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Air Quality Bureau
Response Letter

February 26, 2015

Joni Arends
Executive Director
Concerned Citizens for Nuclear Safety (CCNS)
P.O. Box 31147
Santa Fe, NM 87594-1147
Sent Via Email to: jarends@nuclearactive.org

Dr. Maureen Merritt
1012 Summerlin Falls Court
Wilmington, NC 28412
Sent Via Email to: abovepar33@gmail.com

Kathy Sanchez, Environmental Health and Justice Program Manager and
Gathering for Mother Earth
Tewa Women United (TWU)
P. O. Box 397
Santa Cruz, NM 87567
Sent Via Email to: kathy@tewawomenunited.org

SUBJECT: Response to comments and questions received on February 2, 2015 regarding the Draft-Proposed Los Alamos National Laboratory Title V Air Quality Operating Permit No. P100-R2

Dear Ms. Arends, Dr. Merritt, and Ms. Sanchez:

On February 2, 2015, the New Mexico Environment Department (Department) – Air Quality Bureau (AQB) received your second set of comments and questions regarding the Draft-Proposed Title V Air Quality Operating Permit No. P100-R2, for the Los Alamos National Laboratory (LANL). We understand your concerns and sincerely hope that the conference call held on February 24 and this written response will explain the limits of our regulatory authority under the Clean Air Act (CAA), answer any questions about the soil vapor extraction (SVE) units at MDA-L, and address the other concerns in your February 2, 2015 letter.

The following lists the questions and comments from the February 2, 2015 letter (attached) and provides the Department's responses. Please note that although your comments were not numbered in your February 2, 2015 letter, we have numbered them below so that they may be more accurately referenced (when required) in the discussion that follows. In addition, we partitioned some longer comments into segments in order to respond to each point separately.

- 1. Comments:** Request for Public Hearing. We begin by stating there is substantial public interest in this permit and we have requested that a public hearing be held. In the event that the commenters, your agency and LANL cannot negotiate final terms of the permit -- there is substantial public interest sufficient to warrant a public hearing -- and we specifically request that a public hearing be held to address our outstanding concerns detailed in this letter and our January 18, 2015 comments.

Department Response: The Air Quality Bureau (AQB) has referred your request for a public hearing to the Department Secretary's Office.

- 2. Comments:** Environmental Justice. We note that NMED did not respond to our environmental justice comments referencing five local, regional and international Women Declarations. We provided the comments to demonstrate the on-going environmental justice issues associated with the permit and the on-going issues and concerns for the permitted and unpermitted emissions from LANL and how protection of the most vulnerable, including women and children, are the priority.

Governor Bill Richardson signed the *New Mexico Environmental Justice Executive Order 2205-056*, on November 18, 2005. NMED states the following on its website:

The State of New Mexico is committed to affording all New Mexicans, including people of color and low-income communities, fair treatment and meaningful opportunities for involvement in the development, implementation and enforcement of environmental laws and regulations regardless of race, creed, color, national origin, gender, disability, religious or political affiliation, income or educational level.
<http://www.nmenv.state.nm.us/NMED/EJ/index.html>, accessed on 2/2/15.

Department Response: We did review the entire January 18, 2015 document, including the five summaries of "some of the Declarations of Indigenous Women" starting on page 3. We thank you for this information and apologize for not acknowledging that this information was provided. We understood that the information was to summarize what you consider to be the environmental justice aspects for this Title V permit.

The above excerpt copied from your comments is from the State of New Mexico's November 18, 2005 Executive Order 2005-06 (EO 2005-06) on environmental justice. For this application, we sent public notice to 17 Pueblos and Tribes including San Ildefonso Pueblo, published the public notice in a newspaper, posted the public notice on our website,

and in addition, provided public notification by electronic mail to WildEarth Guardians, the Eight Northern Indian Pueblo Council, Concerned Citizens for Nuclear Safety, the Director of Environmental and Cultural Preservation for San Ildefonso and the Embudo Valley Environmental Monitoring Group. We have also placed the draft-proposed permit and your comments on our website at this address:

<http://www.nmenv.state.nm.us/aqb/permit/ApplicationsPermitswithPublicInterest.htm>

- 3. Comments:** As requested below, we ask the Department to review several no permit required determinations with the Department's environmental justice lens. The 50-mile radius of LANL contains the highest number of minority and low-income peoples of any of the Department of Energy (DOE) sites in the U.S. *See* Final Site-Wide Environmental Impact Statement for Continued Operation of Los Alamos National Laboratory, Los Alamos, New Mexico, DOE/EIS-0380, May 2008, Fig. 4-33 on p. 474 and Fig. 4-34 on p. 476 at <http://energy.gov/sites/prod/files/EIS-0380-FEIS-01-2008.pdf>.

Department Response: Your comments request that we review no permit required (NPR) determinations with the Department's environmental justice lens.

NPR determinations are not used to determine if a piece of equipment is subject to the Title V permit. Instead it is used to determine if a minor construction permit is required according to regulation 20.2.72 NMAC (weblink to that regulation [CONSTRUCTION PERMITS](#)). If a piece of equipment or activity is "Title V Insignificant" it is exempt from the Title V permit (see the attached Title V Insignificant Activity List and Title V Trivial Activity List). The Title V Insignificant and Trivial Activity lists were subject to public notification and EPA approval according to 20.2.70.401.A NMAC. As required by regulation, LANL reported all Title V Insignificant Activities in the permit application.

Reviewing each NPR request with an environmental justice lens would not change the Title V permit requirements for the equipment since the EO 2005-06 does not provide the Department with additional regulatory authority over and above what is allowed or required by the Title V regulation 20.2.70 NMAC.

- 4. Comments:** Further, the Environmental Protection Agency (EPA) requires analysis of the cumulative effects of operations to minority and low-income populations from polluting facilities. LANL has taken the approach of keeping its emissions below the threshold for a "major" source classification. We believe with the emissions from the facilities described meet the requirements for inclusion in the Title V permit.

Response: We reviewed EPA's environmental justice initiative for Title V permits in their Plan EJ 2014 and could find no regulatory requirement or any guidance for completing a cumulative effects analysis for a Title V permit application (please see section II. Title V, starting on page 17 of Plan EJ 2014). This is the weblink for that document accessed on 2-10-15: <http://www.epa.gov/compliance/ej/resources/policy/plan-ej-2014/ej-legal-tools.pdf>.

Based on our review, NMED believes that the emissions from the facilities described in the Title V permit include all sources regulated under the Title V regulations.

Additionally, it should be noted that by taking the approach of keeping its emissions below the threshold for a “major” source classification, LANL reduces its environmental impact on surrounding populations.

5. **Comments:** Exceedances of Facility-Wide Allowable Emissions. In our review of the draft permit, however, we find that for three source categories in Table 106.A, the total emissions significantly exceed the limits established in Table 106.B for the facility-wide allowable emissions. The three categories are:

<u>Emission</u>	<u>Table 106.B Facility-Wide Allowable Emissions</u>	<u>Table 106.A Allowable Emissions Per Source Category</u>	<u>Percentage Increase Above Allowable Emissions</u>
NOx tons per year (tpy)	245.0	286.65	17%
CO tpy	225.0	285.50	27%
TSP tpy	120.0	164.30	37%

We request that the Department explain how the exceedances are allowed under a permit with minor source threshold limits.

Department Response: LANL has agreed to a lower allowable emission limit of 50 tpy for NOx, VOC and TSP, and 30 tpy for CO in Table 106.A for the Asphalt Production (A600) category. This results in the totals for the allowable emissions for the source categories in Table 106.A to be lower than the Facility Wide totals in Table 106.B.

6. **Comments:** Unpermitted Emissions. We remain concerned about the unpermitted emissions are not included in the Title V draft permit. We believe that if the unpermitted emissions were included in the Title V permit, they would push LANL into the major source category. We cite three examples below. The first example is the recent April 30, 2014 approval by the Department of the LANL request for no permit required determination for the Technical Area 54 (TA-54), Material Disposal Area L (MDA L) Soil Vapor Extraction (SVE) System. See LA-UR-14-22478, ENV-DO-14-0098. We learned about this following the January 25, 2015 *Santa Fe New Mexican* article, entitled “LANL vents toxic ground vapors, raising air quality concerns.”

Department Response: First, we need to clarify the three different ways that a facility can be a ‘Major Source’.

- a. LANL is an existing ‘major source’ under the Title V regulation since their potential to emit a single pollutant such as NOx, is over 100 tons per year (tpy). The Title V definition of Major Source is found at 20.2.70.7.R NMAC (weblink to that regulation:

OPERATING PERMITS).

- b. The facility limits in the Title V permit in Table 106.B are to prevent LANL from being a ‘PSD Major Source’ as defined at 20.2.74.7.AG NMAC (weblink to that regulation: [PERMITS - PREVENTION OF SIGNIFICANT DETERIORATION \(PSD\)](#)). PSD stands for Prevention of Significant Deterioration and is a pre-construction permit regulation. For LANL to be PSD major, the stack air emissions for a single pollutant, such as NO_x, must be 250 tpy or more. LANL’s Title V permit limits their emissions so that they stay below the PSD major source threshold.
- c. Finally, the individual and total Hazardous Air Pollutant (HAP) limits in Table 106.B of the permit are to prevent LANL from being a major source of HAP emissions as defined at 40 CFR §63.2 (weblink to that regulation: [40 CFR §63.2 DEFINITIONS](#)). For LANL to be a major source of HAP emissions, they would have to emit 10 tons per year (tpy) or more of an individual HAP, or 25 tpy or more of total HAPs. LANL’s Title V permit limits their emissions so that they stay below the HAP major source threshold.

For 2012, LANL reported actual HAPs emissions of 7.2 tpy for Total HAPs and 2.0 tpy as the highest emission rate for an individual HAP. These were the highest rates of HAPs emissions reported between 2008 and 2012. These emission rates include emissions from all combustion sources and from all chemical usage, regardless if the equipment is Title V Insignificant or not.

Additionally, LANL has provided updated emissions calculations for the three NPRs, which are discussed further below. The potential HAP emissions from the three NPRs in question are not significant enough to result in LANL becoming a major source of HAP emissions.

Based on our review, NMED believes that the emissions from the facilities described in the Title V permit include all sources regulated under the Title V regulations.

- 7. Comments:** The Permittees’ application contains egregious mathematical addition errors that may result in LANL further exceeding the Table 102.B for the “Total Potential Hazardous Air Pollutants (HAPs) that exceed 1.0 tons per year” limits of 8.0 tpy for individual HAPs and an annual limit of 24.0 tons.

Soil Vapor Extraction at MDA L. For example, in the “Annual Emission Estimates T-54 MDA L Soil Vapor Extraction” worksheet, the Permittees state the Total HAPs + VOCs are 2.73 tpy (1.13 tpy VOCs + 2.70 tpy HAPs). Our addition reveals a total of 3.83 tpy.

Further, in the “Maximum Emissions, tpy, MDA L SVE East” worksheet, the Permittees state the Total HAPs + VOCs are 3.91 tpy (1.43 tpy VOCs + 3.78 tpy 3.78 HAPs). Our addition reveals 5.21 tpy.

Finally, in the “Maximum Emissions, tpy, MDA L SVE East and SVE West Totals, the Permittees state the Total HAPs + VOCs are 6.64 tpy (2.57 tpy VOCs + 6.48 tpy HAPs).

Our addition finds 9.04 tpy, which may exceed the Individual HAP limit.

Based on LANL's application, we find a 36% increase in the estimate maximum emissions (6.64 tpy v. 9.04 tpy) from the MDA L SVE unit.

These egregious errors lead us to request that NMED conduct further investigation into the Permittees' application. We find sloppy addition, which may be indicative of serious, fundamental errors in the application. We request that NMED pull the draft Title V permit until such investigation is finalized. We further request that the investigation report is provided in a timely manner to the public for review and comment.

Department Response: We have re-reviewed the NPR application for MDA-L SVEs and find no mathematical errors. The reason that there is confusion regarding these totals is that some HAPs are also VOCs and so are already accounted for in the VOC total. Therefore, adding the total VOCs to the total HAPs double counts the HAPs that are already included in the VOC total. If you look at the 2 far right columns in the LANL calculation tables, you will see an X marked for each HAP and an X marked for each VOC. For example, all of the pollutants are included in the VOC total except for Methylene Chloride, Tetrachlorethene, and Trichloroethane[1,1,1] which are not VOCs as defined by regulation at 40 CFR 51.100(s)(1). All of the pollutants are included in the HAPs total except for Cyclohexane and Tetrahydrofuran which are not hazardous air pollutants (HAPs) as defined in the Clean Air Act (CAA) Section 112(b)(1). For your information here is the weblink to the list of EPA's HAPs: <http://www.epa.gov/ttn/atw/orig189.html>

LANL provided updated emissions calculations for the MDA-L SVEs in an email to the Department dated February 4, 2015 (attached). The updated calculations estimate maximum HAP emissions that are significantly lower than those referenced above.

The updated calculations also demonstrate that this activity is Title V Insignificant and thus is not subject to the Title V permit.

Regardless, the Title V permit will include two conditions for the SVE system. The first will require LANL to provide an analysis demonstrating that the SVE system is Title V Insignificant. The SVE system is periodically sampled and equipped with in-stack monitors that measure the emissions from the system. The second condition will require reporting of the SVE emissions in future Title V semi-annual emission reports.

8. **Comments:** Further, with respect to MDA L SVE No Permit Required Determination, the Department did not require carbon filtration for the system. As noted in the *Recommendation for Interim Measure for Volatile Organic Constituent Contaminant Source Removal in MDA-L and MDA-G*, Recommendation No. 2010-05 of the Northern New Mexico Citizens' Advisory Board (NNMCAB), an activated carbon filtration was required on ground surface for the SVE demonstration project. http://www.nnmcab.energy.gov/recommendations/2010_Recs/NNMCAB_Recommendation_2010-05.pdf.

Department Response: The AQB's regulatory authority comes from the Clean Air Act (CAA) and the air permit regulations used to implement the CAA. The Department determined that no construction permit was required since the construction regulation, 20.2.72 NMAC, does not require a permit for VOC and HAP only sources.

Under Title V, our authority to require any type of controls for this SVE system would come from EPA regulations called National Emission Standards for Hazardous Air Pollutants (NESHAP) found in the code of federal regulations (CFR) at 40 CFR 63 or 40 CFR 61 or under EPA's New Source Performance Standards (NSPS) found at 40 CFR 60. We have reviewed those regulations and do not find any NESHAP or NSPS regulations that apply to the SVE system and that would impose control requirements, including carbon filtration.

The AQB is not provided any authority to regulate air emissions for the SVE system under the Department of Energy's (DOE) responses to NNM CAB's recommendations, under the hazardous waste regulations, or under the 2005 Consent Order.

- 9. Comments:** Moreover, the Permittees make reference to the activated carbon filtration demonstration test in their analysis, but do not specifically describe that the data is from a SVE with carbon filtration. That data masks the unmitigated VOC emissions now allowed by the Department through the no permit required determination. The Permittees do not describe how the carbon filtration data compares to the assumed data from unfiltered releases in the computer models. In fact, Permittees used the exhaust data to match flow-rate versus pressure drop and concentrations in the exhaust gas.

Obviously, that would not work for unmitigated, unfiltered emissions from the SVE. We quote the Permittees' application:

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 the 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. [Emphasis added.]

Department Response: LANL provided updated emissions calculations for the MDA-L SVEs in an email to the Department dated February 4, 2015 (attached). The updated calculations are not based on the use of activated carbon filtration. In addition, the Title V permit will include conditions that require the reporting of actual emissions to verify once again that it is Title V Insignificant. See response to item 7 above.

10. Comments: Permittees' April 30, 2014 letter to NMED re: No Permit Required Determination – TA-54 MDA L Soil Vapor Extraction, ENV-DO-14-0098, LA-UR-14-22478.

The NNM CAB Recommendation states:

This short-term pilot test demonstrated the efficiency of removing several hundred pounds of VOC contaminants from the ground in about three weeks. Such a removal of the VOC contaminant source material from MDA-L is consistent with good practice prior to constructing the final remedy at MDA-L.

During the three-week test, several hundred pounds of VOC contaminants were captured. This is much more than the estimated one ton per year estimated by the Permittees in their application to the Department for a no permit required determination, based on unfiltered releases. We respectfully request that the Department explain their reasoning for granting the determination to Permittees last April.

Department Response: See response to item 7 above.

11. Comments: Further, the NNM CAB states:

The intent of this recommendation is to remove large volumes of liquid waste VOCs from the ground and to prevent these contaminants from moving into the groundwater or to the atmosphere.

The Under the Department's determination, hundreds, if not thousands, of pounds of VOCs are being disposed in the atmosphere to the detriment of those living downwind and downstream of LANL in the Rio Grande Watershed, including the Bandelier National Monument, a Class 1 Clean Air Act Designated Area. Those emissions are being distributed into the environment, not captured to protect public health and the environment.

Department Response: See response to item 7 above.

As stated previously, the AQB is given no authority under the NNM CAB, under the hazardous waste regulations, or under the 2005 Consent Decree to regulate the SVE system.

12. Comments: Further, we have questions about the MDA L SVE project to determine whether the operations should, in fact, be covered by the Title V permit. They are:

1. What is the aboveground treatment process once the vapors are extracted? Is it a carbon adsorption method or a combination of several methods? If so, what are they?

Department Response: According to the NPR request, there is no aboveground treatment process for the extracted vapors.

2. What are LANL's end points for satisfactory completion of SVE remediation? Please provide numbers.

Department Response: The SVE remediation is regulated by the Hazardous Waste Bureau (HWB), not the Air Quality Bureau. Therefore, we contacted Dave Cobrain with HWB who stated that the remediation clean up levels have not yet been determined since the final remedy has not yet been determined.

3. Is the MDA-L-SVE unit being used as an interim measure? If so, then what is the final process to be used?

Department Response: According to Dave Cobrain with the HWB, the final remedy has not yet been determined.

4. The Permit request characterizes TCA (1,1,1, trichloroethane) as not a VOC and therefore HAP. But TCA is a VOC, just exempted from reporting per EPA NESHAP regulations. Is this the regulator loophole that allows LANL to release literally tons of toxic material into the air annually without special permits?

Department Response: The EPA defines VOCs at 40 CFR 51.100(s)(1) and TCA is not a VOC under that air regulation. The definition of a VOC is reproduced here in relevant part, "...*Volatile organic compounds (VOC)* means any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions.

(1) This includes any such organic compound *other than the following (emphasis added)*, which have been determined to have negligible photochemical reactivity: methane; ethane; methylene chloride (dichloromethane); 1,1,1-trichloroethane (methyl chloroform);"

TCA is a HAP under the CAA regulations. The weblink for the list of regulated air quality HAPs is: <http://www.epa.gov/ttn/atw/orig189.html>

5. **Comments:** TCA is estimated to be 70% of the total plume mass. It is considered a "possible carcinogen" per EPA, OSHA and NIOSH. TCA does have liver and

kidney toxicity leading to organ failure via acute or chronic exposure over time.

Department Response: Please see our response to number 6 below.

6. **Comments:** What are the regulated maximum worker and public exposure limits from the three agencies (EPA, OSHA and NIOSH)?

Department Response: The EPA does not have a single ambient air quality standard for TCA. Rather than a single numerical standard, the EPA regulates HAPs such as TCA, through regulations in 40 CFR 63 that are specific to a type of equipment rather than to a pollutant.

The AQB does not implement or enforce the OSHA regulations. Therefore, we asked the Department's Occupational Health and Safety Bureau (OHSB) for this information. They determined that the OSHA permissible exposure limit (PEL) is 350 parts per million (ppm) as an 8-hr weighted average and the NIOSH recommended exposure limit (REL) for TCA is 350 parts per million (ppm) [15 minutes]. This information is found in the CDC NIOSH Pocket Guide to Chemical Hazards. Our OHSB would use the PEL level to enforce worker safety.

7. **Comments:** What analysis did the Department do to analyze the physics supporting the SVE? Did the analysis include the flow, rate, soil type, moisture content, composition of gases, liquids, etc., all of which influence the end result.

Department Response: The original emission estimates from the SVE systems were based on the soil pore gas sample concentrations which listed all constituents, or the composition of the sample. Since subsurface soil pore gas sample concentrations and maximum rated blower capacity (flow rate) were used to estimate the emissions from the above ground SVE stack, there was no reason to consider the soil type, or moisture content to verify the emission rates. Please note, as discussed previously, the emissions estimates were revised as discussed in item 7 above.

13. **Comments:** SET and MES. The requested investigation should include a review of other Department no permit required determinations, including the Solar Evaporative Tanks (SET) at TA-52 and the Mechanical Evaporator System (MES) located at TA-50, Bldg. 250.

The Department approved the no permit required determination for the MES on September 20, 2010 by the Department. Given the egregious mathematical errors in the MDA L SVE application, we request that the Department review the application for the MES. The MES is described as:

The effluent evaporator is constructed of 316 stainless steel, and has approximate dimensions of 17' x 9' x 10' (L x W x H). The evaporator is equipped with two natural-gas burners with low-NO_x controls, a 6000- CFM blower, a heat exchanger, and a stack mist eliminator. It has a capacity of 4.5

million BTU per hour. The evaporator and its components are protected within a weather-resistant housing identified as Building 50- 250, which is located about 20 feet east of Room 34B of Building 50-01.

From the treated water storage tanks in Room 34B, water is pumped into a reservoir (capacity of ~ 1700 gallons) at the evaporator. Water in the reservoir is heated to boiling, and leaves via the stack as a vapor.

Evaporation lowers the water level in the reservoir, and triggers a call for more water to be automatically fed to the reservoir. Either or both burners can be used to heat the water.

“Radioactive Liquid Waste Treatment Facility Discharges in 2011,” by J.C. Del Signore, March 2012, LA-UR-12-21423, p. 9 of 9.

It is difficult to believe that the MES emissions are not covered by the Title V permit.

Department Response: LANL provided updated emissions calculations for the Thermal Evaporator (MES) in an email to the Department dated February 12, 2015 (attached). Based on this information we have verified that this equipment is Title V Insignificant and so is not subject to the Title V permit.

LANL provided updated emissions calculations for the Solar Evaporator (SET) in an email to the Department dated February 25, 2015 (attached). Based on this information we have verified that this equipment is Title V Insignificant and so is not subject to the Title V permit regulations.

14. Comments: Beryllium. We respectfully request that all beryllium operations be monitored and NMED require reporting for all beryllium operations.

Department Response: As stated in our January 26, 2015 response, the permit requires monitoring and reporting of all beryllium facilities at LANL in the semi-annual emissions reports, including the Sigma Facility (see Title V Permit Condition A707.B and D).

As certified by the LANL Responsible Official, the application reports all regulated beryllium facilities at LANL. No other sources, including fugitive sources of beryllium have been reported as either regulated sources in Table 2-A or as Title V insignificant activities in Table 2-B of the application.

15. Comments: We note that NMED did not respond to the CCNS May 18, 2012 letter to Judy Fisher, Enforcement Manager for the Air Quality Bureau regarding “Denial of enforcement action, failure to report on beryllium emissions from the Sigma Facility, per permit # P100R1 (AIRS no. 35-028-00001) issued August 7, 2009.”

Department Response: We apologize if we did not respond to CCNS’s second letter to Judy Fisher regarding reporting of beryllium emissions from the Sigma Facility. As stated in her first letter, the permit did not require reporting for the Sigma facility. Reporting emissions semi-annually and including Title V Insignificant equipment in the emissions inventory is unique to the LANL permit. Very few, if any other Title V permits require this. The regulation that stipulates emissions reporting for Title V facilities, 20.2.73.300.B and C NMAC, only requires annual reporting of particulate matter, ammonia, sulfur oxides, nitrogen oxides, carbon monoxide, VOCs, lead, and if requested HAPs. It also does not require that emissions from Title V Insignificant activities be reported.

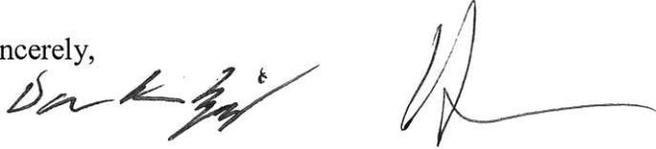
16. Comments: Permit Condition A707.D. We respectfully request that the Department require that any request for a “date of initial startup of each new or modified source” be posted to the Permittees’ Electronic Public Reading Room at <http://epr.lanl.gov/oppie/service>. Posting permit deliverables is a requirement under the NMED Hazardous Waste Permit for LANL. See Permit Conditions 1.10 and 1.10.1.

http://www.nmenv.state.nm.us/HWB/documents/Parts_1_through_11.pdf

Department Response: The Hazardous Waste Permit does not provide the AQB with the authority to require LANL to post these documents on the Permittees Electronic Public Reading Room. However, we forwarded your request to LANL and they have agreed to include a condition in the Title V permit to require that initial startup notifications be posted on the Public Reading Room website.

Thank you for your interest and comments on this Title V Draft-Proposed permit. If there are questions, please do not hesitate to contact either Daren Zigich or Cember Hardison.

Sincerely,

Two handwritten signatures in black ink. The first signature on the left is for Daren K. Zigich, and the second signature on the right is for Cember L. Hardison.

Daren K. Zigich, P.E.
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Cember L. Hardison
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Attachments: Title V Insignificant Activity List and Trivial Activity List
MDA-L SVE Emissions Calculations dated February 4, 2015
MES Emissions Calculations dated February 12, 2015
SET Emissions Calculations dated February 25, 2015

cc: Bill Blankenship, LANL via email: bblankenship@lanl.gov
Randy Pitre, US EPA Region-6 via email: Pitre.Randy@epamail.epa.gov

New Mexico Environment Department (NMED) Air Quality Bureau (aqb)
Operating Permit Program
List of Insignificant Activities
March 24, 2005

Insignificant activities are those activities, which are listed herein by the Environment Department and approved by the Administrator of the US Environmental Protection Agency as insignificant on the basis of size, emissions or production rate. Any activity for which applicable requirements apply, is not insignificant, regardless of whether the activity meets the criteria listed below.

Operating permit applications submitted under 20.2.70 NMAC for sources, which include any of the following emissions units, operations or activities must provide the information required for emissions units under Subsection D.6 of 20.2.70.300 NMAC:

- 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.
- 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).
2. Surface coating of equipment, including spray painting and roll coating, for sources with facility-wide total clean-up solvent and coating actual emissions of less than two (2) tons per year.
3. Fuel burning equipment which uses gaseous fuel, has a design rate less than or equal to five (5) million BTU per hour, and is used solely for heating buildings for personal comfort or for producing hot water for personal use.
4. Fuel burning equipment which uses distillate oil, has a design rate less than or equal to one (1) million BTU per hour, and is used solely for heating buildings for personal comfort or for producing hot water for personal use.
5. Any emissions unit, operation, or activity that handles or stores a liquid with a vapor pressure less than 10 mm Hg or in quantities less than 500 gallons.

6. Portable engines and portable turbines that have a design capacity (based on sea level specifications) or a physically derated capacity less than or equal to:

- 200 HP engine if fueled by diesel or natural gas;
- 500 HP engine if fueled by gasoline;
- 650 HP engine if fueled by JP-4 or JP-8;
- 1,500 HP turbine if fueled by natural gas.

A certification of physical engine deration must accompany the portable source and be kept by the Operator or Owner. Physical deration is a result of equipment design, such as combining an engine with a compressor that has an rpm limit. Physical deration is not a result of environmental conditions such as altitude or temperature.

OR

Portable engines, portable turbines, or fixed and portable emergency generators for which the Operator or Owner can adequately demonstrate through actual test data (using EPA approved methods) or manufacturer emissions data that at maximum sea level horsepower the units produce no more than 25 tons per year nitrogen oxides (NO_x). In such a case, the documentary information is to be kept with the portable engine, portable turbine, or fixed and portable emergency generator.

To be classified as emergency, a generator's sole function is to provide electrical power when power from the local utilities is interrupted.

OR

Portable Aerospace Ground Equipment (such as power generators, compressors, heaters, air conditioners, lighting units) in direct support of aircraft operations on or in the immediate vicinity of an airfield.

To be classified as portable, the engine must comply with the definition of portable source in 20.2.70 NMAC.

7. Emergency generators which on a temporary basis replaces equipment used in normal operation, and which either has an allowable emission rate or potential to emit for each fee pollutant that is equal to or less than the equipment replaced, or which does not operate for a period exceeding 500 hours per calendar year. (revised 3/4/05)

8. Emissions from fuel storage and dispensing equipment operated solely for company-owned, company-leased or company-rented vehicles, which have a capacity of less than 25,000 gallons.

Title V Operating Permit

Insignificant Activities

MDA L Soil Vapor Extraction Units

Activity Summary

LANL Environmental Programs, Corrective Actions Program (EP-CAP) is implementing a soil vapor extraction system (SVE) at MDA L in TA-54 to remediate soil vapors occurring from past disposal of waste drums and debris. The SVE system has been selected as a RCRA interim measure with approval by the NMED-Hazardous Waste Bureau 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 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 to collection and potential treatment aboveground before being exhausted to the air. 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. This activity was described in a No Permit Required (NPR) application submitted to NMED on April 30, 2014 and approved on May 29, 2014.

There are no applicable requirements – EPA or NMED air regulations – which apply to this operation. Thus, the operation is defined as a Title V insignificant activity if potential emissions are below specific thresholds in the NMED Title V Operating Permit List of Insignificant Activities.

Potential to Emit

The NPR application provided two estimates of PTE for the pollutants emitted.

The higher estimates were based on worst-case assumptions regarding contaminant concentrations in soil pore gas. This included the assumption that the current pore-gas concentrations would not diminish over time due to operation of the SVE system but remain constant over an entire year. This does not reflect correctly how the system will operate and lower current soil pore-gas concentrations. The intent of this estimate was to demonstrate an air permit under 20.2.72 NMAC would not be required.

The second estimate provided is more realistic and was developed by LANL's EP-CAP using a three-dimensional multiphase numerical model developed specifically for MDA L. 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 organic compound removal, the model was run from 2010 to 2014 assuming both SVE boreholes are pumped at maximum capacity for one year. Given that TCA is close to 60-70% of the total plume mass, a conservative estimate of total organic emissions from the SVE units for the first year of operation is approximately 1 ton at 900 kg per year.

Using the projected annual emissions from the site-scale model, the potential to emit was estimated for each compound present by assuming conservatively 100% of all organic emissions which are not TCA will be the maximum value for each remaining compound. Using this approach, the annual TCA emission is estimated to be 0.59 tons per year. Each additional compound is estimated to be emitted less than 0.4 tons per year. These emission rates were then compared to the NMED Title V Operating Permit List of Insignificant Activities criteria in 1.a and 1.b. Each compound will be emitted at maximum capacity below the corresponding annual emission rate which defines an insignificant activity.

Conclusion

Emission rates assuming continuous operation of both SVE units are below insignificant activity thresholds. Importantly, the NMED NPR approval requires LANL to report emissions from the SVE units in the Title V semi-annual emission reports. The SVE units will be continuously monitored for key compounds such as TCA, and other contaminants will be measured using Summa canisters and subsequent analysis. LANL will use this data to verify the emission rates in this review. This data will also be reported in future Title V semi-annual emission reports.

MDA L SVE Units Emission Estimate for Title V Insignificant Activity

Air Pollutants and Designations

	VOC	HAP	112r	TAP
71-43-2 Benzene	x	x	no	no
71-36-3 Butanol[1-]	x	no	no	x
56-23-5 Carbon Tetrachloride	x	x	no	no
108-90-7 Chlorobenzene	x	x	no	no
67-63-3 Chloroform	x	x	no	no
110-82-7 Cyclohexane	x	no	no	x
75-34-3 Dichloroethane[1,1-]	x	x	no	no
107-06-2 Dichloroethane[1,2-]	x	x	x	no
75-35-4 Dichloroethene[1,1-]	x	x	no	no
156-60-5 Dichloroethene[trans-1,2-]	x	no	no	x
78-87-5 Dichloropropane[1,2-]	x	x	no	no
123-91-1 Dioxane[1,4-]	x	x	no	no
64-17-5 Ethanol	x	no	no	no
100-41-4 Ethylbenzene	x	x	no	no
622-96-8 Ethyltoluene(4-)	x	no	no	no
110-54-3 Hexane	x	x	no	no
142-82-5 n-Heptane	x	no	no	no
1634-04-4 Methyl tert-Butyl Ether	x	x	no	no
75-09-2 Methylene chloride	no	x	no	no
115-07-1 Propylene	x	no	no	no
12-71-84 Tetrachloroethene	no	x	no	no
109-99-9 Tetrahydrofuran	x	no	no	no
108-88-3 Toluene	x	x	no	no
71-55-6 Trichloroethane[1,1,1-]	no	x	no	no
79-00-5 Trichloroethane[1,1,2-]	x	x	no	no
79-01-6 Trichloroethene	x	x	no	no
95-63-6 Trimethylbenzene[1,2,4-]	x	no	no	x
108-67-8 Trimethylbenzene[1,3,5-]	x	no	no	x
75-01-4 Vinyl Chloride	x	x	x	no
95-47-6 Xylene[1,2-]	x	x	no	no
108-38-3 1 Xylene[1,3-]+xylene[1,4-]	x	x	no	no

Notes

1 Pollutants listed are each compound detected in bore hole sampling and used in the hourly and annual emission estimates within the April 30, 2014 20.2.72 NMAC No Permit Required application.

Potential to Emit

Basis	900 kg/year total organic
	60 percent TCA
	1188 lbs/year TCA
	0.59 tons/year TCA
	792 lbs/year all organics less TCA
	0.40 tons/year all organics less TCA

Notes

- 1 The total organic and TCA quantities are from the LANL EP site specific model used to predict the capability of the soil vapor extraction system at MDA L.

NMED Insignificant Activity 1.a

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.

	VOC	112r	TAP	1.a Threshold (tpy)	PTE (tpy)
71-36-3 Butanol[1-]	x	no	x	1	<0.40
110-82-7 Cyclohexane	x	no	x	1	<0.40
107-06-2 Dichloroethane[1,2-]	x	x	no	1	<0.40
156-60-5 Dichloroethene[trans-1,2-]	x	no	x	1	<0.40
64-17-5 Ethanol	x	no	no	1	<0.40
622-96-8 Ethyltoluene(4-)	x	no	no	1	<0.40
142-82-5 n-Heptane	x	no	no	1	<0.40
115-07-1 Propylene	x	no	no	1	<0.40
109-99-9 Tetrahydrofuran	x	no	no	1	<0.40
95-63-6 Trimethylbenzene[1,2,4-]	x	no	x	1	<0.40
108-67-8 Trimethylbenzene[1,3,5-]	x	no	x	1	<0.40
75-01-4 Vinyl Chloride	x	x	no	1	<0.40

NMED Insignificant Activity 1.b

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).

		HAP	EPA de minimis level (tpy)	1.b threshold (tpy)	PTE
71-43-2	Benzene	x	2	1	<0.40
56-23-5	Carbon Tetrachloride	x	1	1	<0.40
108-90-7	Chlorobenzene	x	10	1	<0.40
67-63-3	Chloroform	x	0.9	0.9	<0.40
75-34-3	Dichloroethane[1,1-]	x	1	1	<0.40
107-06-2	Dichloroethane[1,2-]	x	0.8	0.8	<0.40
75-35-4	Dichloroethene[1,1-]	x	0.4	0.4	<0.40
78-87-5	Dichloropropane[1,2-]	x	1	1	<0.40
123-91-1	Dioxane[1,4-]	x	6	1	<0.40
100-41-4	Ethylbenzene	x	10	1	<0.40
110-54-3	Hexane	x	10	1	<0.40
1634-04-4	Methyl tert-Butyl Ether	x	10	1	<0.40
75-09-2	Methylene chloride	x	10	1	<0.40
12-71-84	Tetrachloroethene	x	10	1	<0.40
108-88-3	Toluene	x	10	1	<0.40
71-55-6	Trichloroethane[1,1,1-]	x	10	1	0.59
79-00-5	Trichloroethane[1,1,2-]	x	1	1	<0.40
79-01-6	Trichloroethene	x	10	1	<0.40
75-01-4	Vinyl Chloride	x	0.2	0.2	<0.40
95-47-6	Xylene[1,2-]	x	10	1	<0.40
108-38-3	1 Xylene[1,3-]+xylene[1,4-]	x	10	1	<0.40

Notes

- 1 In the NPR application, vinyl chloride was not present in the bore hole samples selected as appropriate to estimate annual ton per year emissions. For annual emission estimates, the average pore-gas concentration from four quarterly sampling events in 2011 from boreholes within a 150 foot radius of influence of extractions wells were used. For estimating maximum hourly emission rates, the maximum pore-gase concentrations used were the highest values measured from any bore hole in proximity to the SVE site. Using the hourly value from the application (0.001 lb/hr) yields an annual PTE of 0.004 tons per year. Emission monitoring will verify an annual emission below the applicable threshold of 0.2 tons per year.
- 2 The EPA document cited in Insignificant Activity 1.b was developed for the purpose of setting de minimis values to define a modification at a major HAP source to implement Section 112 (g) of the federal Clean Air Act. EPA subsequently decided to not develop this rule, but NMED has never revised this criteria.

Title V Operating Permit

Insignificant Activities

TA-50 Thermal Evaporation Unit

Activity Summary

LANL uses a gas-fired thermal evaporator to evaporate treated wastewater at the TA-50 Radioactive Liquid Waste Treatment Facility. LANL applied for a No Permit Required (NPR) determination regarding 20.2.72 NMAC permit requirements for this unit. The NPR application contains a full description of the activity. NMED issued in September 2010 NPR 2195-U determining a permit under 20.2.72 NMAC was not required.

Potential to Emit

As shown in the NPR application, assuming the evaporator operated at full capacity every hour of the year, all organic and metal emissions are several orders of magnitude below Title V insignificant activity thresholds. However, the NPR application indicated the potential to emit for NO_x and CO were 1.9 and 1.6 tons per year respectively. These emission estimates were based on AP-42 emission factors for a gas-fired boiler. As stated in the NPR application, those estimates took no credit for the installed low-NO_x burner or any deration for altitude. The AP-42 factor for a low-NO_x burner is 50% less than the factor used in the emission estimate.

For this Title V insignificant activity review, emission factors were obtained from the burner vendor to estimate emissions of criteria pollutants. Using the vendor factors, the potential to emit for NO_x and CO is 0.14 and 0.52 tons per year respectively. Without any altitude deration, the potential to emit values are 0.20 and 0.74 tons per year. All emission estimates are shown in the attachment.

There are no Title V applicable requirements which apply to the evaporator. The NMED List of Insignificant Activities does not have a categorical activity for an evaporator. In this case, the list criteria at 1.a and 1.b are applied. As shown on the attachment, all regulated pollutants are below the respective emission thresholds in 1.a and 1.b.

Conclusion

Potential to emit for each regulated pollutant are below Title V insignificant activity thresholds. The evaporation unit is an insignificant activity for Title V purposes.

ENCON Thermal Evaporator Emission Estimate for Title V Insignificant Activity

Basis

Fuel			
Natural gas			
Heat Content			1030 Btu/scf
Sulfur Content			2 grains/100 scf
ENCON Thermal Evaporator			
	Rated capacity heater		4.54 MMBtu/hr
	Altitude deration		30.00 %
	Heater capacity derated		3.18 MMBtu/hr
	Maximum fuel input		0.004 MMscf/hr
	Maximum evaporation rate		400 gallons/hr

Notes

- 1 Altitude deration specified by LANL Engineering Standards for a gas-fired heater.
- 2 Sulfur content of pipeline natural gas is 2 gr/100 scf as specified by PNM.

Criteria Pollutants

Emission Factors - lb/MMBtu

NOx	CO	SOx	PM	PM ₁₀	PM _{2.5}	VOC
0.01	0.037	0.0035	0.0048	0.0048	0.0048	0.025

Notes

- 1 All factors specified by vendor.
- 2 2 grain S = 33.8 ppm S/100 scf = 0.00338% S.

Potential to Emit - Heater

	NOx	CO	SOx	PM	PM ₁₀	PM _{2.5}	VOC
lb/hr	0.03	0.12	0.0113	0.02	0.02	0.02	0.08
ton/year	0.14	0.52	0.0494	0.07	0.07	0.07	0.35
	0.20	0.74	Ton per year without altitude deration				

Notes

- 1 Vendor emission factor is total hydrocarbon not VOC only.

Total VOC TPY Emissions - natural gas combustion plus process evaporation

Evaporative Max Conc (ppm)	lb/hr	tpy	Total tpy Both
5.46E-02	1.82E-04	7.98E-04	0.35

Notes

- 1 Evaporative VOC from maximum TTO (ppm) from 2007 RLWTF Annual Report.

Hazardous Air Pollutants

ENCON Thermal Evaporator - Combustion

HAP	Emission Factor lb/MMscf	Emission Estimate	
		lb/hr	tpy
Organics			
POM	8.82E-05	3.89E-07	1.70E-06
Benzene	2.10E-03	9.26E-06	4.06E-05
Dichlorobenzene	1.20E-03	5.29E-06	2.32E-05
Formaldehyde	7.50E-02	3.31E-04	1.45E-03
Hexane	1.80E+00	7.94E-03	3.48E-02
Naphthalene	6.10E-04	2.69E-06	1.18E-05
Toluene	3.40E-03	1.50E-05	6.57E-05
Metals			
Arsenic	2.00E-04	8.82E-07	3.86E-06
Beryllium	1.20E-05	5.29E-08	2.32E-07
Cadmium	1.10E-03	4.85E-06	2.13E-05
Chromium	1.40E-03	6.18E-06	2.71E-05
Cobalt	8.40E-05	3.71E-07	1.62E-06
Lead	5.00E-04	2.21E-06	9.66E-06
Manganese	3.80E-04	1.68E-06	7.34E-06
Mercury	2.60E-04	1.15E-06	5.02E-06
Nickel	2.10E-03	9.26E-06	4.06E-05
Selenium	2.40E-05	1.06E-07	4.64E-07
Total		8.33E-03	3.65E-02

Notes

- 1 All emission factors from AP-42, 7/98, Section 1.4-Natural Gas Combustion, Tables 1.4-2, 1.4-3, and 1.4-4.
- 2 Hourly values based on maximum hourly fuel capacity.
- 3 Annual ton/yr values based on operation of 8,760 hr/year

ENCON Thermal Evaporator - Evaporation Process

HAP	Max Conc (ppm)	lb/hr	tpy
Arsenic	3.00E-02	1.00E-04	4.38E-04
Beryllium	4.00E-03	1.33E-05	5.84E-05
Cyanide	3.00E-03	1.00E-05	4.38E-05
Lead	1.00E-02	3.34E-05	1.46E-04
Mercury	1.10E-04	3.67E-07	1.61E-06
Nickel	3.00E-02	1.00E-04	4.38E-04
Phosphorus	1.50E-01	5.00E-04	2.19E-03
Selenium	2.20E-03	7.34E-06	3.21E-05
Total		7.65E-04	3.35E-03

ENCON Thermal Evaporator - Combustion and Evaporation Total

HAP	lb/hr	tpy
	9.10E-03	3.98E-02

Toxic Air Pollutants

ENCON Thermal Evaporator

TAP	Combustion Emissions		Evaporative Emissions		Total lb/hr	TAP Threshold lb/hr
	EF lb/MMscf	lb/hr	Max Conc (ppm)	lb/hr		
Aluminum			5.40E-02	1.80E-04	1.80E-04	1.3E-01
Ammonia			10.1	3.37E-02	3.37E-02	1.2E+00
Barium	4.40E-03	1.94E-05	3.00E-03	1.00E-05	2.94E-05	3.3E-02
Copper	8.50E-04	3.75E-06	2.30E-02	7.67E-05	8.05E-05	6.7E-02
Fluoride			0.34	1.13E-03	1.13E-03	1.7E-01
Nickel	2.10E-03	9.26E-06	3.00E-02	1.00E-04	1.09E-04	6.7E-02
Selenium	2.40E-05	1.06E-07	2.20E-03	7.34E-06	7.45E-06	1.3E-02
Silver			4.00E-03	1.33E-05	1.33E-05	6.7E-04
Uranium			8.00E-03	2.67E-05	2.67E-05	1.3E-02

Notes

- 1 Evaporative emissions based on maximum concentration (ppm) from 2007 RLWTF Annual Report.
- 2 Evaporative emission (lb/hr) = max conc (ppm) x max flow rate (gal/hr) x 8.34 lb/gal (density water).
- 3 Combustion emission factors from AP-42, 7/98, Section 1.4-Natural Gas Combustion, Table 1.4-4.

NMED Insignificant Activity 1.a

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.

	112r	TAP	1.a Threshold (tpy)	PTE (tpy)
Nitrogen oxides	no	no	1.0	0.14
Carbon Monoxide	no	no	1.0	0.52
Sulfur Oxides	no	no	1.0	0.0494
Particulate Matter	no	no	1.0	0.07
VOC	no	no	1.0	0.35
Aluminum	no	yes	1.0	0.001
Ammonia	no	yes	1.0	0.15
Barium	no	yes	1.0	0.0001
Copper	no	yes	1.0	0.0004
Fluoride	no	yes	1.0	0.005
Nickel	no	yes	1.0	0.0005
Selenium	no	yes	1.0	0.00003
Silver	no	yes	1.0	0.0001
Uranium	no	yes	1.0	0.0001

NMED Insignificant Activity 1.b

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).

	HAP	EPA de minimis level (tpy)	1.b threshold (tpy)	PTE (tpy)
POM	x	0.01	0.01	0.000002
Benzene	x	2	1.0	0.00004
Dichlorobenzene	x	3	1.0	0.00002
Formaldehyde	x	2	1.0	0.001
Hexane	x	10	1.0	0.03
Naphthalene	x	10	1.0	0.00001
Toluene	x	10	1.0	0.00007
Arsenic	x	0.005	0.005	0.0004
Beryllium	x	0.008	0.008	0.0001
Cadmium	x	0.01	0.01	0.00002
Chromium	x	5	1.0	0.00003
Cobalt	x	0.1	0.1	0.000002
Lead	x	0.01	0.01	0.0002
Manganese	x	0.8	0.8	0.00001
Mercury	x	0.01	0.01	0.00001
Nickel	x	1	1.0	0.0005
Selenium	x	0.1	0.1	0.00003
Cyanide	x	5	1.0	0.00004
Phosphorous	x	0.1	0.1	0.002



Typical Flue Product Emissions Data for Power Flame Burners

	Natural Gas	# 2 Fuel Oil (1)
Carbon Monoxide - CO	.037 lb CO per 10 ⁶ BTU input (50 PPM)	.037 lb per 10 ⁶ BTU INPUT (50 PPM)
Sulfur Dioxide - SO ₂	(1.05) x (% Sulphur by weight in fuel) = lb SO ₂ per 10 ⁶ BTU Input	
Particulate Matter	.0048 lb PM per 10 ⁶ BTU input	.0143 lb PM per 10 ⁶ BTU input
Hydrocarbons	.025 lb HC's per 10 ⁶ BTU input	.038 lb HC's per 10 ⁶ BTU input
CO ₂	9 % to 10%	10% to 13%

Nitrogen Oxides - NO_x

Standard C, J Burners	.088 lb NO _x per 10 ⁶ BTU input (75 PPM)	.159 lb NO _x per 10 ⁶ BTU Input (120) PPM
LNIAC burner	.029 lb NO _x per 10 ⁶ BTU input (25 PPM)	.12 lb NO _x per 10 ⁶ BTU Input (90) PPM
CM burner	.070 lb NO _x per 10 ⁶ BTU input (60 PPM)	.146 lb NO _x per 10 ⁶ BTU Input (110) PPM
IFGR LNIC NO _x Burners	.029 lb NO _x per 10 ⁶ BTU input (25 PPM)	.126 lb NO _x per 10 ⁶ BTU Input (110) PPM
LNICM burner	.029 lb NO _x per 10 ⁶ BTU input (25) PPM	.12 lb NO _x per 10 ⁶ BTU Input (90) PPM
NPM Premix burner	.029 lb NO _x per 10 ⁶ BTU input (25) PPM	N/A
Nova Plus Burner	.010 lb NO _x per 10 ⁶ BTU input (9) PPM	N/A

ENCLOSURE
EVAPORATOR

(1) NO_x emissions at 3.0 % O₂ will vary based on the percent of fuel bound nitrogen and boiler configurations.

These emission rates are general estimates and do not constitute guarantees by Power Flame Inc.

In instances where guarantees are required, please consult the factory with the specific application information.

3.5 Gas-Fired Equipment

- A. Determine natural gas consumption (cfh) by dividing the Btu/h input rating at sea level by the gas heating value of 1000 Btu/ft³.⁵
-  B. Derate gas-fired heating units and atmospheric boilers catalog output rating by 30 percent.⁶
- C. Specify gas fired units that will be operating at 7500 feet altitude (see Chapter 1, Z1010 Constants, for altitude exceptions) so the manufacturer can factory install the correct gas orifices.
- D. For forced-draft boilers, consult with manufacturer for derating criteria.

3.6 Motors

- A. Refer to the Motors subsection below for deration and selection criteria.

4.0 CHEMICAL WATER TREATMENT

- A. Clean, flush, and chemically-treat process water in HVAC systems, e.g., steams, hot water, heating, cooling systems, etc. to address LANL's higher-than-neutral pH and silica scaling problems.
 - 1. Consult the ESM Mechanical POC for specific requirements, such as type of treatment system, chemicals, etc. *For existing facilities the LANL System Engineer will be consulted to determine preferred chemicals.*
- B. Provide biocide products that are registered with the EPA, with the registration number clearly shown on the drum.
- C. Chemical supplier personnel using biocide products shall have a New Mexico Department of Agriculture (NMDA) pesticide applicator license.
- D. Chemical formulations used in water treatment require LANL Water Quality Group (ENV-RCRA) approval.⁷
- E. Provide an emergency eyewash per OSHA 10CFR 1910.151 and 1450 if required after an evaluation/analysis by LANL IHS-IP. Consult IHS-IP Industrial Hygiene and Safety for additional emergency equipment requirements.
 - 1. *Guidance Note: Potable eye station may be acceptable in lieu of permanent.*

⁵ Per LANL Utilities & Infrastructure Group Gas Representative, "By contract, the gas supplier must furnish natural gas with a minimum heating value of 1,000 btu/ft³."

⁶ Carrier publication "Engineering Guide for Altitude Effects." (derate 4 percent for each 1,000 feet above sea level.) (EMref-9)

⁷ The LANL Water Quality Group (ENV-RCRA) is responsible for submittal of compliance data to the EPA and NMED as required for NPDES permits.

Sulfur Measurement Handbook



Sulfur Concentration Conversion Factors

Galvanic

1 Grain	= 0.0648 grams	
1cu ft.	= 28.316 liters	= 0.28316m ³
Molecular wt. H ₂ S	= 34.08	
Molecular wt. S	= 32.064	
1 gram mole gas	= 22.414 litres	@0°C & 14.75 PSI @-STP
1 gram mole gas	= 23.718 litres	@60° & 14.73 ST(commonSTP)
1 grain H ₂ S/100 SCF	= 22.88 mg/m ³	
1 grain H ₂ S/100 SCF	= 15.05 ppmv H ₂ S	@0°C & 14.75 PSI @ STP
1 grain H ₂ S/100 SCF	= 15.26 ppmv H ₂ S	@ 60°F & 14.73 PSI @STP
1 grain Sulf/100 SCF	= 15.99 ppmv/Sulfur	@ 0°C & 14.75 PSI @STP
1 grain Sulf/100 SCF	= 16.92 ppmv/ Sulfur	@ 60°F & 14.73 PSI @ STP
1 grain H ₂ S/100 SCF(Methane)	= 32 ppm wt./wt.	@ 0°C & 14.75 PSI @STP
1 grain H ₂ S/100 SCF(Methane)	= 33.9 ppm wt./wt.	@ 60°F & 14.73 PSI @ STP

Dow Gas Conditioning Fact Book

Multiply U.S.	By	To Obtain
Grains per Gallon	17.1	Parts per Million by weight
Grains H ₂ S per 100 SCF	0.001588	Mole percent H ₂ S
Grains H ₂ S per 100 SCF	1588 X 10 ⁻⁸	Mole Fraction
Grains H ₂ S per 100 SCF	15	ppm (w/v)
Mole Percent H ₂ S	615	Grains H ₂ S per 100 SCF

Conversion Factors Commonly used by pipeline transmission companies for H₂S in Natural Gas

ppm to mg/m ₃	multiply by 1.4331
mg/m ₃ to grains/100SCF	multiply by 0.0437
ppm to grains/100 SCF	multiply by 0.0626285
grains/100 SCF to mg/m ³	multiply by 22.88277
mg/m ³ to ppm	multiply by 0.69778
grains/100SCF to ppm	multiply by 15.967

Specification for Sulfur Levels

Tariff Limits - H₂S

TCPL	23mg/m ³ OR 1 grain/100 SCF/100 SCF OR 16 ppm
NOVA	23mg/m ³ OR 1 grain/100 SCF/100 SCF OR 16 ppm
TRANS GAS	6mg/m ³ OR .26grain/100 SCF OR 4.2 ppm

Tariff Limits - Total Sulfur

TCPL	460 mg/m ³ OR 20.1 grains or 321 ppm
NOVA	115 mg/m ³ OR 5.03 grains OR 80 ppm
TRANS GAS	23mg/m ³ OR 1.00 grains OR 16 ppm

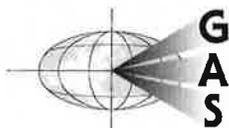
Total Sulfur Limits by Environment Canada

Gasoline	360 ppm,	Recommended interim measure as of January 1, 1997
	30 ppm by 2005	Canadian Environmental Protection Act, Registration SOR/97-110
Diesel	0.05 wt%	

Total Sulfur Limits by United States Environmental Protection Agency

Code of Federal Regulations, Title 40, Part 79, Section 79.55

Methane Base Fuel Specification	16 ppmv
Propane Base Fuel Specification	123 ppmw
Methanol Base Fuel Properties	40 ppmw
Ethanol Base Fuel Properties	40 ppmw
Gasoline Base Fuel Properties	339 ppmw
Diesel Base Fuel Properties	0.05 wt%



Potential to Emit for TA52 Solar Evaporation Tanks

Potential to Emit (PTE) - VOCs

VOCs	Max ¹ conc (mg/l)	Max Conc (lb/l)	Annual ² Evap rate (l/yr)	PTE (lb/yr)	PTE (ton/yr)
benzene	0.01	2.2E-08	5.0E+06	0.11	5.5E-05
PCBs	0.001	2.2E-09	5.0E+06	0.01	5.5E-06
toluene	0.75	1.7E-06	5.0E+06	8.27	4.1E-03
carbon tetrachloride	0.01	2.2E-08	5.0E+06	0.11	5.5E-05
1,2-Dichloroethane	0.01	2.2E-08	5.0E+06	0.11	5.5E-05
1,1-Dichloroethylene	0.005	1.1E-08	5.0E+06	0.06	2.8E-05
1,1,2-trichloroethylene	0.1	2.2E-07	5.0E+06	1.10	5.5E-04
ethylbenzene	0.75	1.7E-06	5.0E+06	8.27	4.1E-03
xylene	0.62	1.4E-06	5.0E+06	6.83	3.4E-03
chloroform	0.1	2.2E-07	5.0E+06	1.10	5.5E-04
1,1-dichloroethane	0.025	5.5E-08	5.0E+06	0.28	1.4E-04
ethylene dibromide	0.0001	2.2E-10	5.0E+06	0.00	5.5E-07
1,1,2-trichloroethane	0.01	2.2E-08	5.0E+06	0.11	5.5E-05
1,1,2,2-tetrachloroethane	0.01	2.2E-08	5.0E+06	0.11	5.5E-05
vinyl chloride	0.001	2.2E-09	5.0E+06	0.01	5.5E-06
naphthalene	0.03	6.6E-08	5.0E+06	0.33	1.7E-04
Total PTE VOCs				(ton/yr)	0.013

Potential to Emit (PTE) For HAPs

HAPs	Max ¹ conc (mg/l)	Max Conc (lb/l)	Annual ² Evap rate (l/yr)	PTE (lb/yr)	PTE (ton/yr)
arsenic	0.1	2.2E-07	5.0E+06	1.10	5.5E-04
cadmium	0.01	2.2E-08	5.0E+06	0.11	5.5E-05
chromium	0.05	1.1E-07	5.0E+06	0.55	2.8E-04
cyanide	0.2	4.4E-07	5.0E+06	2.20	1.1E-03
lead	0.05	1.1E-07	5.0E+06	0.55	2.8E-04
mercury	0.002	4.4E-09	5.0E+06	0.02	1.1E-05
selenium	0.05	1.1E-07	5.0E+06	0.55	2.8E-04
benzene	0.01	2.2E-08	5.0E+06	0.11	5.5E-05
PCBs	0.001	2.2E-09	5.0E+06	0.01	5.5E-06
toluene	0.75	1.7E-06	5.0E+06	8.27	4.1E-03
carbon tetrachloride	0.01	2.2E-08	5.0E+06	0.11	5.5E-05
1,2-Dichloroethane	0.01	2.2E-08	5.0E+06	0.11	5.5E-05
1,1-Dichloroethylene	0.005	1.1E-08	5.0E+06	0.06	2.8E-05
1,1,2,2-tetrachloroethylene	0.02	4.4E-08	5.0E+06	0.22	1.1E-04
1,1,2-trichloroethylene	0.1	2.2E-07	5.0E+06	1.10	5.5E-04
ethylbenzene	0.75	1.7E-06	5.0E+06	8.27	4.1E-03
xylene	0.62	1.4E-06	5.0E+06	6.83	3.4E-03
methylene chloride	0.1	2.2E-07	5.0E+06	1.10	5.5E-04
chloroform	0.1	2.2E-07	5.0E+06	1.10	5.5E-04
1,1-dichloroethane	0.025	5.5E-08	5.0E+06	0.28	1.4E-04
ethylene dibromide	0.0001	2.2E-10	5.0E+06	0.00	5.5E-07
1,1,1-trichloroethane	0.06	1.3E-07	5.0E+06	0.66	3.3E-04
vinyl chloride	0.001	2.2E-09	5.0E+06	0.01	5.5E-06
naphthalene	0.03	6.6E-08	5.0E+06	0.33	1.7E-04
manganese	0.2	4.4E-07	5.0E+06	2.20	1.1E-03
phenol	0.005	1.1E-08	5.0E+06	0.06	2.8E-05
cobalt	0.05	1.1E-07	5.0E+06	0.55	2.8E-04
nickel	0.2	4.4E-07	5.0E+06	2.20	1.1E-03
Total PTE HAPs				(ton/yr)	0.018

1. Treated effluent from RLWTF will not be discharged to tanks unless it meets Groundwater Standards specified under 20.6.2.3103 A. NMAC. Assume each pollutant is at its maximum allowable concentration.
2. ZLD design is based on evaporation of 5 million liters per year.