BOBBY JINDAL
GOVERNOR

HAROLD LEGGETT, PH.D.
SECRETARY

State of Louisiana

DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL SERVICES

June 2, 2008

Mr. John Williams
19815 NW Nestucca Dr.
Portland, OR 97229

RE: Notification of final permit actions.
Permit decisions, Basis for Decision and responses to significant comments regarding Red River Environmental Products, LLC, Activated Carbon Facility, Agency Interest (AI) No. 152139, Red River Parish.

Dear Sir:

Thank you for your interest in the referenced matter. The Louisiana Department of Environmental Quality (LDEQ) has received and considered all public comments submitted regarding these permit actions. Please be advised that the actions were approved as follows:

Air	Title V Air Operating Permit	No. 2420-00027-V0	Issued	05/28/08
Air	Prevention of Significant Deterioration (PSD) Permit	No. PSD-LA-727	Issued	05/28/08

The Basis for Decision and the public comment response summary are attached; they address significant public comments regarding these permit actions. The permits and related documents are available for review at the LDEQ Public Records Center, Room 127, 602 North 5th Street, Baton Rouge, Louisiana. Viewing hours are from 8:00 a.m. to 4:30 p.m. Monday – Friday (except holidays).

The documents are also available for review by accessing LDEQ's Electronic Document Management System (EDMS), the LDEQ's electronic repository of official records that have been created or received by LDEQ. Persons may search and retrieve documents stored in the EDMS via the LDEQ's web application at http://edms.deq.louisiana.gov/app/doc/querydef.aspx).

If you would like to obtain copies of these documents, you may request them from LDEQ Records Management at the North 5th Street location above, write Records Management at P.O. Box 4303, Baton Rouge, LA 70821-4303, or call (225) 219-3168. Your request will be processed pursuant to LDEQ procedures for public record requests, LAC 33:I.2301, *et seq.*, and a copy fee will be charged.

If you have any questions, please contact Sam Phillips of the Office of Environmental Services, Air Permits Division, at (225) 219-3114.

Sincerely,

Bryan D. Johnston
Administrator, Air Permits Division

Attachment

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL SERVICES
BASIS FOR DECISION
PART 70 OPERATING PERMIT NO. 2420-00027-V0
PREVENTION OF SIGNIFICANT DETERIORATION PERMIT NO. PSD-LA-727
AGENCY INTEREST (AI) NO. 152139
AC MANUFACTURING FACILITY
RED RIVER ENVIRONMENTAL PRODUCTS, LLC
ARMISTEAD, RED RIVER PARISH, LOUISIANA

The Louisiana Department of Environmental Quality (LDEQ), Office of Environmental Services, Air Permits Division, through this decision, issues to Red River Environmental Products, LLC a Part 70 (Title V) Operating Permit, Number 2420-00027-V0, and a Prevention of Significant Deterioration Permit, Number PSD-LA-727, for the AC Manufacturing Facility located in Armistead, Red River Parish, Louisiana.

For the AC Manufacturing Facility, the LDEQ finds that as a part of the "IT Requirements,"[1] adverse environmental impacts have been minimized or avoided to the maximum extent possible. Save Ourselves v. La. Envtl. Control Commission, 452 So. 2d 1152, 1157 (La. 1984). The LDEQ finds that the permit applications for Red River Environmental Products, LLC, AC Manufacturing Facility, comply with all applicable federal and state statutes and regulations and have otherwise minimized or avoided the environmental impacts to the maximum extent possible. Additionally, the LDEQ finds that Red River Environmental Products, LLC met the alternative projects, alternative sites, and mitigation measures requirements of Save Ourselves. Id. at 1157.

After the LDEQ determined that adverse environmental impacts had been minimized or avoided to the maximum extent possible, it balanced social and economic factors with environmental impacts. Notably, the Louisiana constitution does not establish environmental protection as an exclusive goal, but instead, requires a balancing process in which environmental costs and benefits must be given full and careful consideration along with economic, social, and other factors. Id. Accordingly, the LDEQ finds that the social and economic benefits of the proposed project will outweigh greatly its adverse environmental impacts.

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[1] The "IT Requirements" or "IT Questions" are five requirements [see Save Ourselves v. Envtl. Control Comm'n, 452 So. 2d at 1152, 1157 (La. 1984)] that both the permit applicant and the LDEQ consider during certain permit application processes. Although the five requirements have been expressed as three requirements (see Rubicon Inc., 670 So. 2d at 475, 483 (La. App. 1 Cir 1996), rehearing denied), the requirements remain basically the same whether stated as five or as three. The "IT Requirements" must satisfy the issues of whether:

1) the potential and real adverse environmental effects of the proposed project have been avoided to the maximum extent possible;
2) a cost benefit analysis of the environment impact costs balanced against the social and economic benefits of the project demonstrate that the latter outweighs the former;
3) there are alternative projects or alternative sites or mitigating measures, which would offer more protection to the environment than the proposed project without unduly curtailing nonenvironmental benefits to the extent applicable.

The details of the LDEQ's reasoning are set forth below:[2]

FINDINGS OF FACT

I. BACKGROUND

A. Description of Facility

The Red River Environmental Products, LLC ("RREP"), AC Manufacturing Facility ("AC Facility" or "facility") is a proposed facility for the production of activated carbon (AC).

B. Proposed Site

The proposed site is an undeveloped site in Red River Parish. There is no existing facility. Red River Parish is in attainment for all criteria pollutants pursuant to the federal Clean Air Act.

C. Proposed Permit Actions

The permit applications, including the Environmental Assessment Statement (EAS) and additional application-related submittals are available to the public in LDEQ's EDMS[3]and at the local library

RREP submitted permit applications and an Emission Inventory Questionnaire (EIQ) dated August 2, 2007, requesting an initial Part 70 Operating Permit and a Prevention of Significant Deterioration (PSD) Permit for the proposed facility pursuant to the Part 70 (Title V) Operating Permits Program under Louisiana Administrative Code (LAC) 33:III.507, which is based on the mandates established by the United States Environmental Protection Agency (EPA). Additional application-related information (dated August 20, 2007, October 3, 2007, and November 2, 2007) was also submitted to and reviewed by the LDEQ.

The AC Manufacturing Facility is a proposed facility for the production of activated carbon. The permits include the new sources associated with the proposed project.

Facility Operations

Red River Environmental Products, LLC proposes to construct and operate a "greenfield"[4] facility for the production of activated carbon (AC). The facility will be known as the AC Manufacturing Facility. The proposed facility consists of two production lines. Each line will have a production capability of approximately 175 million pounds of AC per

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[2] Any finding of fact more appropriately designated as a conclusion of law shall be considered also a conclusion of law; and any conclusion of law more appropriately designated as a finding of fact shall be considered also as a finding of fact.

[3] EDMS stands for Electronic Document Management System, the LDEQ's electronic repository of official records that have been created or received by LDEQ. Employees and members of the public can search and retrieve documents stored in the EDMS via this web application. (See http://edms.deq.louisiana.gov/app/doc/querydef.aspx).

[4] See LAC 33:III.551.B

year. The facility will receive coal from the coal mine on the adjacent property via truck or rail transport and will produce activated carbon by using a steam activation process. The coal will be heated to a high temperature and then it is exposed to steam. The resulting product is activated carbon. The activated carbon will be transported off-site via rail and trucks. All product awaiting transport will be stored on site indoors or under a covered loading site until further distribution.

Overall, the process produces more heat than it consumes. Therefore, the waste heat from the process will be used to generate steam that will continue to drive the process. Some of the steam will also be used to drive steam turbines that will generate electrical energy. Excess power may be exported to the utility transmission system.

In addition to producing AC, the manufacturing process also produces a gaseous by-product/waste stream. The gaseous byproduct/waste gas from the multi-hearth furnace (MHF) will be routed to an afterburner. The gases exiting the afterburner will pass through an unfired waste heat recovery boiler to make steam. The steam loop will generate no air pollutant emissions. The proposed emissions to the atmosphere come from the Multi-Hearth furnace stacks, material handling and storage equipment (including truck-generated fugitive dust), cooling towers, and a diesel emergency fire water pump. The estimated emissions in tons per year are indicated in Table 1 below.

The new units and processes consist of the following new sources:

- Multi-Hearth Furnaces
- Storage Silos
- Material Handling equipment
- Cooling Towers
- Diesel Emergency Fire Water Pump
- Steam Generating Equipment

<u>Air Emissions</u>

Air emissions from the proposed operation of the AC Manufacturing Facility are expected to include emissions of particulate matter (PM_{10}), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen oxides (NO_x), and volatile organic compounds (VOC). Based on the PSD application, permitted emissions from this facility are as follows:[5]

[5] See PSD Permit No. PSD-LA-727 (EDMS Document No. 36461654, p. 115 of 903)

Table 1

Pollutant	Emissions in Tons Per Year	PSD Significance Level	Further PSD Review?
PM_{10}	423.9	15	Yes
SO_2	638.2	40	Yes
NO_X	677.2	40	Yes
CO	329.8	100	Yes
VOC	314.7	40	Yes
H_2SO_4	9.8	7	Yes

As displayed in Table 1, the increase in criteria pollutant emissions from the proposed project is greater than the PSD significance level for PM_{10}, SO_2, NO_X, CO, H_2SO_4, and VOC. Therefore, further analysis pursuant to PSD is required.

BACT Analysis resulted in the selection of the emission control systems as indicated in the Table 2, below:

Table 2

Equipment	Pollutant	Emissions Control System
MHF's	Carbon monoxide, Volatile organic compounds	Afterburner and good combustion practices
	Nitrogen oxides	Low-NO_X burners and selective non-catalytic reduction
	Sulfur dioxide	Spray dryer absorber
	Sulfuric acid	Spray dryer absorber, fabric filter baghouse
	Particulate matter	Cyclone, afterburner, spray dryer absorber, fabric filter baghouse
Cooling Tower	Particulate matter	Drift elimination system
Haul Roads	Particulate matter	Pave roads and implement best practices
Material Handling Equipment and Storage Silos	Particulate matter	Fully enclose all material conveyors/transfer points Equip all emission points with a dust collection device with an efficiency of 99.9% or greater
Emergency Fire Water Pump	Nitrogen oxides, Sulfur dioxide, Particulate matter, Carbon monoxide, Volatile organic compounds	Manufacturer-certified engine design Low-sulfur diesel fuel Annual operating limit of 100 hours

Air modeling demonstrates that the emissions will not cause or contribute to an exceedance of a National Ambient Air Quality Standard (NAAQS) for a criteria pollutant.

In addition, permitted emissions of toxic air pollutants are as follows:

VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs): in tons per year		Non-VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs): in tons per year	
Pollutant	Emissions	Pollutant	Emissions
1,1,2,2 –Tetrachloroethane	<0.001	Ammonia	18.43
1,1,2-Trichloroethane	<0.001	Antimony (and compounds)	<0.001
1, 1- Dichloroethane	<0.001	Arsenic (and compounds)	<0.001
1, 2- Dichloroethane	<0.001	Barium (and compounds)	0.785
1, 2- Dichloropropane	<0.001	Beryllium (Table 51.1)	0.004
1, 3- Butadiene	<0.001	Cadmium (and compounds)	0.008
2, 4- Dinitrotoluene	<0.001	Chromium VI (and compounds)	0.048
Acetaldehyde	0.003	Copper (and compounds)	0.024
Acetophenone	<0.001	Hydrogen Chloride	3.38
Acrolein	0.001	Hydrogen Fluoride	2.23
Benzene	0.004	Hydrogen Sulfide	0.34
Benzyl Chloride	0.002	Lead compounds	0.001
Biphenyl	<0.001	Manganese (and compounds)	0.145
Bromoform	<0.001	Mercury (and compounds)	0.022
Carbon Disulfide	<0.001	Nickel (and compounds)	0.025
Carbon Tetrachloride	<0.001	Selenium (and compounds)	0.001
Chlorinated Dibenzo-P-Dioxins	<0.0001	Sulfuric Acid	9.78
Chlorinated Dibenzofurans	<0.0001	Zinc (and compounds)	0.004
Chlorobenzene	<0.001		
Chloroethane	<0.001		
Chloroform	<0.001		
Cyanide compounds	0.008		
Ethyl Benzene	<0.001		
Formaldehyde	0.001		
Hexachlorobenzene	<0.001		

VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs): in tons per year		Non-VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs): in tons per year	
Pollutant	Emissions	Pollutant	Emissions
Methyl Bromide	<0.001		
Methyl Chloride	0.005		
Methyl Ethyl Ketone	0.001		
Naphthalene	<0.001		
Polynuclear Aromatic Hydrocarbons	<0.001		
Propionaldehyde	0.001		
Styrene	<0.001		
Toluene	0.001		
Vinyl Acetate	<0.001		
Vinyl Chloride	<0.001		
Xylene (mixed isomers)	<0.001		
Total	0.033		35.22

The requested permit applications were reviewed for compliance with the 40 CFR Part 70 operating permit program, Louisiana Air Quality Regulations, New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP), and Prevention of Significant Deterioration (PSD). The AC Manufacturing Facility is a major source of toxic air pollutants (TAPs) pursuant to LAC 33:III.Chapter 51-Comprehensive Toxic Air Pollutant Emission Control Program.

II. PUBLIC COMMENT

A notice requesting public comment and informing the public of the time and location of a public hearing was published in *The Advocate*, Baton Rouge; and in the *Coushatta Citizen*, Coushatta, Red River Parish, on December 13, 2007; and in the LDEQ mailout on December 11, 2007. The proposed permits were sent to the Environmental Protection Agency (EPA) Region 6 via e-mail on December 11, 2007. The LDEQ, Office of Environmental Services, Air Permits Division, held a public hearing on Tuesday, January 22, 2008, beginning at 6:00 p.m., at the Coushatta City Hall Council Meeting Room, 1211 E. Carroll St, Coushatta Louisiana. The hearing afforded the public an opportunity to provide technical comments on the proposed Part 70 (Title V) Operating Permit Number 2420-00027-V0 and Prevention of Significant Deterioration Permit Number PSD-LA-727, and the Environmental Assessment Statement (EAS) for the permits.

The Louisiana Department of Environmental Quality received oral and written comments on the proposed permits and the environmental assessment statement during the public hearing, by facsimile, and by mail.

III. PUBLIC COMMENTS RESPONSE SUMMARY

A "Public Comment Response Summary" was prepared for all significant comments and is attached and made a part of this Basis for Decision.

IV. ALTERNATIVE SITES: **Are there alternative sites, which would offer more protection to the environment than the proposed AC Manufacturing Facility site without unduly curtailing nonenvironmental benefits?**

While the LDEQ recognizes that the concepts of alternative sites, alternative projects, and mitigative measures are closely interrelated and overlap, each concept is addressed separately in this document for purposes of emphasis and clarity. However, the LDEQ stresses the interrelation of the three. For example, the choice of a particular site could involve mitigative factors and possibly alternative project considerations. Likewise, selection of an alternative project could invoke mitigative factors and impact site selection. Apparently, the Louisiana First Circuit Court of Appeal has also recognized this interrelationship and now considers the three requirements as one. Matter of Rubicon, Inc., 95-0108 (La. App. 1 Cir. 2/14/96); 670 So. 2d 475, 483.

Therefore, because of this interrelationship, the LDEQ adopts any and all of its findings on all of the three factors under each of the specific designated areas -- alternative sites (Section IV), alternative projects (Section V), and mitigative measures (Section VI). Additionally, the assessment and findings set forth below in Section VII (Avoidance of Adverse Environmental Effects) also interrelate and have been considered relative to these facts.

Red River Environmental Products, LLC intends to purchase the proposed site for the AC Manufacturing Facility located in Armistead, Louisiana. According to information from the EAS, as accepted by the LDEQ, the site is reclaimed mine land. Land nearby is either reclaimed mine land or agricultural property. Undeveloped land and active mine areas lie south of the site boundary.[6] Since this is a proposed facility, a traditional alternative site analysis was performed by RREP; a description of the analysis is included in the EAS.

As described in the EAS, as accepted by the LDEQ, RREP selected the proposed site based upon a process that included consideration of site factors such as:

- proximity to the raw material (lignite coal);
- proximity to necessary infrastructure (such as gas pipeline and electrical interconnect);
- absence of wetlands on the proposed site;
- protection from the 100-year flood plain;
- proximity to truck, rail, and barge for product delivery;

[6] See EAS, Section IV.C (EDMS Document No. 36461654, p. 612 of 903)

- local and regional benefits;
- availability of a trained workforce; and
- ability to benefit from Federal and State incentive and financing programs.[7]

RREP also considered other sites in Texas and Louisiana. However, according to the EAS, and as accepted by the LDEQ, these sites were rejected due to site features such as:

- lack of proximity to support infrastructure (transportation, electrical interconnect, gas and water availability);
- located below the flood plain;
- potential timing to obtain land ownership;
- located a greater distance from the raw material which would increase transportation costs.[8]

CONCLUSION: For the foregoing reasons, the LDEQ finds there are no alternative sites, which would offer more protection to the environment than the proposed site without unduly curtailing nonenvironmental benefits.

V. ALTERNATIVE PROJECTS: Are there alternative projects, which would offer more protection to the environment than the proposed AC Manufacturing Facility without unduly curtailing nonenvironmental benefits?

The LDEQ finds that the proposed AC Manufacturing Facility offers more protection to the environment than any other possible alternative without unduly curtailing nonenvironmental benefits. Additionally, the LDEQ recognizes that selection of the most environmentally sound project usually also serves as a mitigative measure because the two considerations overlap considerably.

The proposed project would allow the AC Manufacturing Facility to produce AC, which can be used in coal-fired power plants to capture mercury so that mercury emissions to the atmosphere can be reduced. Therefore, the project, as proposed, will produce a product that can be used as a tool to protect the environment.

In addition, as described in the EAS, as accepted by the LDEQ, the project, as proposed, "protects the environment based on its design and proposed operations."[9] As explained in the EAS, and as accepted by the LDEQ, RREP's proposed project is designed to utilize a combination of highly reliable devices, which will result in "reliable operation and performance."[10] In addition, the proposed project is designed to be protective of the environment through the use of Best Available Control Technology (BACT). RREP will also voluntarily use mercury control technology to further reduce potential mercury emissions.[11]

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[7]See EAS, Section IV.C (EDMS Document No. 36461654, p. 610 of 903)
[8]See EAS, Section IV.C (EDMS Document No. 36461654, p. 610 of 903)
[9]See EAS, Section III (EDMS Document No. 36461654, p. 607 of 903)
[10] See EAS, Section III (EDMS Document No. 36461654, p. 607 of 903)
[11]See EAS, Section IV (EDMS Document No. 36461654, p. 616 of 903)

RREP did consider alternative projects. According to the EAS, as accepted by the LDEQ, another technology for carbon activation is possible (chemical activation of carbon). However, "there are no records of adequate mercury removal performance"[12] using activated carbon produced by this alternate method. Further, as described in the EAS, as accepted by the LDEQ, the technology chosen for this project (steam activation of coal) has "a proven record of mercury control performance."[13] Therefore, because RREP intends to produce AC for sale to coal-fired power plants for use in removing mercury from air emissions, the alternative project (chemical activation of carbon) was rejected since its effectiveness in mercury control of coal-fired power plants is unproven.

CONCLUSION: For the foregoing reasons, the LDEQ finds there are no alternative projects, which would offer more protection to the environment than the proposed project, without unduly curtailing nonenvironmental benefits.

VI. MITIGATING MEASURES: Are there mitigating measures, which would offer more protection to the environment than the AC Manufacturing Facility as proposed without unduly curtailing nonenvironmental benefits?

According to AC Manufacturing Facility's submitted information, as accepted by the LDEQ, the AC Manufacturing Facility is designed and operated to maximize environmental protection and prevent adverse environmental impacts. The AC Manufacturing Facility utilizes state-of-the-art emissions control systems[14] and is permitted to operate under stringent operational guidelines and requirements.

The Part 70 (Title V) permit and the PSD permit meet all applicable Louisiana Air Quality Regulations, New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAP). The emissions levels allowed by the permits are in compliance with all state and federal regulations. The permit limits are determined to be acceptable and protective of the environment based on the existing Prevention of Significant Deterioration program and other requirements.

Under the requirements of the proposed permits, RREP will install controls according to the Prevention of Significant Deterioration (PSD) regulations known as Best Available Control Technology (BACT).[15] Based on the PSD review by RREP, as accepted by the LDEQ, the LDEQ determined that no other technologies provide more protection to the environment considering all adverse effects (technical and economical).

CONCLUSION: For the foregoing reasons, the LDEQ finds there are no mitigating measures which would offer more protection to the environment than the AC Manufacturing Facility, as proposed, without unduly curtailing nonenvironmental benefits.

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[12] See EAS, Section III (EDMS Document No. 36461654, p. 607 of 903)
[13] See EAS, Section III (EDMS Document No. 36461654, p. 607 of 903)
[14] See EAS, Section I (EDMS Document No. 36461654, p. 596 of 903)
[15] Controls to be installed under the BACT are identified in Best Available Control Technology section of Permit No. PSD-LA-727.

VII. AVOIDANCE OF ADVERSE ENVIRONMENTAL EFFECTS: Have the potential and real adverse environmental effects of the proposed AC Manufacturing Facility been avoided to the maximum extent possible?

As part of the permitting process, potential and real adverse environmental impacts of pollutant emissions from the proposed new permitted sources are assessed by the LDEQ prior to construction to ensure that they are minimized to the maximum extent possible. Along with the permit applications, the LDEQ considers the information outlined in the AC Manufacturing Facility's EAS and Public Comments as part of the Department's assessment.

The permits will require that all emission sources be controlled through technology to meet or exceed the requirements of applicable state and federal emissions regulations, such as the National Ambient Air Quality Standards (NAAQS), PSD, and BACT, by utilizing information obtained through air quality analyses, additional impact analyses, and public involvement. Even though the applicable requirements do not prevent sources from releasing emissions, they do function to protect public health and welfare, protect the areas of historic value, and ensure economic growth consistent with the preservation of existing clean air resources.

As part of the permitting process, potential and real adverse environmental impacts of pollutant emissions from the proposed sources are assessed to ensure that they are minimized. The following paragraphs describe the assessment by type of impact:

A. Air Emissions

The emissions from this proposed project shall be controlled to meet or exceed the requirements of all applicable regulations and defined permit conditions. The estimated emissions submitted by RREP for the AC Manufacturing Facility's emission sources are based on conservative engineering design calculations and established, approved emission factors.[16]

As described in the EAS, as accepted by the LDEQ, the following are expected to be sources of air pollutant emissions at the proposed facility:

- "By-product/waste gas from two production lines, each consisting of MHFs (Multi-hearth furnace), controlled by an afterburner with low-NO_x burners and flame tempering, SNCR (selective non-catalytic reduction), AC injection, SDA (spray dryer absorber), and a baghouse;
- Material handling operations, controlled by dust collectors;
- Truck traffic-generated (haul road) fugitive dust;
- Two small cooling towers, equipped with drift eliminators: and
- One small fire water pump diesel engine (300 hp)."[17]

[16] See Permit application Section B (EDMS Document No. 36169951, p. 269-329 of 446)
[17] See EAS, Section I (EDMS Document No. 36461654, p. 594 of 903)

Air emissions from the operation of the proposed facility include particulate matter (PM_{10}), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen oxides (NO_X), volatile organic compounds (VOCs), and sulfuric acid (H_2SO_4). Emissions of these air pollutants are minimized using good design and control devices, as described in the following table.[18]

Equipment	Pollutant	Emissions Control System
MHF's	Carbon monoxide, Volatile organic compounds	Afterburner and good combustion practices
	Nitrogen oxides	Low-NO_X burners and selective non-catalytic reduction
	Sulfur dioxide	Spray dryer absorber
	Sulfuric acid	Spray dryer absorber, fabric filter baghouse
	Particulate matter	Cyclone, afterburner, spray dryer absorber, fabric filter baghouse
Cooling Tower	Particulate matter	Drift elimination system
Haul Roads	Particulate matter	Pave roads and implement best practices
Material Handling Equipment and Storage Silos	Particulate matter	Fully enclose all material conveyors/transfer points Equip all emission points with a dust collection device with an efficiency of 99.9% or greater
Emegency Fire Water Pump	Nitrogen oxides, Sulfur dioxide, Particulate matter, Carbon monoxide, Volatile organic compounds	Manufacturer-certified engine design Low-sulfur diesel fuel Annual operating limit of 100 hours

The proper sequence of the control devices for the MHFs is vital to the efficiency of the control technology. Basically, the afterburner burns any existing hydrocarbons (including VOCs and CO) in the waste gas stream. This step is not necessary with other "coal-fired" sources (e.g., coal-fired power boilers, etc.), where sufficient combustion takes place in the combustion chamber. The exhaust gas exits the afterburner at significantly higher temperatures than typical coal-fired power boilers. The exhaust gas then goes through SNCR. The SNCR injects an aqueous solution of ammonia into the waste gas. At elevated temperatures of the exhaust gases, the ammonia reacts with nitrogen oxides to form nitrogen gas (N_2) and water. A dry flue gas desulfurization system then reacts the waste gas with a dry or hydrated lime slurry to remove the sulfur oxides. By this time, the exhaust gas has cooled considerably and then goes through a "baghouse" (essentially fabric filters) to remove particulate matter. A "wet" FGD could not be used in this configuration because it increases the water vapor in the exhaust gases, which decreases the filter's efficiency and causes them to "plug" at an unreasonable rate.

[18] Controls to be installed under the BACT are identified in Best Available Control Technology section of Permit No. PSD-LA-727.

The accidental air release prevention program is mandated by Section 112(r) of the Clean Air Act Amendments and codified in 40 CFR 68 (see also LAC 33:III.Chapter 59). According to the EPA, the purpose of a Risk Management Plan (RMP) is to "prevent accidental releases of substances that can cause serious harm to the public and the environment from short-term exposures and to mitigate the severity of releases that do occur."[19] However, an RMP is only required for certain facilities storing materials above certain thresholds. Facilities below these thresholds do not present excessive risk and RMP is not required. Based on the AC Manufacturing Facility's EAS, as accepted by the LDEQ, a Risk Management Plan (RMP) is not required by the regulations because the proposed project will not utilize any substances for which an RMP is applicable. The only significant substance utilized will be ammonia. However, according to the EAS, as accepted by the LDEQ, the facility will utilize 19 percent aqueous ammonia.[20] Ammonia of this type and concentration falls below the threshold for which an RMP is applicable. In addition, the facility will utilize secondary containment to further avoid the potential for adverse affects to public health or the environment.[21]

RREP will utilize protective measures on-site to handle emergency situations. As described in the EAS, as accepted by the LDEQ, these measures will include plans such as a stormwater pollution prevention plan (SWPPP) and a Spill Prevention Control and Countermeasure (SPCC) Plan.[22] In addition, "An on-site emergency fire pump system will be installed. Personnel will be trained to maintain, test, and operate the facility fire protection systems."[23]

B. Wastewater Discharges

As described in the EAS, as accepted by the LDEQ,

> "on-site sources of waste generation will include small quantities of wastewater from equipment, cleaning operations, sanitary waste, and certain cleaning and treatment residues. Wastewater discharge will be managed on-site. The facility intends to meet all regulatory requirements for wastewater discharges…the facility will be designed for minimal or zero wastewater discharge."[24]

The discharges, if any, will be in accordance with the Louisiana Pollutant Discharge Elimination System (LPDES) requirements and will meet or exceed all State surface water standards.

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[19] EPA's General Risk Management Plan Program Guidance, April 2004
http://yosemite.epa.gov/oswer/ceppoweb.nsf/vwResourcesByFilename/Intro_final.pdf/$File/Intro_final.pdf
[20] See EAS, Section I (EDMS Document No. 36461654, p. 599 of 903)
[21] See EAS, Section I (EDMS Document No. 36461654, p. 599 of 903)
[22] See EAS, Section I (EDMS Document No. 36461654, p. 600 of 903)
[23] See EAS, Section I (EDMS Document No. 36461654, p. 600 of 903)
[24] See EAS, Section II (EDMS Document No. 36461654, p. 598 of 903)

C. Solid and Hazardous Waste Generation

According to the information in the permit applications, there are no existing hazardous waste or solid waste the proposed project site.

As described in the EAS, as accepted by the LDEQ, the proposed project's various types of non-hazardous solid wastes will be handled as follows:

- Solid waste resulting from process operations (from the air emissions control of the exhaust gas) will be disposed of "in an approved, nearby landfill or used as backfill in the nearby coal mine, or other beneficial use, subject to appropriate approvals."[25]
- Solid waste resulting from general plant activities (such as plant refuse and spent oil filters) will be disposed of "at an approved municipal landfill or incinerator."[26]
- Universal solid waste (such as antifreeze, lead acid batteries, and fluorescent light bulbs) "generated from miscellaneous support activities and plant activities will be transported off-site."[27]

The facility will utilize licensed haulers to transport the non-hazardous solid waste; it will be recycled or disposed by municipal landfill/incineration in accordance with federal and state regulations.

As described in the EAS, as accepted by the LDEQ, no hazardous waste generation is associated with the operation of the production lines.[28] However, the proposed project is expected to generate small quantities of hazardous waste resulting from miscellaneous support activities (such as laboratory waste, maintenance wastes, cathode ray tubes, nickel-cadmium batteries, and waste solvents).[29] Therefore, the facility is expected to qualify as either a Conditionally Exempt Small Quantity Generator or as a Small Quantity Hazardous Waste Generator based on the Resource Conservation Recovery Act (RCRA) criteria.[30]

No hazardous waste will be permanently stored at the facility. The facility will utilize licensed haulers to transport and dispose of the hazardous waste by landfill in accordance with Federal and State regulations.[31]

The Stormwater Pollution Prevention Plan will ensure that the potential adverse environmental effects associated with the generation of solid or hazardous wastes resulting from spills of oil or hazardous substances are minimized to the maximum extent possible. RREP will implement a plan to ensure that general debris generated during the construction activities is disposed in accordance with applicable regulatory requirements.[32]

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[25]See EAS, Section I (EDMS Document No. 36461654, p. 596 of 903)
[26]See EAS, Section I (EDMS Document No. 36461654, p. 596 of 903)
[27]See EAS, Section I (EDMS Document No. 36461654, p. 596 of 903)
[28]See EAS, Section I (EDMS Document No. 36461654, p. 593 of 903)
[29]See EAS, Section I (EDMS Document No. 36461654, p. 593 of 903)
[30]See EAS, Section I (EDMS Document No. 36461654, p. 595 of 903)
[31]See EAS, Section I (EDMS Document No. 36461654, p. 596 of 903)
[32]See EAS, Section I (EDMS Document No. 36461654, p. 596 of 903)

Potential and real adverse environmental effects associated with the generation of solid and hazardous wastes will be avoided to the maximum extent possible.

D. Other Releases

Releases to the soil from the facility are unlikely due to the design of the facility. All chemical tanks are above-ground storage tanks with secondary containment. Stormwater will be routed to on-site ditches and culverts directed to an on-site detention basin. Any discharge from the detention basin will meet the acceptable federal and state regulatory requirements. Utilization of Strormwater Pollution Prevention Plans and Spill Prevention and Control Plans are expected to minimize impacts to the environment.

As described in the EAS, as accepted by the LDEQ, no wetlands will be impacted by the project; there are no wetlands or water bodies on-site.[33]

CONCLUSION: Accordingly, the LDEQ finds that RREP has avoided, to the maximum extent possible, adverse environmental impacts without unduly curtailing non-environmental benefits.

VIII. COST/BENEFIT ANALYSIS (BALANCING): Does a cost benefit analysis of the environmental impact costs balanced against the social and economic benefits of the proposed AC Manufacturing Facility demonstrate that the latter outweighs the former?

The social and economic benefits of the proposed AC Manufacturing Facility will greatly outweigh the adverse environmental impacts. Notably the Louisiana constitution requires balancing, not protection of the environment as an exclusive goal. Save Ourselves, 452 So. 2d at 1157.

A. Environmental Impact Costs

Emissions from the AC Manufacturing Facility include the criteria pollutants: nitrogen oxides (NO_X), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter with a diameter equal to or less than 10 microns (PM_{10}), volatile organic compounds (VOCs), , and sulfuric acid (H_2SO_4).

AC Manufacturing Facility is a major source of toxic air pollutants (TAPs) and is subject to the Louisiana Air Toxics program under LAC 33:III.Chapter 51 - Comprehensive Toxic Air Pollutant Emission Control Program.

As modeled, the LDEQ finds that RREP's proposed project will meet or exceed the requirements of the primary and secondary National Ambient Air Quality Standards (NAAQS) and the Louisiana Ambient Air Standards (AAS) for criteria pollutants and toxics within industrial property. The proposed project is not expected to cause air quality impacts that would adversely affect human health or the environment in Red River Parish and

[33] See EAS, Section I (EDMS Document No. 36461654, p. 611 of 903)

surrounding parishes.

B. Social and Economic Benefits

The LDEQ finds that the social and economic benefits of the project will greatly outweigh its environmental impact costs. The social and economic benefits are discussed in detail below:

As described in the EAS, as accepted by the LDEQ, RREP conducted an analysis of the proposed project's effect on local and state economies. As established by RREP, the project will result in significant economic benefits to the parish and to the state. As previously stated, the project includes the construction of two production lines. The EAS documents that for the construction of the first production line, the following benefits are expected for the two-year construction period:

- More than 180 workers are projected to be needed for peak construction workforce;
- An average of about 100 construction jobs; and
- Up to $320,000 per year in individual income tax revenues. [34,35,36]

The construction of the second production line is expected to result in construction jobs and individual income tax revenues, as well.

RREP has demonstrated that during facility operations, the following benefits are expected:

- For the first production line, about 50 new permanent jobs will be created, including "skilled operating and maintenance personnel, office staff, and management" positions;[37]
- With the addition of the second production line, the facility is expected to create an additional 25 new permanent jobs, to result in a total of approximately 75 permanent jobs;[38]
- The expected annual payroll for the first production line is about $3.94 million;[39]
- The expected annual payroll for both production lines is about $5.91 million;[40]
- These 50 new plant jobs are expected to result in about 150 regional jobs, including RREP employees;[41]
- Average annual income for permanent employees could generate up to $160,000 in individual state income taxes;[42]

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[34] See EAS, Project Overview Section (EDMS Document No. 36461654, p. 592 of 903)
[35] RREPs tax revenue estimates were developed in conjunction with the Coordinating and Development Corporation in Shreveport, LA.
[36] See EAS, Section II (EDMS Document No. 36461654, p. 602 of 903)
[37] See EAS, Section II (EDMS Document No. 36461654, p. 602 of 903)
[38] See EAS, Project Overview Section (EDMS Document No. 36461654, p. 592 of 903)
[39] See EAS, Section II (EDMS Document No. 36461654, p. 604 of 903)
[40] See EAS, Section II (EDMS Document No. 36461654, p. 602 of 903)
[41] See EAS, Section II (EDMS Document No. 36461654, p. 602 of 903)

- Off-site employment could generate up to $180,000 in new state income tax revenues;[43]
- During operation, the facility will also purchase local goods and services, and raw materials such as lignite;[44, 45] and
- The facility has the potential to provide for sale the excess electrical energy produced during facility operations.[46]

In addition to social and economic benefits realized as a result of facility operations, the facility operations are expected to result in environmental benefits. As stated in the EAS, as accepted by the LDEQ, "On the environmental front, the facility's product is environmentally beneficial in that it is a demonstrated method to reliably reduce mercury from coal-fired power plants in a wide variety of applications."[47] This benefit is expected to enable coal-fired plants nationwide to reduce their mercury emissions to the atmosphere.

CONCLUSION: Based on the reasoning above, the LDEQ finds that the social and economic benefits outweigh the environmental impact costs.

IX. ENVIRONMENTAL JUSTICE CONSIDERATIONS

EPA's Office of Civil Rights in the Michigan Select Steel Title VI Complaint (EPA File No. 5R-98-R5, The Office of Civil Rights dated October 30, 1998) determined as follows in "Allegation Regarding Air Quality Impacts" Pages 25 and 26:

> The environmental laws that EPA and the states administer do not prohibit pollution outright; rather, they treat some level of pollution as "acceptable" when pollution sources are regulated under individual, AC Manufacturing Facility-specific, permits recognizing society's demand for such things as power plants, waste treatment systems, and manufacturing facilities. In effect, Congress—and, by extension, society—has made a judgment that some level of pollution and possible associated risk should be tolerated for the good of all, in order for Americans to enjoy the benefits of a modern society—to have heat in our homes, and the products we use to clean dishes or manufacture our wares. The expectation and belief of the regulators is that, assuming the facilities comply with their permit limits and terms; the allowed pollution levels are acceptable and low enough to be protective of the environment and human health.
>
> EPA and the states have promulgated a wide series of regulations to effectuate these protections. Some of these regulations are based on

[42]See EAS, Section II (EDMS Document No. 36461654, p. 602 of 903)
[43]See EAS, Section II (EDMS Document No. 36461654, p. 602 of 903)
[44]See EAS, Project Overview Section (EDMS Document No. 36461654, p. 592 of 903)
[45]See EAS, Section II (EDMS Document No. 36461654, p. 602 of 903)
[46]See EAS, Section II (EDMS Document No. 36461654, p. 602 of 903)
[47]See EAS, Section II (EDMS Document No. 36461654, p. 601 of 903)

assessment of public health risks associated with certain levels of pollution in the ambient environment. The National Ambient Air Quality Standards established under the Clean Air Act (CAA) are an example of this kind of health-based ambient standard setting. Air Quality that adheres to such standards is presumptively protective of public health. Other standards are "technology-based," requiring installation of pollution control equipment that has been determined to be appropriate in view of pollution reduction goals. In the case of hazardous air pollutants under the CAA, EPA sets technology-based standards for industrial sources of toxic air pollution, the maximum achievable control technology standards for industrial sources of toxic air pollution. The maximum achievable control technology standards under the Clean Air Act are examples of this kind of technology-based standards; an assessment of the remaining or residual risk is undertaken and additional controls implemented where needed. [Clean Air Act ' 112(f)(2)(A)(1) states "... If standards promulgated pursuant to subsection (d) and applicable to a category or subcategory of sources emitting a pollutant (or pollutants) classifies as a known, probable, or possible human carcinogen, do not reduce lifetime excess cancer risks to the individual most exposed to emissions from a source in the category or subcategory to less than one in a million, the Administrator shall promulgate standards under this subsection for such category." 42 U.S.C. § 7412(f)(2)(A)(1).]

Title VI and EPA's implementing regulations set out a requirement independent of the environmental statutes that all recipients of EPA financial assistance ensure that they implement their environmental programs in a manner that does not have discriminatory effect based on race, color, or national origin. If recipients of EPA funding are found to have implemented their EPA-delegated or authorized federal environmental programs in a manner which distributes the otherwise acceptable residual pollution or other effects in ways that result in a harmful concentration of those effects in racial or ethnic communities, then a finding of an adverse disparate impact on those communities within the meaning of Title VI may, depending on the circumstance may be appropriate.

Importantly, to be actionable under Title VI, an impact must be both "adverse" and "disparate." The determination of whether the distribution of effects from regulated sources to racial or ethnic communities is "adverse" within the meaning of Title VI will necessarily turn on the facts and circumstances of each case and nature of the environmental regulation designed to afford protection. As the United States Supreme Court stated in the case of Alexander v. Choate, 469 U.S. 287 (1995), the inquiry for federal agencies under Title VI is to identify the sort of disparate impacts upon racial or ethnic groups which constitute "sufficiently significant social problems, and [are] readily enough remediable, to warrant altering the practices of the federal grantees that had produced those impacts." Id at 293-94.

> The complaint in this case raises air quality concerns regarding several NAAQS-covered pollutants, as well as several other pollutants. With respect to the NAAQS-covered pollutants, EPA believes that where, as here, an air quality concern is raised regarding a pollutant regulated pursuant to an ambient, health-based standard, and where the area in question is in compliance with, and will continue after the operation of the challenged AC Manufacturing Facility to comply with, that standard, the air quality in the surrounding community is presumptively protective and emissions of that pollutant should not be viewed as "adverse" within the meaning of Title VI. By establishing an ambient, public health threshold, standards like the NAAQS contemplate multiple source contributions and establish a protective limit on cumulative emissions that should ordinarily prevent an adverse air quality impact.
>
> With respect to the pollutants of concern that are not covered by the NAAQS, Title VI calls for an examination of whether those pollutants have become so concentrated in a racial or ethnic community that the addition of a new source will pose a harm to that community. If there is no "adverse" impact for anyone living in the vicinity of the AC Manufacturing Facility, it is unnecessary to reach the question of whether the impacts are "disparate."

[Reference: Letter from Ann E. Goode, Director of EPA's Office of Civil Rights to Father Phil Schmitter and Sister Joanne Chiaverni, Co-Directors, St. Francis Prayer Center, G-2381 East Carpenter Road, Flint Michigan 48909-7973].

Also note that the United States Supreme Court held in Alexander v. Sandoval, (532 U.S. (2001) [No. 99-1908, decided April 24, 2001], that there is no private cause of action to enforce Section 602 of Title VI of the Civil Rights Act of 1964, 78 Stat. 252, as amended, 42 U.S.C. §2000d *et. seq.*

LDEQ accepts the EPA's assessment and reasoning. RREP's modeling shows the facility will, with the controls installed under the BACT,[48] meet or exceed the primary and secondary National Ambient Air Quality Standards (NAAQS). Accordingly, there will be no "adverse" and "disparate" impact in the surrounding area.

X. CONCLUSION

The LDEQ, Office of Environmental Services, Air Permits Division, has conducted a review of the information submitted and has determined that the Part 70 (Title V) Operating Permits and the Prevention of Significant Deterioration Permit, should be issued to Red River Environmental Products, LLC, AC Manufacturing Facility.

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[48] Controls to be installed under the BACT are identified in Best Available Control Technology section of Permit No. PSD-LA-727.

The permits for the AC Manufacturing Facility will require that the emissions be controlled to meet or exceed the requirements of all applicable regulations and defined permit conditions. The estimated emissions from the project are based on conservative engineering design calculations and established and approved emission factors. The applications detail the emission calculations and state and federal regulatory requirements for the air emission sources.

The AC Manufacturing Facility's permits will meet or exceed the primary and secondary National Ambient Air Quality Standards (NAAQS) for criteria air pollutants beyond the industrial property and will not cause air quality impacts that will adversely affect human health or the environment in Red River Parish.

The local economy benefits from the operations of the proposed facility. The proposed project is expected to provide personal income for the facility's permanent and contract employees; increase the tax revenues for Red River Parish, the State of Louisiana, and the federal government; and facilitate the purchase of goods and services by the facility and its employees from other businesses. These benefits are major, significant, and tangible. They outweigh the environmental impact costs of operation of the AC Manufacturing Facility.

Based on a careful review and evaluation of the entire administrative record, which includes the permit applications, Environmental Assessment Statement, the proposed permits, and all public comments, the Louisiana Department of Environmental Quality, Office of Environmental Services, finds that the AC Manufacturing Facility's proposed permits will comply with all applicable federal and state statutes and regulations and will comply with the requirements of Save Ourselves v. La. Envtl. Control Commission, 452 So. 2d 1152, 1157 (La. 1984). Particularly, the LDEQ finds that the proposed permits have minimized or avoided potential and real adverse environmental impacts to the maximum extent possible and that social and economic benefits of the proposed AC Manufacturing Facility outweigh adverse environmental impacts. Id.

Cheryl Sonnier Nolan
Assistant Secretary
Office of Environmental Services

28 May 2008
Date

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL SERVICES

RESPONSE TO PUBLIC COMMENTS

PART 70 OPERATING PERMIT 0420-00027-V0
AND
PREVENTION OF SIGNIFICANT DETERIORATION PERMIT PSD-LA-727

AGENCY INTEREST (AI) NO. 152139

ACTIVATED CARBON FACILITY
RED RIVER ENVIRONMENTAL PRODUCTS, LLC
ARMISTEAD, RED RIVER PARISH, LOUISIANA

This document responds to pertinent statements (questions and/or comments) received regarding the impact of emissions on air quality. The following statements, taken verbatim from the public hearing transcript and the comment letters (numbered for reference), together with the Office of Environmental Services, Air Permits Division's responses, are relevant to the proposed Part 70 (Title V) Operating Permit and the proposed PSD permit for the Red River Environmental Products, LLC, Activated Carbon Facility.

Comments 1-10 were submitted by Mr. John Williams during the public hearing conducted on January 22, 2008.[1]

Comment No. 1

I. THE PERMIT'S EMISSIONS LIMITS DO NOT MEET "BEST AVAILABLE CONTROL TECHNOLOGY" STANDARDS

The facility is a new source subject to Prevention of Significant Deterioration ("PSD") permitting requirements. One of the principle requirements of the PSD regulations is that the major source must install and operate state-of-the-art pollution controls, known as Best Available Control Technology ("BACT") for each pollutant subject to regulation under the Clean Air Act. 42 U.S.C. § 7475(a) (4). Best Available Control Technology or "BACT" means:

An emissions limitation (including a visible emissions standard) based on the maximum degree of reduction for each pollutant subject to regulation under the Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including clean fuels, fuel cleaning or treatment or innovative fuel

[1] See *Public Hearing and Request for Public Comment Transcript*, January 22, 2008, pp. 21-27 of 234 (EDMS Document No. 36682883)

combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR parts 60 and 61. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results.

40 CFR 52.21(b) (12) and LAC 33.III.509.B.

The emission limits proposed for SO_2 and NO_x emissions from the Multi-hearth Furnaces ("MHFs") do not satisfy this definition, as discussed below.

To ensure that the BACT determination is "reasonably moored" to the Clean Air Act's statutory requirement that BACT represent the maximum achievable reduction, the U.S. EPA established a top-down analysis process outlined in the NSR Manual. *Alaska Dept. of Envt'l Conservation v. Envt'l Protection Agency,* 540 U.S. 461, 485 (2004). This Manual details the necessary process for a "top down" BACT review. This five-step process consists of the following five steps, which will be referred to later in these comments:

- STEP 1: Identify all control technologies. This list must be comprehensive and include all "Lowest Achievable Emission Rates" ("LAER")
- STEP 2: Eliminate technically infeasible options. A demonstration of technical infeasibility should be clearly documented and must show, based on physical, chemical, and engineering principles, that technical difficulties would preclude the successful use of the control option on the emissions unit under review.
- STEP 3: Rank remaining control technologies by control effectiveness. This must include:
  - Control effectiveness (percent pollutant removed);
  - Expected emission rate (tons per year);
  - Expected emission reduction (tons per year);
  - Energy impacts (Btu/k Wh);
  - Environmental impacts (other media and the emissions of toxic and hazardous air emissions); and
  - Economic impacts (total cost effectiveness, incremental cost effectiveness)

- STEP 4: Evaluate most effective controls and document results. This must include a case-by-case consideration of energy, environmental, and economic impacts. If top option is not selected as BACT, evaluate next most effective control option.

- STEP 5: Select most effective option not rejected as BACT

NSR Manual, Table B-1.

The Applications indicates that the top-down process was used to determine BACT in this case and cited specifically to the NSR Manual. Ap., pp. 38-39 and footnote 3. Thus, the top-down process as laid out in the NSR Manual must be followed. *Alaska v. US EPA*, 298 F.3d 814 (9th Cir. 2002) ("Although the top-down approach is not mandated by the Act, if a state purports to follow this method, it should do so in a reasoned and justified manner.") As set out below, it was not.

LDEQ Response to Comment No. 1

When citing EPA's 1990 New Source Review Workshop Manual (NSR Manual), it is imperative to recognize that this document remains in "draft" form and was never formally adopted as guidance. In fact, the preface to the NSR Manual states, "It [the NSR Manual] is not intended to be an official statement of policy and standards and does not establish binding regulatory requirements; such requirements are contained in the regulations and approved state implementation plans."

Nevertheless, many people have looked to this document for guidance and have sometimes improperly construed the draft NSR Manual to contain requirements that must be followed. To avoid any misunderstandings concerning the effect of the NSR Manual, EPA has proposed to make clear that the manual is not a binding regulation and does not by itself establish final EPA policy or authoritative interpretations of EPA regulations under the NSR program.[2]

EPA's Environmental Appeals Board ("EAB") has sometimes referenced the NSR Manual as a reflection of EPA's thinking on certain PSD issues, but the EAB has been clear that the draft NSR Manual is not a binding Agency regulation. See In re: Indeck-Elwood, LLC, PSD Permit Appeal No. 03-04, (pg. 10, footnote 13) (September 27, 2006); and In re: Prairie State Generating Company, PSD Permit Appeal No. 05-05, (pg. 7, footnote 2) (August 24, 2006). In these and other cases, the EAB also considered briefs filed on behalf of the Office of Air and Radiation that provided more current information on the thinking of the EPA headquarters program office on specific PSD issues arising in particular cases. Thus, the EAB has looked to the draft NSR Manual as one resource to consider in developing EPA positions through case-by-case adjudications, while recognizing that the draft NSR Manual does not itself contain binding requirements.

Notably, it remains EPA's *policy* to use the five-step, top-down process to satisfy the BACT requirements when PSD permits are issued by EPA and delegated permitting

[2] 72 FR 31372 – 31399, June 6, 2007

authorities, and EPA continues to interpret the BACT requirement in the CAA and EPA regulations to be satisfied when BACT is established using this process. However, notwithstanding this policy and the interpretations of the BACT requirement reflected in EPA adjudications, EPA has not established the top-down BACT process as a binding requirement through regulation.

Nevertheless, LDEQ did adhere to EPA's top-down process in this instance, as detailed in the remainder of this response to public comments documents.

As stated in Section 5 of the permit application:[3]

> "This BACT analysis was conducted in a manner consistent with the top-down, step-wise approach described above. The primary source of control technology evaluation results for permitted projects – the U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC) database (www.epa.gov/ttn/catc) – was consulted to collect available control technology and emission limitation information on emission sources similar to those associated with the proposed Project. However, the RBLC provided no control technology/emission limitation information specifically for MHFs used for AC production. Further investigation indicated that there is only one AC production facility in the U.S. using a similar thermal activation process (i.e., MHFs) – the NORIT Americas facility in Marshall, Texas – with available permit documentation. The BACT evaluation conducted in support of a recently-permitted MHF at the NORIT Americas facility (TCEQ Air Quality Permit No. 78421) was given primary consideration in this analysis. A copy of relevant portions of the BACT evaluation submitted (March 17, 2006) by NORIT Americas to the TCEQ as part of the permit application for a new MHF is provided in Appendix E for reference."

The NORIT Americas permit (TCEQ Air Quality Permit No. 78421) was issued January 5, 2007.

Utilization of the NORIT Americas facility in the BACT evaluation is especially significant considering the unique differences between a Multi-Hearth Furnace (MHF) at an activated carbon facility and a coal-fired power boiler. RREP's process uses coal as a feedstock/raw material for a chemical manufacturing process, not as a fuel. The higher temperature and moisture content (approximately 40 percent) of the byproduct/waste gas stream from the waste heat recovery boiler is distinct from a traditional pulverized coal-fired boiler, which has a typical moisture content of about 10 percent. A significant portion of the higher moisture content is caused by the steam activation process which is an essential step in the manufacture of activated carbon. Without steam activation the desired final product could not be produced.

[3] See permit application (EDMS Document No. 36461654, pp. 210-231)

An afterburner will be used to ensure the destruction of Volatile Organic Compounds (VOCs) in the MHF. This step is not necessary in a coal-fired power boiler. The exit temperature from the afterburner of a MHF will be significantly higher than the exit temperature from a typical coal-fired power boiler.

Comment No. 2

II. BACT IS NOT REQUIRED FOR SO_2 EMISSIONS FROM MULTI-HEARTH FURNANCES

The Briefing Sheet, page 5, reports that BACT for SO_2 emissions from the multi-hearth furnaces ("MHF") is 101.2 lb/hr on a 30-day rolling basis. This limit would be achieved using a spray dryer absorber ("SDA") and compliance would be determined using a CEMS. Draft Permit, p.5. This does not represent BACT for the MHFs. As explained below, the BACT analysis is legally and technically flawed. BACT for the MHFs is an SO_2 emissions limit of 25 lb/hr based on a 30-day rolling basis, achieved using a wet scrubber.

II.A BACT Limits not based on Maximum Degree of Reduction

The term "best available control technology" means "an emission limitation based on the maximum degree of reduction of each pollutant..." 40 CFR 52.21 (b) (12) and LAC 33.III.509.B. The degree of reduction means the amount by which a pollutant concentration is reduced, relative to the uncontrolled level. The degree reduction information is used in Step 3 of the top-down process to rank control options based on emissions from the lowest to the highest. NSR Manual, p. B.25 and Tables B-2 and B-3.

To satisfy this requirement, Step 3 of the top down BACT process requires that control options be ranked by control efficiency. The Application and Draft Permit evaluated two generic classes of scrubbers dry scrubbers (which includes the selected SDA) and wet scrubbers. However, the Application and Draft Permit fail to disclose the removal efficiency ranges for these two classes of scrubber. The upper end of the removal efficiency range for dry scrubbers is 95% while the upper end of the range for wet scrubber is greater than 99%. Further, the Application and Draft Permit fail to evaluate specific options within each generic scrubber class, many of which have higher control efficiencies than the selected SDA. A circulating dry scrubber, for example, can achieve SO_2 removal efficiencies of up to 97% while the selected SDA is capped out at 95%.

Congress chose to require an emission limit based on the "maximum degree of reduction....achievable for such source" at the time the source is constructed. 42 U.S.C. §§ 7475(a) (4) (new sources are subject to BACT), 7479 (3) (BACT definition). A BACT analysis should always default to the best pollution control option available. *Citizens for Clean Air v. EPA*, 959 F.2d 839, 845 (9th Cir. 1992), citing In re: *Spokane Regional Waste-to-Energy Applicant*, PSD Appeal No. 88-12 (EPA June 9, 1989), at 9 (internal quotation marks omitted) (emphasis in original); See also In re: *Inter-Power of New York Inc.* 5 E.A.D 130, 135 (EAB 1994) ("Under the 'top-down' approach, permit applicants must apply the most stringent control alternative, unless the applicant can demonstrate that the alternative is not technically or economically achievable."); In re: *Pennsauken County, New Jersey Resource Recovery Facility*, 2 E.A.D. 667 (Adm'r 1988), available at 1988 EPA App. LEXIS 27, 28 (Nov. 10, 1988) ("Thus, the 'top-down' approach shifts the burden of proof to the applicant to justify why the proposed source is unable to apply the best technology available.")

The Draft Permit fails to comply with the requirement that the SO_2 BACT limit represent the maximum degree of reduction achievable with available control options because, as discussed below, the Applicant eliminated the top option for invalid reasons. Therefore, the permit must either be denied or the permit limits must be revised, supplemented, and significantly lowered so that the limits represent BACT.

II.B The SO_2 BACT Analysis Improperly Rejects Wet Flue Gas Desulfurization

The Applicant and LDEQ eliminated the top SO_2 control option in Step 4 of the top-down process based on alleged environmental, energy and economic impacts. Draft Permit, p. 20. We note that the Applicant's analysis appears to compare a conventional spray dryer absorber ("SDA"), a type of dry scrubber, with a conventional limestone forced oxidation ("LSFO") scrubber, a type of wet scrubber. The so-called adverse impacts attributed to this conventional wet scrubber can be minimized or eliminated by using alternate scrubber designs and various engineering controls, none of which are acknowledged in the record.

II.B.1 <u>Unique Circumstances Not Demonstrated</u>

BACT is typically determined based on the top-ranked pollution control option. However, in limited and unique situations, energy, environmental, or economic issues may justify rejecting the top-ranked control and, instead, establishing BACT based on a less effective pollution control option. NSR Manual, pp.B.26-B.29. However, such cases are the exception and should be very unique.

The Clean Air Act only allows BACT to be established based on a less-effective control option when collateral energy, environmental or economic "collateral impacts" associated wit the top-ranked option justifies rejection. 42 U.S.C.§ 7479(3). Such "collateral impacts" must be <u>site specific</u>, and not common to control technology. Senate Debate on S.252 (June 8, 1977), reprinted in 3 *Senate Committee on Environment and Public Works, A Legislative History of the Clean Air Act Amendments of 1977* at 729 (Comm. Print August 1978) (Congressional Research Service, Serial No. 95-16) (the purpose of the collateral impacts clause is to allow for differences between regions in the country.

feedstock and plant configuration while still maximizing the use of improved technology).

> The Administrator has explained that the primary purpose of the collateral impacts clause is to temper the stringency of the technology requirements whenever one or more of the specified collateral impacts – energy, environmental or economic – render the use of the most efficient technology inappropriate. The clause allows rejection of the most effective technology as BACT only in limited circumstances. The collateral impacts clause operates primarily as a safety valve whenever **unusual circumstances specific to the facility** make it appropriate to use less than the most effective technology. Unless it can be demonstrated to the satisfaction of the permit issuer that such unusual circumstances exist, then the permit applicant must use the most effective technology.

In re Kawaihae Cogeneration Project, 7 E.A.D. at 116-17 (emphasis original; *quoting In re Columbia Gulf Transmission Company*, PSD Appeal No. 88-11 4-6, 2 E.A.D. 824, 826 (Adm'r June 21, 1989)); also citing *In re Old Dominion Elec. Coop.*, 3 E.A.D. 779, 792 (Adm'r 1992)); internal cites omitted). Collateral environmental, energy or economic impacts that are common to a pollution control technology do not justify rejecting the top-ranked option.

The determination that a control alternative to be [sic] inappropriate involves a demonstration that circumstances exist at the source which distinguish it from other sources where the control alternative may have been required previously……In the absence of unusual circumstances, the presumption is that sources within the same source category are similar in nature, and that cost and other impacts that have been borne by one source of a given source category may be borne by another source of the same source category.

NSR Manual, p.B.29 (emphasis added); see also Masonite Corp., 5 E.A.D. at 564. Therefore, the applicant bears the burden of demonstrating that site-specific reasons justify rejecting the top-ranked pollution control option. *Kawaihae Cogeneration*, 7 E.A.D. at 116-17; *In re World Color Press, Inc.*, 3 E.A.D. 474, 478 (Adm'r 1990) (collateral impacts clause focuses on the specific local impacts); *see also 3 Legislative History of the Clean Air Act Amendments of 1977* at 729 (congressional intent to maximize the use of the best technology).

The applicant and LDEQ rejected wet scrubbing as the basis for SO_2 BACT. However, there is insufficient basis to do so. To reject wet scrubbing, the applicant is required to not only show collateral impacts, but they must demonstrate that such impacts are unique to Red River, and support that demonstration with an objective and documented analysis. NSR Manual, p. B.26-B.29; *Knauf*, 8 E.A.D. at 131 ("A permitting authority's decision to eliminate potential control options as a matter of technical infeasibility, or due to collateral impacts, must be adequately explained and justified."); *General Motors*, 10 E.A.D. at 374 (agency's failure to demonstrate that rejection of top ranked technology is truly justified by the economic impacts or other costs in clear error); *Steel Dynamics*, 9 E.A.D. at 206-07 (failing to document costs of alternative control options on the record is reversible error); *Masonite*, 5 E.A.D. at 564-69 (same); *Columbia Gulf Transmission Co.*, 2 E.A.D. 824, 830 (Adm'r 1989); *Pennsauken County, J.J., Res. Recovery Facility*, 2 E.A.D. 667, 672 (Adm'r 1988).

The Applicant and LDEQ argue that the SDA is preferred to wet scrubbers as BACT because: (1) the SDA uses less water; (2) a wet scrubber produces a wastewater stream; (3) a wet scrubber emits higher levels of PM emissions; (4) a wet scrubber uses more energy; and (5) a wet scrubber costs more. Draft Permit, p. 20; Ap., pp. 50-51. However, the Applicant and LDEQ do not demonstrate any site-specific collateral effects that justify rejection of the more effective wet scrubbing technologies.

These alleged collateral impacts are neither sufficient to justify rejecting the top-ranked wet scrubbing technology, nor unique to the Red River site. Rather, they are impacts that are common to all wet scrubbers (to the extent that the impacts even exist). We discuss elsewhere that these impacts are exaggerated or do not occur at all for may types of wet scrubbers. We furthers note that wet scrubbers have many important benefits that the applicant failed to disclose.

Therefore, even if the Applicant could show that each of the alleged "collateral impacts" exists, they cannot use any of the non-site specific impacts to reject wet scrubbing as the basis for BACT for SO_2. *Kawaihae*, 7 E.A.D. at 116-17 (holding that a collateral impact "allows rejection of the most effective technology as BACT only in limited circumstances... [based on]...**unusual circumstances specific to the facility...**" (emphasis in original)); *Columbia Gulf*, 2 E.A.D. at 826; *Old Dominion Elec*, 3 E.A.D. at 792; Masonite Corp., 5 E.A.D. at 564; NSR Manual at B.29 (rejecting a top-ranked control alternative requires "a demonstration that circumstances exist at the source which distinguish it from other sources where the control alternative may have been required previously."); *In re World Color Press, Inc.*, 3 E.A.D. at 478.

In addition to failing to demonstrate that the impacts from wet scrubbing would be unique to Red River site, the Applicant fails to demonstrate any adverse impacts at all. Instead, the Applicant provides only conclusory statements that wet scrubbing causes some collateral impacts.

II.B.2 The Alleged Adverse Impacts of Wet FGD Are Exaggerated, Misleading, and Erroneous

The litany of problems attributed to wet scrubbers is conclusory and unsupported with citations or engineering calculations. Further, many of the claims are erroneous and misleading. The following sections discuss each point in the Draft Permit.

II.B.2.a Water Use

The Draft Permit states that "[w]ater requirements, for example, are much less for an SDA than a wet scrubber." Draft Permit, p. 20. This is incorrect. The adjectives "dry" and "wet" refer to the state of the waste solids from the scrubbers, not the amount of water they use. The solids from a dry scrubber exit the scrubber "dry," while those from a wet scrubber exit "wet."

The amount of water used by a scrubber depends on the amount of SO_2 that must be removed. The reverse is true. A dry scrubber uses about 4 to 6 gallons of water per pound of SO_2 ("gal/lb) that is removed while a wet scrubber uses 1-2 gal/lb. Some have erroneously reported that a wet scrubber uses more water than a dry because the wet scrubber was assumed to remove much more of the SO_2 than the dry.

II.B.2.b Wastewater

The Draft Permit states that a wet scrubber produces a wastewater stream that must be treated and discharged. While it is true that a wet scrubber produces a wastewater stream, it is small and can be economically reused or treated and discharged.

A purge stream is required for a wet scrubber to control the buildup of soluble chlorides. This purge stream is very small, typically only about 10-15 gpm in a plant sized for the Red River facility that produces saleable gypsum and half that amount if saleable gypsum is not produced. There are several options for treating wet scrubber wasterwater: (1) eliminate the discharge using a zero liquid discharge system; (2) treat and discharge the FGD wastewater separately (the only option mentioned); and (3) treat the wastewater and recycle within the plant.

II.B.2.c Particulate Emissions

The Draft permit alleges that a wet scrubber can result in higher particulate emissions because the wet scrubber must be located downstream of the particulate control devices and dissolved solids from the wet scrubber are emitted. Draft Permit, p. 20. This is incorrect. Some types of wet scrubbers are more efficient PM control devices than day scrubbers.

First, a baghouse would be used regardless of the type of scrubber. The efficiency of the baghouse would be the same regardless of its location. The Draft Permit argues that particulates from the scrubber would not be removed if the baghouse is upstream of the scrubber. This is misleading. Particulate matter created within the scrubber is removed by a mist eliminator located at the top of a conventional scrubber. This mist eliminator is typically specified to require that outlet particulate loading is no higher than inlet particulate loading. Therefore, by design, the wet scrubber makes no net contribution to particulate emissions.

Second, the dry FGD substantially increases PM by injecting lime directly into the flue gas. The unreacted lime and reaction byproducts are routed to the downstream baghouse. Thus, air pollution control systems that include dry scrubber must include a much more efficient and costly baghouse to achieve the same particulate matter emissions as from a wet scrubber. Regardless, it is simple matter to design the baghouse, regardless of where it is located, to achieve the same stack particulate emission rate, regardless of the type of scrubber.

II.B.2.d Energy

The Draft Permit claims that "an SDA [the dry scrubber selected by the Applicant] requires significantly less power than a wet system" This is an exaggeration. Dry scrubbers use less energy than wet scrubbers, but not significantly less. Two reliable industry sources report the energy use of dry versus wet scrubbers as follows:

Babcock & Wilcox (2005)

- Wet: 1.9% (p. 35-11, Table 6)
- Dry Recycle: 1.73% (p. 35-18, Table 9)
- Dry Single Pass: 1.62% (p. 35-18, Table 9)

Sargent & Lundy 2007:

- Central Appalachian Coal (p. 27, Table 5.2-2)
- Wet: 1.40%
- Dry: 1.10%
- PRB (p. 27, Table 5.2-2)
- Wet: 1.30%
- Dry: 1.20%

Further, wet scrubbers cannot be rejected as BACT based on collateral energy use. Even though wet scrubbers do use more electricity than dry scrubbers, this is irrelevant to a top-down BACT analysis unless the permit applicant demonstrates that this energy difference is <u>unique</u> to the Red River site, compared to other sources using wet scrubbing. *Kawaihae Cogeneration Project*, 7 E.A.D. at 116-17; *World Color Press, Inc.*, 3 E.A.D. at 478; NSR Manual, pp. B.29, B.47. The additional energy use cannot justify rejecting wet scrubbing technology as the basis for BACT:

> [C]ertain types of control technologies have inherent energy penalties associated with their use. While these penalties should be quantified, so long as they are within the normal range for the technology in question, such penalties should not, in general, be considered adequate justification for nonuse of that technology.

NSR Manual, p. B.30. In this case, there is no indication that wet scrubbing energy use would not be "within the normal range for [that] technology." Since this showing was not and cannot be made, energy cannot be used to reject wet scrubbing as BACT.

Moreover, the "energy" collateral effects analysis is an extremely limited inquiry. EPA guidance requires that any increased energy use associated with a pollution control be translated into a dollar amount and incorporated into the overall cost effectiveness analysis. NSR Manual, p. B.20-B.30.

> Because energy penalties or benefits can usually be quantified in terms of additional cost or income to the source, the energy impacts analysis can, in most cases, simply be factored into the economic impacts analysis.

NSR Manual, p. B.30; *General Motors*, 10 E.A.D. at 365-66 (citing NSR Manual at B.31, B.47-B.48); *Kawaihae Cogen. Project*, 7 E.A.D. at 131).

II.B.2.e Sulfuric Acid Mist Emissions

The Draft Permit alleges a wet scrubber will emit sulfuric acid mist. Draft Permit, p. 20. The facility will use one type of coal – lignite with very low sulfur content. Ap., pdf pp. 328-329. Ignite has very high alkalinity. Coal with low sulfur and high alkalinity general very little sulfuric acid mist. What form is absorbed by the alkaline fly ash and removed in the particulate control device before it reaches the stack, regardless of scrubber technology. Sulfuric acid mist has not been detected in stack gases from low rank coal-fired boilers when tested using accurate methods. Regardless, any sulfuric acid mist emissions from a wet scrubbed plant can be reduced to the same levels as from a dry scrubbed plant by using sorbent injection.

II.B.2.f Costs

The Draft Permit claims that "[i]t has been well-documented through numerous analyses that wet FGD systems are more costly than dry ones, such as an SDA." Draft Permit, p. 20.

First, this is the wrong test. A top-ranked control option, such as the wet scrubber here, cannot be rejected merely because it costs more, particularly given the absence of any cost data whatsoever. Rather, a top control option can only be rejected for economic reasons if an applicant can demonstrate that the cost-effectiveness in dollars per ton of pollutant removed is above the levels experienced by other sources. NSR Manual, p. B.31. "[T]he presumption is that sources within the same category are similar in nature, and that cost and other impacts that have been borne by one source of a source category may be borne by another source of the same source category." NSR Manual, p. B.29. See also *Steel Dynamics*, 9 E.A.D. at 202:

> The agency will then compare a control option's cost-effectiveness with what other companies in the same industry have been required to pay in recent BACT determinations to remove a ton of the same pollutant. In most cases, a control option is determined to be economically achievable if its cost-effectiveness is within the range of costs being borne by others of the same type to control the pollution [In re Inter-Power of New York, Inc. 4 E.A.D. 130, 135 (EAB 194); NSR Manual, p. B.44].

In the Steel Dynamics case, the permit was remanded to the Indiana Department of Environmental Management ("IDEM") with instructions to "include comparisons of costs to other facilities and to other technologies." *In re Steel Dynamics, Inc.*, 165, 202-207 (PSD Appeal Nos. 99-4 & 99-5) (EAB 2000). See also *Masonite Corp.*, 5 E.A.D. at 564 (a control option is economically achievable if the cost-effectiveness is within the range being borne by other sources).

In this case, to avoid setting the SO_2 BACT limit based on the better control achievable with a wet scrubber, the applicant would have to provide "a comprehensive demonstration, based on objective factors," that the cost of wet scrubbing is "disproportionately high" and "<u>significantly beyond the range of recent costs normally associated with BACT for the type of facility.</u>" NSR Manual, pp. B.31, B.45 (emphasis added). See also Letter from Robert B. Miller, Chief Permits and Grants Section, USEPA, to Lynn Fiedler, Supervisor Permit Section, Michigan Department of Environmental Quality at 3 (October 6, 1999) ("where controls have been successfully applied to similar sources in a source category, an applicant should concentrate on documenting significant cost differences, if any, between the application of the controls on those sources and the particular source under review"). Neither the applicant nor LDEAQ has made such a showing, nor can they.

Second, the claim that wet costs more than dry is not correct when compared on the same basis. A recent detailed comparative cost analysis performed by Burns & McDonnell for the proposed wet scrubber unit on the 335-MW Weston Unit 3 in Wisconsin indicates the life-cycle costs of a generic wet FGD is only 7% more than a generic dry FGD.[9] Another similar study prepared by the Washington Group International for WE Energies similarly concluded that a conventional wet scrubber cost \$585.3 million compared to \$755.6 for an SDA in 2006 levelized dollars for 1135 MW of electric generating capacity at Oak Creek Units 5-8.

II.B.3 Benefits of Wet Scrubber

The beneficial and adverse impacts of both scrubbing technologies must be evaluated in Step 4 of the top-down BACT process. The applicant only identified adverse impacts of wet scrubbers compared to dry scrubbers. However, wet scrubbers have many beneficial impacts compared to dry scrubbers. Further, dry scrubbers have adverse impacts that were not discussed. Wet scrubbing also avoids the high short-term SO_2 emission rates attributable to atomizer change-out at dry scrubber. Wet scrubbing creates a reusable solid byproduct, gypsum and does not contaminate the fly ash from the system. Furthermore, some types of wet scrubbers, such as the Chiyoda bubbling jet reactor and the Mitsubishi double contact absorber, have fewer environmental impacts than the conventional wet scrubber that was evaluated by the applicant, e.g., use less power, remove more sulfuric acid mist, particulate matter, and mercury.

II.B.3.a Reliability

Wet scrubbers have a much longer and more extensive operating history than dry scrubbers. Wet scrubbers have demonstrated high availability, and all of them constructed in recent years have been able to maintain better than 98% availability. Operating data from six facilities using dry scrubbing was reviewed. This data showed these facilities were available much less than 98% of the time. The Hayden station, one of the better performing units, maintained an availability of only 95%. This means that emissions will be higher from the dry system, unless the permit is modified to require that he plant be shut down during malfunction and repair.

II.B.3.b Maintenance Emissions

The Draft Permit is silent as to maintenance emissions. Units permitted with spray dryer absorbers have very high short-term emissions. Due to the abrasive nature of the lime slurry, nozzle assemblies must be removed, cleaned and flushed, and replaced on a routine basis, usually every 4 to 8 weeks, reducing the control efficiency of the dry scrubber by up to 50% (assuming two modules, only one of which is shutdown). This procedure typically requires one of the two atomizer modules to be removed from service for 1 to 2 hours so it can be swapped with another assembly. During this time, approximately half of the flue gas stream is being controlled by the other module and some SO_2 removal, generally estimated at 10% to 15%, is also still taking place within the filter cake in the baghouse.

The emissions during these "maintenance" events are high. They were not included in the modeling nor discussed in the record we reviewed. It is unclear whether these emissions are included in the BACT limits.

II.B.3.c SO_2 Removal Efficiency

It is generally recognized that a wet scrubber is capable of greater SO_2 reductions than a dry scrubber. EPA has recognized this fact, noting that new state-of-the are wet scrubbers "have been demonstrated above 98 percent." Even "[e]xisting wet FGD removal efficiencies of 95 percent and higher." Id. At 9715. Multiple plants have demonstrated that 95 percent and higher control is achievable on a long-term basis with a wet scrubber, as opposed to lower SO2 removal efficiencies for existing dry injection systems. Id. at 9711. When U.S. EPA recently issued a draft PSD permit for two 750 MW supercritical pulverized coal boilers burning sub bituminous coal, it established BACT based on the superior control of a wet scrubber. U.S. EPA, Desert Rock Energy Center (AZP 04-01) Proposed Permit Conditions.

> EPA's independent analysis of available control technologies for pulverized coal fire boilers included reviewing the DOE/NETL (National Energy Technology Laboratory) database, EPA's RACT/BACT/LAER Clearinghouse, EPA's National Coal BACT workgroup database, and the EPA spreadsheet of recently permitted and proposed coal-fired power plants as well as....other sources....
>
> EPA's review of all available data and technologies demonstrates that the choice of low sulfur coal and wet limestone desulfurization is the most stringent combination of control technologies available for pulverized coal fired boilers. The emission rate of 0.06 lb/MMBtu that [the applicant] has proposed, as a 24-hour average, is lower than other SO2 emission rates that have been proposed for pulverized coal fired boilers recently.
> EPA is also persuaded that 0.06 lb/MMBtu SO2 are BACT for [Desert Rock] based on the information in the National Coal Workgroup database...

Desert Rock AAQIr, p.18.

LDEQ Response to Comment No. 2

It would not be reasonable to have the BACT control limit the emissions to 25 lb/hr. on a 30-day rolling average, as the comment proposes. The record demonstrates the BACT limit established by the LDEQ (101.2 lb/hr. on a 30-day rolling average) is the lowest emission limit technically feasible. The BACT limit advocated by the comment is based upon the assumption of removal efficiencies that the record does not demonstrate are achievable by to the proposed project.

Technological Considerations
The commenter states that **wet** Flue Gas Desulfurization (FGD) is more efficient, thereby ranking higher in the BACT analysis than dry FGD. The comment further states that wet

FGD was incorrectly rejected as a potential control technology without a sufficient justification based upon the circumstances particular to this facility. The LDEQ disagrees.

The facility will employ four control technologies to reduce emissions of pollutants in the exhaust gases from hearth furnaces. (See Basis for Decision Part VII). As discussed in the Basis for Decision, the proper sequence of technologies is a vital consideration for the appropriate control of emissions. This is true both to establish that adverse environmental consequences have been avoided to the maximum extent possible and to determine BACT.

Steam activation of the carbon is a critical part of the manufacturing process. The facility simply could not produce their desired product without it. Steam activation increases the moisture content to 40 percent in the flue gas as compared to 10 percent in a typical coal-fired boiler.

The "elevated" temperature and the high moisture content the exhaust gases are the "unique" circumstances present that differentiate this facility from other facilities listed in the EPA RACT/BACT/LAER clearinghouse. It is these circumstances that warrant the order of control technology, preclude "technology transfer" from other applications and require the use of dry FGD.

The efficiency of both dry and wet FGD depends upon conditions in the exhaust gas stream, including (but not limited to) the temperature, initial concentration, moisture content, etc. As a result, the efficiency of sulfur removal can vary considerably depending upon the application. The conditions of these exhaust gases will be different than the exhaust gases from other facilities examined in the EPA RACT/BACT/LAER clearinghouse. Only one other facility for the manufacture of steam activated carbon has been permitted in the United States (The NORIT Americas Permit). The commenter can not assume "maximum" control efficiency for the wet FGD. The conditions of these exhaust gases, particularly the low concentration of sulfur in the in the inlet gases will preclude "maximum" efficiency. Rather, the previous permit issued for a steam activated carbon manufacturing facility provides the best data for consideration of removal efficiency.

Contrary to the comment that states the facility could place a PM control device before a wet FGD, the above configuration with a **dry** FGD before PM control is the only technically feasible alternative. It would not be practical to place a PM control device before the FGD. The exhaust gases are considerably hotter before the FGD than after. Placing the PM control device before FGD would require the applicant take one of several actions, none of which would be practical:

(1) Use a "baghouse" that is designed for use at elevated temperatures. Most baghouses are designed to be used at lower temperatures. Lower temperatures give the facility greater flexibility in the filters that can be used and to achieve greater reduction efficiency. While baghouses can be used at elevated temperatures, the options for filters are considerably more limited. The filters designed to be used at such temperatures generally have lower removal efficiencies, are more expensive and must be replaced more often.

(2) Cool the exhaust gas to temperature appropriate for a baghouse and then reheat the gases to temperatures necessary for the FGD. This would involve unnecessary cost and use of a supplemental fuel.

(3) Use an alternate control device, such as an electrostatic precipitator or cyclone for PM control. Baghouses are by far the most efficient and effective measure to reduce the emissions of PM. Utilizing one of these in place of a baghouse would result in increased PM emissions.

The inlet concentration of SO_2 at the dry FGD is a significant factor in determining the actual removal efficiency achieved. The lower the inlet concentration the lower the overall removal efficiency will be. The sulfur content of the lignite that will be the raw material for the multi-hearth furnaces is low. As described in the emission calculations section of the application for the multi-hearth furnaces the long term sulfur fraction of the lignite is 0.7 % by weight.

In a coal-fired boiler, because of complete combustion, all of the sulfur originally in the coal is oxidized and is included in the inlet concentration. The lignite used as feedstock in the activated carbon manufacturing process is not combusted completely as it would be in a coal-fired boiler. The significance of this difference is that approximately 20% of the sulfur in the lignite remains in the final product. This further reduces the inlet concentration of SO_2 at the dry FGD. This is shown in the emission calculations section of the application for the multi-hearth furnaces.

A permit was issued by the Texas Commission on Environmental Quality on January 5, 2007 for the NORIT Americas activated carbon facility located in Marshall, TX. This is the only other activated carbon facility in the U.S. that uses lignite as feedstock and steam activation in its process. The permit states:

> "A dry scrubber, with calcium hydroxide (lime slurry) injection, will be used to remove sulfur dioxide from the gases which exit the afterburner. The applicant represents that the dry scrubber can remove 90 % of the SO_2 while minimizing water usage and wastewater discharges."[4]

The proposed dry scrubber for the RREP facility is designed with an SO_2 removal efficiency of 92.0%.

Because the RREP facility and the NORIT Americas activated carbon facility located in Marshall, TX are the only two of their kind in the United States, LDEQ has reviewed data from low-sulfur coal-fired power plants for the purpose of determining what was found to be BACT even though, as explained earlier, the two processes do not lend themselves to direct comparison. In a number of instances, the permitting authority found BACT to be dry FGD.

[4] Texas Permit No. 78421, Review Analysis and Technical Review section (NORIT Americas activated carbon facility, Marshall, TX)

Other state regulatory agencies have determined that "dry FGD" technology is BACT for Circulating Fluidized Bed (CFB) boiler applications. In a CFB a significant portion of the SO_2 is removed by the calcium in the fluidized bed. Therefore even with high sulfur fuels as feedstock, the CFB outlet flue gas SO_2 concentration approaches that of uncontrolled low sulfur coals. The BACT analyses for several recently permitted projects considered and rejected wet FGD as the control technology for SO_2 or otherwise did not even consider wet FGD as an alternative post-combustion technology. These include:

Project	Location	Permit No.	Date Issued
NEVCO Sevier	Utah	DAQE-AN2529001-04	October 12, 2004
Gascoyne Generating Station	North Dakota	PTC06008	Proposed
Indeck-Elwood	Illinois	02030060	October 10, 2003
Highwood Generating Station	Montana	3423-00	May 11, 2007

The NEVCO Sevier and Indeck-Elwood projects only considered dry FGD alternatives in their BACT evaluations for post combustion SO_2 control. The Gascoyne and Highwood projects considered both wet and dry FGD alternatives in their BACT analyses. In all cases, some form of dry FGD technology, in combination with the CFB's SO_2 removal, was selected as BACT for SO_2.

Moreover, the Nevada Bureau of Air Pollution Control (BAPC), in response to EPA comments concerning a PC project burning Powder River Basin (PRB) coal, stated:

> Based on an EPA report and review of vendor information for wet and dry FGD processes, BAPC concluded that for higher sulfur coals wet scrubbing achieves better control, however, for lower sulfur Powder River Basin (PRB) coals, the efficiencies become so close as to be indistinguishable within their respective margins of error.[5]

The SO_2 removal efficiency of the post-combustion FGD equipment is a function of several operating variables, including the inlet SO_2 concentration. As the inlet SO_2 concentration decreases, it becomes more difficult to maintain high emission control efficiencies. As noted earlier the lignite proposed for the RREP facility has a low sulfur content. Wet FGD systems using limestone as a reagent have achieved control efficiencies of as high as 96-98% on large pulverized coal-fired boilers firing high-sulfur bituminous coals. However, the following table developed by the National Park Service (NPS) lists SO_2 control efficiencies from operating pulverized coal-fired units using **wet** FGD and firing low sulfur coal.[6]

[5] BAPC Response to EPA Region 9 Comments, Draft Operating Permit to Construct, AP4911-1349, Newmont Nevada Energy Investments, LLC – TS Power Plant.

[6] NPS Comments on XCEL Energy – Comanche Power Plant Draft Permit, E-mail from Mr. John Reber (NPS) to Jackie Joyce (State of Colorado), May 23, 2005. Data taken from Table 3.a entitled "SO_2 Rankings (30-day averaging period)."

Generating Unit	NPS 30-day Averaging Period Year 2001 (% Removal)	NPS 30-day Averaging Period Year 2002 (% Removal)
Bonanza Unit 1	90.4	89.9
IPP Unit 1	91.5	92.2
IPP Unit 2	91.2	92.4
Navajo Unit 1	90.1	94.3
Navajo Unit 2	95.2	92.9
Navajo Unit 3	93.1	92.3
	91.9	**92.3**

The data illustrate that operating wet FGD systems on the identified low sulfur coal applications have removal efficiencies comparable to that proposed by RREP.

Comment No. 3

II.C The BACT Analysis Omits Viable Technologies In Step 1

As noted above, the first step in the top-down BACT analysis is to identify all potentially applicable and available control options. NSR Manual, p. B.5. The BACT analysis only considered two generic classes of technologies to remove SO2 – wet scrubbers and dry scrubbers and among these, only evaluated one option from each class.

First, these two general classes contain many distinguishable and unique technologies that have different characteristics, including maximum SO2 removal efficiency and adverse/beneficial environmental impacts.

There are three distinguishable "dry FGD" technologies: (1) spray dryer absorber ("SDA"); (2) sorbent injection, and (3) circulating dry scrubber ("CDS"). The Application and Draft Permit failed to evaluate sorbent injection and circulating dry scrubbers.

There are also many distinguishable wet scrubbers, including wet lime scrubbers, wet limestone scrubbers, wet magnesium enhanced lime scrubbers, jet bubbling reactor scrubbers, dual alkali scrubbers, and double contact scrubbers.

II.C.1. The <u>BACT Analysis Omitted Circulating Dry Scrubber</u>

The circulating dry scrubber ("CDS") circulates dry lime in a fluidized bed, allowing very high SO2, acid gas, and particulate matter removal efficiencies, greater fuel flexibility, and simpler operation at lower cost than conventional dry and wet FGSs. In treatises on SO2 scrubbing, circulating dry scrubbers are treated separately from conventional wet and dry scrubbers evaluated n the Application.

The circulating dry scrubber process is a technically and commercially viable scrubber technology. Three vendors service the U.S. market: Allied Environmental Solutions (formerly Lurgi), Babcock Power (Turbosorp licensed from Austrian Energy & Environment), and Nooter/Eriksen (Graff/Wulff). S&L 3/07, p. 9. Circulating dry scrubbers are widely used in Europe and China. Id. There are also three installations in the U.S.

This scrubbing technology has many advantages compared to conventional semi-dry and wet scrubbing systems. Vendor SO2 removal guarantees of 95-98% are available (S&L 3/07, p.8), higher than for the selected SDA, which tops out at about 95%. S&L 3/07, p.6. The CDS simultaneously achieves very high removals of sulfuric acid mist (97-99.5%), hydrogen chloride (>98-99%), hydrogen fluoride (>98-99.5%), and particulate matter (99.97-99.99%). The CDS has fewer moving parts, resulting in high availability and lower maintenance costs. Independent injection of lime and water result in improved operating range and better utilization of lime, resulting in lower lime usage and O&M costs compared to an SDA. The system eliminates the need for handling high solids slurries, lowering O&M costs. Finally poor quality wastewater can be used for cooling, compared to the SDA which requires high quality plant water. Costs are comparable to a conventional dry FGD (S&L 3/07, p.36) or lower (Turbosorp). Thus, the omission of this technology from Step 1 of the BACT analysis is a serious error.

II.C.2 Wet Scrubbers

Certain types of wet scrubbers confer substantial benefits (e.g., cost less, achieve higher SO2 removal efficiency, use less power) over the standard spray or tray tower wet scrubber evaluated in the Application and Draft Permit. Some of these are briefly discussed below. We encourage LDEQ to survey the universe of wet scrubbers before accepting Red River's summary dismissal based on an outdated technology and non-site specific and misleading adverse impacts.

Alstom offers two types of wet scrubbers, an open spray tower (the type of wet FGD evaluated in the Application) and a bubbling bed reactor known as Flowpac. Alstom has also offered an integrated dry and wet scrubber which allows efficient simultaneous removal of SO2, acid gases, particulate matter and mercury.

The Alstom Flowpac is a bubbling bed reactor with few moving parts (no agitators or recycle pumps) that uses a waterfall quench design, eliminating the need for a slurry pump to quench the flue gas. It uses a cross flow tray designed for optimal SO2 mass transfer. Flue gas contact with slurry takes place in a bubbling bed of slurry located above a sieve tray. Slurry circulation is achieved using a airlift that uses density differentials created by compressed oxidation air injected into the absorber reaction tank. This intimate contact of flue gas and slurry eliminates sneakage, the main impediment to high SO2 removal in standard open spray towers. The Flowpac has proven ability to operate at greater than 99% SO_2 removal and has outstanding flexibility for fuel switching and load following. Due to a simple design with no external moving parts, pumps, or rotating equipment, it has a smaller footprint, lower O&M costs, and uses less power than conventional wet FGDs. In addition to high SO2 removal, Flowpac also achieves excellent removals of sulfuric acid mist, particulates, and soluble forms of mercury.

Advatech, a joint venture of URS and Mitsubishi Heavy Industries, offers the Double Contact Flow Scrubber ("DCSF"). This scrubber is compact, offering simple construction with one spray header and no packing. Its compact design allows it to be integrated into the stack, saving considerable space compared to a traditional wet FGD system. It operates at 100% availability with no spare module. The DCSF has proven performance on all ranges of sulfur, with SO_2 removals up to 99.9%. The highest SO_2 removal guaranteed was 99.8% for an SO_2 inlet of 2,200 ppm SO_2. During guarantee testing, this unit achieved an SO_2 removal efficiency of 99.9% or 2 ppm SO_2. As of 2005, Advatech had guaranteed five plants at greater than 99% SO_2 removal ad 100% availability. As of 2006, three of these were operating at greater than 99% SO_2 removal, including one unit installed in 1972 (99.5%) and another in 1998 (99.9%).

Chiyoda, who licenses the CT-121 jet bubbling reactor ("JBR") to Black & Veatch and Southern Company in the U.S., has supplied more than 66 installations supporting over 17,000 MW of generation. The JBR has accumulated an impressive reliability record, approaching 100%, and a reputation for easy, robust, and flexible operation on a wide range of fuels. The JBR can consistently exceed 99% SO_2 removal for all fuel sources and plant load levels. The JBR is generally more cost effective than conventional wet scrubbers. The JBR experience lists includes three installations on coal fired boilers guaranteed at 99% SO_2 removal from gases containing from 541 ppm to 1,165 ppm SO_2 (about 1.1 to 2.3 lb SO_2/MMBtu).

This technology has been guaranteed by Chiyoda to achieve 99% SO_2 removal on three coal-fired boilers in Japan. It also has been demonstrated in the U.S. at the University of Illinois's Abbott power plant and Georgia Power's Plant Yates and recently was licensed for use on several additional plants in the US, including Plant Bowen in Georgia, Dayton Power & Light's Killen and Stuart plants, and AEP's Big Sandy Unit 2, Conesville Unit 4, Cardinal Units 1 and 2, and Kyger Creek, among others. The Killen unit has started up and is achieving >98% SO2 control.

Georgia Power recently contracted for the installation of four CT-121 jet bubbling reactors to be installed at Bowen Station. Ex. 82. The Bowen units include two 750 MW that currently operate jet bubbling reactors. Georgia Power expects to achieve 98%

reduction of SO_2 and 90% reduction of PM with the jet bubbling reactors (in addition to the PM control achieved with the PM control devices). Id.

Magnesium Enhanced Lime wet scrubbing technology also achieves SO_2 control of 99%. Documented experience at the Mitchell Station in Pennsylvania demonstrates that magnesium enhanced lime, a type of wet scrubbing, regularly achieves 99% control of SO_2.

In summary, wet scrubbing can achieve 99% control or greater on the type of low sulfur coals proposed for Red River. Therefore, wet scrubbing must be used to establish BACT unless the applicant can over come its significant burden of demonstrating that wet scrubbing should be rejected due to unique conditions at the Red River site.

LDEQ Response to Comment No. 3

The first step in the BACT selection (top-down) process is to identify all "available" control options for the emissions unit in question. Available control options are those air pollution control technologies or techniques with a practical potential for application to the emissions unit and the regulated pollutant under evaluation. The control alternatives should include not only existing controls for the source category in question, but also (through technology transfer) controls applied to similar source categories and gas streams. Red River properly identified Selective Catalytic Reduction (SCR) and wet flue gas desulfurization (FGD) as "available" control options.

Step 2 is to eliminate technically infeasible options. The technical feasibility of the control options identified in step one is evaluated with respect to the source-specific (or emissions unit-specific) factors. A demonstration of technical infeasibility should be clearly documented and should show, based on physical, chemical, and engineering principles, that technical difficulties would preclude the successful use of the control option on the emissions unit under review. Technically infeasible control options are then eliminated from further consideration in the BACT analysis.

With respect to control techniques with a wide range of emissions performance levels, EPA's New Source Review (NSR) Manual includes the following discussion:

> The objective of the top-down BACT analysis is to not only identify the best control technology, but also a corresponding performance level (or in some cases performance range) for that technology considering source-specific factors. Many control techniques, including both add-on controls and inherently lower polluting processes can perform at a wide range of levels. Scrubbers, high and low efficiency electrostatic precipitators (ESPs), and low-VOC coatings are examples of just a few. It is not the EPA's intention to require analysis of each possible level of efficiency for a control technique, as such an analysis would result in a large number of options. **Rather, the applicant should use the most recent regulatory**

> **decisions and performance data for identifying the emissions performance level(s) to be evaluated in all cases** (emphasis added).
>
> The EPA does not expect an applicant to necessarily accept an emission limit as BACT solely because it was required previously of a similar source type. While the most effective level of control must be considered in the BACT analysis, different levels of control for a given control alternative can be considered. For example, the consideration of a lower level of control for a given technology may be warranted in cases where past decisions involved different source types. The evaluation of an alternative control level can also be considered where the applicant can demonstrate to the satisfaction of the permit agency demonstrate that other considerations show the need to evaluate the control alternative at a lower level of effectiveness.
>
> **Manufacturer's data, engineering estimates and the experience of other sources provide the basis for determining achievable limits** (emphasis added). Consequently, in assessing the capability of the control alternative, latitude exists to consider any special circumstances pertinent to the specific source under review, or regarding the prior application of the control alternative.[7]

Moreover, EPA's Environmental Appeals Board (EAB) has had addressed control efficiency-related arguments in several past PSD cases and acknowledged that permitting agencies have discretion in determining whether a particular control efficiency level is appropriate in determining the best control technology and in setting an appropriate emissions limit. The EAB has found that:

> When [a permit issuer] prescribes an emissions limitation representing BACT, the limitation does not necessarily reflect the highest possible control efficiency achievable by the technology on which the emissions limitation is based. Rather, the [permit issuer] has discretion to base the emissions limitation on a control efficiency that is somewhat lower than the optimal level. ...There are several different reasons why a permitting authority might choose to do this. One reason is that the control efficiency achievable through the use of the technology may fluctuate, so that it would not always achieve its optimal control efficiency. ... Another possible reason is that the technology itself, or its application to the type of facility in question, may be relatively unproven. ...To account for these possibilities, a permitting authority must be allowed a certain degree of discretion to set the emissions limitation at a level that does not necessarily reflect the highest possible control efficiency, but will allow the permittee to achieve compliance consistently.[8]

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[7] New Source Review Manual (pp. B-23 to B-24)

[8] In re: Newmont Nevada Energy Investment, L.L.C., TS Power Plant, PSD Appeal No. 05-04, December 21, 2005, pg. 43.

In the same decision, the EAB also stated that:

> In essence, Agency [EPA] guidance and our prior decisions recognize a distinction between, on the one hand, measured "emissions rates," which are necessarily data obtained from a particular facility at a specific time, and on the other hand, the "emissions limitation" determined to be BACT and set forth in the permit, which the facility is required to continuously meet throughout the facility's life. Stated simply, if there is uncontrollable fluctuation or variability in the measured emission rate, then the lowest measured emission rate will necessarily be more stringent than the "emissions limitation" that is "achievable" for that pollution control method over the life of the facility. Accordingly, because the "emissions limitation" is applicable for the facility's life, it is wholly appropriate for the permit issuer to consider, as part of the BACT analysis, the extent to which the available data demonstrate whether the emissions rate at issue has been achieved by other facilities over a long term. Thus, the permit issuer may take into account the absence of long term data, or the unproven long-term effectiveness of the technology, in setting the emissions limitation that is BACT for the facility. *Masonite*, 5 E.A.D. at 560 (noting that the permit issuer must have flexibility when "the technology itself, or its application to the type of facility in question, may be relatively unproven").[9]

Accordingly, it is appropriate for LDEQ to consider the extent to which the available data demonstrate whether the emissions rate at issue has been achieved by other facilities over a long term.

As discussed in Response to Comment No. 2, the SO_2 removal efficiency of FGD equipment is a function of several operating variables, including the inlet SO_2 concentration. With low inlet SO_2 concentration, the difference in removal efficiencies for various FGD alternatives become indistinguishable within their respective margins of error. Considering the minimal difference in removal efficiencies it is appropriate for RREP to evaluate dry FGD as one of the control options.

See Response to Comment No. 2 for further details relative to SO_2 removal efficiencies.

Comment No. 4

II.D Dry Scrubbers Are Not BACT

Dry scrubbers are not BACT for Red River because wet scrubbers are feasible, remove much higher amount of SO2, and have no adverse energy, environmental or economic impacts. In a recent comprehensive review and comparison of wet and dry scrubber technology, Sargent & Lundy reported that equipment suppliers will guarantee up to 95%

[9] In re: Newmont Nevada Energy Investment, L.L.C., TS Power Plant, PSD Appeal No. 05-04, December 21, 2005, pg. 43.

reduction for dry scrubbers (S&L 3/07, p.6) and for wet FGD, they reported that equipment vendors will guarantee up to 99% SO2 removal. Id. P. 10.

Consultants to the developer of a Powder River Basin coal-fired boiler acknowledged nearly three years ago that they could no longer justify using dry scrubbing as the basis for BACT determinations. The memo stated:

> The proposed permit SO2 limits of 0.10 lb/MMBtu 30-day average and the 0.09 lb/MMBtu yearly average will represent the lowest permit level (we are aware of) for a dry scrubber system. We do not believe that this one single permit would immediately adversely impact the future of the dry scrubbing (SDA) industry but it does continue a trend of lower emission levels that will eventually require that the flue gas de-sulfurization industry migrate to wet scrubbers for all coal fired units including PRB fired units.
>
> Currently SO2 emission level limits in Japan are set at 10 ppm, which is available from several wet scrubbing systems. Spray dryers are currently limited to limited periods of operation at outlet SO2 emission of approximately 25ppm. The Sierra Club and other environmental organizations are likely aware of the SO2 limits being set in Japan, since they have demonstrated awareness of lower emission limits for NOx in Europe and will likely eventually push for US coal plants to meet SO2 limits at least as stringent as those established in Japan. We believe this situation will be driving force that will likely eventually push the flue gas de-sulfurization industry to more frequent use of wet scrubbing systems for PRB-fueled projects.

WEPCO 2004.

In other words, the industry recognizes that wet scrubbing can achieve much lower SO2 emissions, even with low sulfur coal, and that once permitting agencies realize this, the industry will be required to use wet scrubbing. Unfortunately, permit applicants like ADA-ES, Inc, who are very familiar with the coal-fired boilers, are still making the same disingenuous, boilerplate, excuses for setting higher SO2 emission limits using less efficient dry scrubbing. Their desire to save money by subjecting residents of Louisiana to unnecessary amounts of SO2 pollution should be rejected. LDEQ should apply BACT as required and as intended: by establishing permit limits based on the best control option.

LDEQ Response to Comment No. 4

The commenter states that "**the industry** recognizes that wet scrubbing can achieve much lower SO2 emissions" (emphasis added). The commenter does not specify what "industry." Every example given by the commenter for the use of wet scrubbing involved the permitting of coal-fired boilers. This project does not involve the combustion of coal to generate electricity, steam or other utility. The proposed project will use the coal as a raw material to manufacture steam activated carbon. The exhaust gases from the proposed project will have different characteristics from exhaust gases than from coal-fired boilers. The exhaust gases will exit at considerably higher temperature and with a higher moisture content. For this reason, control technologies and conclusions relating to coal-fired boilers can not be considered to be "transferable" to the proposed facility.

See LDEQ Responses to Comments No. 1, No. 2, and No. 3 relative to this comment.

Comment No. 5

II.D BACT SO2 Emission Rate Are Internally Inconsistent

The Briefing Sheet, page 5, states that BACT for SO2 emissions from the MHF is 101.2 lb/hr based on a 30-day rolling average. The Preliminary Determination Summary, page 20, likewise states that BACT for SO2 from the MHFs is 101.2 lb/hr. However, the Specific Conditions in the proposed Draft Permit sets a maximum allowable emission rate for SO2 emissions form the two production lines of 121.44 lb/hr. Presumably, 100% of the SO2 comes from the MHFs. This discrepancy in SO2 emission rates should be resolved.

LDEQ Response to Comment No. 5

There is not a discrepancy in the SO_2 emission limits. Variation is a normal part of any industrial process. Because a 30-day rolling average could mask a short term spike in SO_2 emissions, LDEQ establishes two SO_2 emission limits. The BACT SO_2 emission limit is 101.2 lb/hr , expressed as a 30-day rolling average; the maximum hourly SO_2 emission limit is 121.44 lb/hr.

Comment No. 6

II.E Limits Expressed Two Ways

All of the emission limits in the Draft Permit are expressed in pounds per hour ("lb/hr"). This does not assure that emission limits are met continuously, as they must be to comply with BACT.

BACT emission limits must be met continuously. The statue and regulations define BACT as an "emission limitation." CAA Sec. 169(3) U.S.C. Sec 7479(3) and 40 CFR 52.21 (b) (12). The CAA defines the term "emission limitation" as "a requirement established by the State or the Administrator which limits the quantity, rate, or concentration of emissions of air pollutants on a **continuous** basis, including any requirement relating to the operation or maintenance of a source to assure continuous emission reduction..." CAA Sec. 302(k), 42 U.S.C. Sec. 7602(k) (emphasis added).

The NSR Manual likewise states that BACT emission limits or conditions must be met on a continual basis (satisfied by the ppm or lb/MMBtu limits) and demonstrate protection of short-term ambient standards (written in pounds/hour). NSR Manual p. B.56. Elsewhere: "it is best to express the emission limits in two different ways with one value serving as an emissions cap (e.g., lb/hr) and the other ensuring continuous compliance at any operating capacity (e.g., lbs/MMBtu)." NSR Manual, p. H.5.

However, the Draft Permit does not contain any instantaneous limitations, in units such as parts per million ("ppm") or grains per dry standard cubic feet ("gr/dscf") that would assure continuous compliance. The permit should be revised to express all BACT emission limits in two ways to assure continuous compliance and to cap emissions.

LDEQ Response to Comment No. 6

The full quote in the NSR Manual actually begins with the qualification: "In general, it is best to express the emission limits in two different ways . . . ."[10]

Specific Requirement No. 1 of the proposed permit requires the facility adhere to an SO_2 emission limitation of < 0.20 lbs/MMBTU of heat input. This condition provides a limit on the emissions at "any operating capacity" as noted in the comment. Specific Requirement No. 6 of the proposed permit requires the facility to use a continuous emissions monitoring system for SO_2. These requirements coupled with lb/hr limitation (which serves as the emissions "cap") will ensure the limits are met on a continuous basis.

See Response to Comment No. 5 for further details relative to this comment.

Comment No. 7

III. SCR, NOT SNCR IS BACT FOR NOX CONTROL

The Red River Environmental (RRE) BACT review incorrectly concluded that SCR is technically infeasible to control NOX from the off gasses produced from heating lignite coal, in part SCR is not and cannot used on lignite and sub-bituminous coal-fired boilers. This is incorrect. SCR is permitted and used on lignite fired and sub-bituminous coal fired equipment in the USA and Europe and is therefore technically feasible for the RRE project.

[10] New Source Review Manual (p. H.5).

> Even if SCR has never been used on precisely the same technology to be used at RRE. The New Source Review (NSR) Manual warns at p. B. 16 that "The fact that a control option has never been applied to process control units similar or identical to the proposed does not mean it can be ignored in the BACT analysis."

While RRE has not literally ignored, SCR, RRE did not meet their burden of proof required to carefully analyze SCR and present a high level of detail that justified rejecting SCR.

Specifically RRE claimed that SCR is technically infeasible for RRE NOx control because of the high level of PM and alkali-and alkaline metals and materials in the exhaust stream would damage the catalyst, as shown in pilot scale tests. RRE also claimed that SCR is not used on any lignite-coal-based process in the US. This conclusion was incorrect and misleading, because SCR is used in may high-dust exhaust streams on a variety of coal-fired units, including sub-bituminous coal units in the US, and lignite-fired units in Europe.

SNCR was picked as BACT for NOx control at RRE, but no control efficiency is mandated in the permit for SNCR. SNCR control efficiency can range from 30%-50%. The permit's failure to require a high rate of NOx removal means that SNCR will not be operated at an appropriately efficient level of NOx removal. A low operating efficiency, especially in the 30% range, would not be a BACT level of control.

The BACT review lacked a cost/benefit analysis of SCR vs. SNCR for NOx control, although the objections to SCR also alleged excessive costs.

III.A. SCR IS TECHNICALLY FEASIBLE TO REDUCE NOX IN A LIGNITE FIRED EXHAUST STREAM

SCR does not have operating experience on lignite fired boilers. Furthermore even if some of its operating experience is on fluidized bed boilers, and on hard and sub-bituminous coal fired equipment, New Source Review guidelines allow for "transfers" of proven pollution control technologies, form similar sources, to the source that is under review, as part of the BACT analysis. The EPA Region IX Manager of the New Source Section recently summarized this obligation with these words:

> "The control alternatives evaluated (in a BACT analysis) should include not only existing controls for the source category in question, but also (through technology transfer) controls applied to similar source categories and gas streams, and innovative control technologies."

Under this doctrine of technology transfer, even if SCR had only been used on hard coal fired boilers, the BACT analysis should have studied whether it could be "transferred" to this lignite fired exhaust stream for NOx control.

For examples, here is a list of existing coal fired power plants successfully burning PRB coal and meeting low NOx limits with SCR:

Pleasant Prairie, WI
Oak Creek, WI
Baldwin, IL
James Miller, AL
Parish Units 5-8, TX
New Madrid, MO
Havana Unit 6, IL
Dan Karn Units 1-2, MI
Presque Isle, WI
Hawthorne, MO

Plainly SCR is technically feasible for NOx removal from sub-bituminous (PRB) coal, which has many of the same adverse minerals and metals exhaust stream composition as does lignite. But SCR, which has been in use for decades on a wide variety of sources, has overcome the challenges of these chemical assaults from PRB upon the catalysts at these and other plants.

Please remember that the applicant RRE has the burden of proof when they rejected SCR which is the most efficiency NOx removal technology. But RRE failed to demonstrate that the exhaust from their facility would be so wildly different from SCR controlled sub-bituminous fired exhaust streams (or lignite coal power plant combustion exhausts), that SCR was technically infeasible.

The New Source Review Manual at p. B.21 states that "A control technology that is demonstrated for a given type or class of sources is assumed to be technically feasible, if it is both "available" and "applicable." (NSR Manual, p. B.17.) A technology is considered "available" "if it has reached the licensing and commercial sales stage of development." (Ibid. p. B.18.)

As previously cited, SCR is plainly available and has been in use for decades in the USA on all coal types, including sub-bituminous, and in Europe on lignite (brown) coal. Furthermore, SCR is applicable because of its European use to control NOx from Lignite (Brown) coal on the Dormagen plant in Germany, and Voitsberg, Austria. I have attached a list of Argillion and CERAM SCR installations documenting SCR's use at Dormagen and Voitsburg, and on many other difficult exhaust streams, including other coal types, waste incinerators, wood fired boilers, and coke ovens in Europe.

All of these sources of information, such as manufacturers and permits in other states, and other countries, regarding NOx control technology must be included in a legally adequate BACT review. In an Advice Memorandum, Gary McCutchen, Chief of the EPA New Source Review Section, pointed out:

"The BACT Clearinghouse is often used to find the most stringent control technology, as are calls to experienced permit review engineers in other states, discussions with control equipment manufacturers, and reviews of literature such as the McIlavine Newsletter." (July 28, 1987, memo to Richard Grusnick, Alabama Department of Environmental Management)

Mr. McCutchen's recommendations were later memorialized in the NSR Manual at page B.11. In additional the Manual points out that "technologies in application outside the United States (should be reviewed) to the extent that the technologies have been successfully demonstrated in practice on full scale operations." This directive means that SCR experiences on lignite boilers in Europe and elsewhere should have been reviewed in the BACT analysis, since "all available control techniques must be considered in the BACT analysis." (Manual, p. B. 16)

Despite this guidance, we did not see RRE cite any SCR vendors, SCR manufacturer guarantees for lignite units or European experiences. Given these shortcomings, RRE did not meet its burden of proof.

Furthermore, the US EPA has stated that SCR experiences in the USA and elsewhere, including installation on sub-bituminous coal fired units, have been positive. In a February 27, 2007 Federal Register notice, the EPA declared the SCR's successful control of NOx on European lignite-fired units can legally be extrapolated to justify SCR on USA lignite-fired units:

> "EPA has concluded that SCR can be used in lignite boilers in the United States and catalyst suppliers have indicated they will offer performance guarantees on these applications."

The EPA also alluded to potential SCR problems such as plugging and binding, but concluded that duct and catalyst design, and on-line cleaning methods such as soot blowers and sonic horns could correct any problems. (71 Fed. Reg. 9868 et al., (2/27/06)

While RRE claimed that (uncited) pilot scale tests demonstrated problems with SCR on lignite units, other pilot tests concluded that any SCR problems were surmountable:

> "...the ash deposit (on the catalyst) was extremely friable and not bound tightly ....It is believed this type of deposition could be controlled with

> soot blowing." (Laumb and Benson. SCR Catalyst Blinding for Sub bituminous and Lignitic Coals: Field Results. (attached)

RRE also fails to inform reviewers that lignite fired units with SCR are currently permitted and under construction in Texas. Adequate BACT evaluations are required to include this type if information, according to the following advice memorandum:

> "The lowest permit limit required in any construction permit which has been issued anywhere in the country in the time period up to and including the public comment period on a permit should have been considered."

III.B. TAIL-END SCR NOT EVALUATED

The claims as to fouling and pressure drop can be designed around by increasing the removal efficiency of the cyclones (see Ap. Fig. 2-2), by using large pitch SCR catalyst, by properly specifying the catalyst management plan, and by using soot blowing, techniques routinely used to minimize fouling and plugging of SCR catalyst on PRB-fired boilers. Further, the SCR can be located at the tail end of the pollution control train, where SO_2 and PM concentrations are very low. Some utilities have chosen this as the cheapest option. See Oak Creek Ap., WEPCO, WI, cited in SO_2 section. Tail end SCRs are abundant in Europe. See also CERAM list.

LDEQ Response to Comment No. 7

The first step in the BACT selection (top-down) process is to identify, for the emissions unit in question, all "available" control options. Available control options are those air pollution control technologies or techniques with a practical potential for application to the emissions unit and the regulated pollutant under evaluation. The control alternatives should include not only existing controls for the source category in question, but also (through technology transfer) controls applied to similar source categories and gas streams. RREP properly identified Selective Catalytic Reduction (SCR) as an "available" control option. Though SCR has not been applied to a Multi-Hearth furnace, it has been applied to many pulverized coal-fired (PC) units.

The second step in the top-down process is to eliminate technically infeasible options. According to the NSR Manual, a demonstration of technical infeasibility should be clearly documented and should show, based on physical, chemical, and engineering principles, that technical difficulties would preclude the successful use of the control option on the emissions unit under review. Technically infeasible control options are then eliminated from further consideration in the BACT analysis.

It is essential to note the significant dissimilarities in the manufacturing operations and fuel sources at the proposed facility from other units that use SCR. Mr. Williams provides lists of various, dissimilar sources that apply SCR controls to Powder River Basin coal and other (non-lignite) species of coal in the United States. This list highlights the fact that SCR has not been applied to any commercially-available lignite-fired or fueled sources in the United States.

An SCR can be placed in two areas: before or after the particulate control device. SCR systems are dependant upon the temperature of the flue gas stream to allow for the catalytic reaction to occur. The flue gas temperature at the tail end of the pollution control train will be less than 200° F. An SCR placed in this tail end configuration would require all of the flue gas to be reheated to a range that is optimum for SCR operation, somewhere between 570° F and 840° F. Additional fuel use will be necessary to achieve these temperatures. The emissions generated by burning the additional fuel eliminates this as a viable option.

An SCR placed upstream of the particulate control device is commonly referred to as a "high dust SCR." In the area upstream of the particulate control device, it is generally understood that the SCR will experience very high particulate loading, resulting in rapid catalyst deactivation, erosion, and poisoning.[11]

Physical and chemical deactivation are the two primary concerns when discussing catalyst deactivation. The primary method of physical deactivation is the exposure of the catalyst to excessive amounts of particulate in the flue gas stream. The high amount of particulate matter masks the catalyst's activation sites and causes rapid degradation of the catalyst and loss of effectiveness (masking).

Poisoning and inhibition are two common methods by which chemical deactivation can occur. Catalyst poisoning is caused by an irreversible reaction of the catalyst with a contaminant in the gas stream. Catalyst inhibition is the reversible absorption of a contaminant of the surface. A lignite-derived gas stream is rich in constituents that can poison or inhibit SCR catalyst.

Catalyst poisoning results from the presence of trace elements and strong alkaline substances (Na, K, Ca, etc.) in flue gas.[12] From the referenced paper:

> Alkaline metals can chemically attach to active catalyst pore sites and cause binding. Sodium (Na) and potassium (K) are of prime concern especially in their water-soluble forms which are mobile and penetrate into the catalyst pores.
>
> Earth metals, especially calcium (Ca), can react with SO_3 absorbed within the catalyst to form $CaSO_4$ and blind the catalyst.

In sum, the technical difficulties associated with the application of SCR to a Multi-Hearth furnace render this technology infeasible.

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[11] Sanyal, A. and Pircon, J.J., *What and How Should You Know About U.S. Coal to Predict and Improve SCR Performance?* Proceedings of the USEPA/DOE/EPRI Combined Power Plant Air Pollution Control "Mega" Symposium, Chicago, IL, August 20-23, 2001.

[12] Gutberlet, H., Schluter, A., and Licata, A., *Deactivation of SCR Catalyst*, Proceedings of the 2000 Conference on Selective Catalytic – Selective Non-Catalytic Reduction for NOx Control, NETL Publications.

Comment No. 8

III.C ADDITIONAL ISSUES
TEXAS BACT DETERMINATIONS

RRE should not be allowed to rely on the BACT determinations made for the Norit plant in Texas as Texas has a unique BACT definition (at the moment none) and does not use the top down BACT process.

LDEQ Response to Comment No. 8

The NSR Manual includes the following discussion:

> The objective of the top-down BACT analysis is to not only identify the best control technology, but also a corresponding performance level (or in some cases performance range) for that technology considering source-specific factors. Many control techniques, including both add-on controls and inherently lower polluting processes can perform at a wide range of levels. Scrubbers, high and low efficiency electrostatic precipitators (ESPs), and low-VOC coatings are examples of just a few. It is not the EPA's intention to require analysis of each possible level of efficiency for a control technique, as such an analysis would result in a large number of options. **Rather, the applicant should use the most recent regulatory decisions and performance data for identifying the emissions performance level(s) to be evaluated in all cases** (emphasis added).[13]

LDEQ's BACT analysis was not limited to the NORIT Americas facility. The NORIT Americas facility is unique in that it is the only activated carbon manufacturing plant with similar design and operating criteria in the United Sates as compared to RREP. LDEQ performed a BACT analysis based on the regulations and definitions applicable in the State of Louisiana. Irrespective of the unique definition of BACT in Texas, the facility's similarity to the Red River facility was the overriding factor in its consideration for BACT analysis.

Comment No. 9

QUESTIONABLE PUBLIC POLICY

Furthermore, it is bad policy to reject a control technology simply because it has not been installed on exactly the type of plant under discussion. This policy would mean that Louisiana would never be the first jurisdiction to enjoy installation of newly designed and more-efficient pollution control equipment.

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[13] New Source Review Manual (pp. B-23 – B-24)

LDEQ Response to Comment No. 9

The first step in the BACT selection (top-down) process is to identify, for the emissions unit in question, all "available" control options. Available control options are those air pollution control technologies or techniques with a practical potential for application to the emissions unit and the regulated pollutant under evaluation. The control alternatives should include not only existing controls for the source category in question, but also (through technology transfer) controls applied to similar source categories and gas streams. Red River properly identified Selective Catalytic Reduction (SCR) and wet flue gas desulfurization (FGD) as "available" control options.

See LDEQ Responses to Comments No. 2, No.3, No. 4, and No. 7 relative to this comment.

Comment No. 10

Pm 2.5

We did not see, in the RRE application, monitoring of the resulting increased concentrations of PM 2.5 caused by the RRE project. Since other large pollution sources including a coal mine and coal fired power plant are nearby, elevated ambient levels of PM 2.5 are likely even before the RRE emissions are added in.

LDEQ Response to Comment No. 10

Regarding speciation of $PM_{2.5}$ in Title V permits, EPA's April 5, 2005 Memo "Implementation of New Source Review Requirements in PM2.5 Nonattainment Area" states that because EPA has "not promulgated the PM-2.5 implementation rule, administration of a PM-2.5 PSD program remains impractical. Accordingly, States should continue to follow the October 23, 1997, guidance for PSD requirements." EPA's October 23, 1997 guidance states that "EPA believes that PM10 may properly be used as a surrogate for PM2.5 in meeting NSR requirements until these difficulties [PM2.5 monitoring, emissions estimation and modeling] are resolved."
According to EPA (72 FR 54114, September 21, 2007), a "State implementing a NSR program in an EPA approved State Implementation Plan (SIP) may continue to rely on the [aforementioned] interim surrogate policy until we approve a revised SIP addressing these requirements."

Thus, evaluation of $PM_{2.5}$ under NSR will not be required until such time as EPA acts on LDEQ's SIP required only after EPA finalizes its September 21, 2007 proposal establishing $PM_{2.5}$ increments, significant impact levels, and significant monitoring concentration pursuant to the federal PSD program. EPA's April 25, 2007 $PM_{2.5}$ Implementation Rule will not necessitate a SIP submittal since LA has no $PM_{2.5}$ nonattainment areas.

Comments 11-21 were submitted as additional comments received January 28, 2008 from Mr. John Williams.[14]

Comment No. 11

The environmental Assessment Statement claims there will be little or no waste water. But the project will have cooling towers and than means cooling tower blowdown and wastewater that must go somewhere. The EAS should have given an accurate description of the wastewater quantity and quality, and destiny. Also, the proposed cooling tower drift PM emissions is not BACT. I have attaching a BACT determination for Archer Daniels Midland showing 0.0005% as BACT for cooling tower drift.

LDEQ Response to Comment No. 11

As described on page 2 of the EAS, the bulk of the waste water generated, including cooling tower blow down, will be introduced into and evaporated in the SDA.

The temperature and relative humidity seen in Louisiana is significantly different from that experienced in Iowa. The extreme difference in operating conditions would suggest that it would be more appropriate to use a BACT determination for an area that operates in a similar environment. The Cleco Power, LLC Rodamacher facility currently under construction, is locacted in Louisiana approximately 73 miles from the proposed RREP site. The RACT/BACT/LAER Clearinghouse ID for this project is LA-0202. BACT was determined as 0.005% for cooling tower drift.

Comment No. 12

The site's roads will be paved. But, there will be a lot of dust and ash and coal particles generated at this plant. The air permit should require the roads to be washed and swept periodically. These type of road cleaning will reduce PM and have been ruled BACT at other similar facilities. I am attaching references to BACT determinations for road cleaning at Wisconsin Public Service and Homeland Energy Solutions.

LDEQ Response to Comment No. 12

Specific Requirement No. 90 of the draft permit requires the facility to use best operating practices in order to control fugitive PM_{10} emissions for the facilities roads. It is intended for the best operating practices to include cleaning and sweeping of the roads as necessary. To clarify this issue Specific requirement 90 has been changed to read:

[14] See Mr. John Williams' facsimile to LDEQ, January 28, 2008; pp.1-15 of 15 (EDMS Document No. 36556035)

"Permittee shall pave all haul roads within the RREP facility. Permittee shall use best operating practices, including cleaning and sweeping of the roads as necessary, in order to control emissions of PM10. Determined as BACT."

Comment No. 13

The plant will generate 4.5 tons of waste every hour or about 40,000 tons a year. The EAS does not say where will it go. Is it going to fill up a local landfill so there will be no place for local garbage? The scrubber wastes will also contain toxics including mercury. the EAS should have described and studied the impacts on landfill capacity and the potential for these wastes to leach into groundwater.

LDEQ Response to Comment No. 13

The Environmental Assessment Statement conservatively estimates that approximately 4.4 tons of solid waste will be generated from the particulate and SO_2 emission control devices per hour. The EAS further states that the solid waste will be disposed of in an approved solid waste facility in accordance with the applicablefederal and state programs. La. R.S. 30:2162 requires the LDEQ to evaluate the volume and types of solid waste managed in Louisiana every two years and to determine the permitted capacity that is available to safely manage the solid waste. The LDEQ can take any additional capacity required into account in future permitting. Per the federal RCRA regulations (and equivalent state regulations), the facility will be required to properly characterize and dispose of all waste streams that leave the facility.

Comment No. 14

The plant should be producing gypsum from their wastes and selling it instead of dumping it in a landfill. The EAS should have discussed this issue.

LDEQ Response to Comment No. 14

There is no regulatory requirement that would require the facility to produce gypsum. The gypsum produced by the dry spray dryer absorber (SDA) yields a gypsum that has various contaminants. The cost to refine the gypsum to an acceptable product exceeds the cost to produce gypsum from other sources. The "cost" of refining the gypsum for sale at a price to compete with other gypsum sources would exceed the cost to dispose of the gypsum. The balancing of factors under the IT analysis does not warrant sale of the gypsum at this time.

Comment No. 15

The air permit application does not analyze the impacts from the air pollution on soils and vegetation. It claims if air pollution standards are met there are no impact on soils and plants. That isn't true. Air pollution can harm soils and plants at levels below the legal limits. The air permit application should have included calculations of how much nitrogen, for instance, is going to fall on the ground and whether those levels will be high enough to harm plants.

LDEQ Response to Comment No. 15

Specifically with regard to air emissions, the Clean Air Act required the Environmental Protection Agency (EPA) to establish health-based National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards. *Primary standards* set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. *Secondary standards* set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. According to EPA, air quality that adheres to such standards is protective of public health, animals, soils, and vegetation.

EPA's Office of Air Quality Planning and Standards (OAQPS) has set NAAQS for six principal pollutants, called "criteria" pollutants – lead (Pb), particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), and ozone (note that volatile organic compounds (VOC) and nitrogen oxides (NO_X) are surrogates for ozone). RREP has demonstrate that the maximum ground level concentration of each criteria pollutant will be below its NAAQS.

At the state level, Louisiana has established Ambient Air Standards (AAS) for a group of compounds known as Toxic Air Pollutants (TAP). These state ambient air standards for TAPs are also deemed to be protective of human health and the environment. TAPs include the federally-regulated Hazardous Air Pollutants (HAP), as well as a handful of other compounds such as ammonia and hydrogen sulfide. LAC 33:III.Chapter 51 requires the permit applicant demonstrate that TAP emissions be below their respective AAS. RREP has demonstrated thar TAP emissions will be below their respective AAS.

Comment No. 16

The plant will produce fluoride air emissions which are harmful to plants and humans at low levers. The EAS never discussed the impacts on plants and soils from the fluoride emissions. Pine trees, which are in the vicinity, are especially sensitive to fluoride emissions.

LDEQ Response to Comment No. 16

LDEQ ran a screening model on the hydrogen fluoride emissions from the AC manufacturing facility using ISCST3 and the results do not exceed the AAS. The calculated maximum ground level concentration is significantly below the Louisiana Air Quality Standard as shown in the following table:

Pollutant	Time Period	Calculated Maximum Ground Level Concentration	Louisiana Air Quality Standard (NAAQS)
Hydrogen Fluoride	8-hour	0.111μg/m^3	61.90μg/m^3

See also LDEQ Response to Comment No. 15.

Comment No. 17

The EAS says there will be 50 local jobs created. Is there any evidence this company made a formal, binding commitment to hire local residents? Have they already started a jobs training program, for instance, at the community college? The EAS should have discussed whether these jobs will really to got local residents and what the company should do to increase local hiring.

LDEQ Response to Comment No. 17

There is no regulatory requirement that would require the facility to make a formal, binding commitment to hire local residents. Regardless of who is hired, there will be positive economic and social benefits to the State of Louisiana and its citizens as a result of this project. See the Cost/Benefit analysis in the Basis for Decision.

Comment No. 18

The company should have chosen SCR instead of SNCR to reduce NOX pollution. SCR is much more efficient. The company claims that SCR needs too much maintenance but they never provided any figures showing that running an SCR would be too expensive, especially since it will reduce the pollution more.

LDEQ Response to Comment No. 18

See LDEQ Response to Comment No. 7 relative to this comment.

Comment No. 19

The EAS never told us exactly what hazardous wastes will be generated, how much will be generated, how many truckloads of hazardous wastes will leave the site, and where will it go? The EAS should have discussed whether all of the trucks coming to and from this plant will damage the local roads and who will pay for the damage.

LDEQ Response to Comment No. 19

The Environmental Assessment Statement addresses hazardous waste generation at the proposed facility. Specifically, the EAS states that "small quantities of hazardous waste as a result of miscellaneous support activities are expected to qualify the facility as either a Conditionally Exempt Small Quantity Generator (less than 100 kilograms per month, or less than 220 pounds per month), or as a Small Quantity Hazardous Waste Generator (100 kilograms to 1,000 kilograms per month, or 220 to 2,204 pounds per month) based on the Resource Conservation and Recovery (RCRA) criteria. Hazardous waste will not be permanently stored on-site."[15]

The facility is located in a rural area directly adjacent to the mine that supplies the lignite. The distance between the mine and the proposed facility is minimal and because the mine is an existing facility the roads have been built to handle this type of truck traffic. This is an isolated area with minimal, if any, local traffic.

Local roads were discussed further in the EAS. [16]

Comment No. 20

How far will the neighbors have to evacuate if there is a failure of the ammonia tank or a crash of an ammonia supply tanker truck? A mile? A half mile? The EAS should have discussed this.

LDEQ Response to Comment No. 20

See Section VII.A. of the Basis for Decision concerning Part 68. Facilities that process, handle, or store a regulated substance as defined below are subject to LAC 33:III.59 Chemical Accident Prevention and Minimization of Consequences, which incorporates by reference 40 CFR Part 68 Chemical Accident Prevention Provisions, and would be required to include evaluations as described in Comment No. 20. The facility in question does not handle a regulated substance as defined below.

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[15] See EAS, Section I EDMS Document No. 36461654, p. 595 of 903)
[16] See EAS, Section II EDMS Document No. 36461654, pp. 604-606 of 903)

"The owners and operators of stationary sources producing, processing, handling, or storing substances listed in 40 CFR 68.130, Table 59.0 of LAC 33:III.5907, or Table 59.1 of LAC 33:III.5913 in quantities greater than the threshold quantities listed in those respective places (as determined in the manner described in 40 CFR 68.115), have a general duty in the same manner and to the same extent as Section 654 of Title 29 of the United States Code (Occupational Safety and Health Act) to identify hazards that may result from accidental releases of such substances using appropriate hazard assessment techniques, to design and maintain a safe facility, and to minimize the off-site consequences of accidental releases of such substances that do occur. For the purposes of this Section the provisions of R.S. 30:2026 (Citizen Suits) shall not be available to any person or otherwise be construed to be applicable to this Section. Nothing in this Section shall be interpreted, construed, implied, or applied to create any liability or basis for suit for compensation for bodily injury or any other injury or property damages to any person that may result from accidental releases of such substances."

Comment No. 21

Lignite coal has a lot of trace elements, materials, and hydrocarbons in it that will be emitted in the processing of the coal. The air permit application never provided the figures showing exactly how many tons of chemicals like benzene and metals are in the lignite, how much will be produced by heating up the lignite, and how much the afterburner will reduce the hydrocarbons or the baghouse will reduce metals. I am unable, during the public comment period, to perform calculations for all likely toxics emitted from lignite coal. Here are a couple of examples of how I am unable to achieve the same calculated results that are presented in the RRE application.

My data shows Arsenic in lignite at 8.52 lb per million lbs (AP-42, reference 33, attached). Since RRE will process 350 million lb then there would be 2982 lb. Of Arsenic emitted, with controls, or about 1.5 tons. RRE claims less than .001 ton. Of arsenic emitted.

Cadmium is 9.46 lb. Per million lbs, for 3311 lbs emitted, or about 1.65 tons. RRE claims only .008 tons.

Benzene is about 511 lb. Per million lbs. or about 178,850 lb emitted. Given 98% control by the afterburner, there would be 3577 lb emitted, or 1.79 tons. RRE claims only .004 tons emitted.

Similar disparate calculations would occur for emissions of acetaldehyde, acrolien, acetophenone, and other air toxics and metals, given the controlled emissions factors presented in AP-42. I am attaching AP-42 emissions factors.

LDEQ Response to Comment No. 21

The permit application adequately reviewed the expected emissions from the processing of lignite coal. The calculations in Appendix B of the permit application provide detailed emission calculations for the proposed facility.

NO_X, CO, and VOC concentrations are based on engineering analysis and vendor guarantees. The PM_{10} emissions are based on vendor guarantees for outlet grain loading. The remainder of the emissions are based on emission factors derived from coal analysis. The use of AP-42 emission factors is not appropriate when analytical data is available.

Comment No. 22 was given by Mr. Jason Fontenot during the public hearing conducted on January 22, 2008.[17]

Comment No. 22

I can see that the sites in the plant will be paved but there will be a lot of dust and ash and coal particulates on the pavement. I think the air permit should require some type of periodic washing and sweeping, possibly to prevent any adverse conditions in our waterways and things like that.

LDEQ Response to Comment No. 22

See LDEQ Response to Comment No. 12 relative to this comment.

Comments 23-24 were submitted by EPA Region 6 during the public comment period.[18,19]

Comment No. 23

The vertical mixing height should extend beyond 3000 meters (m). If the vertical mixing height does not extend past 3000 m, it is possible that CALPUFF will not accurately represent pollutant transport.

[17] See *Public Hearing and Request for Public Comment Transcript*, January 22, 2008, pp. 27-28 of 234 (EDMS Document No. 36682883)
[18] See USEPA Region 6's Adina R. Wiley email to LDEQ, January 28, 2008, pp. 1-3 of 3 (EDMS Document No. 36556027)
[19] See USEPA Region 6's Jeff Robinson letter to LDEQ, January 28, 2008, pp. 1-2 of 2 (EDMS Document No. 36572205)

Response to Comment No. 23 (prepared by Red River Environmental Products and accepted by LDEQ)[20]

A value of 3000 m was assumed for both the maximum overland mixing height (ZIMAX) and the maximum overwater mixing height (ZIMAXW). This value of 3000 m is the default value recommended in Table 4-43 of the CALMET User's Guide[21]. There is nothing in the record to support a deviation from the default value is warranted.

It should also be noted that the Federal Land Manager (FLM) for the Caney Creek Wilderness Area (CCWA) concurred with our using the default value for this variable.

Comment No. 24

The applicant should provide a technical justification for the selection of the R1, R1max, R2, and R2max variables in the CALMET setup. We feel that values R2 = 10 kilometers (km) and R2max = 50 km may be uncharacteristic for this application.

Response to Comment No. 24 (prepared by Red River Environmental Products and accepted by LDEQ)[22]

Our response is supported by precedent, a quantitative analysis, and the FLM concurrence with the approach. In addition, we conducted sensitivity modeling to demonstrate that these variables do not have a meaningful effect on the results. Following a summary of what we included in our modeling, each of these aspects of our response are presented below.

Table 1 summarizes the values that RREP used for the variables questioned by EPA.

Table 1 RREP values for R1, R2, RMAX1, and RMAX2

Variable	Explanation	RREP Value
R1	Weighting parameter for the diagnostic wind field in the surface layer (km). R1 is the distance from an observational station at which the observation and the first-guess wind field are equally weighted.	5
R2	Weighting parameter for the diagnostic wind field in the layers aloft (km). R2 is applied in the upper layers in the same manner as R1 is used in the surface layer.	10

[20] See RREP's Response to EPA's comment (EDMS Document No. 36744233)
[21] A User's Guide for the CALMET Meteorological Model (Version 5). Scire, Robe, Fernau, and Yamartino. January 2000.
[22] See RREP's Response to EPA's comment (EDMS Document No. 36744233)

Variable	Explanation	RREP Value
RMAX1	Maximum radius of influence over land in the surface layer (km).	50
RMAX2	Maximum radius of influence over land in layers aloft (km).	50

Because there are no default values for these variables they must be specified by the user. Generally speaking, these variables would be set to very small values if the elevations varied significantly (such as in the Rocky Mountains), or to very large values if over open desert (such as West Texas).

In the case of our analysis the majority of the modeling domain is fairly flat with more variations in elevation occurring in the northern quarter of the modeling domain (see Figure 1).

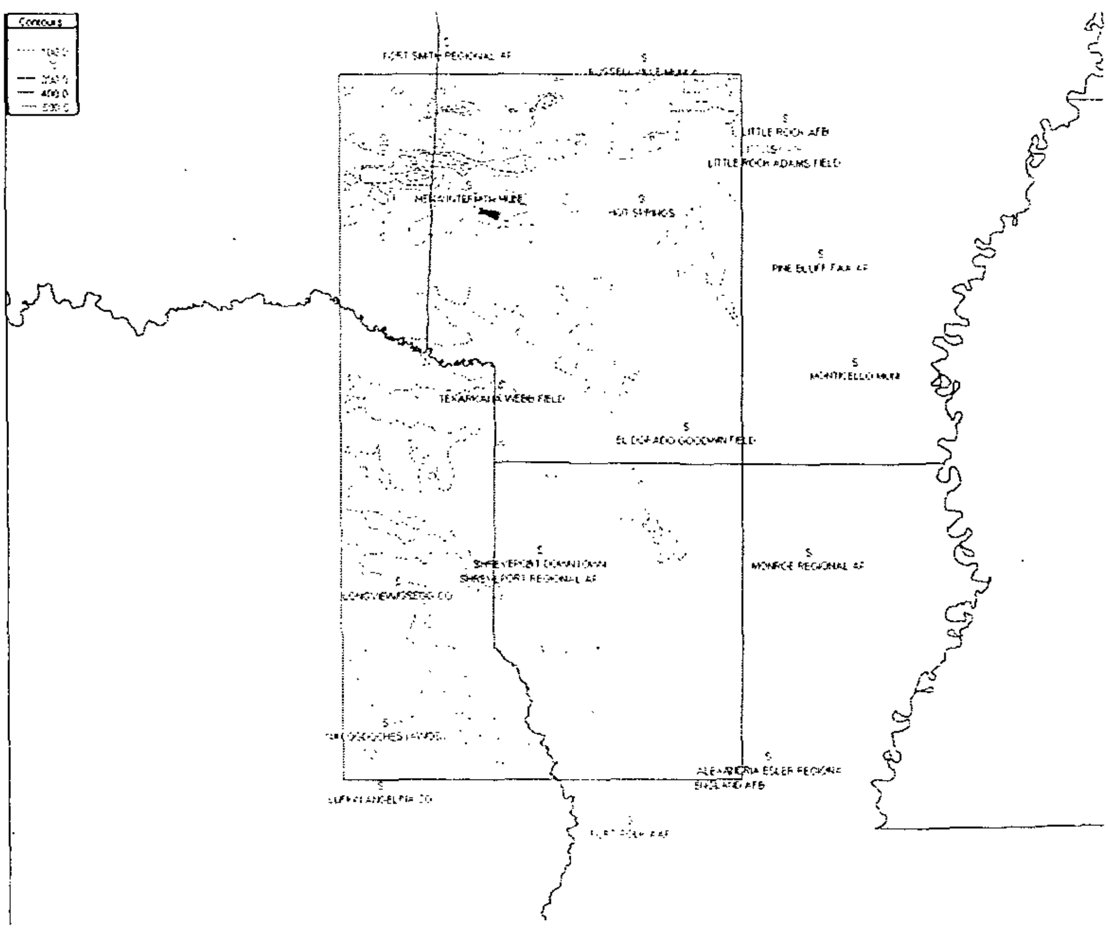

Figure 1

Terrain Contours and Surface Stations in CALMET processing

Because the elevations in the vast majority of the modeling domain do not vary much one may think that very large values of R1, R2, R1MAX, and R2MAX would be appropriate. However, because the elevations in the northern portion of the modeling grid do vary somewhat we concluded that using values roughly in the middle of those generally used in CALMET processing was appropriate.

To determine the precise values to be used we consulted the most recent Class I analysis conducted for the CCWA, specifically for the Southwestern Electric Power Company (SWEPCO) Hempstead County Project, located near Fulton, Arkansas. Because these values were consistent with our interpretation of the topography of our modeling domain, these identical values were used. (While the permit application is still being reviewed, the Modeling Protocol that put forth this approach was approved by the Arkansas Department of Environmental Quality in the Fall of 2006.)

Precedent supporting our approach

A variety of other sources support the values we used for this analysis. Two of the ones most pertinent to our analysis are the following:

BART Modeling Protocol to Determine Sources Subject to BART in the State of Louisiana, February 2007

Table B-7 recommends the following:

- R1: 1 km
- R2: 1 km
- R1MAX: 30 km
- R2MAX: 30 km

While we chose R1 and R2 values slightly larger than those recommended by the LDEQ's BART Modeling Protocol, the values for R1MAX and R2MAX are consistent with the values we assumed for our analysis.

Class I Air Quality Modeling Study for the Proposed 275-MW Coal-Fired Generation Facility, City Utilities of Springfield, April 2004

City of Springfield Utilities in Springfield, Missouri conducted Class I modeling for the Upper Buffalo Wilderness in northern Arkansas. Their analysis assumed the following:

- R1: 5 km
- R2: 5 km
- R1MAX: 40 km
- R2MAX: 40 km

These values are nearly identical to the ones we used in our analysis.

Quantitative analysis of topography supporting our approach

We also conducted a detailed assessment of the topography of the modeling domain to characterize the general change in elevation. Specifically, we examined the elevations at points located at 1000 m intervals within a 20 km by 20 km grid centered on each surface station within the modeling domain and calculated the change in elevation for each of those points, as well as the standard deviation of the change in elevation at each of those points. These values were then averaged to help describe the typical change in elevation within the modeling domain. This analysis is summarized in the following table.

Table 2 Change in elevation analysis

Surface Station	1 km by 1 km analysis of change in terrain elevation within 20 km of surface station		Slope (cm/m)
	Average change in elevation (m)	Standard deviation of change in elevation (m)	
Shreveport Regional AP (LA)	4	4	0.4
Shreveport Downtown (LA)	4	4	0.4
Texarkana Webb Field (AR)	6	5	0.6
El Dorado Goodwin Field (AR)	6	5	0.6
Hot Springs (AR)	22	24	2.2
Mena Intermtn Muni (AR)	27	28	2.7
Longview/Gregg Co. (TX)	8	7	0.8
Nacogdoches (AWOS) (TX)	11	9	1.1

As can be seen from the table above, the topography near the surface meteorological stations within the modeling domain is quite flat. For the majority of the modeling domain the average change in elevation is on the order of single meters per km. This table confirms the overall topography that is illustrated in Figure 1.

Of particular interest is the slope calculated for the terrain around each station. Only three of the stations have a slope that is more than 1 cm change in elevation per 1 m, and none of those stations (Hot Springs, Mena Intermtn Muni, and Nacogdoches) is in the path between RREP and the CCWA.

Therefore, with fairly small changes in elevation throughout the modeling domain, R1, R2, RMAX1, and RMAX2 values should not be set to very small values such as one would see in the Rocky Mountains.

FLM review that supports our approach

As was the case with the vertical mixing height, it should also be noted that the FLM for the CCWA concurred with our approach for these variables.

Visibility sensitivity modeling

We also conducted sensitivity modeling to ascertain whether or not modifications to these variables would have any bearing on the conclusion of our analysis.

The Class I analysis conducted addressed PSD Class I Increments, visibility, and deposition. Of those modeling analyses the visibility was controlling; namely the largest change in light extinction predicted was 3.82%, relative to a generally-accepted threshold of 5%.

Therefore, sensitivity modeling was conducted as follows:

- R1 and R2 were varied, with all other variables identical to the original analysis; and
- RMAX1 and RMAX2 were varied, with all other variables identical to the original analysis.

The results of this modeling are presented in Tables 3 and 4.

Table 3 Visibility sensitivity modeling, R1 and R2 varied

R1 (km)	R2 (km)	Maximum Extinction (%)
50	100	1.65
20	40	2.55
1	1	3.99

As can be seen from the table above, regardless of whether the values for R1/R2 are increased to very high values or whether they are reduced to very small values, the change in the maximum extinction change is quite small. If R1/R2 are decreased to very low values the visibility result slightly increases from 3.82% to 3.99%, but still well below the generally-accepted cutoff of 5%. On the other hand, if R1/R2 are increased to very high values the visibility result improves, from 3.82% to 1.65%.

Table 4 Visibility sensitivity modeling, RMAX1 and RMAX2 varied

RMAX1 (km)	RMAX2 (km)	Maximum Extinction (%)
100	200	3.96
50	100	3.89
5	10	3.81

As can be seen from the table above, regardless of whether the values for RMAX1/RMAX2 are increased to very high values or whether they are reduced to very small values, the change in the maximum extinction change is quite small. If RMAX1/RMAX2 are increased to very high values the visibility result slightly increases from 3.82% to 3.96%, but still well below the generally-accepted cutoff of 5%. On the other hand, if RMAX1/RMAX2 are decreased to low values the visibility result barely changes at all, from 3.82% to 3.81%.

Therefore, even if these values are modified, the overall conclusion of the visibility analysis will not be affected.

Conclusion

We chose values for R1, R2, RMAX1, and RMAX2 that we deemed reasonable for this analysis. These values are supported by a variety of facts:

- They are identical to the most recent CALPUFF analysis performed for the CCWA;
- The ranges of our values are consistent with LDEQ BART guidance as well as a CALPUFF analysis conducted for another nearby Class I area; and
- A qualitative analysis confirmed that the elevations in the modeling domain do not vary much, which is consistent with the values we assumed for these variables.

In addition, while we believe our values for these variables are defensible and appropriate, we nonetheless conducted sensitivity modeling on these variables to ascertain whether or not any changes to those variables would have any meaningful impact on the results of the Class I analysis. Our modeling demonstrated that any reasonable value assumed for these variables does not change the conclusion of analysis—that RREP would not have any significant impact on PSD Class I Increments of deposition at the CCWA, nor would it result in a perceptible change to visibility at the CCWA.

Comments 25-30 were submitted by RREP during the public comment period.[23]

Comment No. 25

In the specific condition section of the proposed PSD Permit on page 30, Condition No. 1, the last date should be November 2, 2007.

LDEQ Response to Comment No. 25

The proposed PSD permit has been updated to reflect November 2, 2007 instead of November 1, 2007.

Comment No. 26

In the specific condition section of the proposed PSD Permit on page 32, second row of table, ID No. should be EQT 52 (it says 54 but that is 1 F), and the Description should be Rail Product Storage Silo 1D Bin Vent.

LDEQ Response to Comment No. 26

The proposed PSD permit has been updated to reflect the changes described.

Comment No. 27

In the General Information Document the Front Gate Coordinates should be 32° 0' 19" Lat, 93° 23' 28" Long.

LDEQ Response to Comment No. 27

The General Information Section of the proposed Title V Permit has been updated to reflect the changes described.

Comment No. 28

In the Inventories Section of the proposed Title V Permit on page 4 of 12, EQT 158 & 159, the units should be lb/hr.

LDEQ Response to Comment No. 28

The Inventories Section of the proposed Title V Permit has been updated to reflect the changes described.

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23 See RREP's email to LDEQ, January 28, 2008, pp. 1-2 of 2 (EDMS Document No. 36556029)

Comment No. 29

In the Specific Requirements Section of the proposed Title V Permit. Add State-Only designations. "Specific Requirements referencing LAC 33:III.Chapters 2, 51, and 56 are considered State-Only provisions." .

LDEQ Response to Comment No. 29

Chapter 2 has some sections that are federally enforceable as does Chapter 56. These chapters cannot be designated State-Only. Chapter 51 is already recognized as a State-Only requirement in Table 1 of the proposed Title V Permit. None of the requested changes will be made.

Comment No. 30

In the Specific Requirements Section of the proposed Title V Permit, Specific condition No. 85, add "as appropriate and applicable" after Equation 8.

LDEQ Response to Comment No. 30

The language used in Specific Condition No. 85 accurately reflects the intent of Federal regulation 40 CFR 60.4213(f). This change will not be made.

AIR PERMIT ROUTING/APPROVAL SLIP-Misc.

JUN 04 2008

AI No.	152139	Company	Red River Environmental Products, LLC	Date Received	
Activity No.	PER 20070001	Facility	Activated Carbon Facility		
CDS No.	0420-00027	Permit No.	0420-00027-V0	Expedited Permit	☒yes ☐no

Variance	Exemption (Inc. CTS)	ATC	Case by Case	Add'l. Info Request	Company Notification Letter	Letter	Other:______
☐	☐	☐	☐	☐	☐	☒	☐

1. Technical Review		Approved	Date received	Date forwarded	Comments
Permit Writer	slp	SLP		6/4/08	
Air Quality / Modeling					
Toxics					
PSD/NNSR					
Technical Advisor					
Supervisor					

2. Final Approval	Approved	Date received	Date forwarded	Comments
Supervisor				
ES Manager				
Administrator	BDJ		6/4/08	
Assistant Secretary				

Answer the following:		Comments
Fee Assessment Created	☐yes ☒no	

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02/7/07