance Programs (ENV-CP)
PO Box 1663, K490
Los Alamos, New Mexico 87545
(505) 667-0666

Date: APR 30 2014
Symbol: ENV-DO-14-0098
LAUR: 14-22478

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: No Permit Required Determination – TA 54 MDA L Soil Vapor Extraction

Los Alamos National Laboratory (LANL) is requesting review and approval of this No Permit Required (NPR) determination. LANL intends to install and operate two (2) soil vapor extraction systems to remediate hydrocarbon vapors in soil surrounding a legacy waste disposal site. This site is located within Technical Area (TA) 54 and is designated Material Disposal Area (MDA) L. We have evaluated in a conservative manner maximum air emissions which could be emitted from this operation, and determined an air quality construction or New Source Review (NSR) permit is not required under 20.2.72 NMAC – Construction Permits. This letter summarizes our determination. All required permit application forms for an NPR request are included in the attached enclosure.

LANL used MDA L from the early 1960s until 1985 as the designated disposal area for non-radiological, 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 RCRA Phase I characterization of MDA L. Ongoing monitoring of the hydrocarbon plume is done by soil pore-gas sampling and has been conducted for many years. Concentrations of most hydrocarbons within the pore gas are less than 1 ppmv but several exceed 1,000 ppmv near the intended extraction wells.

A soil vapor extraction (SVE) system has been selected as a RCRA interim measure for in situ remediation of the volatile contaminants in the vadose zone (unsaturated) soils. This is intended to assure the contaminant plume will not increase 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 to collection and potential treatment aboveground before being exhausted to the air. This technology can be implemented with minimum site disturbance and standard off-the-shelf equipment

