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Abengoa Bioenergy Biomass of Kansas, LLC

Air Dispersion Modeling Supplement in Support of Prevention of Significant Deterioration Air Quality Construction Permit Modification Application Source ID No. 1890231

Prepared for:
KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT
Topeka, Kansas

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SECTION 1
GENERAL MODELING DISCUSSION

1.1 Current Approved Project

Abengoa Bioenergy Biomass of Kansas, LLC (ABBK) applied for and received an Air Emission Source Construction Permit for a biomass-to-ethanol and biomass-to-energy production facility dated September 16, 2011. A subsequent letter dated March 15, 2012 and associated modeling files were submitted to the Kansas Department of Health and Environment to address changes in certain source locations. After reviewing the information submitted, KDHE concurred with the conclusion presented in the March 15, 2012 letter that the changes outlined therein would not significantly impact the previously modeled results relied upon for the September 16, 2011 Air Emission Source Construction Permit.

1.2 Proposed Project Changes

Abengoa presented the best design information available at the time in the Air Emission Source Construction application and Ambient Air Quality Impact Assessment (AQIA), and this information was relied upon for the September 16, 2011 Air Emission Source Construction Permit. Continued engineering of the project and finalization of certain process areas has resulted in changes to the boiler start-up design and procedures presented in the Air Emission Source Construction application and AQIA.

The boiler will continue to utilize the natural gas-fired start-up/auxiliary burner for start-up and periodically during partial fuel source interruptions. However, the final engineering design includes the addition of four natural gas (NG)-fired generator sets (EP-20010 through EP-20040) that will be used for power production to support the boiler/steam turbine generator (STG) system (and auxiliary utility support systems, such as cooling water, instrument air, raw water treatment, biomass fuel handling, etc.) during start-up, shutdown, and malfunction (SSM) events.

Only three NG generator sets (EP-20010 through EP-20030) will be used in conjunction with boiler/STG system SSM events, in which the enzymatic hydrolysis (EH) production process is idle. As the boiler heats up and begins to produce on-spec steam for the STG, the STG will be started to produce power, and the NG generator power will be reduced gradually until the boiler/STG system is operating solely on the permitted biomass blend at the reduced 30% nominal load.

The fourth NG generator set (EP-20040) will also be used to support in conjunction with boiler/STG system SSM events when the EH production process is not idle (i.e. when production tanks are full).

1.3 Proposed Equipment Operations

After initial start-up, the ABBK facility plans to have one short planned startup/shutdown event per year for scheduled maintenance, and the maximum number of boiler/STG system short unplanned start-up/shutdown events is expected not to exceed four per year. Additionally,

ABBK plans to schedule a long boiler/STG system planned maintenance event once every two years, which coincides with EH production process planned maintenance outage. In some instances, a portion of EH production process must continue to operate (not idle) during a boiler/STG system outage, in order to avoid hydrolysate spoilage, loss of live organisms and yield loss.

During a start-up of the boiler/STG system after a short planned maintenance event or a short unplanned outage, the fourth NG generator set (EP-20040) is expected to be needed if the EH production process is not idle. However, after a long boiler/STG system planned maintenance, the fourth NG generator set (EP-20040) is not required to restart the boiler/STG system because the EH production process is expected to be idle.

During a short planned maintenance or unplanned boiler/STG system event, the three NG generator sets (EP-20010 through EP-20030) could operate up to 168 hours each to continue the EH production process until the restart of the boiler/STG system. The fourth NG generator (EP-20040) would then operate up to 12 hours to support the restart of the boiler/STG system.

During a long planned maintenance boiler/STG system event, the EH production process is idle. The three NG generator sets (EP-20010 through EP-20030) could operate up to 24 hours each to restart the boiler/STG system. The EH production process would be restarted after the boiler/STG system was supplying power and the three NG generator sets were shut down.

Natural gas will be used for boiler start-up and for operating the generator sets. The selective catalytic reduction (SCR) reheat loop will be started in the boiler prior to introducing any fuels other than natural gas. The SCR reheat loop includes a duct burner, which will be used to reach SCR reaction temperature prior to the introduction of biomass-related fuels.

The hourly emissions during boiler start-up by the four NG generator sets are less than the maximum worst-case hourly emissions presented for the boiler when operating at 500 million British thermal units per hour (MMBtu/hr). For the purpose of estimating worst-case hourly emissions, it is assumed that the four NG generator sets will operate at 100% of their rating load up to the boiler's 30% nominal load, although actual emissions will be significantly less, as it is expected that the boiler will be operating solely on the permitted biomass blend at the reduced 30% nominal load. The maximum worst-case annual potential emissions relied upon in the Air Emission Source Construction Permit will not change as the four NG generator sets will not normally be used when the boiler is operating at the reduced 30% nominal load and greater.

The four NG generator sets may also be operated for the purpose of maintenance checks and readiness testing. Maintenance checks and readiness testing of these units will be limited to 100 hours each per year during normal facility operations.

The four NG generator sets meet the 40 CFR Part 60, Subpart JJJJ, *Standards of Performance for Stationary Spark Ignition (SI) Internal Combustion Engines (ICE),* definition of "emergency stationary internal combustion engines". This is based on the definition's specific example of the ICE being used to produce power for critical equipment, including power supplied to portions of the facility, when the normal power source (i.e. the biomass-fired boiler) is interrupted. Because ABBK produces its own power, it will not be affected by an "emergency" loss of power from the

local utility. Rather, ABBK controls its power through generation of on-site power in the boiler/STG system and through the four NG generator sets which are limited to operating during SSM events. The four NG generator sets will not operate during normal facility operations except for maintenance checks and readiness testing.

1.4 Modeling Applicability

The ABBK facility was previously evaluated under the Prevention of Significant Deterioration (PSD) requirements of 40 CFR Part 52.21 for the September 16, 2011 Air Emission Source Construction Permit. The AQIA relied upon the modeling performed to support the approval of the Air Emission Source Construction Permit in accordance with K.A.R. 28-19-350. KDHE requested that the previously approved project's ambient air impacts be re-evaluated with the proposed project changes to support modification of the September 16, 2011 Air Emission Source Construction Permit to include the 4 NG generator sets.

ABBK contracted Sage Environmental Consulting, L.P. (Sage) to prepare this AQIA supplement, including modeling and modeling report, to address the proposed project changes on ambient air impacts. The supplemental AQIA was be conducted according to the requirements of the U.S. EPA and KDHE modeling guidelines and manuals[i,ii,iii], as outlined in the pre-modeling protocol submitted to KDHE prior to the completion of this AQIA supplement.

1.4.1 Project Location and Regulatory Status

The ABBK facility is located one mile west of the City of Hugoton, in Stevens County, Kansas along U.S. Highway 56/Kansas State Highway 51. Figures 1-1 through 1-3 present the general facility location, regional topography, and revised facility layout, respectively. The proposed facility is being constructed in Section 18, Township 33S, Range 37W. The portion of Section 18 that is being developed includes the area north of the Cimarron Valley Railroad right-of-way, which consists of approximately 385 acres. The property was previously used as row-cropped agricultural land and is adjoined by grain elevators, an asphalt plant, an industrial park, and the Hugoton Municipal Airport to the south; a golf course and agricultural land to the west; two residences to the northwest; agricultural cropland to the north; and the City of Hugoton to the east.

Stevens County is located within the Southwest Kansas Intrastate Air Quality Control Region, is a Class II PSD area as defined by U.S. EPA[iv], and is designated as attainment or unclassifiable/attainment for particulate matter (PM; aka total suspended particulate (TSP, generally defined as particulate matter with an aerodynamic diameter less than or equal to 30 micrometers, PM_{30}), particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM_{10}), particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers ($PM_{2.5}$), nitrogen oxides (NOx), sulfur dioxide (SO_2), carbon monoxide (CO), and volatile organic compounds (VOCs). Attainment areas are areas where the air quality meets or is better than the National Ambient Air Quality Standards (NAAQS).

There are no Federal PSD Class I areas located within 100 kilometers (km) of the proposed facility. The nearest Federal PSD Class I Area is the Great Sand Dunes in southeastern Colorado, located approximately 370 km (230 miles) west of the ABBK facility location. There

is one potential Class II area of concern within 50 km (31 miles) to the proposed facility. The Cimarron National Grasslands, one of twenty National Grasslands administered by the U.S. Department of Agriculture (USDA) Forest Service is located within Morton and Stevens Counties in southwestern Kansas, approximately 24 km (15 miles) west of ABBK facility. The Cimarron National Grasslands consist of 437.8 km2 (108,175 acres) of protected grasslands. Figure 1-4 shows the 50 km area of influence for the ABBK facility, and the nearby Cimarron National Grasslands.

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GENERAL FACILITY LOCATION
ABENGOA BIOENERGY
BIOMASS OF KANSAS, LLC
HUGOTON – KS

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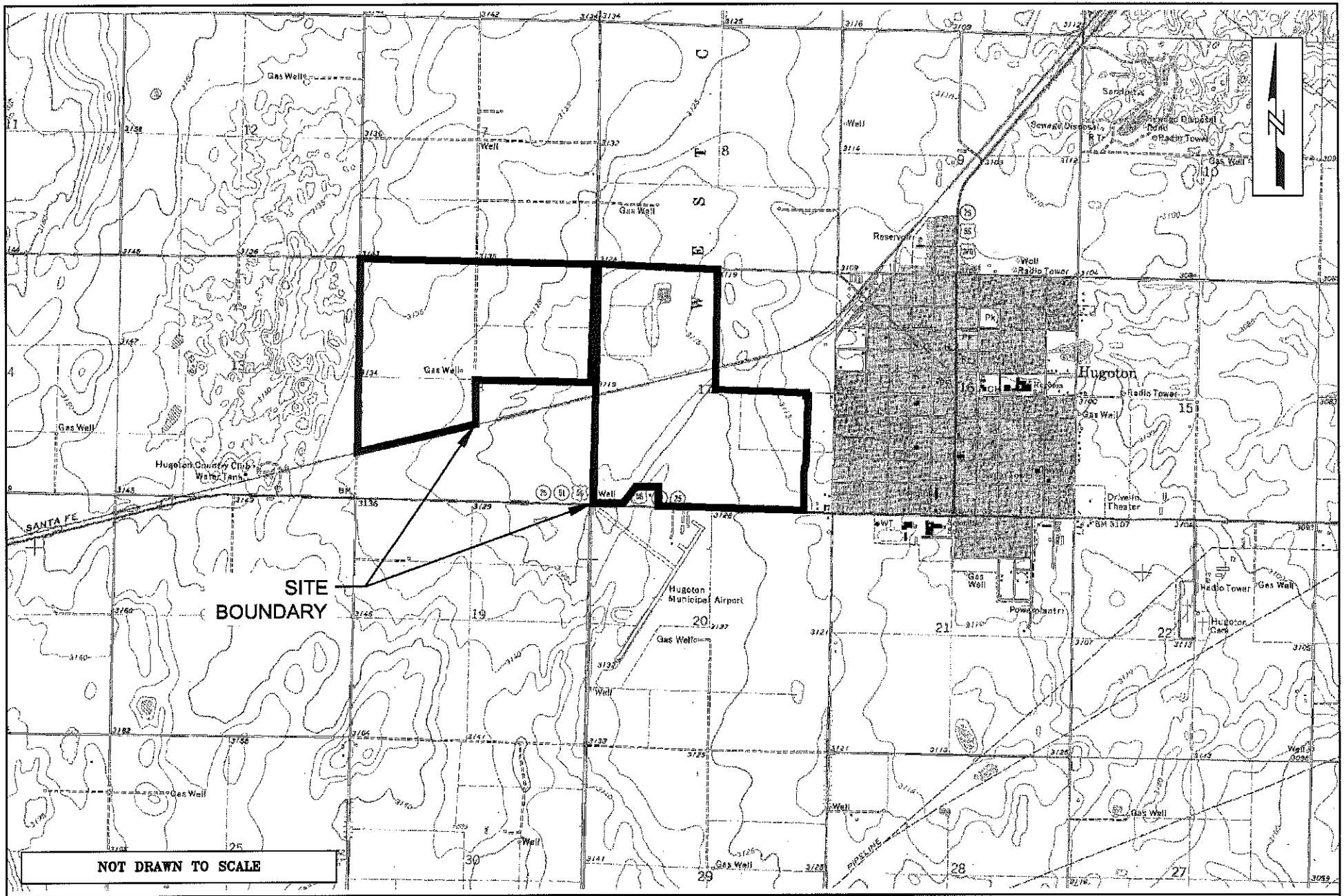
Figure: 1-1
Revision # : 0
Date: October 2012
Project No: 400-966-2-2-1-3



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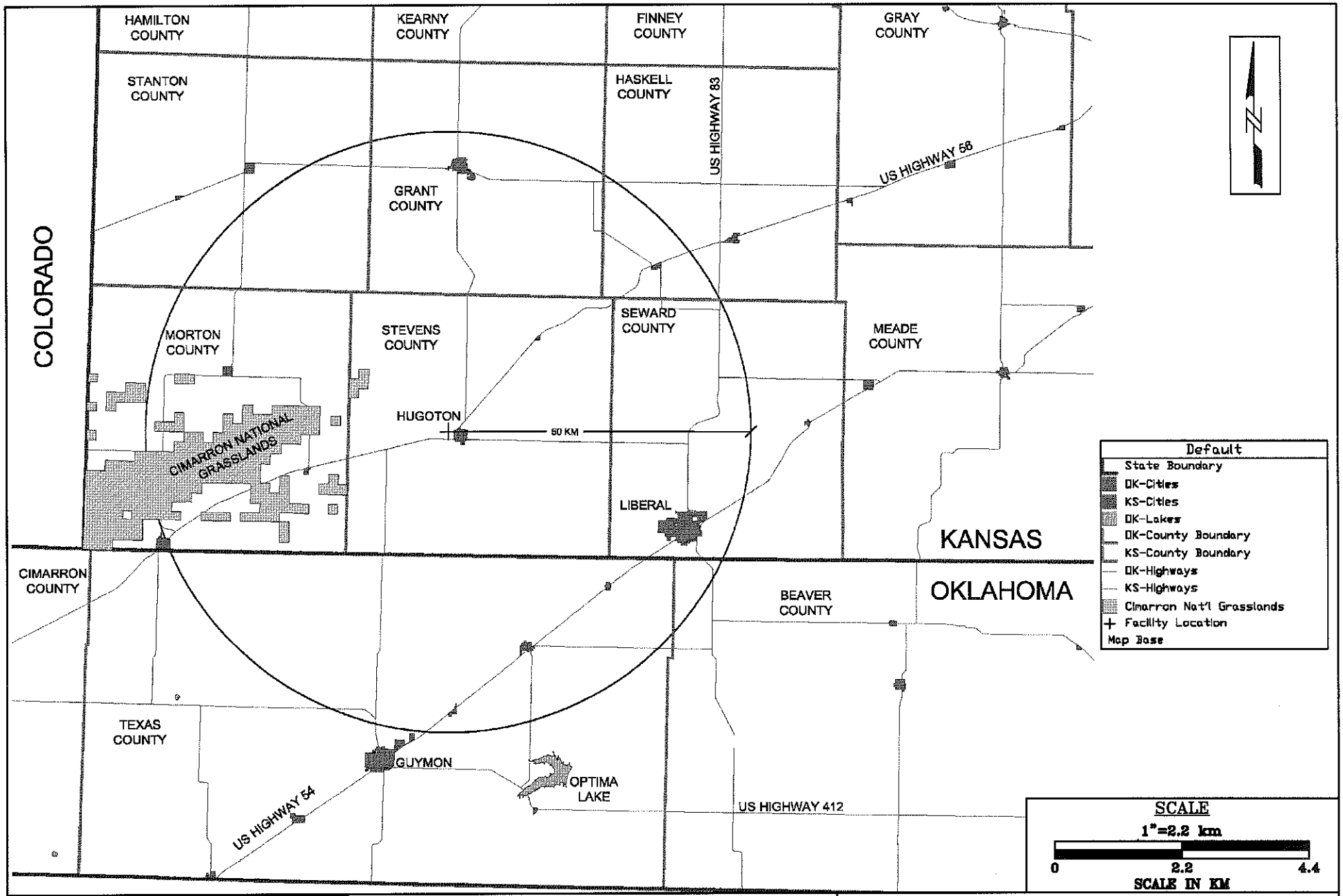
REGIONAL TOPOGRAPHY
ABENGOA BIOENERGY
BIOMASS OF KANSAS, LLC
HUGOTON – KS

Sage Environmental Consulting, LP

Figure: 1-2
Revision # : 0
Date: October 2012
Project No: 400-966-2-2-1-3



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MAXIMUM AREA OF INFLUENCE
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HUGOTON – KS

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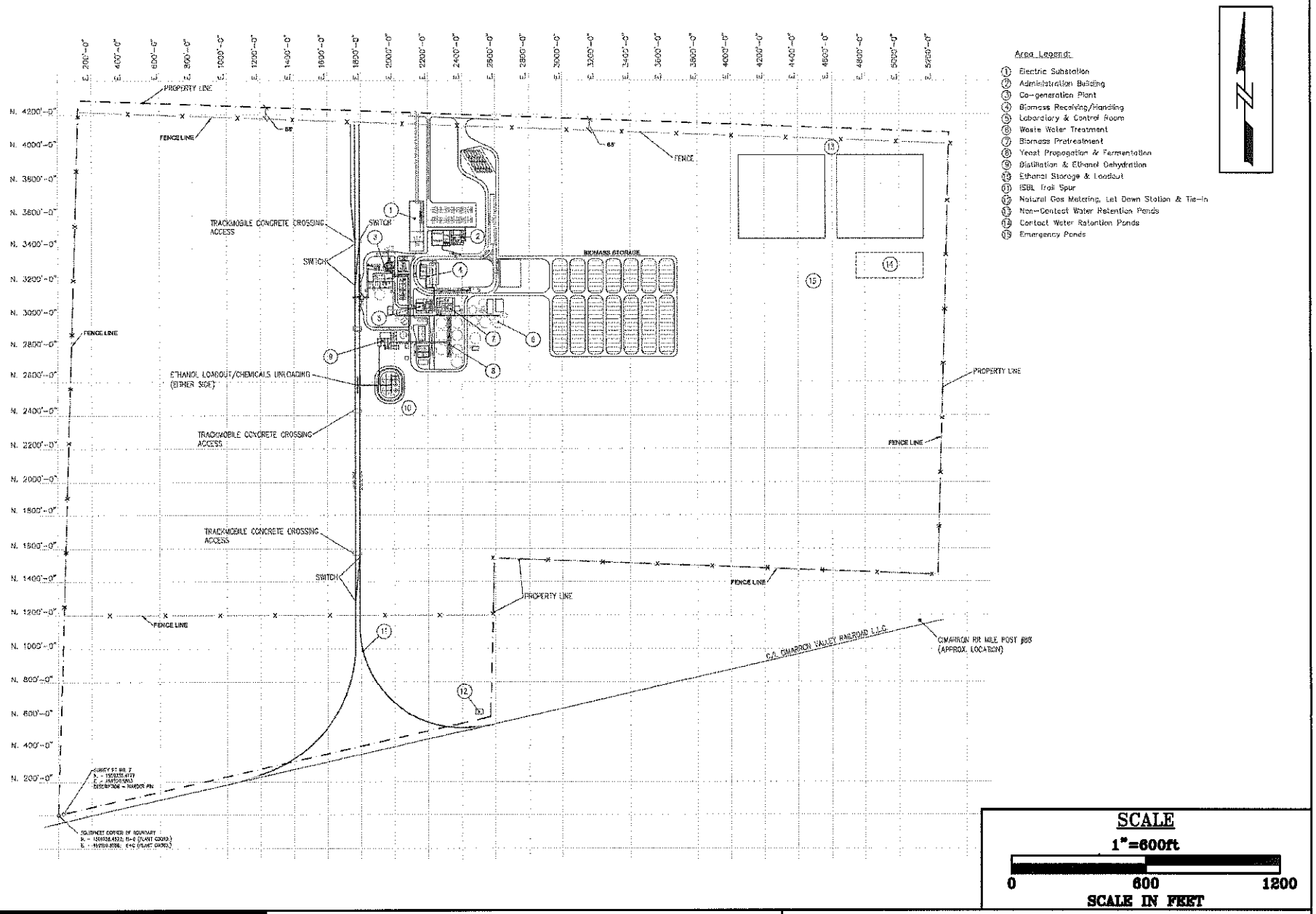
Date: October 2012
Project No: 400-966-2-2-1-3



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REVISED FACILITY LAYOUT
ABENGOA BIOENERGY BIOMASS OF KANSAS, LLC
HUGOTON – KS

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Figure: 1-4
Revision # : 0
Date: October 2012
Project No: 400-966-2-2-1-3

1.5 Modeling for Individual Pollutants

ABBK proposed in the pre-modeling protocol that the following pollutants and averaging periods be re-modeled to include the four NG generator sets:

- SO_2 3-hour
- SO_2 24-hour
- CO 1-Hour
- CO 8-Hour
- PM_{10} 24-hour
- $PM_{2.5}$ 24-Hour

The Sections 5 and 6 present the modeled results for the pollutants and averaging periods listed above. The results of the AQIA supplement indicate that the ABBK facility including the proposed project changes will not cause or contribute to ambient air concentrations in excess of the applicable NAAQS and PSD Class II area increment.

SECTION 2
MODELED EMISSION SOURCES AND LABELING

Each emission source modeled was assigned an identification that was consistent between the modeling files and the permit application. If the modeling identification differed from the application, then the source description included the corresponding permit application identification/description. All onsite emission sources were consistent with the previously completed AQIA relied upon for the September 16, 2011 Construction Permit and the March 15, 2012 modeling files submitted to the KDHE to address changes in certain source locations. The emission source types and identification for the previously modeled ABBK facility and the proposed project changes are presented in the tables contained in Appendix B.

SECTION 3
MODELING EMISSIONS INVENTORY

ABBK evaluated and quantified hourly and annual emissions for all applicable pollutants associated with the proposed project changes. The emissions inventory summary for the previously modeled ABBK facility and the proposed project changes are provided in Appendix B. All onsite emission sources and emissions were consistent with the previously completed AQIA relied upon for the September 16, 2011 Construction Permit and the March 15, 2012 modeling files submitted to the KDHE to address changes in certain source locations.

The emissions input in AERMOD were based on the emission rate in grams per second (g/s), in accordance with the AERMOD User's Guide. Slight differences in the emission rates may be noticed when emissions inputs in g/s are calculated from the lb/hr or ton/yr values, as the emissions inputs in the current calculations are in scientific notation with the coefficient rounded to the nearest hundredth.

SECTION 4
MODEL INPUT SOURCE PARAMETERS

Tables showing the source parameters specific to each modeled source are presented in Appendix B. These tables include UTM coordinates, emissions rates, and release parameters for each modeled pollutant and emission source associated with the proposed project changes. All onsite emission sources' input parameters were consistent with the previously completed AQIA relied upon for the September 16, 2011 Construction Permit and the March 15, 2012 modeling files submitted to the KDHE to address changes in certain source locations.

SECTION 5
SIGNIFICANT IMPACT MODELING

Significant impact modeling was used to determine if the emissions from the ABBK facility including the proposed project changes would cause ambient pollutant concentrations in excess of the significance levels, which indicate refined modeling is required on a pollutant-by-pollutant basis. Sources with impacts less than the significance levels are considered to have negligible impacts on the ambient air quality and will not be included in the cumulative impact analysis. However, if a significance level is exceeded, a cumulative impact analysis is required for that pollutant and corresponding averaging period.

Significant impact modeling results was used to establish the significant impact area (SIA), which is the area in which receptors must be located to evaluate compliance with NAAQS and PSD increment standards.

SILs for the PSD pollutants are presented in tabular form in Appendix A. NAAQS and PSD increment modeling was conducted if the predicted concentrations equal or exceed the SILs listed in the table in Appendix A for each respective pollutant and averaging period. If a SIL was exceeded for a particular pollutant-averaging period combination, a SIA was defined as only those receptors in which the predicted concentrations exceeded the SIL. Table 5-1 below presents the significant modeling results summary with additional details included in the summary tables in Appendix C.

Table 5-1
Predicted Facility Impacts Compared to Significance Levels and Monitoring Concentration Thresholds

Pollutant	Avg. Period	Maximum Predicted Impacts ($\mu g/m^3$)	SIL ($\mu g/m^3$)	Exceeds SIL (Yes/No)	Monitoring Concentration Thresholds ($\mu g/m^3$)	Exceeds Monitoring Concentration (Yes/No)
SO_2	3-Hour	23.97	25	No	N/A	N/A
	24-Hour	11.12	5	Yes	13	No
CO	1-Hour	704.67	2,000	No	N/A	N/A
	8-Hour	37.74	500	No	575	No
$PM_{2.5}$	24-Hour	9.49	1.2	Yes	4	Yes
PM_{10}	24-Hour	32.46	5	Yes	10	Yes

The modeled impacts for the ABBK facility including the proposed project changes fall below the Monitoring Concentration Thresholds except for the 24-hour PM_{10} and 24-hour $PM_{2.5}$ averaging periods. KDHE has indicated that in lieu of pre-application monitoring data, the facility will use representative data from the Dodge City, KS monitoring station.

The modeled impacts indicate that the ABBK facility including the proposed project changes will not cause a significant impact in the modeled area for the 3-hour SO_2, or the 1-hour and 8-hour CO averaging periods.

The radius of impact (ROI) distances rounded to the nearest kilometer for 24-hour SO_2, 24-hour PM_{10} and 24-hour $PM_{2.5}$ are summarized in Table 5-2. The predicted impacts are based on the H1H for comparison to the SILs. The ROI was calculated based on the facility's approximate center UTM coordinates: Easting: 2883551.05, Northing: 4117494.00.

Table 5-2
Radius of Impacts Summary

Pollutant	Avg. Period	ROI Based on H1H	ROI + 50 km
SO_2	24-Hour	3 km	53 km
$PM_{2.5}$	24-Hour	21 km	71 km
PM_{10}	24-Hour	21 km	71 km

SECTION 6
CUMULATIVE IMPACT MODELING

Cumulative impact analysis was used to demonstrate that the ABBK facility including the proposed project changes will not cause or contribute to any violations of applicable NAAQS or PSD Class II area increment for those pollutants with concentrations above the respective significance level.

NAAQS and PSD increment modeling was conducted for the pollutants with significant impacts from the facility resulting from the proposed project changes. All on-site sources were included in this step of the modeling analysis at maximum permitted emission rates.

Updated contributions from off-site major and minor sources were obtained from KDHE, Oklahoma Department of Environmental Quality (ODEQ), Colorado Department of Public Health and Environment (CDPHE) and Texas Commission on Environmental Quality (TCEQ). There were no additional PM_{10} or $PM_{2.5}$ off-site major and minor sources included in the inventories from ODEQ or CDPHE due to an increased ROI of 71 km. A summary of the off-site major and minor sources inventories relied upon for this AQIA supplement are included in Appendix D.

ABBK continued to apply the adjustments documented in the previously completed AQIA for the Seaboard Foods, LLC feed mill located immediately adjacent to and south of the ABBK facility.

6.1 NAAQS Modeling

To address NAAQS for pollutants and averaging periods with the significant impact modeling impacts that are greater than the significance levels, the cumulative impact analysis included the ABBK facility including the proposed project changes impacts plus significant off-site sources in the vicinity of the proposed facility. Background ambient concentrations were added to the model-predicted concentrations from all emission sources included in the NAAQS modeling for comparison to the NAAQS.

A summary of the background monitored values to be used in the NAAQS analyses is provided in Table 6-1.

Table 6-1
Background Concentrations Proposed for Modeling

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)
SO_2	24-Hour	6.8
$PM_{2.5}$	24-Hour	17
PM_{10}	24-Hour	89

6.1.1 24-Hour SO_2 NAAQS Analysis

The predicted cumulative 24-hour SO_2 impacts are based on the daily high second high (H2H) for comparison to the NAAQS since one exceedance per year per receptor is allowed. Results of the 24-hour SO_2 NAAQS analysis are summarized in Table 6-2. The background concentration used for comparison to the NAAQS was 6.8 $\mu g/m^3$ for the 24-hour averaging period.

Table 6-2
Predicted Cumulative 24-Hour SO_2 Concentration for NAAQS Evaluation
October 2012 AQIA Modification Results (BEEST AERMOD 12060)

SO_2 24-HOUR	Operating Scenarios	Maximum Year H1H (Plus Off-Site) H2H (Plus Off-Site)	Date/Hour	UTM Easting (m)	UTM Northing (m)
NAQ500	Boiler at 500 MMBtu/hr	2009			
Includes Off-	Flare Operational	17.59 (24.39)	09102224	288407.00	4116682.00
Site Sources	No Firewater Pump	15.82 (22.62)	09102224	288457.00	4116682.00
NAQ471	Boiler at 471 MMBtu/hr	2007			
Includes Off-	Flare Operational	18.67 (25.47)	07042524	288407.00	4116682.00
Site Sources	No Firewater Pump	**16.41 (23.21)**	07102124	288407.00	4116632.00
NAQ353	Boiler at 353 MMBtu/hr	2007			
Includes Off-	Flare Operational	17.57 (24.37)	07042524	288407.00	4116682.00
Site Sources	No Firewater Pump	16.20 (23.00)	07102124	288407.00	4116632.00
NAQ236	Boiler at 236 MMBtu/hr	2007			
Includes Off-	Flare Operational	16.15 (22.95)	07042524	288407.00	4116682.00
Site Sources	No Firewater Pump	15.71 (22.51)	07102124	288407.00	4116682.00
NAQ141	Boiler at 141 MMBtu/hr	2007			
Includes Off-	Flare Operational	14.82 (21.62)	07102124	288407.00	4116682.00
Site Sources	No Firewater Pump	14.67 (21.47)	07042524	288407.00	4116682.00

As explained in the July 7, 2011 memorandum, *Response to Initial AQIA Comments Received Via E-Mail on July 6, 2011*, the predicted cumulative 24-hour SO_2 impacts are based on the H2H per year for comparison to the NAAQS since one exceedance per year is allowed. While there may be other years with high first high (H1H) values greater than the values reported above, the NAAQS evaluation is compared to the H2H per year, which is what is summarized in the table above.

The NAAQS for 24-hour SO_2 is 365 $\mu g/m^3$. Based on the results detailed in Table 6-2, the ABBK facility including the proposed project changes will not cause or significantly contribute to a violation of the NAAQS for 24-hour SO_2.

6.1.2 24-Hour $PM_{2.5}$ NAAQS Analysis

The predicted cumulative 24-hour $PM_{2.5}$ impacts are based on the daily H1H for comparison to the NAAQS. Results of the 24-hour $PM_{2.5}$ NAAQS analysis are summarized in Table 6-3. The background concentration used for comparison to the NAAQS was 17 $\mu g/m^3$ for the 24-hour averaging period.

Table 6-3
Predicted Cumulative 24-Hour $PM_{2.5}$ Concentration for NAAQS Evaluation
October 2012 AQIA Modification Results (BEEST AERMOD 12060)

$PM_{2.5}$ 24-HOUR	Operating Scenarios	H1H (Plus Off-Site)	Date/Hour	UTM Easting (m)	UTM Northing (m)
NAQ500 Includes Off-Site Sources	Boiler at 500 MMBtu/hr Flare Operational No Firewater Pump	11.62 (28.62)	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00
NAQ471 Includes Off-Site Sources	Boiler at 471 MMBtu/hr Flare Operational No Firewater Pump	11.62 (28.62)	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00
NAQ353 Includes Off-Site Sources	Boiler at 353 MMBtu/hr Flare Operational No Firewater Pump	11.62 (28.62)	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00
NAQ236 Includes Off-Site Sources	Boiler at 236 MMBtu/hr Flare Operational No Firewater Pump	11.63 (28.63)	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00
NAQ141 Includes Off-Site Sources	Boiler at 141 MMBtu/hr Flare Operational No Firewater Pump	**11.63 (28.63)**	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00

The NAAQS for 24-hour $PM_{2.5}$ is 35 $\mu g/m^3$. Based on the results detailed in Table 6-3, the ABBK facility including the proposed project changes will not cause or significantly contribute to a violation of the NAAQS for 24-hour $PM_{2.5}$.

6.1.3 24-Hour PM_{10} NAAQS Analysis

The predicted cumulative 24-hour PM_{10} impacts are based on the daily high sixth high (H6H) for comparison to the NAAQS, in accordance with the methodology recommended in Section 7.2.1.1 of the EPA guideline, *Guideline on Air Quality Models*, incorporated as 40 CFR Part 51, Appendix W.

Results of the 24-hour PM_{10} NAAQS analysis are summarized in Table 6-4. The background concentration used for comparison to the NAAQS was 89 $\mu g/m^3$ for the 24-hour averaging period.

Table 6-4
Predicted Cumulative 24-Hour PM_{10} Concentration for NAAQS Evaluation
October 2012 AQIA Modification Results (BEEST AERMOD 12060)

PM_{10} 24-HOUR	Operating Scenarios	Maximum Year H6H (Plus Off-Site)	Date/Hour	UTM Easting (m)	UTM Northing (m)
NAQ500 Includes Off-Site Sources	Boiler at 500 MMBtu/hr Flare Operational No Firewater Pump	2007 28.53 (117.53)	07072524	288043.40	4117995.20
NAQ471 Includes Off-Site Sources	Boiler at 471 MMBtu/hr Flare Operational No Firewater Pump	2007 28.53 (117.53)	07072524	288043.40	4117995.20
NAQ353 Includes Off-Site Sources	Boiler at 353 MMBtu/hr Flare Operational No Firewater Pump	2007 28.54 (117.54)	07072524	288043.40	4117995.20
NAQ236 Includes Off-Site Sources	Boiler at 236 MMBtu/hr Flare Operational No Firewater Pump	2007 28.55 (117.55)	07072524	288043.40	4117995.20
NAQ141 Includes Off-Site Sources	Boiler at 141 MMBtu/hr Flare Operational No Firewater Pump	2007 **28.57 (117.57)**	07072524	288043.40	4117995.20

The NAAQS for 24-hour PM_{10} is 150 $\mu g/m^3$. Based on the results detailed in Table 6-4, the ABBK facility including the proposed project changes will not cause or significantly contribute to a violation of the NAAQS for 24-hour PM_{10}.

6.2 PSD Class II Area Increment Modeling

To address PSD increments, for pollutants and averaging periods with the significant impact modeling impacts that are greater than the significance levels, the cumulative impact analysis included all ABBK facility emission sources including the proposed project changes plus PSD increment consuming sources in the vicinity of the ABBK facility. The model-predicted concentrations from the ABBK facility and increment consuming sources were compared to the PSD Class II area increment levels.

6.2.1 24-Hour SO_2 PSD Class II Increment Analysis

The predicted cumulative 24-hour SO_2 impacts are based on the daily H2H for comparison to the PSD increment since one exceedance per year per receptor is allowed. Results of the 24-hour SO_2 PSD increment analysis are summarized in Table 6-5.

Table 6-5
Predicted Cumulative 24-Hour SO_2 Concentration for PSD Evaluation
October 2012 AQIA Modification Results (BEEST AERMOD 12060)

SO_2 24-HOUR	Operating Scenarios	Maximum Year H1H H2H	Date/Hour	UTM Easting (m)	UTM Northing (m)
PSD500	Boiler at 500 MMBtu/hr	2009			
Includes Off-	Flare Operational	17.59	09102224	288407.00	4116682.00
Site Sources	No Firewater Pump	15.82	09102224	288457.00	4116682.00
PSD471	Boiler at 471 MMBtu/hr	2007			
Includes Off-	Flare Operational	18.67	07042524	288407.00	4116682.00
Site Sources	No Firewater Pump	**16.41**	07102124	288407.00	4116632.00
PSD353	Boiler at 353 MMBtu/hr	2007			
Includes Off-	Flare Operational	17.57	07042524	288407.00	4116682.00
Site Sources	No Firewater Pump	16.20	07102124	288407.00	4116632.00
PSD236	Boiler at 236 MMBtu/hr	2007			
Includes Off-	Flare Operational	16.15	07042524	288407.00	4116682.00
Site Sources	No Firewater Pump	15.71	07102124	288407.00	4116682.00
PSD141	Boiler at 141 MMBtu/hr	2007			
Includes Off-	Flare Operational	14.82	07102124	288407.00	4116682.00
Site Sources	No Firewater Pump	14.67	07042524	288407.00	4116682.00

As explained in the July 7, 2011 memorandum, *Response to Initial AQIA Comments Received Via E-Mail on July 6, 2011*, the predicted cumulative 24-hour SO_2 impacts are based on the H2H per year for comparison to the PSD since one exceedance per year is allowed. While there may be other years with H1H values greater than the values reported above, the PSD evaluation is compared to the H2H per year, which is what is summarized in the table above.

The allowable PSD Class II increment for 24-hour SO_2 is 91 $\mu g/m^3$. Based on the results detailed in Table 6-5, the ABBK facility including the proposed project changes will not cause or significantly contribute to a violation of the PSD Class II increment for 24-hour SO_2.

6.2.1 24-Hour $PM_{2.5}$ PSD Class II Increment Analysis

The predicted cumulative 24-hour $PM_{2.5}$ impacts are based on the H2H maximum daily average for comparison to the PSD increment. Results of the 24-hour $PM_{2.5}$ PSD increment analysis are summarized in Table 6-6.

Table 6-6
Predicted Cumulative 24-Hour $PM_{2.5}$ Concentration for PSD Evaluation
October 2012 AQIA Modification Results (BEEST AERMOD 12060)

$PM_{2.5}$ 24-HOUR	Operating Scenarios	H1H H2H	Date/Hour	UTM Easting (m)	UTM Northing (m)
PSD500 Includes Off-Site Sources	Boiler at 500 MMBtu/hr Flare Operational No Firewater Pump	9.90690 8.76073	1st Highest Max Daily 24-Hr Over 2010	287943.50 287957.00	4117999.00 4118032.00
PSD471 Includes Off-Site Sources	Boiler at 471 MMBtu/hr Flare Operational No Firewater Pump	9.90741 8.76444	1st Highest Max Daily 24-Hr Over 2010	287943.50 287957.00	4117999.00 4118032.00
PSD353 Includes Off-Site Sources	Boiler at 353 MMBtu/hr Flare Operational No Firewater Pump	9.90824 8.76922	1st Highest Max Daily 24-Hr Over 2010	287943.50 287957.00	4117999.00 4118032.00
PSD236 Includes Off-Site Sources	Boiler at 236 MMBtu/hr Flare Operational No Firewater Pump	9.91069 8.78291	1st Highest Max Daily 24-Hr Over 2010	287943.50 287957.00	4117999.00 4118032.00
PSD141 Includes Off-Site Sources	Boiler at 141 MMBtu/hr Flare Operational No Firewater Pump	9.91452 **8.80165**	1st Highest Max Daily 24-Hr Over 2010	287943.50 287957.00	4117999.00 4118032.00

The allowable PSD Class II increment for 24-hour $PM_{2.5}$ is 9 $\mu g/m^3$. Based on the results detailed in Table 6-6, the ABBK facility including the proposed project changes will not cause or significantly contribute to a violation of the PSD Class II increment for 24-hour $PM_{2.5}$.

6.2.1 24-Hour PM_{10} PSD Class II Increment Analysis

The predicted cumulative 24-hour PM_{10} impacts are based on the daily H2H for comparison to the PSD increment. Results of the 24-hour PM_{10} PSD increment analysis are summarized in Table 6-7.

Table 6-7
Predicted Cumulative 24-Hour PM_{10} Concentration for PSD Evaluation
October 2012 AQIA Modification Results (BEEST AERMOD 12060)

PM_{10} 24-HOUR	Operating Scenarios	Maximum Year H1H (Plus Off-Site) H2H (Plus Off-Site)	Date/Hour	UTM Easting (m)	UTM Northing (m)
NAQ500	Boiler at 500 MMBtu/hr	2007			
Includes Off-	Flare Operational	32.49638	07010224	288107.00	4117082.00
Site Sources	No Firewater Pump	28.90560	07010324	288107.00	4117082.00
NAQ471	Boiler at 471 MMBtu/hr	2007			
Includes Off-	Flare Operational	32.53211	7010224	288107.00	4117082.00
Site Sources	No Firewater Pump	**28.92092**	7010324	288107.00	4117082.00
NAQ353	Boiler at 353 MMBtu/hr	2007			
Includes Off-	Flare Operational	32.51178	7010224	288107.00	4117082.00
Site Sources	No Firewater Pump	28.91884	7010324	288107.00	4117082.00
NAQ236	Boiler at 236 MMBtu/hr	2007			
Includes Off-	Flare Operational	32.47972	7010224	288107.00	4117082.00
Site Sources	No Firewater Pump	28.91856	7010324	288107.00	4117082.00
NAQ141	Boiler at 141 MMBtu/hr	2007			
Includes Off-	Flare Operational	32.42223	7010224	288107.00	4117082.00
Site Sources	No Firewater Pump	28.90860	7010324	288107.00	4117082.00

As explained in the July 7, 2011 memorandum, *Response to Initial AQIA Comments Received Via E-Mail on July 6, 2011*, the predicted cumulative 24-hour PM_{10} impacts are based on the H2H per year for comparison to the PSD increment since one exceedance per year is allowed. While there may be other years with high first high (H1H) values greater than the values reported above, the PSD evaluation is compared to the H2H per year, which is what is summarized in the table above.

The allowable PSD Class II increment for 24-hour PM_{10} is 30 $\mu g/m^3$. Based on the results detailed in Table 6-7, the ABBK facility including the proposed project changes will not cause or significantly contribute to a violation of the PSD Class II increment for 24-hour PM_{10}.

6.3 PSD Class II Area Increment Consumption Review

As indicated by KDHE, K.A.R. 28-19-350(k) requires the following in the public notice for a PSD permit: *"A statement specifying the portion of the applicable maximum allowable increment that is expected to be consumed by the source or modification... ".*

Tables 6-8 and 6-9 summarize the ABBK increment consumption for the source only, as well as the all source cumulative increment consumption.

Table 6-8
Increment Consumption for the ABBK Facility Including the Proposed Project Changes

Pollutant	Averaging Period	Maximum Concentration ($\mu g/m^3$)	UTM Easting (m)	UTM Northing (m)	Class II Increment ($\mu g/m^3$)	Percent of Increment (%)
SO_2	24-Hour	11.12 (H2H Year 2010)	288157.00	4118682.00	91	12.22%
$PM_{2.5}$	24-Hour	8.69 (H2H Year 2010)	287907.00	4118032.00	9	96.56%
PM_{10}	24-Hour	28.88 (H2H Year 2007)	288107.00	4117082.00	30	96.27%

Table 6-9
Increment Consumption for the ABBK Facility Including the Proposed Project Changes and Increment Consuming Sources

Pollutant	Averaging Period	Concentration ($\mu g/m^3$)	UTM Easting (m)	UTM Northing (m)	Class II Increment ($\mu g/m^3$)	Percent of Increment (%)
SO_2	24-Hour	16.41 (H2H Year 2007)	288407.00	4116632.00	91	18.03%
$PM_{2.5}$	24-Hour	8.80 (H2H Year 2010)	287957.00	4118032.00	9	97.78%
PM_{10}	24-Hour	28.92 (H2H Year 2007)	288107.00	4117082.00	30	96.40%

APPENDIX A
SILS, NAAQS, PSD CLASS II INCREMENTS, AND SMCS FOR CRITERIA POLLUTANTS

Significant Impact Levels (SILs), National Ambient Air Quality Standards (NAAQS), PSD Class II Increments, and Significant Monitoring Concentrations for Criteria Pollutants
Kansas Department of Health and Environment, Bureau of Air- Modeling Group

Pollutant	Averaging Period	SIL	NAAQS	Form of NAAQS Standard[a]		PSD Class II Increment	Form of Class II Increment Standard		Significant Monitoring Concentration[b]
		$\mu g/m^3$	$\mu g/m^3$ (ppb)						$\mu g/m^3$
NO_2	1-hour	10[c]	188 (100)	H8H[d]	Tyler Fox memo, 6/29/2010 and 3/01/2011	-	-	-	NA
	Annual	1	100 (53)	Annual arithmetic mean	Appendix W Section 7.2.1.1	25	NTBE[i]	Appendix W Section 7.2.1.1	14
SO_2	1-hour	10[c]	196 (75)	H4H[d]	Stephen Page memo, 8/23/2010	-	-	-	NA
	3-hour	25	1309 (500)	NTBE[i] more than once per year	Appendix W Section 7.2.1.1	512	NTBE[i] more than once per year	Appendix W Section 7.2.1.1	NA
	24-hour	5	365 (140)[e]	NTBE[i] more than once per year	Appendix W Section 7.2.1.1	91	NTBE[i] more than once per year	Appendix W Section 7.2.1.1	13
	Annual	1	80 (30)[e]	Annual arithmetic mean	Appendix W Section 7.2.1.1	20	NTBE[i]	Appendix W Section 7.2.1.1	NA
$PM_{2.5}$	24-hour	1.2	35	H1H[d]	Stephen Page memo, 3/23/2010	9	NTBE[i] more than once per year	Appendix W Section 7.2.1.1	4[f]
	Annual	0.3	15	H1H[d]		4	NTBE[i]	Appendix W Section 7.2.1.1	NA
PM_{10}	24-hour	5	150	NTBE[i] more than once per year on average over 5 years[g].	Stephen Page memo, 3/23/2010	30	NTBE[i] more than once per year	Appendix W Section 7.2.1.1	10
	Annual	1	Revoked[h]			17	NTBE[i]	Appendix W Section 7.2.1.1	NA
CO	1-hour	2000	40,000 (35,000)	NTBE[i] more than once per year	Appendix W Section 7.2.1.1	-	-	-	NA
	8-hour	500	10,000 (9,000)	NTBE[i] more than once per year	Appendix W Section 7.2.1.1	-	-	-	575
Pb	Rolling 3-month avg.	0.03	0.15	NTBE[i]		-	-	-	0.1

[a] Form of the standard assumes 5 years of meteorological data. If using on-site gathered meteorological data, the form of the standard would be based on at least one year of on-site data.
[b] No *de minimis* air quality level is provided for ozone monitoring. However, any net emissions increase of 100 tons per year or more of VOC or NO_x subject to PSD would be required to perform an ambient impact analysis including gathering of air quality data.
[c] These KDHE-established interim SILs are to be valid until the EPA promulgated SILs are effective and adopted in Kansas air quality regulations.
[d] Based on the annual distribution of daily maximum 1-hour values, averaged over 5 consecutive years.
[e] The existing annual and 24-hour SO_2 NAAQS will be revoked one year after the effective date in areas with a designated status for the revised SO_2 NAAQS, per 40 CFR §50.4(e).
[f] http://www.epa.gov/nsr/documents/20100929finalrule.pdf
[g] Form of PM10 NAAQS allows the standard to be exceeded once per year on average using the H6H value over 5 years. Refer to page 4 from the March 23, 2010 Stephen Page memo or FR Doc No: 06-8477.
[h] The annual PM_{10} NAAQS of 50 $\mu g/m^3$ was revoked October 17, 2006 but the annual PM_{10} PSD increments remain in effect.
[i] Not to be exceeded.

v. 11/28/2011

APPENDIX B
MODEL INPUT TABLES

Abengoa Bioenergy Biomass of Kansas, LLC
Biorefinery Facility
Hugoton, Kansas

Rev. 6

NAAQS & PSD Modeling Thresholds

Emission Point No.	Emission Unit(s)	PM_{10} (lb/hr)	PM_{10} (lb/day)	PM_{10} (tons/yr)	$PM_{2.5}$ (lb/hr)	$PM_{2.5}$ (lb/day)	$PM_{2.5}$ (tons/yr)	NOx (lb/hr)	NOx (tons/yr)	SO_2 (lb/hr)	SO_2 (tons/yr)	CO (lb/hr)	CO (tons/yr)	Notes
HAUL ROADS														
EP-01000FUG	Paved Plant Roads	0.80	9.55	1.50	0.20	2.34	0.37	--	--	--	--	--	--	Note 1
EP-01050FUG	Biomass Laydown Roads	0.34	4.11	0.73	0.03	0.41	0.07	--	--	--	--	--	--	Note 1
ENZYMATIC HYDROLYSIS PLANT														
EP-11120	Floor Sweep System DC	0.27	6.42	1.17	0.05	1.09	0.20	--	--	--	--	--	--	
EP-11110	Bale Grinder DC	4.93	118.41	21.61	0.84	20.13	3.67	--	--	--	--	--	--	
EP-11170	Classifier Cyclone # 1 DC	0.74	17.77	3.24	0.13	3.02	0.55	--	--	--	--	--	--	
EP-11270	Classifier Cyclone # 2 DC	0.74	17.77	3.24	0.13	3.02	0.55	--	--	--	--	--	--	
EP-11711	Boiler Feed System DC	0.74	17.77	3.24	0.13	3.02	0.55	--	--	--	--	--	--	
EP-11110FUG	Crops Receiving, Grinding and Conveying	0.03	0.82	0.07	0.01	0.12	0.01	--	--	--	--	--	--	
EP-18185	EH Fermentation CO2 Scrubber	0.10	2.40	0.44	0.10	2.40	0.44	0.07	0.29	--	--	--	--	
EP-19001FUG	Lignin-Rich Stillage Storage	--	--	--	--	--	--	--	--	--	--	--	--	
ETHANOL STORAGE AND PIPING														
EP-02000	Fugitive Leaks	--	--	--	--	--	--	--	--	--	--	--	--	
T-02107	EH Product Shift Tank #1	--	--	--	--	--	--	--	--	--	--	--	--	
T-02108	EH Product Shift Tank #2	--	--	--	--	--	--	--	--	--	--	--	--	
T-02102	EH Ethanol Product Storage Tank #1	--	--	--	--	--	--	--	--	--	--	--	--	
T-02112	EH Ethanol Product Storage Tank #2	--	--	--	--	--	--	--	--	--	--	--	--	
T-02105	EH Denaturant Storage Tank	--	--	--	--	--	--	--	--	--	--	--	--	
EP-02100	Vapor Recovery System	--	--	--	--	--	--	--	--	--	--	--	--	
EP-02100FUG	Loading Losses	--	--	--	--	--	--	--	--	--	--	--	--	
UTILITIES														
EP-02710	Bulk Fly Ash Load-Out Silo	0.96	23.12	4.22	0.48	11.56	2.11	--	--	--	--	--	--	
EP-02711A	Bulk Fly Ash Load-Out Silo Spout #1	0.48	11.56	2.11	0.24	5.78	1.05	--	--	--	--	--	--	
EP-02711B	Bulk Fly Ash Load-Out Silo Spout #2	0.48	11.56	2.11	0.24	5.78	1.05	--	--	--	--	--	--	
EP-04001	Cooling Water Tower	0.12	2.85	0.52	0.07	1.71	0.31	--	--	--	--	--	--	
EP-20001	Biomass-Fired Stoker Boiler #1 30% Load	4.24	101.67	--	3.98	95.51	--	107.39	--	29.99	--	31.09	--	Note 2
	50% Load	7.06	169.45	--	6.63	159.18	--	98.44	--	49.99	--	51.81	--	Note 2
	75% Load	10.59	254.17	46.39	9.95	238.76	43.57	147.66	646.74	74.99	328.43	77.72	340.39	Note 2
	100% Load	14.12	338.89	61.85	13.26	318.35	58.10	196.88	862.33	99.98	437.91	103.62	453.86	Note 2
	120% Load	14.99	359.82	65.67	14.08	338.01	61.69	207.56	909.10	106.16	464.96	110.04	481.99	Note 2
EP-20512	Lime Handling DC #1	0.07	1.65	0.30	0.03	0.82	0.15	--	--	--	--	--	--	
EP-20514	Boiler Bottoms Ash Handling DC #1	0.96	23.12	4.22	0.48	11.56	2.11	--	--	--	--	--	--	
EP-20510	Boiler Fly Ash Handling DC #1	0.48	11.56	2.11	0.24	5.78	1.05	--	--	--	--	--	--	
EP-20520	Boiler Fly Ash Handling DC #2	0.48	11.56	2.11	0.24	5.78	1.05	--	--	--	--	--	--	
EP-09001	Flare FWP Engine Operating (Pilot Only)	0.00	0.02	0.00	0.00	0.02	0.00	0.01	0.04	0.00	0.00	0.01	0.04	
EP-09001	Flare No FWP Engine	0.00	0.02	0.00	0.00	0.02	0.00	3.48	6.92	9.31	18.43	18.92	37.47	Note 3
EP-06001 (EMG)	Firewater Pump Engine Normal Operations	0.08	0.08	0.00	0.08	0.08	0.00	2.61	0.13	0.94	0.05	0.68	0.03	Note 4
EP-08000	High Voltage Circuit Breakers Fugitive Leaks	--	--	--	--	--	--	--	--	--	--	--	--	
EP-20010 (EMG)	Genset #1	0.06	0.06	0.00	0.06	0.06	0.00	4.79	0.24	0.00	0.00	15.61	0.78	Note 4
EP-20020 (EMG)	Genset #2	0.06	0.06	0.00	0.06	0.06	0.00	4.79	0.24	0.00	0.00	15.61	0.78	Note 4
EP-20030 (EMG)	Genset #3	0.06	0.06	0.00	0.06	0.06	0.00	4.79	0.24	0.00	0.00	15.61	0.78	Note 4
EP-20040 (EMG)	Genset #4	0.06	0.06	0.00	0.06	0.06	0.00	4.79	0.24	0.00	0.00	15.61	0.78	Note 4

Note 1. The daily haul road traffic and associated processes are based on the "typical scenario" for shipping and receiving, which assumes that all shipping and receiving will occur 6:00 AM to 6:00 PM only, or 12 hours per day. 24-hour PM2.5 emissions from hau roads were modeled based on the worst-case "alternate scenario", which assumes the 70%/30% traffic configuration.

Note 2. Reduced load emissions were only evaluated for the maximum short-term emissions.

Note 3. Flare permitted to operate up to 3,960 hours per year to support the boiler during shutdown or malfunction, or when the boiler is not operating at full capacity. For modeling purposes, the flare will be operated concurrent with boiler operations at all loads to ensure the worst case scenario is evaluated. The boiler emissions will not adjusted to account for the diverted biogas, process vent streams and loadout vapors to the flare; therefore, the biogas, process vent streams and loadout vapors emissions are being double-counted since it may be possible for only one vent stream to be diverted at any given time. The firewater pump engine will not be operated at any time that the flare is operating except in the event of a facility emergency. In the event of an emergency, operations at the facility will be shutdown at all of the major processes during the event, and an emergency event will not be modeled.

Note 4. Emergency equipment will operate a maximum of 1 hours per day for testing, no more than 100 hours per year, during normal facility operations. In the event of an emergency, operations at the facility will be shutdown at all of the major processes during

Modeled Source Parameters

VOLUME SOURCE PARAMETERS

Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Elevation (ft)	Release Height (1) (ft)	Length of Side(2) (ft)	Initial Lateral Dim. (3) (ft)	Height of Truck When Unloading (ft)	Initial Vertical Dim. (4) (ft)
EP11110F	Crops Grinding and Handling	288262.50	4117797.50	3,132.38	5.0	10	2.33	25	11.63

Note 1. Release Height from Truck Unloading = Height from Truck Bed
Note 2. Length of Side = Truck Bed Width.
Note 3. Initial Lateral Dimensions of Single Volume Source = Length of Side / 4.3
Note 4. Initial Vertical Dimensions of Single Volume Source = Maximum Height of Tilt Bed / 2.15

POINT SOURCE PARAMETERS

Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Elevation (ft)	Stack Height (ft)	Stack Diameter (in)	Stack Temp. (°F)	Flow Rate (cfm)	Stack Velocity (ft/s)
ENZYMATIC HYDROLYSIS PLANT									
EP11120	Floor Sweep System DC	288214.50	4117821.00	3,134.02	17	24	Ambient	7,800	41.38
EP11110	Bale Grinder DC	288190.50	4117828.50	3,134.02	48	84	Ambient	143,900	62.32
EP11170	Classifier Cyclone # 1 DC	288236.50	4117773.50	3,134.02	103	36	Ambient	21,600	50.93
EP11270	Classifier Cyclone # 2 DC	288236.50	4117763.00	3,134.02	103	36	Ambient	21,600	50.93
EP11711	Boiler Feed System DC	288098.90	4117727.54	3,136.48	73	36	Ambient	21,600	50.93
EP18185	EH Fermentation CO_2 Scrubber	288242.00	4117662.00	3,132.38	67	16	67	4,100	48.94
UTILITIES									
EP02710	Bulk Fly Ash Load-Out Silo	288085.24	4117682.14	3,137.30	58	36	Ambient	28,100	66.26
EP02711A	Bulk Fly Ash Load-Out Silo Spout #1	288072.69	4117682.14	3,137.30	31	36	Ambient	28,100	66.26
EP02711B	Bulk Fly Ash Load-Out Silo Spout #2	288080.30	4117681.83	3,137.30	31	36	Ambient	28,100	66.26
EP04001	Cooling Water Tower								
EP04001A	Cell 1	288157.50	4117806.50	3,134.84	44	396	72	1,258,000	24.51
EP04001B	Cell 2	288157.50	4117795.00	3,134.84	44	396	72	1,258,000	24.51
EP04001C	Cell 3	288157.50	4117783.50	3,134.84	44	396	72	1,258,000	24.51
EP20512	Lime Handling DC #1	288089.04	4117681.73	3,136.48	73	12	Ambient	2,000	42.44
EP20514	Boiler Bottoms Ash Handling DC #1	288100.83	4117731.59	3,136.48	73	36	Ambient	28,100	66.26
EP20510	Boiler Fly Ash Handling DC #1	288095.52	4117702.23	3,136.48	58	30	Ambient	14,050	47.70
EP20520	Boiler Fly Ash Handling DC #2	288096.03	4117681.73	3,136.48	58	30	Ambient	14,050	47.70
EP09001	Flare - Pilot Only	288395.69	4117591.03	3,131.56	34.5	15.1	1,832	–	65.62
EP09001	Flare	288395.69	4117591.03	3,131.56	47.1	61.6	1,832	–	65.62
EP06000	Firewater Pump Engine	288289.00	4117693.50	3,132.38	68	6	770	1,750	148.54
EP20010	Genset #1	288185.71	4117812.82	3,136.48	32.25	12	921	13,292	282.08
EP20020	Genset #2	288196.07	4117812.82	3,136.48	32.3	12.0	921	13,292	282.08
EP20030	Genset #3	288185.71	4117820.13	3,136.48	32.3	12.0	921	13,292	282.08
EP20040	Genset #4	288196.07	4117820.13	3,136.48	32	12	921	13,292	282.08

Note 1. The Iowa Department of Natural Resources (IDNR) has a flare tool spreadsheet (http://www.iowadnr.gov/air/prof/progdev/files/Flares.xls) that was utilized for estimating the effective stack height and diameter for the modified point source.

POINT SOURCE PARAMETERS

Source ID	Source Description	Percent Load (%)	UTM Easting (m)	UTM Northing (m)	Elevation (ft)	Stack Height (ft)	Stack Diameter (in)	Stack Temp. (°F)	Flow Rate (cfm)	Stack Velocity (ft/s)
UTILITIES										
EP20001	Biomass-Fired Boiler #1	30	288140.90	4117766.03	3,136.48	160	120	250	66,000	14.01
EP20001	Biomass-Fired Boiler #1	50	288140.90	4117766.03	3,136.48	160	120	280	110,000	23.34
EP20001	Biomass-Fired Boiler #1	75	288140.90	4117766.03	3,136.48	160	120	300	165,000	35.01
EP20001	Biomass-Fired Boiler #1	100	288140.90	4117766.03	3,136.48	160	120	300	220,000	46.69
EP20001	Biomass-Fired Boiler #1	120	288140.90	4117766.03	3,136.48	160	120	300	264,000	56.02

Modeled Source Parameters

BUILDING PARAMETERS — Rev 5/4/2011

AERMOD ID	Structure Name	Plan Label	Type	UTM Easting (m)	UTM Northing (m)	Elevation (ft)	Height (ft)	Length (X) (ft)	Width (Y) (ft)	Angle
RECTANGULAR BUILDINGS										
BLD1	Administration	1	Building	288231.50	4117876.00	3134.02	14	117	94	
BLD18	Mechanical Room	11	Building	288218.50	4117781.00	3134.02	14	100	30	
BLD19	Rail Unloading	12, 39	Building	288066.10	4117799.60	3137.30	28	140	70	
BLD2	Maintenance	2	Building	288210.50	4117876.00	3134.02	28	68	94	
BLD20	Dehydration & Evaporation	13, 33	Building	288111.50	4117686.50	3134.02	90	100	110	
BLD22	Water Treatment	15	Building	Partial Structure, Not Included			Various	115	90	
BLD3	Control	3	Building	288182.00	4117752.50	3134.84	14	83	94	
BLD38	Turbine	20	Building	288148.50	4117824.50	3135.66	20	75	75	
BLD39	Cogen / Electrical	21	Building	288171.00	4117883.00	3135.66	14	80	60	
BLD4	Guard House	4	Building	288318.50	4117928.50	3131.56	10	34	13	
BLD43	Cooling Tower	23	Building	288151.50	4117815.65	3134.84	28	125	40	
BLD45	Chemical Tote Storage	26	Building	288185.00	4117658.00	3134.84	14	64	25	
BLD47	Fire Pump House	28	Building	288282.50	4117683.50	3132.38	12	25	40	
BLD5A	Biomass Handling & Cleaning	6, 7	Building	288206.50	4117843.50	3134.02	14	127	52	
BLD5B	Biomass Hammermilling	6, 7	Building	288188.00	4117841.00	3134.84	28	80	40	
BLD54	Waste Water Treatment	32	Building	288311.00	4117778.50	3131.56	14	35	90	
BLD6	Biomass Boiler	8	Boiler	288117.00	4117833.00	3136.48	70	80	45	
BLD62	Foam	38	Building	288161.50	4117667.00	3135.66	14	20	20	
BLD63	Electrical Room #1	ECR	Building	288171.00	4117865.00	3135.66	14	80	60	
BLD64	Electrical Room #2	ECR	Building	288134.70	4117790.10	3136.48	14	15	15	
BLD65	Electrical Room #3	ECR	Building	288162.00	4117688.50	3135.66	14	25	25	
BLD66	Electrical Room #4	ECR	Building	288261.50	4117756.00	3133.20	14	15	15	
BLD8	Biomass Pretreatment	9	Building	288228.00	4117781.00	3134.02	100	105	75	

BUILDING PARAMETERS — Rev 5/4/2011

AERMOD ID	Structure Name	Plan Label	Type	UTM Easting (m)	UTM Northing (m)	Elevation (ft)	Height (ft)	Radius (ft)	Diameter (ft)
RECTANGULAR BUILDINGS									
BLD9	Liquefaction Tower	9	Tank	Under BLD8 (Biomass Pretreatment, Plan Label 9)			10.5	16.625	33.25
BLD10	Yeast Propagator	9	Tank				4.6	2.3	4.6
BLD11	Yeast Propagator	9	Tank				4.6	2.3	4.6
BLD12	Yeast Propagator	9	Tank				17	8.75	17.5
BLD13	Yeast Propagator	9	Tank				17	8.75	17.5
BLD14	Soak	9	Tank				8	3.5	7
BLD15	Fermentor	10	Tank	288255.50	4117734.00	3133.20	59.5	30	60
BLD16	Fermentor	10	Tank	288255.50	4117711.50	3133.20	59.5	30	60
BLD17	Fermentor	10	Tank	288255.50	4117685.50	3133.20	59.5	30	60
BLD21	Clarified (Thin) Stillage	14	Tank	288158.00	4117712.00	3135.66	35	12.5	25
BLD23	Filtered Water	15	Tank	288117.00	4117820.50	3136.48	64	15	30
BLD24	RO Water Storage	15	Tank	288133.50	4117804.00	3136.48	35	15	30
BLD25	Polished Water Storage	15	Tank	288116.00	4117786.50	3136.48	35	29	58
BLD26	Expansion	15	Tank	288098.00	4117800.00	3136.48	5	2	4
BLD27	HP Air	15	Tank	288095.50	4117807.50	3136.48	5.5	8	16
BLD28	HP Air	15	Tank	288101.00	4117807.50	3136.48	5.5	8	16
BLD29	LP Air	15	Tank	288095.50	4117802.50	3136.48	10	8.5	17
BLD30	LP Air	15	Tank	288101.00	4117802.50	3136.48	10	8.5	17
BLD31	Stillage Settling	17	Tank	288159.00	4117737.00	3135.66	42	29.5	59
BLD32	Stillage Flocculation	17	Tank	288147.50	4117730.00	3135.66	12	5.5	11
BLD33	Product Shift	18	Tank	288143.00	4117620.50	3133.20	20	10	20
BLD34	Product Shift	18	Tank	288143.00	4117628.50	3133.20	20	10	20
BLD35	Denaturant Storage	18	Tank	288143.00	4117636.50	3133.20	16.5	8.25	16.5
BLD36	Ethanol Product Storage	18	Tank	288127.00	4117629.50	3133.20	48.5	24.25	48.5
BLD37	Ethanol Product Storage	18	Tank	288127.00	4117609.50	3133.20	48.5	24.25	48.5
BLD40	Saccharification	22	Tank	288227.00	4117734.00	3133.20	59.5	30	60
BLD41	Saccharification	22	Tank	288227.00	4117711.50	3133.20	59.5	30	60
BLD42	Saccharification	22	Tank	288227.00	4117685.50	3133.20	59.5	30	60
BLD44	Beer Well	25	Tank	288255.50	4117662.00	3133.20	68	30	60
BLD46	Fire Water	27	Tank	288289.00	4117700.00	3132.38	65	17	34
BLD48	Cleaning in Place (CIP)	29	Tank	288192.00	4117722.00	3134.84	12	17.5	35
BLD49	Sulfuric Acid	30	Tank	288189.50	4117687.00	3134.84	13	13	26
BLD50	Nutrient	30	Tank	288201.00	4117675.50	3134.84	12	6	12
BLD51	Cellulase	30	Tank	288198.50	4117687.00	3134.84	21	10.5	21
BLD52	Media Liquid	30	Tank	288189.50	4117675.50	3134.84	15.5	11	22
BLD53	Acid	30	Tank	288196.00	4117675.50	3134.84	11	6.5	13
BLD55	Final Rinse	32	Tank	Location To Be Determined			16	15.5	31
BLD56	2% Caustic	32	Tank	Location To Be Determined			16	15.5	31
BLD57	Pre-Rinse	32	Tank	Location To Be Determined			16	15.5	31
BLD58	Waste Water Mix	32	Tank	Location To Be Determined			13.5	12	24
BLD59	Treated Waste Water Storage	32	Tank	288283.50	4117737.00	3132.38	56.5	23	46
BLD60	Evaporator Condensate	33	Tank	288283.50	4117758.00	3133.20	43	23	46
BLD61	Syrup	37	Tank	288144.00	4117741.00	3136.48	19.5	16.5	33
BLD67	Elevated Fly Ash Silo	Near 39	Tank	288127.50	4117869.50	3137.30	55	20	40
BLD7	Aqueous Ammonia	Near 8	Tank	288100.00	4117776.00	3136.48	10	7.5	15

Modeled Source Parameters

VOLUME SOURCE PARAMETERS

Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Elevation (m)	Release Height (1) (m)	Length of Side (2) (m)	Initial Lateral Dim. (3) (m)	Height of Truck When Unloading (m)	Initial Vertical Dim. (4) (m)
EP11110F	Crops Grinding and Handling	288262.50	4117797.50	954.75	1.52	3.05	0.71	7.62	3.54

Note 1. Release Height from Truck Unloading = Height from Truck Bed
Note 2. Length of Side = Truck Bed Width.
Note 3. Initial Lateral Dimensions of Single Volume Source = Length of Side / 4.3
Note 4. Initial Vertical Dimensions of Single Volume Source = Maximum Height of Tilt Bed / 2.15

POINT SOURCE PARAMETERS

Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Elevation (m)	Stack Height (m)	Stack Diameter (m)	Stack Temp. (°K)	Flow Rate (m^3/s)	Stack Velocity (m/s)
ENZYMATIC HYDROLYSIS PLANT									
EP11120	Floor Sweep System DC	288214.50	4117821.00	955.25	5.18	0.61	Ambient	3.68	12.61
EP11110	Bale Grinder DC	288190.50	4117828.50	955.25	14.63	2.13	Ambient	67.91	18.99
EP11170	Classifier Cyclone # 1 DC	288236.50	4117773.50	955.25	31.39	0.91	Ambient	10.19	15.52
EP11270	Classifier Cyclone # 2 DC	288236.50	4117763.00	955.25	31.39	0.91	Ambient	10.19	15.52
EP11711	Boiler Feed System DC	288098.90	4117727.54	956.00	22.25	0.91	Ambient	10.19	15.52
EP18185	EH Fermentation CO2 Scrubber	288242.00	4117662.00	954.75	20.42	0.41	292.44	1.93	14.92
UTILITIES									
EP02710	Bulk Fly Ash Load-Out Silo	288085.24	4117682.14	956.25	17.68	0.91	Ambient	13.26	20.19
EP02711A	Bulk Fly Ash Load-Out Silo Spout #1	288072.69	4117682.14	956.25	9.45	0.91	Ambient	13.26	20.19
EP02711B	Bulk Fly Ash Load-Out Silo Spout #2	288080.30	4117681.83	956.25	9.45	0.91	Ambient	13.26	20.19
EP04001	Cooling Water Tower								
EP04001A	Cell 1	288157.50	4117806.50	955.50	13.41	10.06	295.22	593.71	7.47
EP04001B	Cell 2	288157.50	4117795.00	955.50	13.41	10.06	295.22	593.71	7.47
EP04001C	Cell 3	288157.50	4117783.50	955.50	13.41	10.06	295.22	593.71	7.47
EP20512	Lime Handling DC #1	288089.04	4117681.73	956.00	22.25	0.30	Ambient	0.94	12.94
EP20514	Boiler Bottoms Ash Handling DC #1	288100.83	4117731.59	956.00	22.25	0.91	Ambient	13.26	20.19
EP20510	Boiler Fly Ash Handling DC #1	288095.52	4117702.23	956.00	17.68	0.76	Ambient	6.63	14.54
EP20520	Boiler Fly Ash Handling DC #2	288096.03	4117681.73	956.00	17.68	0.76	Ambient	6.63	14.54
EP09001	Flare - Pilot Only	288395.69	4117591.03	954.50	10.52	0.38	1273.00	--	20.00
EP09001	Flare	288395.69	4117591.03	954.50	14.36	1.56	1273.00	--	20.00
EP06000	Firewater Pump Engine	288289.00	4117693.50	954.75	20.73	0.15	683.00	0.83	45.28
EP20010	Genset #1	288185.71	4117812.82	956.00	9.83	0.30	766.89	6.27	85.98
EP20020	Genset #2	288196.07	4117812.82	956.00	9.83	0.30	766.89	6.27	85.98
EP20030	Genset #3	288185.71	4117820.13	956.00	9.83	0.30	766.89	6.27	85.98
EP20040	Genset #4	288196.07	4117820.13	956.00	9.83	0.30	766.89	6.27	85.98

Note 1. The Iowa Department of Natural Resources (IDNR) has a flare tool spreadsheet (http://www.iowadnr.gov/air/prof/progdev/files/Flares.xls) that was utilized for estimating the effective stack height and diameter for the modified point source.

POINT SOURCE PARAMETERS

Source ID	Source Description	Percent Load (%)	UTM Easting (m)	UTM Northing (m)	Elevation (m)	Stack Height (m)	Stack Diameter (m)	Stack Temp. (°K)	Flow Rate (m^3/s)	Stack Velocity (m/s)
UTILITIES										
EP20001	Biomass-Fired Boiler #1	30	288140.90	4117766.03	956.00	48.77	3.05	394.11	31.15	4.27
EP20001	Biomass-Fired Boiler #1	50	288140.90	4117766.03	956.00	48.77	3.05	410.78	51.91	7.11
EP20001	Biomass-Fired Boiler #1	75	288140.90	4117766.03	956.00	48.77	3.05	421.89	77.87	10.67
EP20001	Biomass-Fired Boiler #1	100	288140.90	4117766.03	956.00	48.77	3.05	421.89	103.83	14.23
EP20001	Biomass-Fired Boiler #1	120	288140.90	4117766.03	956.00	48.77	3.05	421.89	124.59	17.08

Modeled Source Parameters

BUILDING PARAMETERS										Rev 5/4/2011
ID	Description	Plan Label	Type	UTM Easting (m)	UTM Northing (m)	Elevation (m)	Height (m)	Length (X) (m)	Width (Y) (m)	Angle
RECTANGULAR BUILDINGS										
BLD1	Administration	1	Building	288231.50	4117876.00	955.25	4.27	35.66	28.65	0
BLD18	Mechanical Room	11	Building	288218.50	4117781.00	955.25	4.27	30.48	9.14	0
BLD19	Rail Unloading	12, 39	Building	288066.10	4117799.60	956.25	8.53	42.67	21.34	0
BLD2	Maintenance	2	Building	288210.50	4117876.00	955.25	8.53	20.73	28.65	0
BLD20	Dehydration & Evaporation	13, 33	Building	288111.50	4117686.50	955.25	27.43	30.48	33.53	0
BLD22	Water Treatment	15	Building	Partial Structure, Not Included			Various	35.05	27.43	0
BLD3	Control	3	Building	288182.00	4117752.50	955.50	4.27	25.30	28.65	0
BLD38	Turbine	20	Building	288148.50	4117824.50	955.75	6.10	22.86	22.86	0
BLD39	Cogen / Electrical	21	Building	288171.00	4117883.00	955.75	4.27	24.38	18.29	0
BLD4	Guard House	4	Building	288318.50	4117928.50	954.50	3.05	10.36	3.96	0
BLD43	Cooling Tower	23	Building	288151.50	4117815.65	955.50	8.53	38.10	12.19	0
BLD45	Chemical Tote Storage	26	Building	288185.00	4117658.00	955.50	4.27	19.51	7.62	0
BLD47	Fire Pump House	28	Building	288282.50	4117683.50	954.75	3.66	7.62	12.19	0
BLD5A	Biomass Handling & Cleaning	6, 7	Building	288206.50	4117843.50	955.25	4.27	38.71	15.85	0
BLD54	Waste Water Treatment	32	Building	288311.00	4117778.50	954.50	4.27	10.67	27.43	0
BLD6	Biomass Boiler	8	Boiler	288117.00	4117833.00	956.00	21.34	24.38	13.72	0
BLD62	Foam	38	Building	288161.50	4117667.00	955.75	4.27	6.10	6.10	0
BLD63	Electrical Room #1	ECR	Building	288171.00	4117865.00	955.75	4.27	24.38	18.29	0
BLD64	Electrical Room #2	ECR	Building	288134.70	4117790.10	956.00	4.27	4.57	4.57	0
BLD65	Electrical Room #3	ECR	Building	288162.00	4117688.50	955.75	4.27	7.62	7.62	0
BLD66	Electrical Room #4	ECR	Building	288261.50	4117756.00	955.00	4.27	4.57	4.57	0
BLD8	Biomass Pretreatment	9	Building	288228.00	4117781.00	955.25	30.48	32.00	22.86	0

BUILDING PARAMETERS									Rev 5/4/2011
ID	Description	Plan Label	Type	UTM Easting (m)	UTM Northing (m)	Elevation (ft)	Height (ft)	Radius (ft)	Diameter (ft)
CIRCULAR BUILDINGS									
BLD9	Liquefaction Tower	9	Tank	Under BLD8 (Biomass Pretreatment, Plan Label 9)			3.20	5.07	10.13
BLD10	Yeast Propagator	9	Tank				1.40	0.70	1.40
BLD11	Yeast Propagator	9	Tank				1.40	0.70	1.40
BLD12	Yeast Propagator	9	Tank				5.18	2.67	5.33
BLD13	Yeast Propagator	9	Tank				5.18	2.67	5.33
BLD14	Soak	9	Tank				2.44	1.07	2.13
BLD15	Fermentor	10	Tank	288255.50	4117734.00	955.00	18.14	9.14	18.29
BLD16	Fermentor	10	Tank	288255.50	4117711.50	955.00	18.14	9.14	18.29
BLD17	Fermentor	10	Tank	288255.50	4117685.50	955.00	18.14	9.14	18.29
BLD21	Clarified (Thin) Stillage	14	Tank	288158.00	4117712.00	955.75	10.67	3.81	7.62
BLD23	Filtered Water	15	Tank	288117.00	4117820.50	956.00	19.51	4.57	9.14
BLD24	RO Water Storage	15	Tank	288133.50	4117804.00	956.00	10.67	4.57	9.14
BLD25	Polished Water Storage	15	Tank	288116.00	4117786.50	956.00	10.67	8.84	17.68
BLD26	Expansion	15	Tank	288098.00	4117800.00	956.00	1.52	0.61	1.22
BLD27	HP Air	15	Tank	288095.50	4117807.50	956.00	1.68	2.44	4.88
BLD28	HP Air	15	Tank	288101.00	4117807.50	956.00	1.68	2.44	4.88
BLD29	LP Air	15	Tank	288095.50	4117802.50	956.00	3.05	2.59	5.18
BLD30	LP Air	15	Tank	288101.00	4117802.50	956.00	3.05	2.59	5.18
BLD31	Stillage Settling	17	Tank	288159.00	4117737.00	955.75	12.80	8.99	17.98
BLD32	Stillage Flocculation	17	Tank	288147.50	4117730.00	955.75	3.66	1.68	3.35
BLD33	Product Shift	18	Tank	288143.00	4117620.50	955.00	6.10	3.05	6.10
BLD34	Product Shift	18	Tank	288143.00	4117628.50	955.00	6.10	3.05	6.10
BLD35	Denaturant Storage	18	Tank	288143.00	4117636.50	955.00	5.03	2.51	5.03
BLD36	Ethanol Product Storage	18	Tank	288127.00	4117629.50	955.00	14.78	7.39	14.78
BLD37	Ethanol Product Storage	18	Tank	288127.00	4117609.50	955.00	14.78	7.39	14.78
BLD40	Saccharification	22	Tank	288227.00	4117734.00	955.00	18.14	9.14	18.29
BLD41	Saccharification	22	Tank	288227.00	4117711.50	955.00	18.14	9.14	18.29
BLD42	Saccharification	22	Tank	288227.00	4117685.50	955.00	18.14	9.14	18.29
BLD44	Beer Well	25	Tank	288255.50	4117662.00	955.00	20.73	9.14	18.29
BLD46	Fire Water	27	Tank	288289.00	4117700.00	954.75	19.81	5.18	10.36
BLD48	Cleaning in Place (CIP)	29	Tank	288192.00	4117722.00	955.50	3.66	5.33	10.67
BLD49	Sulfuric Acid	30	Tank	288189.50	4117687.00	955.50	3.96	3.96	7.92
BLD50	Nutrient	30	Tank	288201.00	4117675.50	955.50	3.66	1.83	3.66
BLD51	Cellulase	30	Tank	288198.50	4117687.00	955.50	6.40	3.20	6.40
BLD52	Media Liquid	30	Tank	288189.50	4117675.50	955.50	4.72	3.35	6.71
BLD53	Acid	30	Tank	288196.00	4117675.50	955.50	3.35	1.98	3.96
BLD55	Final Rinse	32	Tank	Location To Be Determined			4.88	4.72	9.45
BLD56	2% Caustic	32	Tank	Location To Be Determined			4.88	4.72	9.45
BLD57	Pre-Rinse	32	Tank	Location To Be Determined			4.88	4.72	9.45
BLD58	Waste Water Mix	32	Tank	Location To Be Determined			4.11	3.66	7.32
BLD59	Treated Waste Water Storage	32	Tank	288283.50	4117737.00	954.75	17.22	7.01	14.02
BLD60	Evaporator Condensate	33	Tank	288283.50	4117758.00	955.00	13.11	7.01	14.02
BLD61	Syrup	37	Tank	288144.00	4117741.00	956.00	5.94	5.03	10.06
BLD67	Elevated Fly Ash Silo	Near 39	Tank	288127.50	4117869.50	956.25	16.76	6.10	12.19
BLD7	Aqueous Ammonia	Near 8	Tank	288100.00	4117776.00	956.00	3.05	2.29	4.57

Modeled Source Parameters

VOLUME SOURCE PARAMETERS

Source ID	Source Description	Road Length (m)	Volume Height (m)	Top of Plume (m)	Release Height (m)	Actual Width (m)	Adjusted Width (m)	Initial Lateral Dim. (Sigma Y) (m)	Initial Vertical Dim. (Sigma Z) (m)	Maximum Number of Sources
EP01000F	Paved Plant Roads	Note 2	Note 3	Note 4	Note 5	Note 6	Note 7	Note 8	Note 9	Note 10
PHR01 and PHR02 modeled as an area source as detailed above.										
PHR01 through PHR02	Haul Road Entrance 1 through Haul Road Entrance 2	49.9	3.7	6.2	3.1	14.6	20.6	9.60	2.89	N/A Modeled as Area Source
PHR03	Weigh Staging Lanes 3	46	3.7	6.2	3.1	29.3	35.3	16.40	2.89	1
PHR04 through PHR09	Scale Lanes 4 through Scale Lanes 9	132	3.7	6.2	3.1	14.6	20.6	9.60	2.89	6
PHR10 through PHR43	Main Road Drive Loop 10 through Main Road Drive Loop 43	454	3.7	6.2	3.1	7.3	13.3	6.19	2.89	34
PHR044 through PHR155	Ash Loadout 44 through Ash Loadout 155	308	3.7	6.2	3.1	2.7	2.7	1.28	2.89	112
PHR156 through PHR183	Center Interior Road 156 through Center Interior Road 183	76	3.7	6.2	3.1	2.7	2.7	1.28	2.89	28
PHR184 through PHR292	Ash/Etoh/Chemical Loadout 184 through Ash/Etoh/Chemical Loadout 292	305	3.7	6.2	3.1	2.7	2.7	1.28	2.89	111
EP01050F	Unpaved Biomass Roads									
BRD001 through BRD408	Biomass Road 1 through Biomass Road 408	1,225	3.7	6.2	3.1	2.7	2.7	1.28	2.89	447
BRD409 through BRD441	Biomass Staging Area 409 through Biomass Staging Area 441	91	3.7	6.2	3.1	2.7	2.7	1.28	2.89	33

(1) Plant haul roads modeled as detailed in the EPA's *Haul Road Workgroup Recommendations* , dated February 9, 2011.

(2) Actual haul roads lengths based on the following:

Haul road entrance lanes (two-way traffic) from fenceline to staging area are 163.75 feet in length and consist of 4 lanes (2 in-coming and 2-outgoing lanes).

Haul road entrance lanes (two-way traffic) at the weigh staging area are 151.75 feet in length and consists of eight lanes.

Haul road scale lanes (to-way traffic) are 433.5 feet in length and consist of four lanes.

Main haul road drive loop (one-way traffic) is 1,490 feet in length and consists of two lanes.

The ash loadout loop (one-way traffic) is 2,010 feet in length and consists of one lane.

The ethanol/denaturant/chemical loop (one-way traffic) is 1,250 feet in length and consists of one lane.

The unpaved biomass roads are over 20,000 feet in total length (when all possible driving paths are included). For modeling purposes, only the primary drive loops were included, which are approximately 4,000 feet in length.

(3) Actual height of vehicles based on 12 feet, which is the approximate average standard commercial truck height. The U.S. Department of Transportation (DOT) limits commercial vehicle heights to 13.5 feet (state height limits range from 13.6 feet to 14.6 feet).

(4) The top of the plume height is calculated using the following equation:

Top of Plume Height = 1.7 x Volume Height

(5) The release height is calculated using the following equation:

Release Height = (Top of Plume) x 0.5

(6) The actual road widths will be designed for heavy truck traffic and are based on a 12-foot standard drive lane.

The haul road entrance segment will consist of 2 in-coming drive lanes and 2 out-going lanes. (2 in-coming lanes x 12-ft width each) + (2 out-going lanes x 12-ft width each) = 48 ft wide entrance road.

The weigh staging segment will consist of 6 in-coming drive lanes and 2 out-going lanes. (6 in-coming lanes x 12-ft width each) + (2 out-going lanes x 12-ft width each) = 96 ft wide weigh staging road.

The scales segment will consist of 1 weigh-in scale lane, 1 no weigh in-coming lane, 1 weigh-out scale lane and 1 no weigh out-going lane. (2 in-coming lanes x 12-ft width each) + 2 out-going lanes x 12-ft wide lanes) = 48 ft wide scale road.

The main paved plant haul road will consist of 2 one-way drive lanes. (2 one-way drive lanes x 12-ft width each) = 24 ft wide main paved plant haul road.

The ash loadout will consist of a single one-way drive lane. (1 one-way drive lane x 9-ft vehicle width) = 9 ft wide ash loadout road.

The center interior road will consist of a single one-way drive lane. (1 one-way drive lane x 9-ft vehicle width) = 9 ft wide center interior road.

The ash/ethanol/chemical loadout will consist of a single one-way drive lane. (1 one-way drive lane x 9-ft vehicle width) = 9 ft wide ash/ethanol/chemical loadout road.

Unpaved biomass roads will consist of single one-way drive lanes. (1 one-way drive lane x 9-ft vehicle width) = 9-ft wide biomass laydown roads.

Unpaved biomass staging area roads will consist of single one-way drive lanes. (1 one-way drive lane x 9-ft vehicle width) = 9-ft wide biomass staging area roads.

(7) The adjusted width (AW), or width of plume, is calculated using the following equation:

Adjusted Road Width (Width of Plume) For Multiple Driving Lanes = Actual Road Width + 6 meters *Used for haul road entrance and main paved plant haul roads

Adjusted Road Width (Width of Plume) For Single Lane Road = Actual Vehicle Width + 6 meters *Used for single lane roads and unpaved biomass roads

(8) The initial lateral dimension (sigma y) is based on adjacent volume sauces and is calculated using the following equation:

Initial Lateral Dimension (Sigma Y) = (Adjusted Width) / 2.15

(9) The initial vertical dimension (sigma z) is calculated using the following equation:

Initial Vertical Dimension (Sigma Z) = (Top of Plume) / 2.15

(10) The maximum number of volume sources is calculated using the following equation:

Maximum Number of Volume Sources, N = (Length or Road) / (Adjusted Width)

Modeled Source Parameters

AREA SOURCE PARAMETERS

Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Elevation (m)	Road Length (m)	Road Width (m)	Top of Plume (m)	Release Height (m)	Adjusted Width (m)	Initial Vertical Dim. (Sigma Z) (m)	Source Area (m^2)
PHR01 through PHR02	Haul Road Entrance 1 through Haul Road Entrance 2	288274.5	4118043.0	955.00	49.9	14.6	6.22	3.11	20.6	2.89	1,030

(1) See Volume Source Parameter Table below for details on source parameter calculations.

VOLUME SOURCE PARAMETERS

Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Elevation (m)	Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Elevation (m)
EP01000F	Paved Plant Roads				EP01000F	Paved Plant Roads			
PHR001	Haul Road Entrance 1	N/A	N/A	N/A	PHR147	Ash Loadout 147	288152.7	4117723.5	955.75
PHR002	Haul Road Entrance 2	N/A	N/A	N/A	PHR148	Ash Loadout 148	288155.4	4117723.5	955.75
PHR003	Weigh Staging Lanes 3	288294.5	4118028.0	955.00	PHR149	Ash Loadout 149	288158.2	4117723.5	955.75
PHR004	Scale Lanes 4	288307.0	4118005.5	954.75	PHR150	Ash Loadout 150	288160.9	4117723.5	955.75
PHR005	Scale Lanes 5	288313.5	4117984.9	954.75	PHR151	Ash Loadout 151	288163.7	4117723.5	955.75
PHR006	Scale Lanes 6	288320.0	4117964.2	954.75	PHR152	Ash Loadout 152	288166.4	4117723.5	955.75
PHR007	Scale Lanes 7	288322.0	4117943.6	954.75	PHR153	Ash Loadout 153	288169.1	4117723.5	955.75
PHR008	Scale Lanes 8	288322.0	4117923.0	954.75	PHR154	Ash Loadout 154	288171.9	4117723.5	955.75
PHR009	Scale Lanes 9	288322.0	4117902.3	954.75	PHR155	Ash Loadout 155	288174.6	4117723.5	955.75
PHR010	Main Road Drive Loop 10	288317.0	4117889.0	954.75	PHR156	Center Interior Road 156	288174.6	4117797.6	955.75
PHR011	Main Road Drive Loop 11	288317.0	4117875.7	954.75	PHR157	Center Interior Road 157	288174.6	4117794.8	955.75
PHR012	Main Road Drive Loop 12	288311.0	4117867.0	954.75	PHR158	Center Interior Road 158	288174.6	4117792.1	955.75
PHR013	Main Road Drive Loop 13	288305.0	4117858.0	954.75	PHR159	Center Interior Road 159	288174.6	4117789.3	955.75
PHR014	Main Road Drive Loop 14	288292.0	4117855.7	954.75	PHR160	Center Interior Road 160	288174.6	4117786.6	955.75
PHR015	Main Road Drive Loop 15	288278.7	4117855.7	954.75	PHR161	Center Interior Road 161	288174.6	4117783.9	955.75
PHR016	Main Road Drive Loop 16	288265.4	4117855.7	955.00	PHR162	Center Interior Road 162	288174.6	4117781.1	955.75
PHR017	Main Road Drive Loop 17	288252.1	4117855.7	955.00	PHR163	Center Interior Road 163	288174.6	4117778.4	955.75
PHR018	Main Road Drive Loop 18	288238.8	4117855.7	955.00	PHR164	Center Interior Road 164	288174.6	4117775.6	955.75
PHR019	Main Road Drive Loop 19	288225.5	4117855.7	955.00	PHR165	Center Interior Road 165	288174.6	4117772.9	955.75
PHR020	Main Road Drive Loop 20	288212.1	4117855.7	955.00	PHR166	Center Interior Road 166	288174.6	4117770.1	955.75
PHR021	Main Road Drive Loop 21	288198.8	4117855.7	955.50	PHR167	Center Interior Road 167	288174.6	4117767.4	955.75
PHR022	Main Road Drive Loop 22	288185.5	4117853.0	955.50	PHR168	Center Interior Road 168	288174.6	4117764.6	955.75
PHR023	Main Road Drive Loop 23	288178.8	4117842.4	955.50	PHR169	Center Interior Road 169	288174.6	4117761.9	955.75
PHR024	Main Road Drive Loop 24	288178.8	4117829.1	955.75	PHR170	Center Interior Road 170	288174.6	4117759.2	955.75
PHR025	Main Road Drive Loop 25	288178.8	4117815.8	955.75	PHR171	Center Interior Road 171	288174.6	4117756.4	955.75
PHR026	Main Road Drive Loop 26	288185.5	4117802.5	955.75	PHR172	Center Interior Road 172	288174.6	4117753.7	955.75
PHR027	Main Road Drive Loop 27	288197.0	4117792.0	955.75	PHR173	Center Interior Road 173	288174.6	4117750.9	955.75
PHR028	Main Road Drive Loop 28	288212.1	4117789.2	955.50	PHR174	Center Interior Road 174	288174.6	4117748.2	955.75
PHR029	Main Road Drive Loop 29	288225.5	4117789.2	955.50	PHR175	Center Interior Road 175	288174.6	4117745.4	955.75
PHR030	Main Road Drive Loop 30	288238.8	4117789.2	955.50	PHR176	Center Interior Road 176	288174.6	4117742.7	955.75
PHR031	Main Road Drive Loop 31	288252.1	4117789.2	955.50	PHR177	Center Interior Road 177	288174.6	4117740.0	955.75
PHR032	Main Road Drive Loop 32	288265.4	4117789.2	955.50	PHR178	Center Interior Road 178	288174.6	4117737.2	955.75
PHR033	Main Road Drive Loop 33	288278.7	4117789.2	954.75	PHR179	Center Interior Road 179	288174.6	4117734.5	955.75
PHR034	Main Road Drive Loop 34	288292.0	4117793.0	954.75	PHR180	Center Interior Road 180	288174.6	4117731.7	955.75
PHR035	Main Road Drive Loop 35	288305.3	4117793.0	954.75	PHR181	Center Interior Road 181	288174.6	4117729.0	955.75
PHR036	Main Road Drive Loop 36	288318.7	4117795.0	954.75	PHR182	Center Interior Road 182	288174.6	4117726.2	955.75
PHR037	Main Road Drive Loop 37	288326.5	4117805.0	954.75	PHR183	Center Interior Road 183	288174.6	4117723.5	955.75
PHR038	Main Road Drive Loop 38	288326.5	4117818.3	954.75	PHR184	Ash/Etoh/Chemical Loadout 184	288174.6	4117720.8	955.75
PHR039	Main Road Drive Loop 39	288326.5	4117831.6	954.75	PHR185	Ash/Etoh/Chemical Loadout 185	288174.6	4117718.0	955.75
PHR040	Main Road Drive Loop 40	288326.5	4117844.9	954.75	PHR186	Ash/Etoh/Chemical Loadout 186	288174.6	4117715.3	955.75
PHR041	Main Road Drive Loop 41	288326.5	4117858.3	954.75	PHR187	Ash/Etoh/Chemical Loadout 187	288174.6	4117712.5	955.75
PHR042	Main Road Drive Loop 42	288326.5	4117871.6	954.75	PHR188	Ash/Etoh/Chemical Loadout 188	288174.6	4117709.8	955.75
PHR043	Main Road Drive Loop 43	288326.5	4117884.9	954.75	PHR189	Ash/Etoh/Chemical Loadout 189	288174.6	4117707.0	955.75
PHR044	Ash Loadout 44	288183.5	4117858.5	955.75	PHR190	Ash/Etoh/Chemical Loadout 190	288174.6	4117704.3	955.75
PHR045	Ash Loadout 45	288180.8	4117858.5	955.75	PHR191	Ash/Etoh/Chemical Loadout 191	288174.6	4117701.6	955.8
PHR046	Ash Loadout 46	288178.0	4117858.5	955.75	PHR192	Ash/Etoh/Chemical Loadout 192	288174.6	4117698.8	955.8
PHR047	Ash Loadout 47	288175.3	4117858.5	955.75	PHR193	Ash/Etoh/Chemical Loadout 193	288174.6	4117696.1	955.8
PHR048	Ash Loadout 48	288172.5	4117858.5	955.75	PHR194	Ash/Etoh/Chemical Loadout 194	288174.6	4117693.3	955.8
PHR049	Ash Loadout 49	288169.8	4117858.5	955.75	PHR195	Ash/Etoh/Chemical Loadout 195	288174.6	4117690.6	955.8
PHR050	Ash Loadout 50	288167.0	4117858.5	955.75	PHR196	Ash/Etoh/Chemical Loadout 196	288174.6	4117687.8	955.8
PHR051	Ash Loadout 51	288164.3	4117858.5	955.75	PHR197	Ash/Etoh/Chemical Loadout 197	288174.6	4117685.1	955.8
PHR052	Ash Loadout 52	288161.6	4117858.5	955.75	PHR198	Ash/Etoh/Chemical Loadout 198	288174.6	4117682.4	955.8
PHR053	Ash Loadout 53	288158.8	4117858.5	955.75	PHR199	Ash/Etoh/Chemical Loadout 199	288174.6	4117679.6	955.8
PHR054	Ash Loadout 54	288156.1	4117858.5	955.75	PHR200	Ash/Etoh/Chemical Loadout 200	288174.6	4117676.9	955.8
PHR055	Ash Loadout 55	288153.3	4117858.5	955.75	PHR201	Ash/Etoh/Chemical Loadout 201	288174.6	4117674.1	955.8
PHR056	Ash Loadout 56	288150.6	4117858.5	955.75	PHR202	Ash/Etoh/Chemical Loadout 202	288174.6	4117671.4	955.8
PHR057	Ash Loadout 57	288147.8	4117858.5	955.75	PHR203	Ash/Etoh/Chemical Loadout 203	288174.6	4117668.6	955.8
PHR058	Ash Loadout 58	288145.1	4117858.5	956.00	PHR204	Ash/Etoh/Chemical Loadout 204	288174.6	4117665.9	955.8
PHR059	Ash Loadout 59	288142.4	4117858.5	956.00	PHR205	Ash/Etoh/Chemical Loadout 205	288174.6	4117663.1	955.8
PHR060	Ash Loadout 60	288139.6	4117858.5	956.00	PHR206	Ash/Etoh/Chemical Loadout 206	288174.6	4117660.4	955.8
PHR061	Ash Loadout 61	288136.9	4117858.5	956.00	PHR207	Ash/Etoh/Chemical Loadout 207	288174.6	4117657.7	955.8
PHR062	Ash Loadout 62	288134.1	4117858.5	956.00	PHR208	Ash/Etoh/Chemical Loadout 208	288176.6	4117655.9	955.8
PHR063	Ash Loadout 63	288131.4	4117858.5	956.00	PHR209	Ash/Etoh/Chemical Loadout 209	288178.6	4117654.1	955.8

Modeled Source Parameters

VOLUME SOURCE PARAMETERS

Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Elevation (m)	Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Elevation (m)
EP01000F	Paved Plant Roads				EP01000F	Paved Plant Roads			
PHR064	Ash Loadout 64	288128.6	4117858.5	956.00	PHR210	Ash/Etoh/Chemical Loadout 210	288180.6	4117652.3	955.8
PHR065	Ash Loadout 65	288125.9	4117858.5	956.00	PHR211	Ash/Etoh/Chemical Loadout 211	288182.6	4117650.5	955.8
PHR066	Ash Loadout 66	288123.1	4117858.5	956.00	PHR212	Ash/Etoh/Chemical Loadout 212	288184.6	4117648.7	955.8
PHR067	Ash Loadout 67	288120.4	4117858.5	956.00	PHR213	Ash/Etoh/Chemical Loadout 213	288186.6	4117646.9	955.8
PHR068	Ash Loadout 68	288117.7	4117858.5	956.00	PHR214	Ash/Etoh/Chemical Loadout 214	288189.4	4117646.9	955.8
PHR069	Ash Loadout 69	288114.9	4117858.5	956.00	PHR215	Ash/Etoh/Chemical Loadout 215	288192.1	4117646.9	955.8
PHR070	Ash Loadout 70	288112.2	4117858.5	956.00	PHR216	Ash/Etoh/Chemical Loadout 216	288194.9	4117646.9	955.8
PHR071	Ash Loadout 71	288109.4	4117858.5	956.00	PHR217	Ash/Etoh/Chemical Loadout 217	288197.6	4117646.9	955.8
PHR072	Ash Loadout 72	288106.7	4117858.5	956.00	PHR218	Ash/Etoh/Chemical Loadout 218	288200.3	4117646.9	955.8
PHR073	Ash Loadout 73	288103.9	4117858.5	956.00	PHR219	Ash/Etoh/Chemical Loadout 219	288203.1	4117646.9	955.8
PHR074	Ash Loadout 74	288101.2	4117858.5	956.00	PHR220	Ash/Etoh/Chemical Loadout 220	288205.8	4117646.9	955.5
PHR075	Ash Loadout 75	288098.5	4117858.5	956.00	PHR221	Ash/Etoh/Chemical Loadout 221	288208.6	4117646.9	955.5
PHR076	Ash Loadout 76	288096.9	4117856.4	956.00	PHR222	Ash/Etoh/Chemical Loadout 222	288211.3	4117646.9	955.5
PHR077	Ash Loadout 77	288095.3	4117854.3	956.00	PHR223	Ash/Etoh/Chemical Loadout 223	288214.1	4117646.9	955.5
PHR078	Ash Loadout 78	288093.8	4117852.2	956.00	PHR224	Ash/Etoh/Chemical Loadout 224	288216.8	4117646.9	955.5
PHR079	Ash Loadout 79	288092.2	4117850.1	956.00	PHR225	Ash/Etoh/Chemical Loadout 225	288219.5	4117646.9	955.5
PHR080	Ash Loadout 80	288090.7	4117848.0	956.00	PHR226	Ash/Etoh/Chemical Loadout 226	288222.3	4117646.9	955.5
PHR081	Ash Loadout 81	288089.1	4117845.9	956.00	PHR227	Ash/Etoh/Chemical Loadout 227	288225.0	4117646.9	955.5
PHR082	Ash Loadout 82	288089.1	4117845.9	956.00	PHR228	Ash/Etoh/Chemical Loadout 228	288227.8	4117646.9	955.5
PHR083	Ash Loadout 83	288089.1	4117843.2	956.00	PHR229	Ash/Etoh/Chemical Loadout 229	288230.5	4117646.9	955.5
PHR084	Ash Loadout 84	288089.1	4117840.4	956.00	PHR230	Ash/Etoh/Chemical Loadout 230	288233.3	4117646.9	955.5
PHR085	Ash Loadout 85	288089.1	4117837.7	956.00	PHR231	Ash/Etoh/Chemical Loadout 231	288236.0	4117646.9	955.5
PHR086	Ash Loadout 86	288089.1	4117834.9	956.00	PHR232	Ash/Etoh/Chemical Loadout 232	288238.7	4117646.9	955.5
PHR087	Ash Loadout 87	288089.1	4117832.2	956.00	PHR233	Ash/Etoh/Chemical Loadout 233	288241.5	4117646.9	955.5
PHR088	Ash Loadout 88	288089.1	4117829.4	956.00	PHR234	Ash/Etoh/Chemical Loadout 234	288244.2	4117646.9	955.5
PHR089	Ash Loadout 89	288089.1	4117826.7	956.00	PHR235	Ash/Etoh/Chemical Loadout 235	288247.0	4117646.9	955.5
PHR090	Ash Loadout 90	288089.1	4117824.0	956.00	PHR236	Ash/Etoh/Chemical Loadout 236	288249.7	4117646.9	955.5
PHR091	Ash Loadout 91	288089.1	4117821.2	956.00	PHR237	Ash/Etoh/Chemical Loadout 237	288252.5	4117646.9	955.5
PHR092	Ash Loadout 92	288089.1	4117818.5	956.00	PHR238	Ash/Etoh/Chemical Loadout 238	288255.2	4117646.9	955.0
PHR093	Ash Loadout 93	288089.1	4117815.7	956.00	PHR239	Ash/Etoh/Chemical Loadout 239	288257.9	4117646.9	955.0
PHR094	Ash Loadout 94	288089.1	4117813.0	956.00	PHR240	Ash/Etoh/Chemical Loadout 240	288260.7	4117646.9	955.0
PHR095	Ash Loadout 95	288089.1	4117810.2	956.00	PHR241	Ash/Etoh/Chemical Loadout 241	288262.7	4117648.7	955.0
PHR096	Ash Loadout 96	288089.1	4117807.5	956.00	PHR242	Ash/Etoh/Chemical Loadout 242	288264.7	4117650.5	955.0
PHR097	Ash Loadout 97	288089.1	4117804.8	956.00	PHR243	Ash/Etoh/Chemical Loadout 243	288266.7	4117652.3	955.0
PHR098	Ash Loadout 98	288089.1	4117802.0	956.00	PHR244	Ash/Etoh/Chemical Loadout 244	288268.7	4117654.1	955.0
PHR099	Ash Loadout 99	288089.1	4117799.3	956.00	PHR245	Ash/Etoh/Chemical Loadout 245	288270.7	4117655.9	955.0
PHR100	Ash Loadout 100	288089.1	4117796.5	956.00	PHR246	Ash/Etoh/Chemical Loadout 246	288270.7	4117658.6	955.0
PHR101	Ash Loadout 101	288089.1	4117793.8	956.00	PHR247	Ash/Etoh/Chemical Loadout 247	288270.7	4117661.3	955.0
PHR102	Ash Loadout 102	288089.1	4117791.0	956.00	PHR248	Ash/Etoh/Chemical Loadout 248	288270.7	4117664.1	955.0
PHR103	Ash Loadout 103	288089.1	4117788.3	956.00	PHR249	Ash/Etoh/Chemical Loadout 249	288270.7	4117666.8	955.0
PHR104	Ash Loadout 104	288089.1	4117785.5	956.00	PHR250	Ash/Etoh/Chemical Loadout 250	288270.7	4117669.6	955.0
PHR105	Ash Loadout 105	288089.1	4117782.8	956.00	PHR251	Ash/Etoh/Chemical Loadout 251	288270.7	4117672.3	955.0
PHR106	Ash Loadout 106	288089.1	4117780.1	956.00	PHR252	Ash/Etoh/Chemical Loadout 252	288270.7	4117675.1	955.0
PHR107	Ash Loadout 107	288089.1	4117777.3	956.00	PHR253	Ash/Etoh/Chemical Loadout 253	288270.7	4117677.8	955.0
PHR108	Ash Loadout 108	288089.1	4117774.6	956.00	PHR254	Ash/Etoh/Chemical Loadout 254	288270.7	4117680.6	955.0
PHR109	Ash Loadout 109	288089.1	4117771.8	956.00	PHR255	Ash/Etoh/Chemical Loadout 255	288270.7	4117683.3	955.0
PHR110	Ash Loadout 110	288089.1	4117769.1	956.00	PHR256	Ash/Etoh/Chemical Loadout 256	288270.7	4117686.0	955.0
PHR111	Ash Loadout 111	288089.1	4117766.3	956.00	PHR257	Ash/Etoh/Chemical Loadout 257	288270.7	4117688.8	955.0
PHR112	Ash Loadout 112	288089.1	4117763.6	956.00	PHR258	Ash/Etoh/Chemical Loadout 258	288270.7	4117691.5	955.0
PHR113	Ash Loadout 113	288089.1	4117760.9	956.00	PHR259	Ash/Etoh/Chemical Loadout 259	288270.7	4117694.3	955.0
PHR114	Ash Loadout 114	288089.1	4117758.1	956.00	PHR260	Ash/Etoh/Chemical Loadout 260	288270.7	4117697.0	955.0
PHR115	Ash Loadout 115	288089.1	4117755.4	956.00	PHR261	Ash/Etoh/Chemical Loadout 261	288270.7	4117699.8	955.0
PHR116	Ash Loadout 116	288089.1	4117752.6	956.00	PHR262	Ash/Etoh/Chemical Loadout 262	288270.7	4117702.5	955.0
PHR117	Ash Loadout 117	288089.1	4117749.9	956.00	PHR263	Ash/Etoh/Chemical Loadout 263	288270.7	4117705.2	955.0
PHR118	Ash Loadout 118	288089.1	4117747.1	956.00	PHR264	Ash/Etoh/Chemical Loadout 264	288270.7	4117708.0	955.0
PHR119	Ash Loadout 119	288089.1	4117744.4	956.00	PHR265	Ash/Etoh/Chemical Loadout 265	288270.7	4117710.7	955.0
PHR120	Ash Loadout 120	288089.1	4117741.7	956.00	PHR266	Ash/Etoh/Chemical Loadout 266	288270.7	4117713.5	955.0
PHR121	Ash Loadout 121	288089.1	4117738.9	956.00	PHR267	Ash/Etoh/Chemical Loadout 267	288270.7	4117716.2	955.0
PHR122	Ash Loadout 122	288089.1	4117736.2	956.00	PHR268	Ash/Etoh/Chemical Loadout 268	288270.7	4117719.0	955.0
PHR123	Ash Loadout 123	288091.1	4117734.4	956.00	PHR269	Ash/Etoh/Chemical Loadout 269	288270.7	4117721.7	955.0
PHR124	Ash Loadout 124	288093.2	4117732.6	956.00	PHR270	Ash/Etoh/Chemical Loadout 270	288270.7	4117724.4	955.0
PHR125	Ash Loadout 125	288095.2	4117730.8	956.00	PHR271	Ash/Etoh/Chemical Loadout 271	288270.7	4117727.2	955.0
PHR126	Ash Loadout 126	288097.2	4117728.9	956.00	PHR272	Ash/Etoh/Chemical Loadout 272	288270.7	4117729.9	955.0
PHR127	Ash Loadout 127	288099.2	4117727.1	956.00	PHR273	Ash/Etoh/Chemical Loadout 273	288270.7	4117732.7	955.0
PHR128	Ash Loadout 128	288101.3	4117725.3	956.00	PHR274	Ash/Etoh/Chemical Loadout 274	288270.7	4117735.4	955.0
PHR129	Ash Loadout 129	288103.3	4117723.5	956.00	PHR275	Ash/Etoh/Chemical Loadout 275	288270.7	4117738.2	955.0
PHR130	Ash Loadout 130	288106.0	4117723.5	956.00	PHR276	Ash/Etoh/Chemical Loadout 276	288270.7	4117740.9	955.0
PHR131	Ash Loadout 131	288108.8	4117723.5	956.00	PHR277	Ash/Etoh/Chemical Loadout 277	288270.7	4117743.6	955.0
PHR132	Ash Loadout 132	288111.5	4117723.5	956.00	PHR278	Ash/Etoh/Chemical Loadout 278	288270.7	4117746.4	955.0
PHR133	Ash Loadout 133	288114.3	4117723.5	956.00	PHR279	Ash/Etoh/Chemical Loadout 279	288270.7	4117749.1	955.0
PHR134	Ash Loadout 134	288117.0	4117723.5	956.00	PHR280	Ash/Etoh/Chemical Loadout 280	288270.7	4117751.9	955.0
PHR135	Ash Loadout 135	288119.8	4117723.5	956.00	PHR281	Ash/Etoh/Chemical Loadout 281	288270.7	4117754.6	954.8
PHR136	Ash Loadout 136	288122.5	4117723.5	956.00	PHR282	Ash/Etoh/Chemical Loadout 282	288270.7	4117757.4	954.8
PHR137	Ash Loadout 137	288125.2	4117723.5	956.00	PHR283	Ash/Etoh/Chemical Loadout 283	288270.7	4117760.1	954.8

Modeled Source Parameters

VOLUME SOURCE PARAMETERS

Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Elevation (m)	Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Elevation (m)
EP01000F	Paved Plant Roads				EP01000F	Paved Plant Roads			
PHR138	Ash Loadout 138	288128.0	4117723.5	956.00	PHR284	Ash/Etoh/Chemical Loadout 284	288270.7	4117762.8	954.8
PHR139	Ash Loadout 139	288130.7	4117723.5	956.00	PHR285	Ash/Etoh/Chemical Loadout 285	288270.7	4117765.6	954.8
PHR140	Ash Loadout 140	288133.5	4117723.5	956.00	PHR286	Ash/Etoh/Chemical Loadout 286	288270.7	4117768.3	954.8
PHR141	Ash Loadout 141	288136.2	4117723.5	955.75	PHR287	Ash/Etoh/Chemical Loadout 287	288270.7	4117771.1	954.8
PHR142	Ash Loadout 142	288139.0	4117723.5	955.75	PHR288	Ash/Etoh/Chemical Loadout 288	288270.7	4117773.8	954.8
PHR143	Ash Loadout 143	288141.7	4117723.5	955.75	PHR289	Ash/Etoh/Chemical Loadout 289	288272.7	4117776.6	954.8
PHR144	Ash Loadout 144	288144.4	4117723.5	955.75	PHR290	Ash/Etoh/Chemical Loadout 290	288274.7	4117779.3	954.8
PHR145	Ash Loadout 145	288147.2	4117723.5	955.75	PHR291	Ash/Etoh/Chemical Loadout 291	288276.7	4117782.1	954.8
PHR146	Ash Loadout 146	288149.9	4117723.5	955.75	PHR292	Ash/Etoh/Chemical Loadout 292	288278.7	4117784.8	954.8

Modeled Source Parameters

VOLUME SOURCE PARAMETERS

Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Elevation (m)	Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Elevation (m)
EP01050F	Biomass Laydown Roads				EP01050F	Biomass Laydown Roads			
BRD001	Biomass Road 1	288331.0	4117853.5	954.50	BRD241	Biomass Road 241	288424.3	4117694.4	954.25
BRD002	Biomass Road 2	288333.7	4117853.5	954.50	BRD242	Biomass Road 242	288424.3	4117691.7	954.25
BRD003	Biomass Road 3	288336.5	4117853.5	954.50	BRD243	Biomass Road 243	288424.3	4117688.9	954.25
BRD004	Biomass Road 4	288339.2	4117853.5	954.50	BRD244	Biomass Road 244	288424.3	4117686.2	954.25
BRD005	Biomass Road 5	288342.0	4117853.5	954.50	BRD245	Biomass Road 245	288424.3	4117683.4	954.25
BRD006	Biomass Road 6	288344.7	4117853.5	954.50	BRD246	Biomass Road 246	288424.3	4117680.7	954.25
BRD007	Biomass Road 7	288347.5	4117853.5	954.50	BRD247	Biomass Road 247	288424.3	4117677.9	954.25
BRD008	Biomass Road 8	288350.2	4117853.5	954.50	BRD248	Biomass Road 248	288424.3	4117675.2	954.25
BRD009	Biomass Road 9	288352.9	4117853.5	954.50	BRD249	Biomass Road 249	288427.0	4117675.2	954.00
BRD010	Biomass Road 10	288355.7	4117853.5	954.50	BRD250	Biomass Road 250	288429.8	4117675.2	954.00
BRD011	Biomass Road 11	288358.4	4117853.5	954.50	BRD251	Biomass Road 251	288432.5	4117675.2	954.00
BRD012	Biomass Road 12	288361.2	4117853.5	954.50	BRD252	Biomass Road 252	288435.3	4117675.2	954.00
BRD013	Biomass Road 13	288363.9	4117853.5	954.50	BRD253	Biomass Road 253	288438.0	4117675.2	954.00
BRD014	Biomass Road 14	288366.7	4117853.5	954.50	BRD254	Biomass Road 254	288440.8	4117675.2	954.00
BRD015	Biomass Road 15	288369.4	4117853.5	954.50	BRD255	Biomass Road 255	288443.5	4117675.2	954.00
BRD016	Biomass Road 16	288372.1	4117853.5	954.50	BRD256	Biomass Road 256	288446.2	4117675.2	954.00
BRD017	Biomass Road 17	288374.9	4117853.5	954.50	BRD257	Biomass Road 257	288449.0	4117675.2	954.00
BRD018	Biomass Road 18	288377.6	4117853.5	954.50	BRD258	Biomass Road 258	288451.7	4117675.2	954.00
BRD019	Biomass Road 19	288380.4	4117853.5	954.50	BRD259	Biomass Road 259	288454.5	4117675.2	954.00
BRD020	Biomass Road 20	288383.1	4117853.5	954.50	BRD260	Biomass Road 260	288457.2	4117675.2	954.00
BRD021	Biomass Road 21	288385.9	4117853.5	954.25	BRD261	Biomass Road 261	288460.0	4117675.2	954.00
BRD022	Biomass Road 22	288388.6	4117853.5	954.25	BRD262	Biomass Road 262	288462.7	4117675.2	954.00
BRD023	Biomass Road 23	288391.4	4117853.5	954.25	BRD263	Biomass Road 263	288465.4	4117675.2	954.00
BRD024	Biomass Road 24	288394.1	4117853.5	954.25	BRD264	Biomass Road 264	288468.2	4117675.2	954.00
BRD025	Biomass Road 25	288396.8	4117853.5	954.25	BRD265	Biomass Road 265	288470.9	4117675.2	954.00
BRD026	Biomass Road 26	288399.6	4117853.5	954.25	BRD266	Biomass Road 266	288473.7	4117675.2	954.00
BRD027	Biomass Road 27	288402.3	4117853.5	954.25	BRD267	Biomass Road 267	288476.4	4117675.2	954.00
BRD028	Biomass Road 28	288405.1	4117853.5	954.25	BRD268	Biomass Road 268	288479.2	4117675.2	953.75
BRD029	Biomass Road 29	288407.8	4117853.5	954.25	BRD269	Biomass Road 269	288481.9	4117675.2	953.75
BRD030	Biomass Road 30	288410.6	4117853.5	954.25	BRD270	Biomass Road 270	288484.7	4117675.2	953.75
BRD031	Biomass Road 31	288413.3	4117853.5	954.25	BRD271	Biomass Road 271	288487.4	4117675.2	953.75
BRD032	Biomass Road 32	288416.0	4117853.5	954.25	BRD272	Biomass Road 272	288490.1	4117675.2	953.75
BRD033	Biomass Road 33	288418.8	4117853.5	954.25	BRD273	Biomass Road 273	288492.9	4117675.2	953.75
BRD034	Biomass Road 34	288421.5	4117853.5	954.25	BRD274	Biomass Road 274	288495.6	4117675.2	953.75
BRD035	Biomass Road 35	288424.3	4117853.5	954.25	BRD275	Biomass Road 275	288498.4	4117675.2	953.75
BRD036	Biomass Road 36	288427.0	4117853.5	954.25	BRD276	Biomass Road 276	288501.1	4117675.2	953.75
BRD037	Biomass Road 37	288429.8	4117853.5	954.25	BRD277	Biomass Road 277	288503.9	4117675.2	953.75
BRD038	Biomass Road 38	288432.5	4117853.5	954.25	BRD278	Biomass Road 278	288506.6	4117675.2	953.75
BRD039	Biomass Road 39	288435.2	4117853.5	954.25	BRD279	Biomass Road 279	288509.3	4117675.2	953.75
BRD040	Biomass Road 40	288438.0	4117853.5	954.25	BRD280	Biomass Road 280	288512.1	4117675.2	953.75
BRD041	Biomass Road 41	288440.7	4117853.5	954.00	BRD281	Biomass Road 281	288514.8	4117675.2	953.75
BRD042	Biomass Road 42	288443.5	4117853.5	954.00	BRD282	Biomass Road 282	288517.6	4117675.2	953.75
BRD043	Biomass Road 43	288446.2	4117853.5	954.00	BRD283	Biomass Road 283	288520.3	4117675.2	953.75
BRD044	Biomass Road 44	288449.0	4117853.5	954.00	BRD284	Biomass Road 284	288523.1	4117675.2	953.75
BRD045	Biomass Road 45	288451.7	4117853.5	954.00	BRD285	Biomass Road 285	288525.8	4117675.2	953.75
BRD046	Biomass Road 46	288454.4	4117853.5	954.00	BRD286	Biomass Road 286	288528.5	4117675.2	953.75
BRD047	Biomass Road 47	288457.2	4117853.5	954.00	BRD287	Biomass Road 287	288531.3	4117675.2	953.50
BRD048	Biomass Road 48	288459.9	4117853.5	954.00	BRD288	Biomass Road 288	288534.0	4117675.2	953.50
BRD049	Biomass Road 49	288462.7	4117853.5	954.00	BRD289	Biomass Road 289	288536.8	4117675.2	953.50
BRD050	Biomass Road 50	288465.4	4117853.5	954.00	BRD290	Biomass Road 290	288539.5	4117675.2	953.50
BRD051	Biomass Road 51	288468.2	4117853.5	954.00	BRD291	Biomass Road 291	288542.3	4117675.2	953.50
BRD052	Biomass Road 52	288470.9	4117853.5	954.00	BRD292	Biomass Road 292	288545.0	4117675.2	953.50
BRD053	Biomass Road 53	288473.6	4117853.5	954.00	BRD293	Biomass Road 293	288547.7	4117675.2	953.50
BRD054	Biomass Road 54	288476.4	4117853.5	954.00	BRD294	Biomass Road 294	288550.5	4117675.2	953.50
BRD055	Biomass Road 55	288479.1	4117853.5	954.00	BRD295	Biomass Road 295	288553.2	4117675.2	953.50
BRD056	Biomass Road 56	288481.9	4117853.5	954.00	BRD296	Biomass Road 296	288556.0	4117675.2	953.50
BRD057	Biomass Road 57	288484.6	4117853.5	954.00	BRD297	Biomass Road 297	288558.7	4117675.2	953.50
BRD058	Biomass Road 58	288487.4	4117853.5	954.00	BRD298	Biomass Road 298	288561.5	4117675.2	953.50
BRD059	Biomass Road 59	288490.1	4117853.5	954.00	BRD299	Biomass Road 299	288564.2	4117675.2	953.50
BRD060	Biomass Road 60	288492.8	4117853.5	954.00	BRD300	Biomass Road 300	288566.9	4117675.2	953.50
BRD061	Biomass Road 61	288495.6	4117853.5	953.75	BRD301	Biomass Road 301	288569.7	4117675.2	953.50
BRD062	Biomass Road 62	288498.3	4117853.5	953.75	BRD302	Biomass Road 302	288572.4	4117675.2	953.50
BRD063	Biomass Road 63	288501.1	4117853.5	953.75	BRD303	Biomass Road 303	288575.2	4117675.2	953.50
BRD064	Biomass Road 64	288503.8	4117853.5	953.75	BRD304	Biomass Road 304	288577.9	4117675.2	953.50
BRD065	Biomass Road 65	288506.6	4117853.5	953.75	BRD305	Biomass Road 305	288580.7	4117675.2	953.50
BRD066	Biomass Road 66	288509.3	4117853.5	953.75	BRD306	Biomass Road 306	288583.4	4117675.2	953.50
BRD067	Biomass Road 67	288512.1	4117853.5	953.75	BRD307	Biomass Road 307	288586.1	4117675.2	953.50
BRD068	Biomass Road 68	288514.8	4117853.5	953.75	BRD308	Biomass Road 308	288588.9	4117675.2	953.50
BRD069	Biomass Road 69	288517.5	4117853.5	953.75	BRD309	Biomass Road 309	288591.6	4117675.2	953.50
BRD070	Biomass Road 70	288520.3	4117853.5	953.75	BRD310	Biomass Road 310	288594.4	4117675.2	953.50
BRD071	Biomass Road 71	288523.0	4117853.5	953.75	BRD311	Biomass Road 311	288597.1	4117675.2	953.50
BRD072	Biomass Road 72	288525.8	4117853.5	953.75	BRD312	Biomass Road 312	288599.9	4117675.2	953.50
BRD073	Biomass Road 73	288528.5	4117853.5	953.75	BRD313	Biomass Road 313	288602.6	4117675.2	953.50
BRD074	Biomass Road 74	288531.3	4117853.5	953.75	BRD314	Biomass Road 314	288605.4	4117675.2	953.50

Modeled Source Parameters

VOLUME SOURCE PARAMETERS

Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Elevation (m)	Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Elevation (m)
EP01050F	Biomass Laydown Roads				EP01050F	Biomass Laydown Roads			
BRD075	Biomass Road 75	288534.0	4117853.5	953.75	BRD315	Biomass Road 315	288608.1	4117675.2	953.50
BRD076	Biomass Road 76	288536.7	4117853.5	953.75	BRD316	Biomass Road 316	288610.8	4117675.2	953.50
BRD077	Biomass Road 77	288539.5	4117853.5	953.75	BRD317	Biomass Road 317	288613.6	4117675.2	953.50
BRD078	Biomass Road 78	288542.2	4117853.5	953.75	BRD318	Biomass Road 318	288616.3	4117675.2	953.50
BRD079	Biomass Road 79	288545.0	4117853.5	953.75	BRD319	Biomass Road 319	288619.1	4117675.2	953.50
BRD080	Biomass Road 80	288547.7	4117853.5	953.75	BRD320	Biomass Road 320	288621.8	4117675.2	953.50
BRD081	Biomass Road 81	288550.5	4117853.5	953.50	BRD321	Biomass Road 321	288624.6	4117675.2	953.50
BRD082	Biomass Road 82	288553.2	4117853.5	953.50	BRD322	Biomass Road 322	288627.3	4117675.2	953.50
BRD083	Biomass Road 83	288555.9	4117853.5	953.50	BRD323	Biomass Road 323	288630.0	4117675.2	953.25
BRD084	Biomass Road 84	288558.7	4117853.5	953.50	BRD324	Biomass Road 324	288632.8	4117675.2	953.25
BRD085	Biomass Road 85	288561.4	4117853.5	953.50	BRD325	Biomass Road 325	288635.5	4117675.2	953.25
BRD086	Biomass Road 86	288564.2	4117853.5	953.50	BRD326	Biomass Road 326	288638.3	4117675.2	953.25
BRD087	Biomass Road 87	288566.9	4117853.5	953.50	BRD327	Biomass Road 327	288641.0	4117675.2	953.25
BRD088	Biomass Road 88	288569.7	4117853.5	953.50	BRD328	Biomass Road 328	288643.8	4117675.2	953.25
BRD089	Biomass Road 89	288572.4	4117853.5	953.50	BRD329	Biomass Road 329	288646.5	4117675.2	953.25
BRD090	Biomass Road 90	288575.1	4117853.5	953.50	BRD330	Biomass Road 330	288649.2	4117675.2	953.25
BRD091	Biomass Road 91	288577.9	4117853.5	953.50	BRD331	Biomass Road 331	288652.0	4117675.2	953.25
BRD092	Biomass Road 92	288580.6	4117853.5	953.50	BRD332	Biomass Road 332	288331.0	4117786.3	954.50
BRD093	Biomass Road 93	288583.4	4117853.5	953.50	BRD333	Biomass Road 333	288333.7	4117786.3	954.50
BRD094	Biomass Road 94	288586.1	4117853.5	953.50	BRD334	Biomass Road 334	288336.5	4117786.3	954.50
BRD095	Biomass Road 95	288588.9	4117853.5	953.50	BRD335	Biomass Road 335	288339.2	4117786.3	954.50
BRD096	Biomass Road 96	288591.6	4117853.5	953.50	BRD336	Biomass Road 336	288342.0	4117786.3	954.50
BRD097	Biomass Road 97	288594.3	4117853.5	953.50	BRD337	Biomass Road 337	288344.7	4117786.3	954.50
BRD098	Biomass Road 98	288597.1	4117853.5	953.50	BRD338	Biomass Road 338	288347.5	4117786.3	954.50
BRD099	Biomass Road 99	288599.8	4117853.5	953.50	BRD339	Biomass Road 339	288350.2	4117786.3	954.50
BRD100	Biomass Road 100	288602.6	4117853.5	953.50	BRD340	Biomass Road 340	288352.9	4117786.3	954.50
BRD101	Biomass Road 101	288605.3	4117853.5	953.25	BRD341	Biomass Road 341	288355.7	4117786.3	954.50
BRD102	Biomass Road 102	288608.1	4117853.5	953.25	BRD342	Biomass Road 342	288358.4	4117786.3	954.50
BRD103	Biomass Road 103	288610.8	4117853.5	953.25	BRD343	Biomass Road 343	288361.2	4117786.3	954.50
BRD104	Biomass Road 104	288613.5	4117853.5	953.25	BRD344	Biomass Road 344	288363.9	4117786.3	954.50
BRD105	Biomass Road 105	288616.3	4117853.5	953.25	BRD345	Biomass Road 345	288366.7	4117786.3	954.50
BRD106	Biomass Road 106	288619.0	4117853.5	953.25	BRD346	Biomass Road 346	288369.4	4117786.3	954.50
BRD107	Biomass Road 107	288621.8	4117853.5	953.25	BRD347	Biomass Road 347	288372.1	4117786.3	954.50
BRD108	Biomass Road 108	288624.5	4117853.5	953.25	BRD348	Biomass Road 348	288374.9	4117786.3	954.50
BRD109	Biomass Road 109	288627.3	4117853.5	953.25	BRD349	Biomass Road 349	288377.6	4117786.3	954.50
BRD110	Biomass Road 110	288630.0	4117853.5	953.25	BRD350	Biomass Road 350	288380.4	4117786.3	954.50
BRD111	Biomass Road 111	288632.8	4117853.5	953.25	BRD351	Biomass Road 351	288383.1	4117786.3	954.50
BRD112	Biomass Road 112	288635.5	4117853.5	953.25	BRD352	Biomass Road 352	288385.9	4117786.3	954.50
BRD113	Biomass Road 113	288638.2	4117853.5	953.25	BRD353	Biomass Road 353	288388.6	4117786.3	954.50
BRD114	Biomass Road 114	288641.0	4117853.5	953.25	BRD354	Biomass Road 354	288391.4	4117786.3	954.50
BRD115	Biomass Road 115	288643.7	4117853.5	953.25	BRD355	Biomass Road 355	288394.1	4117786.3	954.50
BRD116	Biomass Road 116	288646.5	4117853.5	953.25	BRD356	Biomass Road 356	288396.8	4117786.3	954.50
BRD117	Biomass Road 117	288649.2	4117853.5	953.25	BRD357	Biomass Road 357	288399.6	4117786.3	954.50
BRD118	Biomass Road 118	288652.0	4117853.5	953.25	BRD358	Biomass Road 358	288402.3	4117786.3	954.50
BRD119	Biomass Road 119	288652.0	4117850.8	953.25	BRD359	Biomass Road 359	288405.1	4117786.3	954.50
BRD120	Biomass Road 120	288652.0	4117848.0	953.25	BRD360	Biomass Road 360	288407.8	4117786.3	954.50
BRD121	Biomass Road 121	288652.0	4117845.3	953.25	BRD361	Biomass Road 361	288410.6	4117786.3	954.50
BRD122	Biomass Road 122	288652.0	4117842.5	953.25	BRD362	Biomass Road 362	288413.3	4117786.3	954.25
BRD123	Biomass Road 123	288652.0	4117839.8	953.25	BRD363	Biomass Road 363	288416.0	4117786.3	954.25
BRD124	Biomass Road 124	288652.0	4117837.0	953.25	BRD364	Biomass Road 364	288418.8	4117786.3	954.25
BRD125	Biomass Road 125	288652.0	4117834.3	953.25	BRD365	Biomass Road 365	288421.5	4117786.3	954.25
BRD126	Biomass Road 126	288652.0	4117831.6	953.25	BRD366	Biomass Road 366	288424.3	4117786.3	954.25
BRD127	Biomass Road 127	288652.0	4117828.8	953.25	BRD367	Biomass Road 367	288429.8	4117786.3	954.25
BRD128	Biomass Road 128	288652.0	4117826.1	953.25	BRD368	Biomass Road 368	288432.5	4117786.3	954.25
BRD129	Biomass Road 129	288652.0	4117823.3	953.25	BRD369	Biomass Road 369	288435.2	4117786.3	954.25
BRD130	Biomass Road 130	288652.0	4117820.6	953.25	BRD370	Biomass Road 370	288438.0	4117786.3	954.25
BRD131	Biomass Road 131	288652.0	4117817.8	953.25	BRD371	Biomass Road 371	288440.7	4117786.3	954.25
BRD132	Biomass Road 132	288652.0	4117815.1	953.25	BRD372	Biomass Road 372	288443.5	4117786.3	954.25
BRD133	Biomass Road 133	288652.0	4117812.4	953.25	BRD373	Biomass Road 373	288446.2	4117786.3	954.00
BRD134	Biomass Road 134	288652.0	4117809.6	953.25	BRD374	Biomass Road 374	288449.0	4117786.3	954.00
BRD135	Biomass Road 135	288652.0	4117806.9	953.25	BRD375	Biomass Road 375	288451.7	4117786.3	954.00
BRD136	Biomass Road 136	288652.0	4117804.1	953.25	BRD376	Biomass Road 376	288454.4	4117786.3	954.00
BRD137	Biomass Road 137	288652.0	4117801.4	953.25	BRD377	Biomass Road 377	288457.2	4117786.3	954.00
BRD138	Biomass Road 138	288652.0	4117798.6	953.25	BRD378	Biomass Road 378	288459.9	4117786.3	954.00
BRD139	Biomass Road 139	288652.0	4117795.9	953.25	BRD379	Biomass Road 379	288462.7	4117786.3	954.00
BRD140	Biomass Road 140	288652.0	4117793.1	953.25	BRD380	Biomass Road 380	288465.4	4117786.3	954.00
BRD141	Biomass Road 141	288652.0	4117790.4	953.25	BRD381	Biomass Road 381	288468.2	4117786.3	954.00
BRD142	Biomass Road 142	288652.0	4117787.7	953.25	BRD382	Biomass Road 382	288470.9	4117786.3	954.00
BRD143	Biomass Road 143	288652.0	4117784.9	953.25	BRD383	Biomass Road 383	288473.6	4117786.3	954.00
BRD144	Biomass Road 144	288652.0	4117782.2	953.25	BRD384	Biomass Road 384	288476.4	4117786.3	954.00
BRD145	Biomass Road 145	288652.0	4117779.4	953.25	BRD385	Biomass Road 385	288479.1	4117786.3	954.00
BRD146	Biomass Road 146	288652.0	4117776.7	953.25	BRD386	Biomass Road 386	288481.9	4117786.3	954.00
BRD147	Biomass Road 147	288652.0	4117773.9	953.25	BRD387	Biomass Road 387	288484.6	4117786.3	954.00
BRD148	Biomass Road 148	288652.0	4117771.2	953.25	BRD388	Biomass Road 388	288487.4	4117786.3	954.00

Modeled Source Parameters

VOLUME SOURCE PARAMETERS

Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Elevation (m)	Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Elevation (m)
EP01050F	Biomass Laydown Roads				EP01050F	Biomass Laydown Roads			
BRD149	Biomass Road 149	288652.0	4117768.5	953.25	BRD389	Biomass Road 389	288490.1	4117786.3	954.00
BRD150	Biomass Road 150	288652.0	4117765.7	953.25	BRD390	Biomass Road 390	288492.8	4117786.3	954.00
BRD151	Biomass Road 151	288652.0	4117763.0	953.25	BRD391	Biomass Road 391	288495.6	4117786.3	954.00
BRD152	Biomass Road 152	288652.0	4117760.2	953.25	BRD392	Biomass Road 392	288498.3	4117786.3	954.00
BRD153	Biomass Road 153	288652.0	4117757.5	953.25	BRD393	Biomass Road 393	288501.1	4117786.3	954.00
BRD154	Biomass Road 154	288652.0	4117754.7	953.25	BRD394	Biomass Road 394	288503.8	4117786.3	954.00
BRD155	Biomass Road 155	288652.0	4117752.0	953.25	BRD395	Biomass Road 395	288506.6	4117786.3	953.75
BRD156	Biomass Road 156	288652.0	4117749.3	953.25	BRD396	Biomass Road 396	288509.3	4117786.3	953.75
BRD157	Biomass Road 157	288652.0	4117746.5	953.25	BRD397	Biomass Road 397	288512.1	4117786.3	953.75
BRD158	Biomass Road 158	288652.0	4117743.8	953.25	BRD398	Biomass Road 398	288514.8	4117786.3	953.75
BRD159	Biomass Road 159	288652.0	4117741.0	953.25	BRD399	Biomass Road 399	288517.5	4117786.3	953.75
BRD160	Biomass Road 160	288652.0	4117738.3	953.25	BRD400	Biomass Road 400	288520.3	4117786.3	953.75
BRD161	Biomass Road 161	288652.0	4117735.5	953.25	BRD401	Biomass Road 401	288523.0	4117786.3	953.75
BRD162	Biomass Road 162	288652.0	4117732.8	953.25	BRD402	Biomass Road 402	288525.8	4117786.3	953.75
BRD163	Biomass Road 163	288652.0	4117730.1	953.25	BRD403	Biomass Road 403	288528.5	4117786.3	953.75
BRD164	Biomass Road 164	288652.0	4117727.3	953.25	BRD404	Biomass Road 404	288531.3	4117786.3	953.75
BRD165	Biomass Road 165	288652.0	4117724.6	953.25	BRD405	Biomass Road 405	288534.0	4117786.3	953.75
BRD166	Biomass Road 166	288652.0	4117721.8	953.25	BRD406	Biomass Road 406	288536.7	4117786.3	953.75
BRD167	Biomass Road 167	288652.0	4117719.1	953.25	BRD407	Biomass Road 407	288539.5	4117786.3	953.75
BRD168	Biomass Road 168	288652.0	4117716.3	953.25	BRD408	Biomass Road 408	288542.2	4117786.3	953.75
BRD169	Biomass Road 169	288652.0	4117713.6	953.25	BRD409	Biomass Road 409	288545.0	4117786.3	953.75
BRD170	Biomass Road 170	288652.0	4117710.9	953.25	BRD410	Biomass Road 410	288547.7	4117786.3	953.75
BRD171	Biomass Road 171	288652.0	4117708.1	953.25	BRD411	Biomass Road 411	288550.5	4117786.3	953.75
BRD172	Biomass Road 172	288652.0	4117705.4	953.25	BRD412	Biomass Road 412	288553.2	4117786.3	953.75
BRD173	Biomass Road 173	288652.0	4117702.6	953.25	BRD413	Biomass Road 413	288555.9	4117786.3	953.75
BRD174	Biomass Road 174	288652.0	4117699.9	953.25	BRD414	Biomass Road 414	288558.7	4117786.3	953.75
BRD175	Biomass Road 175	288652.0	4117697.1	953.25	BRD415	Biomass Road 415	288561.4	4117786.3	953.75
BRD176	Biomass Road 176	288652.0	4117694.4	953.25	BRD416	Biomass Road 416	288564.2	4117786.3	953.75
BRD177	Biomass Road 177	288652.0	4117691.7	953.25	BRD417	Biomass Road 417	288566.9	4117786.3	953.75
BRD178	Biomass Road 178	288652.0	4117688.9	953.25	BRD418	Biomass Road 418	288569.7	4117786.3	953.50
BRD179	Biomass Road 179	288652.0	4117686.2	953.25	BRD419	Biomass Road 419	288572.4	4117786.3	953.50
BRD180	Biomass Road 180	288652.0	4117683.4	953.25	BRD420	Biomass Road 420	288575.1	4117786.3	953.50
BRD181	Biomass Road 181	288652.0	4117680.7	953.25	BRD421	Biomass Road 421	288577.9	4117786.3	953.50
BRD182	Biomass Road 182	288652.0	4117677.9	953.25	BRD422	Biomass Road 422	288580.6	4117786.3	953.50
BRD183	Biomass Road 183	288652.0	4117675.2	953.25	BRD423	Biomass Road 423	288583.4	4117786.3	953.50
BRD184	Biomass Road 184	288424.3	4117850.8	954.25	BRD424	Biomass Road 424	288586.1	4117786.3	953.50
BRD185	Biomass Road 185	288424.3	4117848.0	953.25	BRD425	Biomass Road 425	288588.9	4117786.3	953.50
BRD186	Biomass Road 186	288424.3	4117845.3	953.25	BRD426	Biomass Road 426	288591.6	4117786.3	953.50
BRD187	Biomass Road 187	288424.3	4117842.5	953.25	BRD427	Biomass Road 427	288594.3	4117786.3	953.50
BRD188	Biomass Road 188	288424.3	4117839.8	953.25	BRD428	Biomass Road 428	288597.1	4117786.3	953.50
BRD189	Biomass Road 189	288424.3	4117837.0	953.25	BRD429	Biomass Road 429	288599.8	4117786.3	953.5
BRD190	Biomass Road 190	288424.3	4117834.3	953.25	BRD430	Biomass Road 430	288602.6	4117786.3	953.5
BRD191	Biomass Road 191	288424.3	4117831.6	953.25	BRD431	Biomass Road 431	288605.3	4117786.3	953.5
BRD192	Biomass Road 192	288424.3	4117828.8	953.25	BRD432	Biomass Road 432	288608.1	4117786.3	953.5
BRD193	Biomass Road 193	288424.3	4117826.1	953.25	BRD433	Biomass Road 433	288610.8	4117786.3	953.5
BRD194	Biomass Road 194	288424.3	4117823.3	953.25	BRD434	Biomass Road 434	288613.5	4117786.3	953.5
BRD195	Biomass Road 195	288424.3	4117820.6	953.25	BRD435	Biomass Road 435	288616.3	4117786.3	953.5
BRD196	Biomass Road 196	288424.3	4117817.8	953.25	BRD436	Biomass Road 436	288619.0	4117786.3	953.5
BRD197	Biomass Road 197	288424.3	4117815.1	953.25	BRD437	Biomass Road 437	288621.8	4117786.3	953.5
BRD198	Biomass Road 198	288424.3	4117812.4	953.25	BRD438	Biomass Road 438	288624.5	4117786.3	953.5
BRD199	Biomass Road 199	288424.3	4117809.6	953.25	BRD439	Biomass Road 439	288627.3	4117786.3	953.5
BRD200	Biomass Road 200	288424.3	4117806.9	953.25	BRD440	Biomass Road 440	288630.0	4117786.3	953.5
BRD201	Biomass Road 201	288424.3	4117804.1	953.25	BRD441	Biomass Road 441	288632.8	4117786.3	953.5
BRD202	Biomass Road 202	288424.3	4117801.4	953.25	BRD442	Biomass Road 442	288635.5	4117786.3	953.5
BRD203	Biomass Road 203	288424.3	4117798.6	954.25	BRD443	Biomass Road 443	288638.2	4117786.3	953.5
BRD204	Biomass Road 204	288424.3	4117795.9	954.25	BRD444	Biomass Road 444	288641.0	4117786.3	953.5
BRD205	Biomass Road 205	288424.3	4117793.1	954.3	BRD445	Biomass Road 445	288643.7	4117786.3	953.5
BRD206	Biomass Road 206	288424.3	4117790.4	954.3	BRD446	Biomass Road 446	288646.5	4117786.3	953.5
BRD207	Biomass Road 207	288424.3	4117787.7	954.3	BRD447	Biomass Road 447	288649.2	4117786.3	953.5
BRD208	Biomass Road 208	288424.3	4117784.9	954.3	BRD448	Biomass Road 448	288226.5	4117825	955.50
BRD209	Biomass Road 209	288424.3	4117782.2	954.3	BRD449	Biomass Road 449	288229.2	4117825	955.50
BRD210	Biomass Road 210	288424.3	4117779.4	954.3	BRD450	Biomass Road 450	288232.0	4117825	955.50
BRD211	Biomass Road 211	288424.3	4117776.7	954.3	BRD451	Biomass Road 451	288234.7	4117825	955.50
BRD212	Biomass Road 212	288424.3	4117773.9	954.3	BRD452	Biomass Road 452	288237.5	4117825	955.50
BRD213	Biomass Road 213	288424.3	4117771.2	954.3	BRD453	Biomass Road 453	288240.2	4117825	955.50
BRD214	Biomass Road 214	288424.3	4117768.5	954.3	BRD454	Biomass Road 454	288243.0	4117825	955.50
BRD215	Biomass Road 215	288424.3	4117765.7	954.3	BRD455	Biomass Road 455	288245.7	4117825	955.50
BRD216	Biomass Road 216	288424.3	4117763.0	954.3	BRD456	Biomass Road 456	288248.4	4117825	955.50
BRD217	Biomass Road 217	288424.3	4117760.2	954.3	BRD457	Biomass Road 457	288251.2	4117825	955.50
BRD218	Biomass Road 218	288424.3	4117757.5	954.3	BRD458	Biomass Road 458	288253.9	4117825	955.50
BRD219	Biomass Road 219	288424.3	4117754.7	954.3	BRD459	Biomass Road 459	288256.7	4117825	955.25
BRD220	Biomass Road 220	288424.3	4117752.0	954.3	BRD460	Biomass Road 460	288259.4	4117825	955.25
BRD221	Biomass Road 221	288424.3	4117749.3	954.3	BRD461	Biomass Road 461	288262.2	4117825	955.25
BRD222	Biomass Road 222	288424.3	4117746.5	954.3	BRD462	Biomass Road 462	288264.9	4117825	955.25

Modeled Source Parameters

VOLUME SOURCE PARAMETERS

Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Elevation (m)	Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Elevation (m)
EP01050F	Biomass Laydown Roads				EP01050F	Biomass Laydown Roads			
BRD223	Biomass Road 223	288424.3	4117743.8	954.3	BRD463	Biomass Road 463	288267.6	4117825	955.25
BRD224	Biomass Road 224	288424.3	4117741.0	954.3	BRD464	Biomass Road 464	288270.4	4117825	955.25
BRD225	Biomass Road 225	288424.3	4117738.3	954.3	BRD465	Biomass Road 465	288273.1	4117825	955.25
BRD226	Biomass Road 226	288424.3	4117735.5	954.3	BRD466	Biomass Road 466	288275.9	4117825	955.25
BRD227	Biomass Road 227	288424.3	4117732.8	954.3	BRD467	Biomass Road 467	288278.6	4117825	955.25
BRD228	Biomass Road 228	288424.3	4117730.1	954.3	BRD468	Biomass Road 468	288281.4	4117825	955.25
BRD229	Biomass Road 229	288424.3	4117727.3	954.3	BRD469	Biomass Road 469	288284.1	4117825	955.25
BRD230	Biomass Road 230	288424.3	4117724.6	954.3	BRD470	Biomass Road 470	288286.9	4117825	955.00
BRD231	Biomass Road 231	288424.3	4117721.8	954.3	BRD471	Biomass Road 471	288289.6	4117825	955.00
BRD232	Biomass Road 232	288424.3	4117719.1	954.3	BRD472	Biomass Road 472	288292.3	4117825	955.00
BRD233	Biomass Road 233	288424.3	4117716.3	954.3	BRD473	Biomass Road 473	288295.1	4117825	955.00
BRD234	Biomass Road 234	288424.3	4117713.6	954.3	BRD474	Biomass Road 474	288297.8	4117825	955.00
BRD235	Biomass Road 235	288424.3	4117710.9	954.3	BRD475	Biomass Road 475	288300.6	4117825	955.00
BRD236	Biomass Road 236	288424.3	4117708.1	954.3	BRD476	Biomass Road 476	288303.3	4117825	955.00
BRD237	Biomass Road 237	288424.3	4117705.4	954.3	BRD477	Biomass Road 477	288306.1	4117825	955.00
BRD238	Biomass Road 238	288424.3	4117702.6	954.3	BRD478	Biomass Road 478	288308.8	4117825	955.00
BRD239	Biomass Road 239	288424.3	4117699.9	954.3	BRD479	Biomass Road 479	288311.5	4117825	955.00
BRD240	Biomass Road 240	288424.3	4117697.1	954.25	BRD480	Biomass Road 480	288314.3	4117825	955.00

Modeled Source Emissions

VOLUME SOURCE PM_{10} EMISSIONS

Source ID	Source Description	24-Hour Averaging Period		Annual Averaging Period	
		PM_{10} 24-Hour Emission Rate (lb/day)	PM_{10} Modeled 24-Hour Emission Rate (g/s)	PM_{10} Annual Emission Rate (tons/yr)	PM_{10} Modeled Annual Emission Rate (g/s)
EP11110F	Crops Grinding and Handling	0.815	4.28E-03	0.0745	2.14E-03

VOLUME & AREA SOURCE (HAUL ROADS) PM_{10} EMISSIONS

Source ID	Source Description	Number of Sources	24-Hour Averaging Period		Notes:
			PM_{10} 24-Hour Emission Rate (lb/day)	PM_{10} Modeled 24-Hour Emission Rate (g/s)	
EP01000F	Paved Plant Roads	292	9.55	See Distribution Calculations	Note 1
PHR003 through PHR294		Emission rates for paved haul roads calculated based on the percentage of truck traffic per area. Please see the Paved Haul Roads Emissions Distribution Calculations.			
EP01050F	Unpaved Biomass Roads	480	4.11	See Distribution Calculations	Note 2
BRD001 through BRD447		Emission rates for biomass laydown roads calculated based on the percentage of truck traffic per area (storage field and staging area). Please see the Biomass Haul Roads Emissions Distribution Calculations.			

(1) The daily haul road traffic is based on the "typical scenario" for shipping and receiving, which assumes that all shipping and receiving will occur 6:00 AM to 6:00 PM only, or 12 hours per day. 24-hour PM2.5 emissions from haul roads weremodeled based on the worst-case "alternate scenario", which assumes the 70%/30% traffic configuration.
(2) 24-hour PM_{10} emissions from biomass storage area roads and the biomass staging area were modeled based on the areas being active constantly.

Modeled Source Emissions

POINT SOURCE PM_{10} EMISSIONS				
		24-Hour Averaging Period		
Source ID	Source Description	PM_{10} 24-Hour Emission Rate (lb/day)	PM_{10} Modeled 24-Hour Emission Rate (g/s)	Notes:
ENZYMATIC HYDROLYSIS PLANT				--
EP11120	Floor Sweep System DC	6.42	3.37E-02	--
EP11110	Bale Grinder DC	118.41	6.22E-01	--
EP11170	Classifier Cyclone # 1 DC	17.77	9.33E-02	--
EP11270	Classifier Cyclone # 2 DC	17.77	9.33E-02	--
EP11711	Boiler Feed System DC	17.77	9.33E-02	--
EP18185	EH Fermentation CO_2 Scrubber	2.40	1.26E-02	--
UTILITIES				--
EP02710	Bulk Fly Ash Load-Out Silo	23.12	1.21E-01	--
EP02711A	Bulk Fly Ash Load-Out Silo Spout #1	11.56	6.07E-02	--
EP02711B	Bulk Fly Ash Load-Out Silo Spout #2	11.56	6.07E-02	--
EP04001	Cooling Water Tower	2.85	1.50E-02	--
EP04001A	Cell 1	0.95	4.99E-03	Note 1
EP04001B	Cell 2	0.95	4.99E-03	
EP04001C	Cell 3	0.95	4.99E-03	
EP20512	Lime Handling DC #1	1.65	8.64E-03	--
EP20514	Boiler Bottoms Ash Handling DC #1	23.12	1.21E-01	--
EP20510	Boiler Fly Ash Handling DC #1	11.56	6.07E-02	--
EP20520	Boiler Fly Ash Handling DC #2	11.56	6.07E-02	--
EP09001	Flare FWP Engine Operating (Pilot Only)	0.02	9.58E-05	Note 3
EP09001	Flare No FWP Engine	0.02	9.58E-05	Note 3
EP06000	Firewater Pump Engine	0.08	4.26E-04	Note 2
EP20001	Biomass-Fired Boiler #1 30% Load (141 MMBtu)	101.67	5.34E-01	Note 4
	50% Load (236 MMBtu)	169.45	8.90E-01	
	75% Load (353 MMBtu)	254.17	1.33E+00	
	100% Load (471 MMBtu)	338.89	1.78E+00	
	120% Load (500 MMBtu)	359.82	1.89E+00	
EP20010	Genset #1	0.06	3.29E-04	Note 2
EP20020	Genset #2	0.06	3.29E-04	Note 2
EP20030	Genset #3	0.06	3.29E-04	Note 2
EP20040	Genset #4	0.06	3.29E-04	Note 2

(1) Cooling tower emissions divided by the number of cells to obtain an emission rate per cell.

(2) Emergency equipment will operate a maximum of 1 hour per day for testing, no more than 100 hours per year, during normal facility operations. In the event of an emergency, operations at the facility will be shutdown at all of the major processes during the event, and an emergency event will not be modeled.

(3) Flare permitted to operate up to 3,960 hours per year to support the boiler during shutdown or malfunction, or when the boiler is not operating at full capacity. For modeling purposes, the flare will be operated concurrent with boiler operations at all loads to ensure the worst case scenario is evaluated. The boiler emissions will not adjusted to account for the diverted biogas, process vent streams and loadout vapors to the flare; therefore, the biogas, process vent streams and loadout vapors emissions are being double-counted since it may be possible for only one vent stream to be diverted at any given time. The firewater pump engine will not be operated at any time that the flare is operating except in the event of a facility emergency. In the event of an emergency, operations at the facility will be shutdown at all of the major processes during the event, and an emergency event will not be modeled.

(4) Reduced load emissions were only evaluated for the maximum short-term emissions.

Modeled Source Emissions

VOLUME SOURCE $PM_{2.5}$ EMISSIONS

Source ID	Source Description	24-Hour Averaging Period	
		$PM_{2.5}$ 24-Hour Emission Rate (lb/day)	$PM_{2.5}$ Modeled 24-Hour Emission Rate (g/s)
EP11110F	Crops Grinding and Handling	0.123	6.48E-04

VOLUME & AREA SOURCE (HAUL ROAD) $PM_{2.5}$ EMISSIONS

Source ID	Source Description	Number of Sources	24-Hour Averaging Period		Notes
			$PM_{2.5}$ 24-Hour Emission Rate (lb/day)	$PM_{2.5}$ Modeled 24-Hour Emission Rate (g/s)	
EP01000F	Paved Plant Roads	292	2.34	See Distribution Calculations	Note 1
PHR003 through PHR294		Emission rates for paved haul roads calculated based on the percentage of truck traffic per area. Please see the Paved Haul Roads Emissions Distribution Calculations.			
EP01050F	Unpaved Biomass Roads	480	0.41	See Distribution Calculations	Note 2
BRD001 through BRD447		Emission rates for biomass laydown roads calculated based on the percentage of truck traffic per area (storage field and staging area). Please see the Biomass Haul Roads Emissions Distribution Calculations.			

(1) The daily haul road traffic is based on the "typical scenario" for shipping and receiving, which assumes that all shipping and receiving will occur 6:00 AM to 6:00 PM only, or 12 hours per day. 24-hour PM2.5 emissions from haul roads weremodeled based on the worst-case "alternate scenario", which assumes the 70%/30% traffic configuration.

(2) 24-hour PM_{10} emissions from biomass storage area roads and the biomass staging area were modeled based on the areas being active constantly.

Modeled Source Emissions

POINT SOURCE $PM_{2.5}$ EMISSIONS				
		24-Hour Averaging Period		
Source ID	Source Description	$PM_{2.5}$ 24-Hour Emission Rate (lb/day)	$PM_{2.5}$ Modeled 24-Hour Emission Rate (g/s)	Notes
ENZYMATIC HYDROLYSIS PLANT				
EP11120	Floor Sweep System DC	1.09	5.73E-03	--
EP11110	Bale Grinder DC	20.13	1.06E-01	--
EP11170	Classifier Cyclone # 1 DC	3.02	1.59E-02	--
EP11270	Classifier Cyclone # 2 DC	3.02	1.59E-02	--
EP11711	Boiler Feed System DC	3.02	1.59E-02	--
EP18185	EH Fermentation CO_2 Scrubber	2.40	1.26E-02	--
UTILITIES				
EP02710	Bulk Fly Ash Load-Out Silo	11.56	6.07E-02	--
EP02711A	Bulk Fly Ash Load-Out Silo Spout #1	5.78	3.03E-02	--
EP02711B	Bulk Fly Ash Load-Out Silo Spout #2	5.78	3.03E-02	--
EP04001	Cooling Water Tower	1.71	8.98E-03	--
EP04001A	Cell 1	0.57	2.99E-03	Note 1
EP04001B	Cell 2	0.57	2.99E-03	
EP04001C	Cell 3	0.57	2.99E-03	
EP20512	Lime Handling DC #1	0.82	4.32E-03	--
EP20514	Boiler Bottoms Ash Handling DC #1	11.56	6.07E-02	--
EP20510	Boiler Fly Ash Handling DC #1	5.78	3.03E-02	--
EP20520	Boiler Fly Ash Handling DC #2	5.78	3.03E-02	--
EP06001	Firewater Pump Engine	0.08	4.26E-04	Note 2
EP09001	Flare FWP Engine Operating (Pilot Only)	0.02	9.58E-05	Note 3
EP09001	Flare No FWP Engine	0.02	9.58E-05	Note 3
EP20001	Biomass-Fired Boiler #1 30% Load (141 MMBtu)	95.51	5.014E-01	Note 4
	50% Load (236 MMBtu)	159.18	8.357E-01	
	75% Load (353 MMBtu)	238.76	1.254E+00	
	100% Load (471 MMBtu)	318.35	1.671E+00	
	120% Load (500 MMBtu)	338.01	1.775E+00	
EP20010	Genset #1	0.06	3.29E-04	Note 2
EP20020	Genset #2	0.06	3.29E-04	Note 2
EP20030	Genset #3	0.06	3.29E-04	Note 2
EP20040	Genset #4	0.06	3.29E-04	Note 2

(1) Cooling tower emissions divided by the number of cells to obtain an emission rate per cell.

(2) Emergency equipment will operate a maximum of 1 hour per day for testing, no more than 100 hours per year, during normal facility operations. In the event of an emergency, operations at the facility will be shutdown at all of the major processes during the event, and an emergency event will not be modeled.

(3) Flare permitted to operate up to 3,960 hours per year to support the boiler during shutdown or malfunction, or when the boiler is not operating at full capacity. For modeling purposes, the flare will be operated concurrent with boiler operations at all loads to ensure the worst case scenario is evaluated. The boiler emissions will not adjusted to account for the diverted biogas, process vent streams and loadout vapors to the flare; therefore, the biogas, process vent streams and loadout vapors emissions are being double-counted since it may be possible for only one vent stream to be diverted at any given time. The firewater pump engine will not be operated at any time that the flare is operating except in the event of a facility emergency. In the event of an emergency, operations at the facility will be shutdown at all of the major processes during the event, and an emergency event will not be modeled.

(4) Reduced load emissions were only evaluated for the maximum short-term emissions.

Modeled Source Emissions

POINT SOURCE SO_2 EMISSIONS

Source ID	Source Description		SO_2 Hourly Emission Rate (lb/hr)	Averaging Period SO_2 Modeled 3-Hour Emission Rate (g/s)	Averaging Period SO_2 Modeled 24-Hour Emission Rate (g/s)	Notes
EP09001A	Flare	FWP Engine Operating (Pilot Only)	0.00006	7.56E-06	7.56E-06	
EP09001B	Flare	No FWP Engine	9.31	1.173E+00	1.173E+00	
EP06001A	Firewater Pump Engine	Normal	0.94	3.96E-02	4.95E-03	Note 1
EP60001B	Firewater Pump Engine	No FWP Engine	0	--	--	Note 2
EP20001	Biomass-Fired Boiler #1	30% Load (141 MMBtu)	29.99	3.78E+00	3.78E+00	Note 3
		50% Load (236 MMBtu)	49.99	6.30E+00	6.30E+00	Note 3
		75% Load (353 MMBtu)	74.99	9.45E+00	9.45E+00	Note 3
		100% Load (471 MMBtu)	99.98	1.26E+01	1.26E+01	Note 3
		120% Load (500 MMBtu)	106.16	1.34E+01	1.34E+01	Note 3
EP20010	Genset #1		0.0037	1.55E-04	1.93E-05	Note 1
EP20020	Genset #2		0.0037	1.55E-04	1.93E-05	Note 1
EP20030	Genset #3		0.0037	1.55E-04	1.93E-05	Note 1
EP20040	Genset #4		0.0037	1.55E-04	1.93E-05	Note 1

(1) Emergency equipment will operate a maximum of 1 hour per day for testing, no more than 100 hours per year, during normal facility operations. In the event of an emergency, operations at the facility will be shutdown at all of the major processes during the event, and an emergency event will not be modeled.

(2) Flare permitted to operate up to 3,960 hours per year to support the boiler during shutdown or malfunction, or when the boiler is not operating at full capacity. For modeling purposes, the flare will be operated concurrent with boiler operations at all loads to ensure the worst case scenario is evaluated. The boiler emissions will not adjusted to account for the diverted biogas, process vent streams and loadout vapors to the flare; therefore, the biogas, process vent streams and loadout vapors emissions are being double-counted since it may be possible for only one vent stream to be diverted at any given time. The firewater pump engine will not be operated at any time that the flare is operating except in the event of a facility emergency. In the event of an emergency, operations at the facility will be shutdown at all of the major processes during the event, and an emergency event will not be modeled.

(3) Reduced load emissions were only evaluated for the maximum short-term emissions.

Modeled Source Emissions

POINT SOURCE CO EMISSIONS

Source ID	Source Description		CO Hourly Emission Rate (lb/hr)	Averaging Period CO Modeled 1-Hour Emission Rate (g/s)	Averaging Period CO Modeled 8-Hour Emission Rate (g/s)	Notes
EP09001A	Flare	FWP Engine Operating (Pilot Only)	0.008	1.06E-03	1.06E-03	
EP09001B	Flare	No FWP Engine	18.92	2.38E+00	2.38E+00	
EP06001A	Firewater Pump Engine	Normal	0.68	8.56E-02	1.07E-02	Note 1
EP60001B	Firewater Pump Engine	No FWP Engine	0	--	--	Note 2
EP20001	Biomass-Fired Boiler #1	30% Load (141 MMBtu)	31.09	3.92E+00	3.92E+00	Note 3
		50% Load (236 MMBtu)	51.81	6.53E+00	6.53E+00	Note 3
		75% Load (353 MMBtu)	77.72	9.79E+00	9.79E+00	Note 3
		100% Load (471 MMBtu)	103.62	1.31E+01	1.31E+01	Note 3
		120% Load (500 MMBtu)	110.04	1.39E+01	1.39E+01	Note 3
EP20010	Genset #1		15.61	1.97E+00	2.46E-01	Note 1
EP20020	Genset #2		15.61	1.97E+00	2.46E-01	Note 1
EP20030	Genset #3		15.61	1.97E+00	2.46E-01	Note 1
EP20040	Genset #4		15.61	1.97E+00	2.46E-01	Note 1

(1) Emergency equipment will operate a maximum of 1 hour per day for testing, no more than 100 hours per year, during normal facility operations. In the event of an emergency, operations at the facility will be shutdown at all of the major processes during the event, and an emergency event will not be modeled.

(2) Flare permitted to operate up to 3,960 hours per year to support the boiler during shutdown or malfunction, or when the boiler is not operating at full capacity. For modeling purposes, the flare will be operated concurrent with boiler operations at all loads to ensure the worst case scenario is evaluated. The boiler emissions will not adjusted to account for the diverted biogas, process vent streams and loadout vapors to the flare; therefore, the biogas, process vent streams and loadout vapors emissions are being double-counted since it may be possible for only one vent stream to be diverted at any given time. The firewater pump engine will not be operated at any time that the flare is operating except in the event of a facility emergency. In the event of an emergency, operations at the facility will be shutdown at all of the major processes during the event, and an emergency event will not be modeled.

(3) Reduced load emissions were only evaluated for the maximum short-term emissions.

Unpaved Biomass Haul Roads Emissions Distribution Calculations

Daily VMT Calculations:	Total Feet Per Trip	Daily VMT
Biomass Storage Field	2424	1.38
Biomass Staging Area	460	9.23
	Facility-wide	**10.61**

Biomass Laydown Emissions - PM_{10}	**4.11 lb/day**
Biomass Laydown Emissions - $PM_{2.5}$	**0.41 lb/day**

	Daily VMT Per Volume Group	
	Volume Group 1	Volume Group 2
Total Daily VMT Per Volume Group	1.38	9.23
Percentage of Facility-wide VMT	12.98%	87.02%
PM_{10} Emissions Per Volume Group (lb/day)	0.53	3.58
No. of Sources Per Volume Group	447	33
PM_{10} Emissions Per Volume Source (g/s)	**6.27E-06**	**5.70E-04**
$PM_{2.5}$ Emissions Per Volume Group (lb/day)	0.05	0.36
No. of Sources Per Volume Group	447	33
$PM_{2.5}$ Emissions Per Volume Source (g/s)	**6.27E-07**	**5.70E-05**

Annual VMT Calculations:	Total Feet Per Trip	Annual VMT
Biomass Storage Field	2424	414.10
Biomass Staging Area	460	3,356.61
	Facility-wide	**3,770.71**

Biomass Laydown Emissions - PM_{10}	**0.73 ton/yr**
Biomass Laydown Emissions - $PM_{2.5}$	**0.07 ton/yr**

	Group	
	Volume Group 1	Volume Group 2
Total Annual VMT Per Volume Group	414.10	3,356.61
Percentage of Facility-wide VMT	10.98%	89.02%
PM_{10} Emissions Per Volume Group (ton/yr)	0.08	0.65
No. of Sources Per Volume Group	447	33
PM_{10} Emissions Per Volume Source (g/s)	**5.17E-06**	**5.67E-04**
$PM_{2.5}$ Emissions Per Volume Group (ton/yr)	0.008	0.07
No. of Sources Per Volume Group	447	33
$PM_{2.5}$ Emissions Per Volume Source (g/s)	**5.17E-07**	**5.67E-05**

Note 1: Emissions per volume group based on the following equations:
Emissions per Volume Group (lb/day or ton/yr) = [Total Haul Road Emissions (lb/day or ton/yr)] x [Percentage of Facility-wide VMT]
Emissions per Volume Source (g/s) = [Emissions per Volume Group] x [unit conversion factors for lb/day or ton/yr to g/s] / [No. of Volume Sources]

Paved Haul Roads Emissions Distribution Calculations

Daily VMT Calculations:	Total Feet Per Trip	Daily VMT
Two Way Traffic (Entrance and Scale Lanes)	749	41.99
One Way Traffic (Main Loop - Biomass Delivery)**	1490	39.03
One Way Traffic (Secondary Loop - Ash Loadout)	1010	3.06
One Way Traffic (Center Interior Road - To Etoh/Chemical Load	250	0.85
One Way Traffic (Tertiary Loop - Ash/Etoh/Chemical Loadout)	1000	6.44
	Facility-wide	**91.37**

Paved Haul Road Emissions - PM_{10}	**9.55 lb/day**
Paved Haul Road Emissions - $PM_{2.5}$	**2.34 lb/day**

	Daily VMT Per Volume or Area Group				
	Volume and Area Group 1	Volume Group 2	Volume Group 3	Volume Group 4	Volume Group 5
Total Daily VMT Per Volume Group	42.0	39.0	3.1	0.9	6.4
Percentage of Facility-wide VMT	45.96%	42.72%	3.35%	0.93%	7.05%
PM_{10} Emissions Per Volume Group (lb/day)	4.39	4.08	0.32	0.09	0.67
No. of Sources Per Volume Group	9	34	112	28	109
PM_{10} Emissions Per Volume Source (g/s)	**5.12E-03**	**1.26E-03**	**3.00E-05**	**3.33E-05**	**6.48E-05**
PM_{10} Emissions Per Area Source ($g/s/m^2$)	**9.94E-06**	--	--	--	--
$PM_{2.5}$ Emissions Per Volume Group (lb/day)	1.08	1.00	0.08	0.02	0.17
No. of Sources Per Volume Group	9	34	112	28	109
$PM_{2.5}$ Emissions Per Volume Source (g/s)	**1.26E-03**	**3.09E-04**	**7.36E-06**	**8.17E-06**	**1.59E-05**
$PM_{2.5}$ Emissions Per Area Source ($g/s/m^2$)	**2.44E-06**	--	--	--	--

Annual VMT Calculations:	Total Feet Per Trip	Annual VMT
Two Way Traffic (Entrance and Scale Lanes)	749	13,576.19
One Way Traffic (Main Loop - Biomass Delivery)**	1490	12,904.94
One Way Traffic (Secondary Loop - Ash Loadout)	1010	515.71
One Way Traffic (Center Interior Road - To Etoh/Chemical Load	250	245.03
One Way Traffic (Tertiary Loop - Ash/Etoh/Chemical Loadout)	1000	1,490.72
	Facility-wide	**28,740.50**

Paved Haul Road Emissions - PM_{10}	**1.50 ton/yr**
Paved Haul Road Emissions - $PM_{2.5}$	**0.37 ton/yr**

	Annual VMT Per Volume or Area Group				
	Volume and Area Group 1	Volume Group 2	Volume Group 3	Volume Group 4	Volume Group 5
Total Annual VMT Per Volume Group	13,576.2	12,904.9	515.7	245.0	1,490.7
Percentage of Facility-wide VMT	47.24%	44.90%	1.79%	0.85%	5.19%
PM_{10} Emissions Per Volume Group (ton/yr)	0.71	0.67	0.03	0.01	0.08
No. of Sources Per Volume Group	9	34	112	28	109
PM_{10} Emissions Per Volume Source (g/s)	**4.53E-03**	**1.14E-03**	**1.38E-05**	**2.63E-05**	**4.11E-05**
PM_{10} Emissions Per Area Source ($g/s/m^2$)	**8.81E-06**	--	--	--	--
$PM_{2.5}$ Emissions Per Volume Group (ton/yr)	0.17	0.17	0.01	0.00	0.02
No. of Sources Per Volume Group	9	34	112	28	109
$PM_{2.5}$ Emissions Per Volume Source (g/s)	**1.11E-03**	**2.80E-04**	**3.40E-06**	**6.46E-06**	**1.01E-05**
$PM_{2.5}$ Emissions Per Area Source ($g/s/m^2$)	**2.16E-06**	--	--	--	--

Note 1: Emissions per volume group based on the following equations:

Emissions per Volume Group (lb/day or ton/yr) = [Total Haul Road Emissions (lb/day or ton/yr)] x [Percentage of Facility-wide VMT]

Emissions per Volume Source (g/s) = [Emissions per Volume Group] x [unit conversion factors for lb/day or ton/yr to g/s] / [No. of Volume Sources]

Note 2: Haul road length adjusted to avoid double counting of VMT. One Way Traffic (Main Loop - Biomass Delivery) includes travel miles from all onsite truck traffic.

APPENDIX C
MODEL RESULTS SUMMARY TABLES

Modeling Results

Table 1. SO_2 3-Hour SIL Results

		September 16, 2011 Air Emission Source Construction Permit AQIA Results (EPA AERMOD 11103)				October 2012 AQIA Modification Results (BEEST AERMOD 12060)			
SO2 3-HOUR SIL	Operating Scenarios	Predicted H1H Facility Impacts	Date/Hour	UTM Easting (m)	UTM Northing (m)	Predicted H1H Facility Impacts	Date/Hour	UTM Easting (m)	UTM Northing (m)
ALL-500	Boiler at 500 MMBtu/hr Flare Operational No Firewater Pump	23.12224	08082212	288157.00	4118232.00	22.76888	08082212	288157.00	4118232.00
ALL-471	Boiler at 471 MMBtu/hr Flare Operational No Firewater Pump	24.15001	08082212	288157.00	4118232.00	23.97000	08082212	288157.00	4118232.00
ALL-353	Boiler at 353 MMBtu/hr Flare Operational No Firewater Pump	21.66342	08082212	288157.00	4118182.00	21.48582	08082212	288157.00	4118182.00
ALL-236	Boiler at 236 MMBtu/hr Flare Operational No Firewater Pump	19.28324	07073112	287757.00	4118032.00	18.81107	07073112	287807.00	4118032.00
ALL-141	Boiler at 141 MMBtu/hr Flare Operational No Firewater Pump	17.53637	09051012	287757.00	4118132.00	16.76758	09051012	287757.00	4118182.00
FWP-500	Boiler at 500 MMBtu/hr Flare Pilot Only Firewater Pump Operational	22.73810	08082212	288157.00	4118232.00	22.66772	08082212	288157.00	4118232.00
FWP-471	Boiler at 471 MMBtu/hr Flare Pilot Only Firewater Pump Operational	23.76586	08082212	288157.00	4118232.00	23.86892	08082212	288157.00	4118232.00
FWP-353	Boiler at 353 MMBtu/hr Flare Pilot Only Firewater Pump Operational	21.33999	08082212	288157.00	4118182.00	21.38466	08082212	288157.00	4118232.00
FWP-236	Boiler at 236 MMBtu/hr Flare Pilot Only Firewater Pump Operational	18.43280	08082212	288157.00	4118182.00	18.59822	08082212	288157.00	4118182.00
FWP-141	Boiler at 141 MMBtu/hr Flare Pilot Only Firewater Pump Operational	15.45781	09051012	287757.00	4118132.00	15.06495	08100312	288207.00	4118082.00

Table 2. SO_2 24-Hour SIL Results

		September 16, 2011 Air Emission Source Construction Permit AQIA Results (EPA AERMOD 11103)				October 2012 AQIA Modification Results (BEEST AERMOD 12060)			
SO2 24-HOUR SIL	Operating Scenarios	Predicted H1H Facility Impacts	Date/Hour	UTM Easting (m)	UTM Northing (m)	Predicted H1H Facility Impacts	Date/Hour	UTM Easting (m)	UTM Northing (m)
ALL-500	Boiler at 500 MMBtu/hr Flare Operational No Firewater Pump	10.93139	10052224	288157.00	4118682.00	10.37863	10052224	288157.00	4118732.00
ALL-471	Boiler at 471 MMBtu/hr Flare Operational No Firewater Pump	11.69689	10052224	288157.00	4118632.00	11.11795	10052224	288157.00	4118682.00
ALL-353	Boiler at 353 MMBtu/hr Flare Operational No Firewater Pump	10.73393	10052224	288157.00	4118582.00	10.21069	10052224	288157.00	4118632.00
ALL-236	Boiler at 236 MMBtu/hr Flare Operational No Firewater Pump	9.45188	08102224	288557.00	4117082.00	9.02814m	08102224	288607.00	4117132.00
ALL-141	Boiler at 141 MMBtu/hr Flare Operational No Firewater Pump	8.55177	06031824	287657.00	4118282.00	9.01865	06031824	287707.00	4118282.00
FWP-500	Boiler at 500 MMBtu/hr Flare Pilot Only Firewater Pump Operational	9.93227	10052224	288157.00	4118682.00	9.72558	10052224	288157.00	4118732.00
FWP-471	Boiler at 471 MMBtu/hr Flare Pilot Only Firewater Pump Operational	10.70314	10052224	288157.00	4118632.00	10.48683	10052224	288157.00	4118682.00
FWP-353	Boiler at 353 MMBtu/hr Flare Pilot Only Firewater Pump Operational	9.75473	10052224	288157.00	4118582.00	9.62054	10052224	288157.00	4118582.00
FWP-236	Boiler at 236 MMBtu/hr Flare Pilot Only Firewater Pump Operational	8.50799	10052224	288157.00	4118482.00	8.49051	10052224	288157.00	4118482.00
FWP-141	Boiler at 141 MMBtu/hr Flare Pilot Only Firewater Pump Operational	6.82180	10052224	288157.00	4118382.00	7.22403	06031824	287657.00	4118332.00

Table 3. SO_2 24-Hour NAAQS & PSD Results

		September 16, 2011 Air Emission Source Construction Permit AQIA Results (EPA AERMOD 11103)								October 2012 AQIA Modification Results (BEEST AERMOD 12060)							
SO2 24-HOUR NAAQS & PSD	Operating Scenarios	Predicted H1H ALL Impacts	H1H ALL Impacts Date/Hour	UTM Easting (m)	UTM Northing (m)	Maximum Year, H1H & H2H	Date/Hour	UTM Easting (m)	UTM Northing (m)	Predicted H1H ALL Impacts	H1H ALL Impacts Date/Hour	UTM Easting (m)	UTM Northing (m)	Maximum Year, H1H & H2H	Date/Hour	UTM Easting (m)	UTM Northing (m)
ALL-500	Boiler at 500 MMBtu/hr	18.61410	07042524	288407.00	4116682.00	2009				18.42427	07042524	288407.00	4116682.00	2009			
Includes Nearby	Flare Operational					17.67859	09102224	288407.00	4116682.00					17.58881	09102224	288407.00	4116682.00
Sources	No Firewater Pump					15.66319	09102224	288457.00	4116682.00					15.81599	09102224	288457.00	4116682.00
ALL-471	Boiler at 471 MMBtu/hr	18.86490	07042524	288407.00	4116682.00	2007				18.66734	07042524	288407.00	4116682.00	2007			
Includes Nearby	Flare Operational					18.8649	07042524	288407.00	4116682.00					18.66734	07042524	288407.00	4116682.00
Sources	No Firewater Pump					15.92035	07042524	288457.00	4116682.00					16.41399	07102124	288407.00	4116632.00
ALL-353	Boiler at 353 MMBtu/hr	17.79920	07042524	288407.00	4116682.00	2007				17.65088	09102224	288407.00	4116682.00	2007			
Includes Nearby	Flare Operationnl					17.7992	07042524	288407.00	4116682.00					17.56904	07042524	288407.00	4116682.00
Sources	No Firewater Pump					15.97225	07102124	288407.00	4116632.00					16.20297	07102124	288407.00	4116632.00
ALL-236	Boiler at 236 MMBtu/hr	16.80904	09102224	288407.00	4116682.00	2007				16.57266	09102224	288407.00	4116682.00	2007			
Includes Nearby	Flare Operational					16.4097	07042524	288407.00	4116682.00					16.15482	07042524	288407.00	4116682.00
Sources	No Firewater Pump					15.53946	07102124	288407.00	4116682.00					15.71003	07102124	288407.00	4116682.00
ALL-141	Boiler at 141 MMBtu/hr	15.45640	09102224	288407.00	4116682.00	2007				15.07738	09102224	288407.00	4116682.00	2007			
Includes Nearby	Flare Operational					14.95308	07042524	288407.00	4116682.00					14.82223	07102124	288407.00	4116682.00
Sources	No Firewater Pump					14.77959	07102124	288407.00	4116682.00					14.6719	07042524	288407.00	4116682.00

Table 4. CO 1-Hour SIL Results

		September 16, 2011 Air Emission Source Construction Permit AQIA Results (EPA AERMOD 11103)				October 2012 AQIA Modification Results (BEEST AERMOD 12060)			
CO 1-HOUR SIL	Operating Scenarios	Predicted H1H Facility Impacts	Date/Hour	UTM Easting (m)	UTM Northing (m)	Predicted H1H Facility Impacts	Date/Hour	UTM Easting (m)	UTM Northing (m)
ALL-500	Boiler at 500 MMBtu/hr Flare Operational No Firewater Pump	36.66333	06112711	286357.00	4116982.00	700.01356	10013102	288057.00	4118132.00
ALL-471	Boiler at 471 MMBtu/hr Flare Operational No Firewater Pump	36.99621	06112711	286357.00	4116982.00	700.01356	10013102	288057.00	4118132.00
ALL-353	Boiler at 353 MMBtu/hr Flare Operational No Firewater Pump	31.77265	07010410	290857.00	4118282.00	700.01356	10013102	288057.00	4118132.00
ALL-236	Boiler at 236 MMBtu/hr Flare Operational No Firewater Pump	29.12992	06021222	288740.60	4117195.40	700.01356	10013102	288057.00	4118132.00
ALL-141	Boiler at 141 MMBtu/hr Flare Operational No Firewater Pump	29.12992	06021222	288740.60	4117195.40	700.01356	10013102	288057.00	4118132.00
FWP-500	Boiler at 500 MMBtu/hr Flare Pilot Only Firewater Pump Operational	31.85282	06112711	286257.00	4116982.00	704.66747	10013102	288057.00	4118132.00
FWP-471	Boiler at 471 MMBtu/hr Flare Pilot Only Firewater Pump Operational	32.17406	06112711	286557.00	4117082.00	704.66747	10013102	288057.00	4118132.00
FWP-353	Boiler at 353 MMBtu/hr Flare Pilot Only Firewater Pump Operational	26.74289	06112711	286557.00	4117082.00	704.66747	10013102	288057.00	4118132.00
FWP-236	Boiler at 236 MMBtu/hr Flare Pilot Only Firewater Pump Operational	22.29240	07010410	290257.00	4118182.00	704.66747	10013102	288057.00	4118132.00
FWP-141	Boiler at 141 MMBtu/hr Flare Pilot Only Firewater Pump Operational	19.84872	09071708	287707.00	4118082.00	704.66747	10013102	288057.00	4118132.00

Table 5. CO 8-Hour SIL Results

CO 8-HOUR SIL	Operating Scenarios	September 16, 2011 Air Emission Source Construction Permit AQIA Results (EPA AERMOD 11103)				October 2012 AQIA Modification Results (BEEST AERMOD 12060)			
		Predicted H1H Facility Impacts	Date/Hour	UTM Easting (m)	UTM Northing (m)	Predicted H1H Facility Impacts	Date/Hour	UTM Easting (m)	UTM Northing (m)
ALL-500	Boiler at 500 MMBtu/hr Flare Operational No Firewater Pump	21.24783	06061316	287807.00	4118282.00	37.73729	06061524	288143.40	4117991.50
ALL-471	Boiler at 471 MMBtu/hr Flare Operational No Firewater Pump	22.33428	06061316	287857.00	4118182.00	37.73737	06061524	288143.40	4117991.50
ALL-353	Boiler at 353 MMBtu/hr Flare Operational No Firewater Pump	21.71532	09040508	288507.00	4117182.00	37.73751	06061524	288143.40	4117991.50
ALL-236	Boiler at 236 MMBtu/hr Flare Operational No Firewater Pump	20.91704	06111508	288490.60	4117197.50	37.73792	06061524	288143.40	4117991.50
ALL-141	Boiler at 141 MMBtu/hr Flare Operational No Firewater Pump	20.49552	06111508	288490.60	4117197.50	37.73824	06061524	288143.40	4117991.50
FWP-500	Boiler at 500 MMBtu/hr Flare Pilot Only Firewater Pump Operational	18.11717	06061316	287807.00	4118232.00	37.21802	06100624	288143.40	4117991.50
FWP-471	Boiler at 471 MMBtu/hr Flare Pilot Only Firewater Pump Operational	19.08894	06061316	287807.00	4118232.00	37.21956	06100624	288143.40	4117991.50
FWP-353	Boiler at 353 MMBtu/hr Flare Pilot Only Firewater Pump Operational	17.27895	09082216	287857.00	4118232.00	37.22214	06100624	288143.40	4117991.50
FWP-236	Boiler at 236 MMBtu/hr Flare Pilot Only Firewater Pump Operational	15.28102	06061316	287857.00	4118182.00	37.24908	06100624	288143.40	4117991.50
FWP-141	Boiler at 141 MMBtu/hr Flare Pilot Only Firewater Pump Operational	12.73308	06031916	287707.00	4118132.00	37.27828	06100624	288143.40	4117991.50

Table 14. $PM_{2.5}$ 24-Hour SIL Results

PM2.5 24-HOUR SI	RUN 4 Operating Scenarios	September 16, 2011 Air Emission Source Construction Permit AQIA Results Run 4 (Haul Roads 70%/30%) (Puraffel AERMOD 09292)				October 2012 AQIA Modification Results Run 4 (Haul Roads 70%/30%) (BEEST AERMOD 12060)				Run 4 (Haul Roads 70%/30%) (BEEST AERMOD 12060)				Run 4 (Haul Roads 70%/30%) (BEEST AERMOD 12060)				Run 4 (Haul Roads 70%/30%) (BEEST AERMOD 12060)				Run 4 (Haul Roads 70%/30%) (BEEST AERMOD 12060)			
		Predicted H1H Facility Impacts	Period	UTM Easting (m)	UTM Northing (m)	Predicted H1H Facility Impacts	Year 2006 Date	UTM Easting (m)	UTM Northing (m)	Predicted H1H Facility Impacts	Year 2007 Date	UTM Easting (m)	UTM Northing (m)	Predicted H1H Facility Impacts	Year 2008 Date	UTM Easting (m)	UTM Northing (m)	Predicted H1H Facility Impacts	Year 2009 Date	UTM Easting (m)	UTM Northing (m)	Predicted H1H Facility Impacts	Year 2010 Date	UTM Easting (m)	UTM Northing (m)
AB500	Boiler at 500 MMBtu/hr Flare Operational No Firewater Pump	8.27603	1st Highest Max Daily 24-Hr Over 5	287993.50	4117997.10	8.18019	1st Highest Max Daily 24-Hr Over 2006	287993.50	4117997.10	8.54711	1st Highest Max Daily 24-Hr Over 2007	287993.50	4117997.10	7.91813	1st Highest Max Daily 24-Hr Over 2008	287907.00	4118032.00	9.07401	1st Highest Max Daily 24-Hr Over 2009	287943.50	4117999.00	9.46635	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00
AB471	Boiler at 471 MMBtu/hr Flare Operational No Firewater Pump	8.28239	1st Highest Max Daily 24-Hr Over 5	287993.50	4117997.10	8.18274	1st Highest Max Daily 24-Hr Over 2006	287993.50	4117997.10	8.55177	1st Highest Max Daily 24-Hr Over 2007	287993.50	4117997.10	7.92164	1st Highest Max Daily 24-Hr Over 2008	287907.00	4118032.00	9.07439	1st Highest Max Daily 24-Hr Over 2009	287943.50	4117999.00	9.46707	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00
AB353	Boiler at 353 MMBtu/hr Flare Operational No Firewater Pump	8.28097	1st Highest Max Daily 24-Hr Over 5	287993.50	4117997.10	8.17183	1st Highest Max Daily 24-Hr Over 2006	287993.50	4117997.10	8.55095	1st Highest Max Daily 24-Hr Over 2007	287993.50	4117997.10	7.92411	1st Highest Max Daily 24-Hr Over 2008	287907.00	4118032.00	9.07483	1st Highest Max Daily 24-Hr Over 2009	287943.50	4117999.00	9.46789	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00
AB236	Boiler at 236 MMBtu/hr Flare Operational No Firewater Pump	8.28844	1st Highest Max Daily 24-Hr Over 5	287993.50	4117997.10	8.16555	1st Highest Max Daily 24-Hr Over 2006	287993.50	4117997.10	8.53758	1st Highest Max Daily 24-Hr Over 2007	287993.50	4117997.10	7.92743	1st Highest Max Daily 24-Hr Over 2008	287907.00	4118032.00	9.07684	1st Highest Max Daily 24-Hr Over 2009	287943.50	4117999.00	9.47857	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00
AB141	Boiler at 141 MMBtu/hr Flare Operational No Firewater Pump	8.30406	1st Highest Max Daily 24-Hr Over 5	287993.50	4117997.10	8.16370	1st Highest Max Daily 24-Hr Over 2006	287993.50	4117997.10	8.56038	1st Highest Max Daily 24-Hr Over 2007	287993.50	4117997.10	7.93109	1st Highest Max Daily 24-Hr Over 2008	287907.00	4118032.00	9.08175	1st Highest Max Daily 24-Hr Over 2009	287943.50	4117999.00	9.49011	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00
FWP500	Boiler at 500 MMBtu/hr Flare Pilot Only Firewater Pump Operational	8.27901	1st Highest Max Daily 24-Hr Over 5	287993.50	4117997.10	8.18265	1st Highest Max Daily 24-Hr Over 2006	287993.50	4117997.10	8.54858	1st Highest Max Daily 24-Hr Over 2007	287993.50	4117997.10	7.92013	1st Highest Max Daily 24-Hr Over 2008	287907.00	4118032.00	9.07546	1st Highest Max Daily 24-Hr Over 2009	287943.50	4117999.00	9.46780	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00
FWP471	Boiler at 471 MMBtu/hr Flare Pilot Only Firewater Pump Operational	8.28537	1st Highest Max Daily 24-Hr Over 5	287993.50	4117997.10	8.18520	1st Highest Max Daily 24-Hr Over 2006	287993.50	4117997.10	8.55324	1st Highest Max Daily 24-Hr Over 2007	287993.50	4117997.10	7.92364	1st Highest Max Daily 24-Hr Over 2008	287907.00	4118032.00	9.07584	1st Highest Max Daily 24-Hr Over 2009	287943.50	4117999.00	9.46832	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00
FWP353	Boiler at 353 MMBtu/hr Flare Pilot Only Firewater Pump Operational	8.28395	1st Highest Max Daily 24-Hr Over 5	287993.50	4117997.10	8.17429	1st Highest Max Daily 24-Hr Over 2006	287993.50	4117997.10	8.55242	1st Highest Max Daily 24-Hr Over 2007	287993.50	4117997.10	7.92611	1st Highest Max Daily 24-Hr Over 2008	287907.00	4118032.00	9.07627	1st Highest Max Daily 24-Hr Over 2009	287943.50	4117999.00	9.46914	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00
FWP236	Boiler at 236 MMBtu/hr Flare Pilot Only Firewater Pump Operational	8.29142	1st Highest Max Daily 24-Hr Over 5	287993.50	4117997.10	8.16802	1st Highest Max Daily 24-Hr Over 2006	287993.50	4117997.10	8.55905	1st Highest Max Daily 24-Hr Over 2007	287993.50	4117997.10	7.92942	1st Highest Max Daily 24-Hr Over 2008	287907.00	4118032.00	9.07828	1st Highest Max Daily 24-Hr Over 2009	287943.50	4117999.00	9.48094	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00
FWP141	Boiler at 141 MMBtu/hr Flare Pilot Only Firewater Pump Operational	8.30704	1st Highest Max Daily 24-Hr Over 5	287993.50	4117997.10	8.16616	1st Highest Max Daily 24-Hr Over 2006	287993.50	4117997.10	8.56185	1st Highest Max Daily 24-Hr Over 2007	287993.50	4117997.10	7.93309	1st Highest Max Daily 24-Hr Over 2008	287907.00	4118032.00	9.08320	1st Highest Max Daily 24-Hr Over 2009	287943.50	4117999.00	9.49247	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00

Table 15. $PM_{2.5}$ 24-Hour NAAQS & PSD Results

		September 16, 2011 Air Emission Source Construction Permit AQIA Results Run 4 (Haul Roads 70%/30%) (Parallel AERMOD 09292)										October 2012 AQIA Modification Results Run 4 (Haul Roads 70%/30%) (Parallel AERMOD 09292)							
		PSD					NAAQS					PSD				NAAQS			
PM2.5 24-HOUR NAAQS & PSD	RUN 4 Operating Scenarios	Predicted H1H ALL Impacts	Period	UTM Easting (m)	UTM Northing (m)	ABBK Contribution (AERMOD 11103)	Predicted H1H ALL Impacts	Period	UTM Easting (m)	UTM Northing (m)	ABBK Contribution (AERMOD 11103)	Predicted H1H & H2H ALL Impacts	Period	UTM Easting (m)	UTM Northing (m)	Predicted H1H ALL Impacts	Period	UTM Easting (m)	UTM Northing (m)
500 Includes Nearby Sources	Boiler at 500 MMBtu/hr Flare Pilot Only Firewater Pump Operational	22.87291	1st Highest Max Daily 24-Hr Over 5	293307.00	4115082.00	0.00907	22.87409 39.87409	1st Highest Max Daily 24-Hr Over 5	293307.00	4115082.00	0.00907	9.90690 8.76973	1st Highest Max Daily 24-Hr Over 2010	287943.50 287957.00	4117999.00 4118032.00	11.62147	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00
471 Includes Nearby Sources	Boiler at 471 MMBtu/hr Flare Pilot Only Firewater Pump Operational	22.87308	1st Highest Max Daily 24-Hr Over 5	293307.00	4115082.00	0.00924	22.87426 39.87426	1st Highest Max Daily 24-Hr Over 5	293307.00	4115082.00	0.00924	9.90741 8.76444	1st Highest Max Daily 24-Hr Over 2010	287943.50 287957.00	4117999.00 4118032.00	11.62199	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00
353 Includes Nearby Sources	Boiler at 353 MMBtu/hr Flare Pilot Only Firewater Pump Operational	22.87309	1st Highest Max Daily 24-Hr Over 5	293307.00	4115082.00	0.00925	22.87427 39.87427	1st Highest Max Daily 24-Hr Over 5	293307.00	4115082.00	0.00925	9.90824 8.76922	1st Highest Max Daily 24-Hr Over 2010	287943.50 287957.00	4117999.00 4118032.00	11.62281	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00
236 Includes Nearby Sources	Boiler at 236 MMBtu/hr Flare Pilot Only Firewater Pump Operational	22.87320	1st Highest Max Daily 24-Hr Over 5	293307.00	4115082.00	0.00936	22.87437 39.87437	1st Highest Max Daily 24-Hr Over 5	293307.00	4115082.00	0.00936	9.91069 8.78291	1st Highest Max Daily 24-Hr Over 2010	287943.50 287957.00	4117999.00 4118032.00	11.62527	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00
141 Includes Nearby Sources	Boiler at 141 MMBtu/hr Flare Pilot Only Firewater Pump Operational	22.87380	1st Highest Max Daily 24-Hr Over 5	293307.00	4115082.00	0.00996	22.87498 39.87498	1st Highest Max Daily 24-Hr Over 5	293307.00	4115082.00	0.00996	9.91452 8.80165	1st Highest Max Daily 24-Hr Over 2010	287943.50 287957.00	4117999.00 4118032.00	11.62909	1st Highest Max Daily 24-Hr Over 2010	287943.50	4117999.00

Table 18. PM_{10} 24-Hour SIL Results

		September 16, 2011 Air Emission Source Construction Permit AQIA Results				October 2012 AQIA Modification Results																			
		Run 4 (Haul Roads 70%/30%) (Parallel AERMOD 09292)				Run 4 (Haul Roads 70%/30%) (BEEST AERMOD 12060)				Run 4 (Haul Roads 70%/30%) (BEEST AERMOD 12060)		Run 4 (Haul Roads 70%/30%) (BEEST AERMOD 12060)				Run 4 (Haul Roads 70%/30%) (BEEST AERMOD 12060)				Run 4 (Haul Roads 70%/30%) (BEEST AERMOD 12060)			
PM10 24-HOUR SIL	Operating Scenarios	Predicted H1H Facility Impacts	Date	UTM Easting (m)	UTM Northing (m)	Predicted H1H Facility Impacts	Year 2006 Date	UTM Easting (m)	UTM Northing (m)	Predicted H1H Facility Impacts	Year 2007 Date	UTM Easting (m)	UTM Northing (m)	Predicted H1H Facility Impacts	Year 2008 Date	UTM Easting (m)	UTM Northing (m)	Predicted H1H Facility Impacts	Year 2009 Date	UTM Easting (m)	UTM Northing (m)	Predicted H1H Facility Impacts	Year 2010 Date	UTM Easting (m)	UTM Northing (m)
AB500	Boiler at 500 MMBtu/hr Flare Operational No Firewater Pump	32.57354m	07010224	288107.00	4117082.00	25.02262m	06112524	287943.50	4117999.00	32.41687m	07010224	288107.00	4117082.00	25.04332	08010424	288393.20	4117982.10	26.79598	09110524	288243.30	4117987.70	28.85392	10021724	288343.20	4117984.00
AB471	Boiler at 471 MMBtu/hr Flare Operational No Firewater Pump	32.61024m	07010224	288107.00	4117082.00	25.02379m	06112524	287943.50	4117999.00	32.45259m	07010224	288107.00	4117082.00	25.06335	08010424	288393.20	4117982.10	26.80008	09110524	288243.30	4117987.70	28.87341	10021724	288343.20	4117984.00
AB353	Boiler at 353 MMBtu/hr Flare Operational No Firewater Pump	32.59322m	07010224	288107.00	4117082.00	25.02546m	06112524	287943.50	4117999.00	32.43227m	07010224	288107.00	4117082.00	25.07008	08010424	288393.20	4117982.10	26.80524	09110524	288243.30	4117987.70	28.83964	10021724	288343.20	4117984.00
AB236	Boiler at 236 MMBtu/hr Flare Operational No Firewater Pump	32.56587m	07010224	288107.00	4117082.00	25.02897m	06112524	287943.50	4117999.00	32.40020m	07010224	288107.00	4117082.00	25.07668	08010424	288393.20	4117982.10	26.81305	09110524	288243.30	4117987.70	28.80932	10021724	288343.20	4117984.00
AB141	Boiler at 141 MMBtu/hr Flare Operational No Firewater Pump	32.51165m	07010224	288107.00	4117082.00	25.03307m	06112524	287943.50	4117999.00	32.34271m	07010224	288107.00	4117082.00	25.09132	08010424	288393.20	4117982.10	26.82422	09110524	288243.30	4117987.70	28.79132	10021724	288343.20	4117984.00
FWP500	Boiler at 500 MMBtu/hr Flare Pilot Only Firewater Pump Operational	32.57732m	07010224	288107.00	4117082.00	25.02622m	06112524	287943.50	4117999.00	32.42061m	07010224	288107.00	4117082.00	25.04441	08010424	288393.20	4117982.10	26.79768	09110524	288243.30	4117987.70	28.85768	10021724	288343.20	4117984.00
FWP471	Boiler at 471 MMBtu/hr Flare Pilot Only Firewater Pump Operational	32.61402m	07010224	288107.00	4117082.00	25.02739m	06112524	287943.50	4117999.00	32.45633m	07010224	288107.00	4117082.00	25.06444	08010424	288393.20	4117982.10	26.80198	09110524	288243.30	4117987.70	28.87718	10021724	288343.20	4117984.00
FWP353	Boiler at 353 MMBtu/hr Flare Pilot Only Firewater Pump Operational	32.59700m	07010224	288107.00	4117082.00	25.02905m	06112524	287943.50	4117999.00	32.43601m	07010224	288107.00	4117082.00	25.07117	08010424	288393.20	4117982.10	26.80714	09110524	288243.30	4117987.70	28.84340	10021724	288343.20	4117984.00
FWP236	Boiler at 236 MMBtu/hr Flare Pilot Only Firewater Pump Operational	32.56964m	07010224	288107.00	4117082.00	25.03257m	06112524	287943.50	4117999.00	32.40394m	07010224	288107.00	4117082.00	25.07778	08010424	288393.20	4117982.10	26.81495	09110524	288243.30	4117987.70	28.81308	10021724	288343.20	4117984.00
FWP141	Boiler at 141 MMBtu/hr Flare Pilot Only Firewater Pump Operational	32.51542m	07010224	288107.00	4117082.00	25.03667m	06112524	287943.50	4117999.00	32.34645m	07010224	288107.00	4117082.00	25.09241	08010424	288393.20	4117982.10	26.82612	09110524	288243.30	4117987.70	28.79528	10021724	288343.20	4117984.00

Table 19. PM_{10} 24-Hour NAAQS & PSD Results

		September 16, 2011 Air Emission Source Construction Permit AQIA Results Run 4 (Final Runs 70%/30%) (Parallel AERMOD 09292)								October 2012 AQIA Modification Results Run 4 (Final Runs 70%/30%) (Parallel AERMOD 09292)							
		PSD				NAAQS				PSD				NAAQS			
PM10 24-HOUR NAAQS & PSD	RUN 4 Operating Scenarios	Predicted H1H & H2H ALL Impacts	Date	UTM Easting (m)	UTM Northing (m)	Predicted H6H ALL Impacts	Date	UTM Easting (m)	UTM Northing (m)	Predicted H1H & H2H ALL Impacts	Date	UTM Easting (m)	UTM Northing (m)	Predicted H6H ALL Impacts	Date	UTM Easting (m)	UTM Northing (m)
500	Boiler at 500 MMBtu/hr	29.38639	10021724	288343.20	4117984.00	31.43884	07072624	288043.40	4117995.20	32.49638	07010224	288107.00	4117082.00	28.52711	07072524	288043.40	4117995.20
Includes Nearby	Flare Pilot Only	27.49997	10013124	288043.40	4117995.20					28.90560	07010324	288107.00	4117082.00				
Sources	Firewater Pump Operational																
471	Boiler at 471 MMBtu/hr	29.40727	10021724	288343.20	4117984.00	31.44555	07072624	288043.40	4117995.20	32.53211	07010224	288107.00	4117082.00	28.53209	07072524	288043.40	4117995.20
Includes Nearby	Flare Pilot Only	27.50282	10013124	288043.40	4117995.20					28.92692	07010324	288107.00	4117082.00				
Sources	Firewater Pump Operational																
353	Boiler at 353 MMBtu/hr	29.37966	10021724	288343.20	4117984.00	31.44623	07062524	288043.40	4117995.20	32.51178	07010224	288107.00	4117082.00	28.53842	07072524	288043.40	4117995.20
Includes Nearby	Flare Pilot Only	27.50589	10013124	288043.40	4117995.20					28.91854	07010324	288107.00	4117082.00				
Sources	Firewater Pump Operational																
236	Boiler at 236 MMBtu/hr	29.35052	10021724	288343.20	4117984.00	31.46634	07062524	288043.40	4117995.20	32.47972	07010224	288107.00	4117082.00	28.55197	07072524	288043.40	4117995.20
Includes Nearby	Flare Pilot Only	27.51268	10013124	288043.40	4117995.20					28.91856	07010324	288107.00	4117082.00				
Sources	Firewater Pump Operational																
141	Boiler at 141 MMBtu/hr	29.33442	10021724	288343.20	4117984.00	31.47343	07062524	288043.40	4117995.20	32.42223	07010224	288107.00	4117082.00	28.56794	07072524	288043.40	4117995.20
Includes Nearby	Flare Pilot Only	27.52180	10013124	288043.40	4117995.20					28.90860	07010324	288107.00	4117082.00				
Sources	Firewater Pump Operational																

APPENDIX D
OFF-SITE SOURCES INVENTORIES

Abengoa Bioenergy Biomass of Kansas, LLC
Biorefinery Facility
Hugoton, Kansas

SO_2 Nearby Source Parameters and Emissions

KANSAS NEARBY SOURCES

Model ID	Facility ID	Facility Name	UTM Zone	X Coordinate (m)	Y Coordinate (m)	Elevation (m)	from Facility (km)	Stack Height (ft)	Stack Gas Temp. (°F)	Stack Exit Velocity (ft/s)	Stack Diameter (ft)	SO_2 Emissions (lbs/hr)
KSSO018	1890103	SEABOARD FOODS, LP	14	288373	4116999	953.17	0.722	73.61	416.37	29.33	3.78	10.80
KSSO019	1890103	SEABOARD FOODS, LP	14	288373	4116999	953.17	0.722	108.52	387.19	36.63	6.55	0.01
KSSO017	1890021	HUGOTON MUNICIPAL POWER PLANT (#2)	14	292326	4115396	947.24	4.726	33.00	505.00	106.40	2.50	4.40
KSSO011	0670010	PIONEER NATURAL RESOURCES USA, INC.	14	291901	4147534	944.19	30.063	96.42	759.66	36.64	2.69	9.10
KSSO008	0670007	COLUMBIAN CHEMICALS COMPANY Dryer Vapor Bag Co	14	306549	4156832	923.39	43.220	77.00	320.00	26.00	2.00	2.10
KSSO009	0670007	COLUMBIAN CHEMICALS COMPANY Dryer Vapor Bag Co	14	306549	4156832	923.39	43.220	79.00	280.00	41.00	2.00	2.10
KSSO010	0670007	COLUMBIAN CHEMICALS COMPANY Tail Gas Boiler / Fla	14	306549	4156832	923.39	43.220	195.00	450.00	40.00	6.00	1621.46
KSSO015	1750012	NATIONAL BEEF PACKING COMPANY, L.L.C	14	331090	4102104	861.01	45.638	58.21	436.41	27.61	3.40	117.00
KSSO016	1870009	JOHNSON CITY MUNICIPAL POWER PLANT	14	257034	4161124	1016.96	53.451	33.51	623.03	59.48	2.13	36.76
KSSO014	1750001	MID-KANSAS ELECTRIC COMPANY -CIMARRON RIV	14	343489	4113766	787.99	55.429	53.00	750.00	200.00	8.87	203.10

Abengoa Bioenergy Biomass of Kansas, LLC
Biorefinery Facility
Hugoton, Kansas

$PM_{2.5}$ Nearby Source Parameters and Emissions

KANSAS NEARBY SOURCES

Model ID	Facility ID	Facility Name	UTM Zone	X Coordinate (m)	Y Coordinate (m)	Elevation (m)	from Facility (km)	Stack Height (ft)	Stack Diameter (ft)	Stack Exit Velocity (ft/s)	Stack Gas Temp. (°F)	PM_{10} Emissions (lbs/hr)
KSPM001	0670007	COLUMBIAN CHEMICALS COMPANY	14	306549	4156832	923.39	43.22	83.54	1.38	36.84	195	2.00
KSPM002	0670007	COLUMBIAN CHEMICALS COMPANY	14	306549	4156832	923.39	43.22	83.54	1.38	36.84	195	2.00
KSPM003	0670007	COLUMBIAN CHEMICALS COMPANY	14	306549	4156832	923.39	43.22	77	2	40	450	2.05
KSPM004	0670007	COLUMBIAN CHEMICALS COMPANY	14	306549	4156832	923.39	43.22	79	2	41	280	7.50
KSPM005	0670007	COLUMBIAN CHEMICALS COMPANY	14	306549	4156832	923.39	43.22	85.41	3.61	32.69	381.39	0.16
KSPM006	1890009	WTG HUGOTON, LP	14	293270	4120091	949.39	5.61	23	1.33	77.2	800	0.54
KSPM007	1890009	WTG HUGOTON, LP	14	293270	4120091	949.39	5.61	23	1.33	66.8	800	0.54
KSPM008	1890009	WTG HUGOTON, LP	14	293270	4120091	949.39	5.61	25	1.16	112.4	800	0.59
KSPM009	1890009	WTG HUGOTON, LP	14	293270	4120091	949.39	5.61	17	0.66	116.9	800	0.21
KSPM010	1890009	WTG HUGOTON, LP	14	293270	4120091	949.39	5.61	17	0.66	118.3	800	0.21
KSPM011	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	12	0.5	484	1100	0.38
KSPM012	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	35	0.83	149	660	0.45
KSPM013	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	35	0.83	149	660	0.45
KSPM014	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	35	0.83	149	660	0.45
KSPM015	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	45	3	80	660	3.13
KSPM016	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	35	0.83	149	660	0.45
KSPM017	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	35	0.83	149	660	0.45
KSPM018	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	32	0.83	149	660	0.45
KSPM019	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	32	0.83	150	660	0.45
KSPM020	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	35	0.83	149	660	0.45
KSPM021	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	32	0.83	149	660	0.45
KSPM022	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	35	0.83	149	660	0.45
KSPM023	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	20	0.5	240	1100	0.20
KSPM024	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	20	0.5	240	1100	0.20
KSPM025	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	45	2	94	660	1.64
KSPM026	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	45	2	94	660	1.64
KSPM027	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	45	2	94	660	1.64
KSPM028	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	20	1	39	1000	0.13
KSPM029	1890021	HUGOTON MUNICIPAL POWER PLANT (#	14	292326	4115396	947.24	4.73	33	2.5	106.4	505	11.49
KSPM030	1890054	WTG HUGOTON, LP	14	290087	4121793	961.44	4.51	21	1	64.3	650	0.37
KSPM031	1890054	WTG HUGOTON, LP	14	290087	4121793	961.44	4.51	21	1	64.1	650	0.37
KSPM032	1890054	WTG HUGOTON, LP	14	290087	4121793	961.44	4.51	21	1	64.1	650	0.37
KSPM033	1890054	WTG HUGOTON, LP	14	290087	4121793	961.44	4.51	21	1	64.1	650	0.37
KSPM034	1890185	ONEOK FIELD SERVICES COMPANY, LLC	14	288524	4123448	959.77	5.76	24.51	1.09	53.83	814.31	0.40
KSPM035	1890103	SEABOARD FOODS, LP	14	288373	4116999	953.17	0.72	73.61	3.78	29.33	416.37	0.50
KSPM036	1890103	SEABOARD FOODS, LP	14	288373	4116999	953.17	0.72	108.52	6.55	36.63	387.19	0.16
KSPM037	1890103	SEABOARD FOODS, LP	14	288373	4116999	953.17	0.72	58.05	1.45	29.72	73.19	0.20
KSPM038	1890103	SEABOARD FOODS, LP	14	288373	4116999	953.17	0.72	34.19	1.21	13.48	75.24	0.06
KSPM039	1890103	SEABOARD FOODS, LP	14	288373	4116999	953.17	0.72	71	1.59	62.1	74	1.52
KSPM040	1890103	SEABOARD FOODS, LP	14	288373	4116999	953.17	0.72	56.47	2.60	54.83	114.52	1.28
KSPM041	1890189	ANADARKO GATHERING COMPANY LLC	14	286971	4125107	962.83	7.51	16	0.83	111	1105	0.38

$PM_{2.5}$ Nearby Source Parameters and Emissions

KANSAS NEARBY SOURCES

Model ID	Facility ID	Facility Name	UTM Zone	X Coordinate (m)	Y Coordinate (m)	Elevation (m)	from Facility (km)	Stack Height (ft)	Stack Diameter (ft)	Stack Exit Velocity (ft/s)	Stack Gas Temp. (°F)	PM_{10} Emissions (lbs/hr)
KSPM042	1890189	ANADARKO GATHERING COMPANY LLC	14	286971	4125107	962.83	7.51	16	0.83	111	1105	0.38
KSPM043	1890136	ANADARKO GATHERING COMPANY LLC	14	286857	4120265	960.1	2.90	20	0.67	198	1105	0.38
KSPM044	1890144	ANADARKO GATHERING COMPANY LLC	14	286624	4110597	965.09	7.28	16	0.83	148	1100	0.38
KSPM045	1890144	ANADARKO GATHERING COMPANY LLC	14	286624	4110597	965.09	7.28	16	0.83	148	1100	0.38
KSPM046	1890143	ANADARKO GATHERING COMPANY LLC	14	285140	4115457	963.53	3.79	16	0.83	157	1175	0.38
KSPM047	1890143	ANADARKO GATHERING COMPANY LLC	14	285140	4115457	963.53	3.79	16	0.83	157	1175	0.38
KSPM048	1890143	ANADARKO GATHERING COMPANY LLC	14	285140	4115457	963.53	3.79	16	0.83	161	1175	0.38
KSPM049	1890137	ANADARKO GATHERING COMPANY LLC	14	282035	4120385	967.86	6.72	15	0.5	160	970	0.18
KSPM050	1890137	ANADARKO GATHERING COMPANY LLC	14	282035	4120385	967.86	6.72	15	0.5	160	970	0.18
KSPM051	1890137	ANADARKO GATHERING COMPANY LLC	14	282035	4120385	967.86	6.72	24.51	1.09	53.83	814.31	0.16
KSPM052	1890137	ANADARKO GATHERING COMPANY LLC	14	282035	4120385	967.86	6.72	15	0.5	110	1144	0.10
KSPM053	1890137	ANADARKO GATHERING COMPANY LLC	14	282035	4120385	967.86	6.72	24.51	1.09	53.83	814.31	0.10
KSPM054	1890044	ANADARKO GATHERING COMPANY LLC	14	281998	4118768	965.22	6.29	24.51	1.09	53.83	814.31	0.16
KSPM055	1890044	ANADARKO GATHERING COMPANY LLC	14	281998	4118768	965.22	6.29	24.51	1.09	53.83	814.31	0.10
KSPM056	1890044	ANADARKO GATHERING COMPANY LLC	14	281998	4118768	965.22	6.29	20	1	230	1103	0.29
KSPM057	1890044	ANADARKO GATHERING COMPANY LLC	14	281998	4118768	965.22	6.29	24.51	1.09	53.83	814.31	0.10
KSPM058	0670007	COLUMBIAN CHEMICALS COMPANY	14	306549	4156832	923.39	43.91	150.00	2.50	74.00	400.00	0.25
KSPM059	0670007	COLUMBIAN CHEMICALS COMPANY	14	306549	4156832	923.39	43.91	195.00	6.00	40.00	450.00	18.00
KSPM060	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314101.91	4158949.75	921.78	26.00	106.00	4.00	75.45	640.99	1.36
KSPM061	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314101.94	4158947.01	921.78	26.00	106.00	4.00	75.45	640.99	1.36
KSPM062	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314099.3	4158949.71	921.78	26.00	106.00	4.00	75.45	640.99	1.36
KSPM063	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314099.3	4158946.98	921.78	26.00	106.00	4.00	75.45	640.99	1.36
KSPM064	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314096.66	4158949.71	921.79	26.00	106.00	4.00	75.45	640.99	1.36
KSPM065	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314096.62	4158947.01	921.78	26.00	106.00	4.00	75.45	640.99	1.36
KSPM066	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314101.97	4158906.86	921.68	26.00	106.00	4.00	75.45	640.99	1.36
KSPM067	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314101.97	4158904.1	921.68	26.00	106.00	4.00	75.45	640.99	1.36
KSPM068	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314099.3	4158906.86	921.69	26.00	106.00	4.00	75.45	640.99	1.36
KSPM069	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314099.3	4158904.1	921.68	26.00	106.00	4.00	75.45	640.99	1.36
KSPM070	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314096.69	4158906.86	921.69	26.00	106.00	4.00	75.45	640.99	1.36
KSPM071	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314096.66	4158904.15	921.68	26.00	106.00	4.00	75.45	640.99	1.36
KSPM072	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314259.73	4158904.11	921.64	26.00	106.00	4.00	75.45	640.99	1.36
KSPM073	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314259.72	4158906.86	921.65	26.00	106.00	4.00	75.45	640.99	1.36
KSPM074	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314262.37	4158904.08	921.64	26.00	106.00	4.00	75.45	640.99	1.36
KSPM075	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314262.38	4158906.86	921.65	26.00	106.00	4.00	75.45	640.99	1.36
KSPM076	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314265.01	4158904.1	921.64	26.00	106.00	4.00	75.45	640.99	1.36
KSPM077	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314265.02	4158906.83	921.65	26.00	106.00	4.00	75.45	640.99	1.36
KSPM078	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314259.7	4158946.95	921.78	26.00	106.00	4.00	75.45	640.99	1.36
KSPM079	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314259.7	4158949.72	921.78	26.00	106.00	4.00	75.45	640.99	1.36
KSPM080	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314262.38	4158946.94	921.77	26.00	106.00	4.00	75.45	640.99	1.36
KSPM081	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314262.38	4158949.71	921.78	26.00	106.00	4.00	75.45	640.99	1.36
KSPM082	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314265.02	4158946.95	921.77	26.00	106.00	4.00	75.45	640.99	1.36
KSPM083	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314265	4158949.71	921.78	26.00	106.00	4.00	75.45	640.99	1.36
KSPM084	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314187.78	4158869.94	921.59	26.00	15.00	0.83	44.33	500.00	0.02
KSPM085	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314160	4158930	921.76	26.00	15.00	0.67	149.16	936.00	0.00
KSPM086	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314150	4158834	921.52	26.00	15.00	0.42	145.33	986.00	0.06

**As a preliminary estimate, ABBK used the NAAQS inventories for the increment analysis; however, impacts from the Seaboard Foods, LLC feed mill located immediately adjacent to and south of the ABBK facility resulted in a PSD increment violation when included in the increment analysis for the 24-hour PM_{10} averaging period. Per an email dated December 12, 2009, KDHE reviewed the Seaboard Foods, LLC facility files and indicated that the facility was not a PM_{10} increment consuming source and that it could be excluded from the increment analysis for the 24-hour PM_{10} averaging period. No other nearby source evaluations were

Abengoa Bioenergy Biomass of Kansas, LLC
Biorefinery Facility
Hugoton, Kansas

PM_{10} Nearby Source Parameters and Emissions

KANSAS NEARBY SOURCES

Model ID	Facility ID	Facility Name	UTM Zone	X Coordinate (m)	Y Coordinate (m)	Elevation (m)	from Facility (km)	Stack Height (ft)	Stack Diameter (ft)	Stack Exit Velocity (ft/s)	Stack Gas Temp. (°F)	PM_{10} Emissions (lbs/hr)
KSPM001	0670007	COLUMBIAN CHEMICALS COMPANY	14	306549	4156832	923.39	43.22	83.54	1.38	36.84	195	2.00
KSPM002	0670007	COLUMBIAN CHEMICALS COMPANY	14	306549	4156832	923.39	43.22	83.54	1.38	36.84	195	2.00
KSPM003	0670007	COLUMBIAN CHEMICALS COMPANY	14	306549	4156832	923.39	43.22	77	2	40	450	2.05
KSPM004	0670007	COLUMBIAN CHEMICALS COMPANY	14	306549	4156832	923.39	43.22	79	2	41	280	7.50
KSPM005	0670007	COLUMBIAN CHEMICALS COMPANY	14	306549	4156832	923.39	43.22	85.41	3.61	32.69	381.39	0.16
KSPM006	1890009	WTG HUGOTON, LP	14	293270	4120091	949.39	5.61	23	1.33	77.2	800	0.54
KSPM007	1890009	WTG HUGOTON, LP	14	293270	4120091	949.39	5.61	23	1.33	66.8	800	0.54
KSPM008	1890009	WTG HUGOTON, LP	14	293270	4120091	949.39	5.61	25	1.16	112.4	800	0.59
KSPM009	1890009	WTG HUGOTON, LP	14	293270	4120091	949.39	5.61	17	0.66	116.9	800	0.21
KSPM010	1890009	WTG HUGOTON, LP	14	293270	4120091	949.39	5.61	17	0.66	118.3	800	0.21
KSPM011	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	12	0.5	484	1100	0.38
KSPM012	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	35	0.83	149	660	0.45
KSPM013	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	35	0.83	149	660	0.45
KSPM014	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	35	0.83	149	660	0.45
KSPM015	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	45	3	80	660	3.13
KSPM016	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	35	0.83	149	660	0.45
KSPM017	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	35	0.83	149	660	0.45
KSPM018	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	32	0.83	149	660	0.45
KSPM019	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	32	0.83	150	660	0.45
KSPM020	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	35	0.83	149	660	0.45
KSPM021	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	32	0.83	149	660	0.45
KSPM022	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	35	0.83	149	660	0.45
KSPM023	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	20	0.5	240	1100	0.20
KSPM024	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	20	0.5	240	1100	0.20
KSPM025	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	45	2	94	660	1.64
KSPM026	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	45	2	94	660	1.64
KSPM027	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	45	2	94	660	1.64
KSPM028	1890015	ANADARKO GATHERING COMPANY LLC	14	293191	4115298	947.66	5.54	20	1	39	1000	0.13
KSPM029	1890021	HUGOTON MUNICIPAL POWER PLANT (#	14	292326	4115396	947.24	4.73	33	2.5	106.4	505	11.49
KSPM030	1890054	WTG HUGOTON, LP	14	290087	4121793	961.44	4.51	21	1	64.3	650	0.37
KSPM031	1890054	WTG HUGOTON, LP	14	290087	4121793	961.44	4.51	21	1	64.1	650	0.37
KSPM032	1890054	WTG HUGOTON, LP	14	290087	4121793	961.44	4.51	21	1	64.1	650	0.37
KSPM033	1890054	WTG HUGOTON, LP	14	290087	4121793	961.44	4.51	21	1	64.1	650	0.37
KSPM034	1890185	ONEOK FIELD SERVICES COMPANY, LLC	14	288524	4123448	959.77	5.76	24.51	1.09	53.83	814.31	0.40
KSPM035	1890103	SEABOARD FOODS, LP	14	288373	4116999	953.17	0.72	73.61	3.78	29.33	416.37	0.50
KSPM036	1890103	SEABOARD FOODS, LP	14	288373	4116999	953.17	0.72	108.52	6.55	36.63	387.19	0.16
KSPM037	1890103	SEABOARD FOODS, LP	14	288373	4116999	953.17	0.72	58.05	1.45	29.72	73.19	0.20
KSPM038	1890103	SEABOARD FOODS, LP	14	288373	4116999	953.17	0.72	34.19	1.21	13.48	75.24	0.06
KSPM039	1890103	SEABOARD FOODS, LP	14	288373	4116999	953.17	0.72	71	1.59	62.1	74	1.52
KSPM040	1890103	SEABOARD FOODS, LP	14	288373	4116999	953.17	0.72	56.47	2.60	54.83	114.52	14.40
KSPM041	1890189	ANADARKO GATHERING COMPANY LLC	14	286971	4125107	962.83	7.51	16	0.83	111	1105	0.38

PM_{10} Nearby Source Parameters and Emissions

KANSAS NEARBY SOURCES

Model ID	Facility ID	Facility Name	UTM Zone	X Coordinate (m)	Y Coordinate (m)	Elevation (m)	from Facility (km)	Stack Height (ft)	Stack Diameter (ft)	Stack Exit Velocity (ft/s)	Stack Gas Temp. (°F)	PM_{10} Emissions (lbs/hr)
KSPM042	1890189	ANADARKO GATHERING COMPANY LLC	14	286971	4125107	962.83	7.51	16	0.83	111	1105	0.38
KSPM043	1890136	ANADARKO GATHERING COMPANY LLC	14	286857	4120265	960.1	2.90	20	0.67	198	1105	0.38
KSPM044	1890144	ANADARKO GATHERING COMPANY LLC	14	286624	4110597	965.09	7.28	16	0.83	148	1100	0.38
KSPM045	1890144	ANADARKO GATHERING COMPANY LLC	14	286624	4110597	965.09	7.28	16	0.83	148	1100	0.38
KSPM046	1890143	ANADARKO GATHERING COMPANY LLC	14	285140	4115457	963.53	3.79	16	0.83	157	1175	0.38
KSPM047	1890143	ANADARKO GATHERING COMPANY LLC	14	285140	4115457	963.53	3.79	16	0.83	157	1175	0.38
KSPM048	1890143	ANADARKO GATHERING COMPANY LLC	14	285140	4115457	963.53	3.79	16	0.83	161	1175	0.38
KSPM049	1890137	ANADARKO GATHERING COMPANY LLC	14	282035	4120385	967.86	6.72	15	0.5	160	970	0.18
KSPM050	1890137	ANADARKO GATHERING COMPANY LLC	14	282035	4120385	967.86	6.72	15	0.5	160	970	0.18
KSPM051	1890137	ANADARKO GATHERING COMPANY LLC	14	282035	4120385	967.86	6.72	24.51	1.09	53.83	814.31	0.16
KSPM052	1890137	ANADARKO GATHERING COMPANY LLC	14	282035	4120385	967.86	6.72	15	0.5	110	1144	0.10
KSPM053	1890137	ANADARKO GATHERING COMPANY LLC	14	282035	4120385	967.86	6.72	24.51	1.09	53.83	814.31	0.10
KSPM054	1890044	ANADARKO GATHERING COMPANY LLC	14	281998	4118768	965.22	6.29	24.51	1.09	53.83	814.31	0.16
KSPM055	1890044	ANADARKO GATHERING COMPANY LLC	14	281998	4118768	965.22	6.29	24.51	1.09	53.83	814.31	0.10
KSPM056	1890044	ANADARKO GATHERING COMPANY LLC	14	281998	4118768	965.22	6.29	20	1	230	1103	0.29
KSPM057	1890044	ANADARKO GATHERING COMPANY LLC	14	281998	4118768	965.22	6.29	24.51	1.09	53.83	814.31	0.10
KSPM058	0670007	COLUMBIAN CHEMICALS COMPANY	14	306549	4156832	923.39	43.91	150.00	2.50	74.00	400.00	0.25
KSPM059	0670007	COLUMBIAN CHEMICALS COMPANY	14	306549	4156832	923.39	43.91	195.00	6.00	40.00	450.00	18.00
KSPM060	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314101.91	4158949.75	921.78	26.00	106.00	4.00	75.45	640.99	1.36
KSPM061	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314101.94	4158947.01	921.78	26.00	106.00	4.00	75.45	640.99	1.36
KSPM062	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314099.3	4158949.71	921.78	26.00	106.00	4.00	75.45	640.99	1.36
KSPM063	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314099.3	4158946.98	921.78	26.00	106.00	4.00	75.45	640.99	1.36
KSPM064	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314096.66	4158949.71	921.79	26.00	106.00	4.00	75.45	640.99	1.36
KSPM065	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314096.62	4158947.01	921.78	26.00	106.00	4.00	75.45	640.99	1.36
KSPM066	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314101.97	4158906.86	921.68	26.00	106.00	4.00	75.45	640.99	1.36
KSPM067	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314101.97	4158904.1	921.68	26.00	106.00	4.00	75.45	640.99	1.36
KSPM068	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314099.3	4158906.86	921.69	26.00	106.00	4.00	75.45	640.99	1.36
KSPM069	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314099.3	4158904.1	921.68	26.00	106.00	4.00	75.45	640.99	1.36
KSPM070	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314096.69	4158906.86	921.69	26.00	106.00	4.00	75.45	640.99	1.36
KSPM071	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314096.66	4158904.15	921.68	26.00	106.00	4.00	75.45	640.99	1.36
KSPM072	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314259.73	4158904.11	921.64	26.00	106.00	4.00	75.45	640.99	1.36
KSPM073	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314259.72	4158906.86	921.65	26.00	106.00	4.00	75.45	640.99	1.36
KSPM074	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314262.37	4158904.08	921.64	26.00	106.00	4.00	75.45	640.99	1.36
KSPM075	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314262.38	4158906.86	921.65	26.00	106.00	4.00	75.45	640.99	1.36
KSPM076	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314265.01	4158904.1	921.64	26.00	106.00	4.00	75.45	640.99	1.36
KSPM077	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314265.02	4158906.83	921.65	26.00	106.00	4.00	75.45	640.99	1.36
KSPM078	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314259.7	4158946.95	921.78	26.00	106.00	4.00	75.45	640.99	1.36
KSPM079	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314259.7	4158949.72	921.78	26.00	106.00	4.00	75.45	640.99	1.36
KSPM080	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314262.38	4158946.94	921.77	26.00	106.00	4.00	75.45	640.99	1.36
KSPM081	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314262.38	4158949.71	921.78	26.00	106.00	4.00	75.45	640.99	1.36
KSPM082	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314265.02	4158946.95	921.77	26.00	106.00	4.00	75.45	640.99	1.36
KSPM083	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314265	4158949.71	921.78	26.00	106.00	4.00	75.45	640.99	1.36
KSPM084	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314187.78	4158869.94	921.59	26.00	15.00	0.83	44.33	500.00	0.02
KSPM085	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314160	4158930	921.76	26.00	15.00	0.67	149.16	936.00	0.00
KSPM086	0670173	MID-KANSAS ELECTRIC COMPANY, LLC	14	314150	4158834	921.52	26.00	15.00	0.42	145.33	986.00	0.06

**As a preliminary estimate, ABBK used the NAAQS inventories for the increment analysis; however, impacts from the Seaboard Foods, LLC feed mill located immediately adjacent to and south of the ABBK facility resulted in a PSD increment violation when included in the increment analysis for the 24-hour PM_{10} averaging period. Per an email dated December 12, 2009, KDHE reviewed the Seaboard Foods, LLC facility files and indicated that the facility was not a PM_{10} increment consuming source and that it could be excluded from the increment analysis for the 24-hour PM_{10} averaging period. No other nearby source evaluations were

APPENDIX E
REFERENCES

[i] U.S. EPA, *Guideline on Air Quality Models (Revised). Appendix W of 40 CFR. Part 51.* EPA-450/2-78-027R, August 1995.

[ii] U.S. EPA, *Draft New Source Review Workshop Manual. Prevention of Significant Deterioration and Nonattainment Area Permitting.* U.S. EPA, Office of Air Quality Planning and Standards, October 1990.

[iii] KDHE, *Modeling Protocol Guidelines.* KDHE Bureau of Air - Modeling Group, October 2011.

[iv] 40 CFR §52.21(e)(3).