PERMIT-TO-INSTALL APPLICATION
OHIO RIVER CLEAN FUELS FACILITY
VILLAGE OF WELLSVILLE, COLUMBIANA AND JEFFERSON COUNTIES, OHIO

SUBMITTED TO:

OHIO ENVIRONMENTAL PROTECTION AGENCY

SUBMITTED BY:

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INTRODUCTION

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1.0 Project Overview

The purpose of this project is to produce ultra-clean high-quality liquid transportation fuels from coal and biomass. The proposed coal/biomass-to-liquids (CBTL) facility will encompass an area of approximately 275 acres within a property boundary of more than 600 acres. ORCF has selected a site located west of Route 7 and the Ohio River near Wellsville, Columbiana and Jefferson Counties, Ohio. The proposed project site boundary is shown on Figure 1 – Site Location Map. Figure 2 is a proposed plot plan of the entire facility illustrating both the elements of the facility that are the subject of this PTI application as well as other key site elements.

2.0 Project Description

Figure 3 is a block flow diagram of the entire manufacturing process. To simplify the presentation and organization of this application, the facility has been divided into multiple interrelated modules. The facility will integrate multiple industrial processes into a unique system, the first of its kind in the United States of America. The primary industrial processes and their corresponding Standard Industrial Classification (SIC) codes and North American Industrial Classification System (NAICS) codes are:

Industrial Process	SIC Code	NAICS Code
Feedstock (coal and biomass) storage and handling	1221	212111
Gasification (products of coal not elsewhere classified)	2999	324199
Material Handling and Storage (slag and ash)	3295	212399
Syngas Cleaning (Acid Gas Removal and Sulfur Recovery Plant)	2819	325188
Fischer-Tropsch Process (industrial organic chemicals)	2869	325110
Product Upgrade Process (similar to petroleum refining)	2911	324110
Liquid Product Storage and Loading	5171	424710
Electric Power Generation	4911	221112

SIC and NAICS codes are self-selected by industry. There is no government agency responsible for assigning, monitoring, or approving SIC/NAICS codes. Establishments are advised to select a code or codes based on their highest revenue-producing activity. ORCF has selected SIC code 2869 (Industrial Organic Chemicals, Not Elsewhere Classified, [aliphatics]) and the corresponding NAICS code, 325110 (petrochemical manufacturing) to represent the primary industrial activity at the facility.

Each process module is illustrated in Figure 3. The following brief descriptions summarize the air quality permit application modules for the facility. Detailed process descriptions and module-specific flow diagrams are provided in the module-specific permit application sections.

2.1 Feedstock Storage (SIC Code 1221 - Bituminous Coal and Lignite Surface Mining)

Bituminous coal (e.g., Pittsburgh #8) and biomass (saw dust and wood chips only) will be stored in six piles: four for coal, one for biomass, and one for either coal or biomass. The total storage pile area will be approximately 19 acres. Individual piles will be protected from wind erosion by wind screens and the biomass storage area will be roofed. Associated air emissions will include fugitive particulate matter from material handling and wind erosion of storage piles.

2.2 Feedstock Processing (SIC Code 1221 - Bituminous Coal and Lignite Surface Mining)

Coal and biomass will be delivered to the facility by either conveyor or truck. Conveyor transfers will originate from a river-side terminal operated by a separate legal entity. ORCF will operate an enclosed conveyor that will originate at the terminal and deliver feedstock directly to the facility. Coal and biomass will also be delivered by truck to a hopper building at the facility. Fugitive particulate matter emissions will be generated from stacker/reclaimers used to manage the feedstock piles, and from conveyors used to transfer coal and biomass from the hopper building to the storage piles. Point source particulate emissions will be associated with various transfer towers, silos, crushers, and filling vessels. Products of combustion will be generated when fuel is burned to dry the feedstock prior to delivery to the gasifiers.

2.3 Gasification (SIC Code 2999 - Products of Petroleum and Coal, Not Elsewhere Classified)

Six gasifiers will be used to manufacture synthetic gas (syngas) from the feedstock. Syngas consists primarily of carbon monoxide and hydrogen. Gasification involves exposure of feedstock to sub-stoichiometric quantities of oxygen at elevated temperature (about 2,800 °F) and pressure. Syngas generated in the gasifiers is then cleaned in Module 5 – Syngas Cleanup. The gasification process will not be a source of atmospheric emissions under normal operating conditions. During startup and shutdown of the gasifiers and during emergencies or process upsets, it will be necessary to direct gasifier products to the high pressure flare.

2.4 Material Handling (SIC Code 3295 - Minerals and Earths, Ground or Otherwise Treated)

By-products of the gasification process include fly ash and slag. Fly ash will be collected and transferred to one of six storage silos prior to being shipped off-site. Point sources of particulate emissions will include intermediate storage vents and storage silo vents. Fly ash will be pneumatically conveyed from the silos to trucks. Passive bin vent filters will control particulate emissions associated with the transfer of the fly ash from silos.

Dewatered slag from each of the six gasifiers will be conveyed to on-site storage via enclosed conveyors. The slag storage area will be surrounded on three sides by low barriers to contain material and provide partial wind barriers. The slag storage pile area is estimated at about one acre and will be a source of fugitive particulate emissions.

2.5 Syngas Cleanup (SIC Code 2819 - Industrial Inorganic Chemicals, Not Elsewhere Classified)

In this part of the plant, sulfur, mercury, and other impurities that would adversely impact the Fischer-Tropsch and Product Upgrade processes will be removed from the syngas produced by the gasifiers. Syngas processing steps will include:

- filtration (fly ash removal);
- wet scrubbing (removal of residual particulate, soluble alkali salts, hydrochloric acid, and hydrofluoric acid);
- activated carbon adsorption (removal of mercury);
- Rectisol® (or equivalent) acid gas removal (hydrogen sulfide [H_2S], carbonyl sulfide [COS], carbon dioxide [CO_2], and other trace components such as cyanide, ammonia, mercury, and metal carbonyls); and
- Zinc oxide sorption (residual sulfur species removal)

Also included within this module are sulfur recovery systems that will be used to convert sulfur compounds removed from syngas in the acid gas removal process into elemental sulfur. The sulfur recovery system includes thermal oxidization for conversion of reduced sulfur species to sulfur oxides.

2.6 Fischer-Tropsch (SIC Code 2869 - Industrial Organic Chemicals, Not Elsewhere Classified)

In the Fischer-Tropsch process, clean syngas (essentially carbon monoxide and hydrogen), will undergo chemical conversion to paraffinic wax and water in the presence of cobalt catalyst particles. Emission sources associated with this process include catalyst regeneration and other process gases that will be combusted by a low-pressure flare and combustion emissions from small heaters used in the catalyst regeneration process.

2.7 Product Upgrade (SIC Code 2911 - Petroleum Refining)

The paraffinic wax formed by the Fischer-Tropsch reactors will be fractionated into various product streams in the Product Upgrade portion of the facility. Middle distillates will be hydrotreated and then refined via distillation into F-T-diesel and/or F-T-Jet, F-T-naphtha, and liquefied petroleum gas. Air emissions will be produced by combustion of tailgas in three medium and one large process heaters and various equipment flanges, valves and seals that may be sources of fugitive volatile organic compounds.

2.8 Tank Farm (SIC Code 5171 - Petroleum Bulk stations and Terminals)

Products from the Product Upgrade process will be stored in above-ground storage tanks or pressure vessels prior to being shipped offsite. The tank farm will include eight (three-million gallon) fixed-roof tanks to store middle distillates and four (three-million gallon) fixed roof with internal floating-roof tanks to store F-T naphtha and off-specification product. Liquefied petroleum gas (LPG) will be stored in ten nominal 30,000-gallon LPG bullets. Volatile organic compound (VOC) emissions will be produced by the working and breathing losses of the tank farm.

2.9 Product Loading (SIC Code 5171 - Petroleum Bulk stations and Terminals)

Tanker truck loading of product will occur at the loading rack adjacent to the tank farm. The design of the loading rack will provide capacity for four to eight tanker trucks to load F-T diesel and/or F-T naphtha simultaneously. A pipeline connection for product delivery is also anticipated. The F-T naphtha product loading rack will be equipped with a vapor recovery system to capture the majority of fugitive VOC emissions.

2.10 Combined Cycle Plant (SIC Code 4911 - Electric Services)

The power block will be constructed in three phases. The first phase will be a 1,200-MMBtu/hr natural gas and tailgas-fired boiler (Phase 1 Boiler) that will be constructed along with a steam turbine. The Phase 1 Boiler is expected to provide the power requirements for the facility for the initial 18 months of operation. A transitional stage where one combustion turbine generator (CTG) will be brought on line will begin roughly 18 months after the initial startup. The full operational phase when the second CTG will be brought on line will begin about 36 months after initial startup.

The Combined Cycle block will consist of two CTGs, each exhausting to its own Heat Recovery Steam Generator (HRSG) and a process steam turbine generator (PTG). The two 230-MWe (nominal) CTGs will burn tailgas produced within the facility or natural gas. Emissions from the HRSGs will be controlled by selective catalytic reduction and catalytic oxidation.

2.11 Ancillary Systems

2.11.1 Cooling Towers

The waste heat from condensers at the facility will be rejected by two hyperbolic wet cooling towers. Each tower will be 580 feet tall and 239 feet in diameter at the top. Ohio River water will be used for the cooling tower makeup with pre-treatment prior to use. The cooling towers will also provide cooling required for the CBTL processes.

2.11.2 Emergency Generator and Fire Pumps

Emergency power generation for the site will be provided by a single 16-cylinder diesel-powered 2-MWe emergency generator. Two nominal 300-bhp diesel-driven fire pump engines will be used to provide fire protection at the facility.

2.11.3 Roadways and Parking

Plant roads at the Ohio River Clean Fuels facility will allow for delivery of raw materials (coal and biomass), export of products (F-T diesel, F-T naphtha, and LPG), shipping of by-products (sulfur, fly ash, and slag), and employee vehicle traffic and parking. Due to the high volume of traffic, all plant roads will be paved. Haul trucks will be covered and roadways will be watered and swept in accordance with a dust control plan.

3.0 Primary Emission Units and Air Pollution Control Equipment

Table 1 is a list of the primary emission units proposed for the ORCF facility. As detailed in the attached application, ORCF will employ multiple air pollution control technologies and strategies to reduce air emissions from the plant. Specifically, ORCF will limit the emission of particulate matter (PE and PM_{10}), sulfur dioxide, nitrogen dioxide, carbon monoxide, volatile organic compounds, organic compounds, hazardous air pollutants, and air toxics through the use of the following methods:

- Full and partial enclosures as well as wind screens
- Dust suppressants
- Baghouses, fabric filters, and pneumatic conveyance
- Enclosed conveyors and reduced drop heights
- Use of low-sulfur liquid fuels and gaseous fuels
- Good combustion equipment design and combustion practices
- Thermal oxidation
- Ultra Low-NO_x and low- NO_x burners
- Selective Catalytic Reduction
- Catalytic Oxidation
- Leakless/sealless or low-emission valves, compressor seals, and pumps
- VOC Leak Detection and Repair Program
- Fixed roof tanks with internal floating roofs
- Vapor Recovery System
- Drift Eliminators
- Dust Control Program

Specific pollution control technologies associated with the primary emission units are identified in Table 1.

4.0 Emission Inventory Summary

4.1 Criteria Air Pollutants

Detailed information about the air emissions profile for the various processes proposed for the ORCF facility are provided in the individual Emission Inventory sections of the Permit Application. Table 2 summarizes the actual annual criteria pollutant emissions from ORCF.

4.2 Hazardous Air Pollutants

ORCF has the potential to emit non-criteria air pollutants that are regulated as hazardous air pollutants (HAP) under Clean Air Act Section 112. Table 3 summarizes the potential annual HAP emissions from the facility (hourly potential estimates as well as hourly and annual actual emission estimates are provided in the module-specific Supporting Calculations and OPEA Application Forms attachments). In addition to criteria pollutants and hazardous air pollutants, the facility has the potential to emit other air contaminants that may have an adverse impact on human health. These air toxics are defined by Ohio EPA as substances for which a health-based threshold limit value (TLV) has been established by the American Conference of Governmental Industrial Hygienists (ACGIH). Table 3 includes annual estimated emissions of air toxics from ORCF.

5.0 Regulatory Summary

Regulations applicable to the entire facility are discussed below. Module-specific applicable regulations are presented in the respective application modules. The matrix shown in Table 4 summarizes applicable regulations identified for each process module.

5.1 Air Pollution Nuisances Prohibited (OAC 3745-15-07)

The emission into the open air of smoke, ashes, dust, grime, acids, fumes, gases, vapors, odors, or any other substances or combinations of substances, in such a manner as to endanger the health, safety or welfare of the public, or cause unreasonable injury or damage to property, is a public nuisance. It is unlawful for any person to cause, permit or maintain any such public nuisance.

5.2 Stack Height Requirements (OAC 3745-16)

Good engineering practice stack height requirements are established by this rule. According to 3745-16-02, the requirements of the rule apply to all new air contaminant sources, with certain exemptions that do not apply to ORCF. Good engineering practice (GEP) stack height is defined in 3745-16-01 as the greater of either:

- 65 meters measured from the ground-level elevation at the stack base (or building from which the stack arises);
- the height of the nearby structure (i.e., within 5 times the building height or up to 0.8 km) plus the lesser of the height or projected width times 1.5; or
- the height demonstrated by a fluid model or field study approved by the director which ensures that the emissions from the stack do not result in excessive concentrations.

Stack heights for ORCF sources will be evaluated relative to these criteria. Final stack heights will be selected on the basis of director-approved modeling evaluations and engineering considerations.

6.0 BACT Analysis Summary

The primary SIC code for the proposed ORCF CBTL plant will be 2869 - chemical process plant (NAICS Code 325199). As a Chemical Process Plant, the facility is one of the 28 named source categories listed in Section 169 of the Clean Air Act. Therefore, the facility will be considered a major source if the potential to emit for any single pollutant regulated by the Act, including fugitive emissions, exceeds 100 tons per year.

As shown in Table 2, facility-wide actual emissions of all criteria pollutants exceed the 100-ton per year threshold, therefore the facility will be a major stationary source as defined under OAC 3745-31-01(KKK). As such, the facility is subject to New Source Review.

Because Columbiana County, Ohio is in attainment (or is unclassified) for all regulated pollutants, Prevention of Significant Deterioration (PSD) review applies. While a portion of the facility property is within the adjacent Jefferson County, and Jefferson County has been designated a non-attainment area for fine particulate (PM2.5) air emission sources will not be located in Jefferson County. Non-attainment permitting requirements have therefore not been addressed in this application.

In accordance with OAC 3745-21-15(C) a new major stationary source shall apply best available control technology (BACT) for each regulated New Source Review pollutant that the major stationary source has the potential to emit in significant amounts. The significant emission rates, per OAC 3745-21-01(KKKKK) and whether or not they are applicable to ORCF are:

Carbon Monoxide (CO):	100 tpy:	applies
Nitrogen Oxide (NO_x):	40 tpy:	applies
Sulfur Dioxide (SO2):	40 tpy:	applies
Total Suspended Particulate (PE):	25 tpy:	applies
Respirable Particulate (PM10):	15 tpy:	applies
Ozone (VOC):	40 tpy:	applies
Lead (Pb):	0.6 tpy:	does not apply

Fluorides (Fl):	3 tpy:	does not apply
Sulfuric Acid Mist (H2SO4):	7 tpy:	does not apply
Hydrogen Sulfide (H2S):	10 tpy:	applies
Total Reduced Sulfur (TRS):	10 tpy:	applies
Reduced Sulfur Compounds (RSC):	10 tpy:	applies
NMOC from landfills:	50 tpy:	does not apply

Table 5 summarizes the emission units and pollutants that are considered in the various module-specific BACT analyses. A total of thirty-three BACT analyses covering each of the twelve modules and all of the applicable pollutants listed above are included in this application.

6.1 Top-Down BACT Methodology

Best available control technology (BACT) is defined in OAC 3745-31-01(S) as:

"... an emission limitation (including a visible emission standard) based on the maximum degree of reduction for each regulated NSR pollutant which would be emitted from any proposed major stationary source or major modification which the director, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such major stationary source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such air pollutant."

In a memorandum dated December 1, 1987, the U.S. Environmental Protection Agency (EPA) Assistant Administrator for Air and Radiation implemented the "top-down" method for determining BACT. As described in EPA's *Draft New Source Review Workshop Manual* (October 1990), the five steps of a top-down BACT analysis are:

1. **Identify all available control technologies applicable to the proposed source, including Lowest Achievable Emission Rate (LAER) technologies.** Available control options are those air pollution control technologies or techniques with a practical potential for application to the emissions unit and the regulated pollutant under evaluation. Techniques must be commercially available to be considered. Per page B-11 of the *Draft New Source Review Workshop Manual,* "Technologies which have not yet been applied to (or permitted for) full scale operations need not be considered available; an applicant should be able to purchase or construct a process or control device that has already been demonstrated in practice." On page B.18 of the *Draft New Source Review Workshop Manual,* EPA again specifies that a technology must be commercially available to be considered: "A control technique is considered available, within the context presented above, if it has reached the licensing and commercial sales stage of development. A source would not be required to experience extended time delays or resource penalties to allow research to be conducted on a new technique."

2. **Eliminate technically infeasible options.** The technical feasibility of the control options identified in Step 1 is evaluated with respect to the source-specific factors. This demonstration should show, based on physical, chemical, and engineering principles, that technical difficulties would preclude the successful use of the control option on the emission unit under review. Technically infeasible control options then are eliminated from further consideration in the BACT analysis.

3. **Rank remaining control technologies by control effectiveness.** This ranking should include control efficiencies, expected emission rate, expected emissions reduction, energy impacts, environmental impacts, and economic impacts. If the top control alternative is chosen, then cost and other detailed information about other control options need not be provided.

4. **Evaluate the most effective controls and document results, including a case-by-case consideration of energy, environmental, and economic impacts.** If the top control alternative is selected, impacts of unregulated air pollutants or impacts in other media are considered to determine if the selection of an alternative control option can be justified. If the top control option is not selected as BACT, evaluate the next most effective control option.

5. **Select BACT**, which will be the most effective option not rejected in Step 4. Steps 1 through 5 have been completed for PE/PM10, NO_x, CO, VOC, SO_2, and H_2S emissions from each emission source that is subject to the BACT requirements. The details of each BACT analysis are included within the respective application Modules.

6.2 BACT Determinations

A review of recent BACT determinations for projects with emission sources similar to the ORCF project has been conducted. During that review, the permits or permit applications for following facilities were reviewed:

- Gilberton Pilot Plant, PA- Plan Approval (Construction Permit)
- Secure Energy, IL- Construction Permit
- Rentech Energy, IL- Construction Permit
- Medicine Bow, WY- Permit Application
- American Municipal Power, OH- Draft Permit to Install
- Washington PMEC, WA- Permit Application
- Southeast Idaho Energy, ID- Permit Application

Table 6 shows the ORCF processes and identification of similar processes included in the permits/applications reviewed. The specified BACT at the reviewed facilities was similar to the ORCF facility with two noted exceptions for the Southeast Idaho Energy facility.

1.) Material handling sources are enclosed and controlled by a baghouse.
2.) Ultra low- NO_x burners were specified for small process heaters (< 10 MMBtu/hr).

Note that the area where the Idaho facility will be located is classified as attainment for National Ambient Air Quality Standards (NAAQS); however, the area has historically had problems with the PM NAAQS. As a result of these historical problems, PM was deemed a sensitive pollutant and Southeast Idaho Energy decided to employ rigorous control technologies for material handling equipment.

7.0 Air Quality Impacts Summary

A dispersion modeling analysis was performed for this project in accordance with an Ohio EPA-approved modeling protocol. The modeling evaluation demonstrates that the facility will not have an adverse impact on the National Ambient Air Quality Standards. In addition, the Prevention of Significant Deterioration (PSD) evaluation concludes that modeled impacts are below the Class II PSD increment for each of the criteria contaminants, as well as the Ohio acceptable increments. Further detail concerning the modeling results is provided in Appendix A.

8.0 Relationship to ORCF to Potential Feedstock Transloading Facilities

ORCF's proximity to a recently-permitted transloading facility (Buckeye Industrial Mining, Inc., PTI 02-22500 effective 7/3/07) has raised the question of whether or not the two facilities are under common control for purposes of making a single stationary source PSD analysis. ORCF has established that the operations of its potential contractees meet the PSD definition of a "single stationary source" or the identical OAC definition of a "stationary source." ORCF's desire to clarify the separation of its operations from potential contractees is not motivated by a desire to avoid New Source Review applicability. ORCF's PTI application includes all the requisite analyses for PSD pollutants and would not be substantively impacted by the inclusion of potential contractee operations. In addition, ORCF's dispersion modeling analysis has considered the potential impacts of contractee operations and determined the combined emissions to be in compliance with the National Ambient Air Quality Standards. ORCF's desire to properly separate its operations from those of the potential contractees is motivated by the fact that the contractees will be not be under ORCF's control, or under common control, and therefore must be regulated as separate sources.

ORCF's position on this topic was presented to the Ohio EPA's Mr. Ken Djukic in a letter dated May 1, 2008 from Mr. Nick Petricoff, Counsel for ORCF. Mr. Petricoff summarized his findings as follows:

> "In sum, there should be no presumption of common control because the transloading services will be performed on property not owned or controlled by

> ORCF its affiliates or related parties. Further, none of the major indicators of common control apply to the provision of transloading services as described in this letter and US EPA guidance."

Therefore, the feedstock transloading services as currently planned should not be considered a single source under the applicable PSD regulations.

9.0 PTI Application Organization

This PTI application is organized into twelve process groups which comprise the total operations with significant facility air emissions. Based on pre-application meetings with representatives of the Ohio Environmental Protection Agency, Northeast District Office as well as Central Office, it was agreed that organization of this application in separate modules would be beneficial to the review process. The twelve modules in the order presented are:

Module - Description

1 Feedstock Storage
2 Feedstock Processing
3 Gasification
4 Material Handling
5 Syngas Cleanup
6 Fischer-Tropsch and Product Upgrade
7 Tank Farm
8 Product Loading
9 Combined Cycle Plant
10 Cooling Towers
11 Emergency Generator and Fire Pumps
12 Roadways and Parking

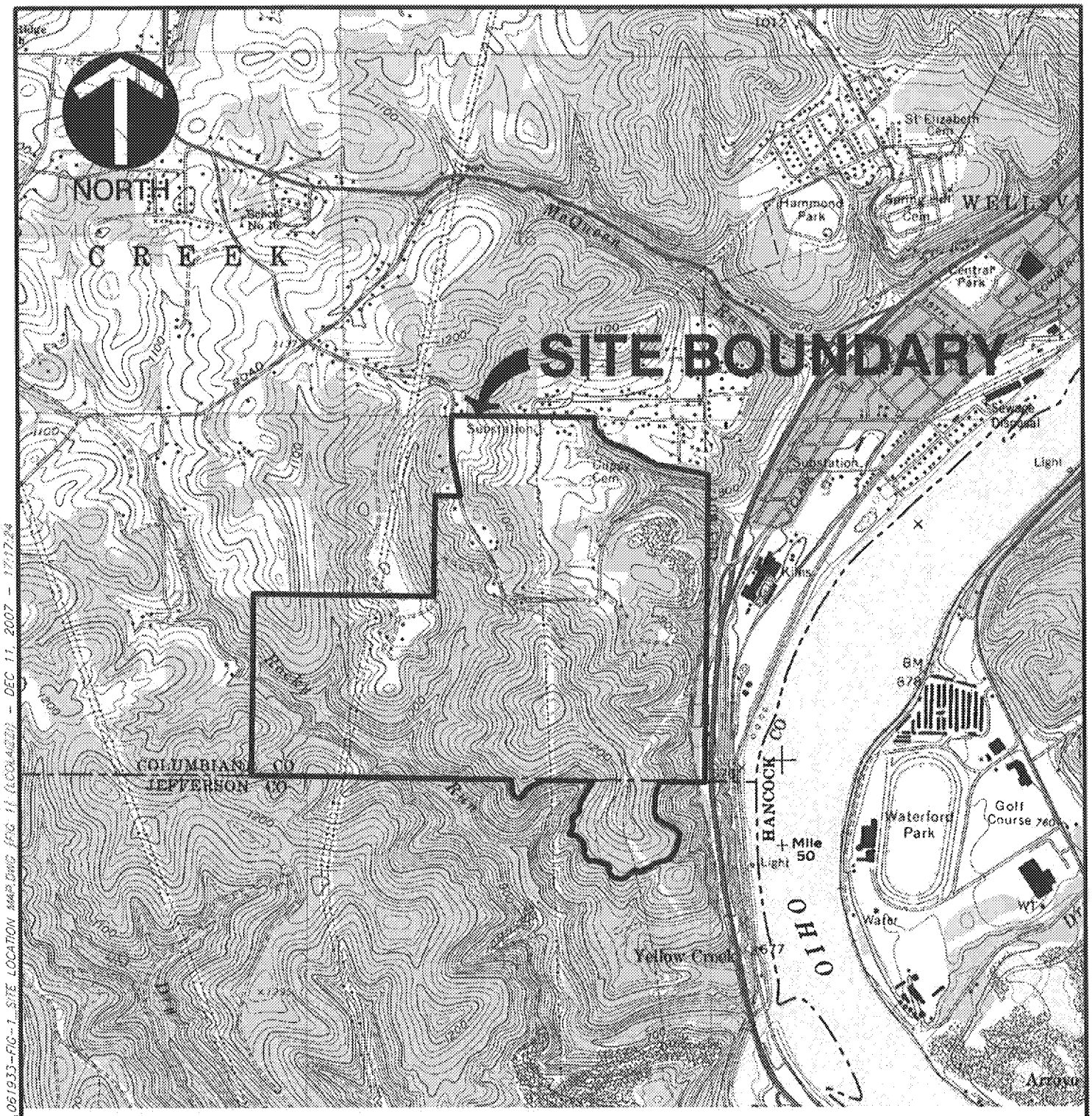
Each module consists of four sections and four attachments:

- Section 1 - Process Description
- Section 2 - Air Emission Inventory
- Section 3 - Source-Specific Applicable Regulations
- Section 4 - BACT Analysis
- Attachment A – Figures
- Attachment B – Supporting Calculations
- Attachment C – Documentation
- Attachment D – OEPA Application Forms

Process descriptions provide module-specific information related to the unique emission sources for the identified process. Block flow diagrams for each module are included as figures in Attachment A for each module. Section 2, the air emissions inventory, describes the module-specific emission sources, pollutants, and techniques used to estimate actual and potential emissions. Detailed supporting calculations are presented in Attachment B for each module. Source-specific applicable regulations are listed and discussed in Section 3 for each module and Section 4 presents the BACT analyses for each affected process. References, RBLC database summary tables, and other unique sources of documentation are provided in Attachment C. The Ohio EPA permit application forms unique to each module are provided in Attachment D. Finally, Appendix A contains the dispersion modeling evaluation for the proposed facility.

ATTACHMENT A

FIGURES



REFERENCE:
USGS 7.5 MIN. TOPOGRAPHIC QUADRANGLE, WELLSVILLE, OHIO – WEST VIRGINIA, DATED 1960. PHOTOREVISED 1992.

THIS DRAWING SUPERSEDES CEC DWG NO.: 061933.0002 SITE LOCATION.DWG, DATED 06/20/07.

SCALE IN FEET
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PROPOSED COAL TO LIQUID FUEL PLANT
COLUMBIANA AND JEFFERSON COUNTY
WELLSVILLE, OHIO

SITE LOCATION MAP

APPROVED: Kem			PROJECT NO: 061-933	FIGURE NO: 1	
DRAWN BY: DWD/LKC	CHKD BY: DJL	DWG SCALE: 1"=2,000'	DATE: 12/17/07		

\\SVR-PITT\CADD\PROJECTS\2006\061-933\DWG\061933-FIG-1_SITE LOCATION MAP.DWG (FIG 1) (LCOLADD) - DEC 11, 2007 - 17:17:24

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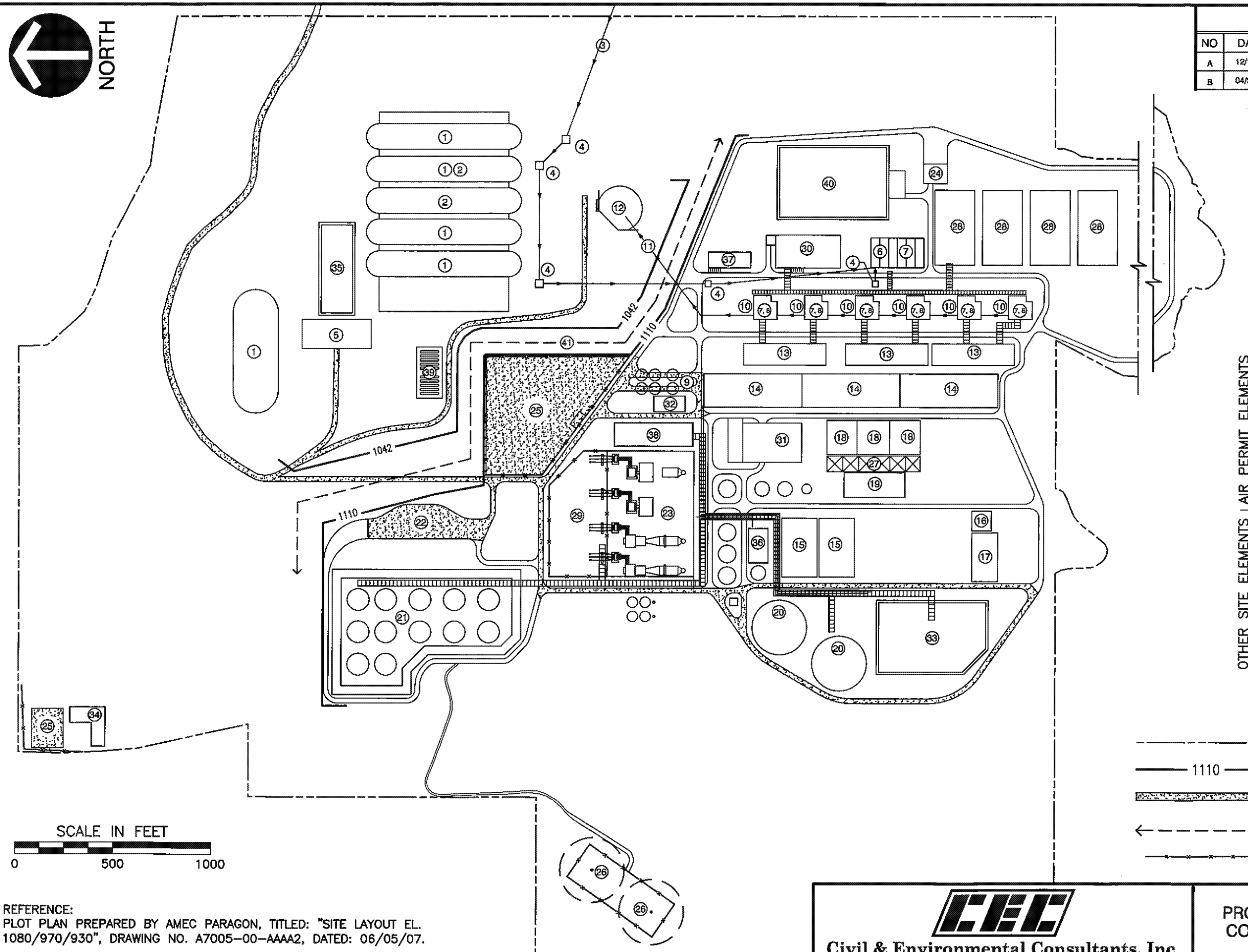

SUBMITTAL & REVISION RECORD

NO	DATE	DESCRIPTION
A	12/17/07	AIR PERMIT APPLICATION
B	04/21/08	REVISED MATERIAL HANDLING FLOW AND CMD LOCATIONS

LEGEND

AIR PERMIT ELEMENTS

1. COAL STORAGE
2. BIOMASS STORAGE
3. CONVEYORS (COAL & BIOMASS)
4. TRANSFER TOWERS
5. COAL & BIOMASS HOPPERS
6. COAL & BIOMASS CRUSHERS
7. COAL & BIOMASS MILLING AND DRYING & FILLING VESSEL VENTS
8. GASIFICATION, SILOS, AND BUNKERS
9. FLY ASH STORAGE AND LOADOUT
10. SLAG DEWATERING SILOS
11. SLAG CONVEYOR
12. SLAG STORAGE
13. CO SHIFT
14. RECTISOL OR EQUIVALENT ACID GAS REMOVAL SYSTEM
15. SRU/TGU
16. SULFUR FORMING
17. SULFUR STORAGE
18. FISCHER–TROPSCH
19. PRODUCT UPGRADE
20. COOLING TOWER
21. TANK FARM
22. PRODUCT LOADING
23. COMBINED CYCLE PLANT
24. FIRE STATION
25. PARKING
26. FLARE
27. AIR COOLERS

OTHER SITE ELEMENTS

28. AIR SEPARATION
29. SWITCHYARD
30. PROCESS WATER TREATMENT
31. SHOP / WAREHOUSE
32. LABORATORY
33. PROCESS POND / SETTLING BASIN
34. ADMINISTRATION BUILDING
35. COAL RUN–OFF POND
36. WATER / WASTEWATER TREATMENT BUILDING
37. CHEMICAL HANDLING STORAGE
38. CONTROL BUILDING
39. LPG BULLETS
40. STORMWATER / WASTEWATER POND
41. TERRAIN WIND BARRIER

PROPERTY BOUNDARY

1110 PROPOSED CONTOUR

ROADWAYS & PARKING AREAS ASSOCIATED WITH PREDICTED FUGITIVE EMISSIONS

TERRAIN WIND BARRIER AREA

FENCING

REFERENCE:
PLOT PLAN PREPARED BY AMEC PARAGON, TITLED: "SITE LAYOUT EL. 1080/970/930", DRAWING NO. A7005–00–AAAA2, DATED: 06/05/07.

DRAWING No. PROP CONTOURS 9–10–07 ALT 2.dwg BY DALLIS DAWSON, DATED 7–5–07.

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COLUMBIANA AND JEFFERSON COUNTY
WELLSVILLE, OHIO

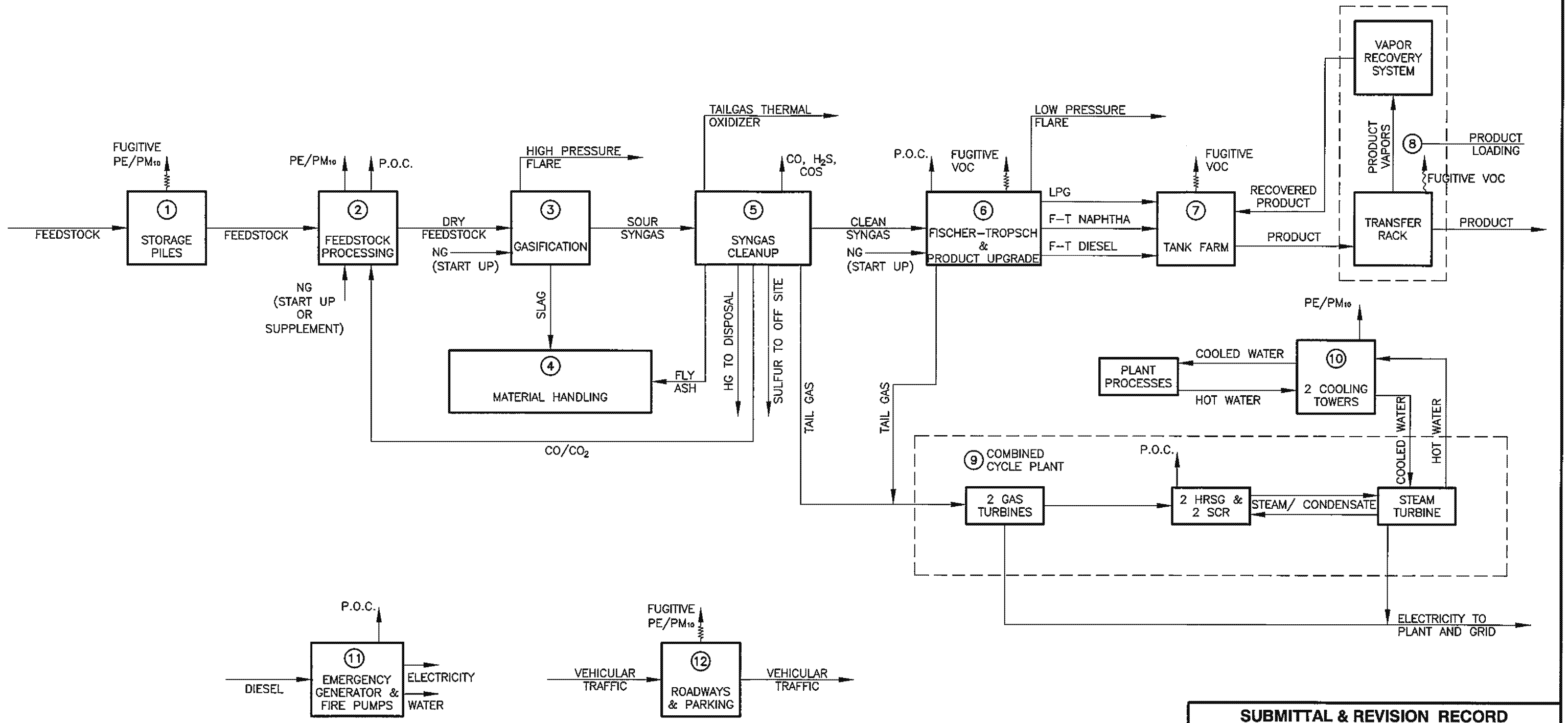
PROPOSED PLOT PLAN
AIR PERMIT APPLICATION

APPROVED:	Kam			PROJECT NO:	061-933.0002
DRAWN BY:	LKC	CHKD BY: DJL	DWG SCALE: 1"=500'	DATE:	11/23/07

FIGURE NO: 2

G:\PROJECTS\2006\061-933\DWG\061933-ENV2-1.DWG {FIG 2-AIR} (KPATRICKUS) - APR 21, 2008 - 10:19:34

EPA-R5-2019-006986_0000087



LEGEND

CO	=	CARBON MONOXIDE	PE	=	PARTICULATE EMISSIONS
COS	=	CARBONYL SULFIDE	P.O.C.	=	PRODUCTS OF COMBUSTION
HRSG	=	HEAT RECOVERY STEAM GENERATOR	PMIO	=	RESPIRABLE PARTICULATE
H_2S	=	HYDROGEN SULFIDE	SCR	=	SELECTIVE-CATALYTIC REDUCTION
NG	=	NATURAL GAS	VOC	=	VOLATILE ORGANIC COMPOUNDS

SUBMITTAL & REVISION RECORD

NO	DATE	DESCRIPTION
A	06/25/07	OHIO EPA DRAFT SUBMISSION, DRAWING: 061-933-SP1.DWG
B	12/17/07	AIR PERMIT APPLICATION

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COLUMBIANA AND JEFFERSON COUNTY
WELLSVILLE, OHIO

BLOCK FLOW DIAGRAM
AIR PERMITTING MODULES

APPROVED:				PROJECT NO: 061-933.0002	FIGURE NO: 3
DRAWN BY: RLS/LKC	CHKD BY: DJL	DWG SCALE: N.T.S.		DATE: 12/11/07	

\\SVR-PITT\CADD\PROJECTS\2006\061-933\DWG\061933-ENV2-2.DWG {FIG 1} (LCOLAIZZI) - DEC 11, 2007 - 15:5:39

ATTACHMENT B

TABLES

Primary Emission Units and Control Technologies

Module	Primary Emission Units	Associated Pollutant(s) and Control Technologies	
1 - Feedstock Storage	Coal Storage Piles with Stacker/Reclaimers	PE/PM10	Installation of three-sided wind screen barriers, enclosed conveyors, reduced drop heights, chemical stabilization/dust suppressants, and/or watering
	Biomass Storage Piles		
2 - Feedstock Processing	Coal & biomass conveyors to transfer towers (5 total)	PE/PM10	Enclosed conveyors and transfer points and transfer towers equipped with baghouse collectors
	Truck Unloading - Coal/Biomass Hopper Building		Totally enclosed unloading hopper building including all transfer points; baghouse dust collector; and totally enclosed exit conveyors.
	Coal Crusher House		Totally enclosed crusher house including all transfer points; baghouse dust collector; and totally enclosed exit conveyors.
	Biomass Crusher House		Totally enclosed crusher house including all transfer points; baghouse dust collector; and totally enclosed exit conveyors.
	Coal Silos 1&2, 3&4, and 5&6		Totally enclosed silos including all transfer points; common baghouse dust collector (one per each pair of silos); and totally enclosed fill and exit conveyors.
	Biomass Silos 1&2		Totally enclosed silos including all transfer points; common baghouse dust collector; and totally enclosed fill and exit conveyors.
	Coal or Biomass Milling and Drying Lines (10 total)	CO	Good Combustion Practices
		PE/PM10	Totally enclosed bunkers, including all transfer points; bunkers and filling vessels equipped with baghouse dust collectors; totally enclosed inlet and exit conveyors to the milling and drying line. Use of Clean Fuels and Good Combustion Practices
		SO_x	Low Sulfur Fuels
		VOC	Good Combustion Practices
		NO_x	Low-NO_x Burners and Flue Gas Recirculation
3 - Gasification	Gasifiers (6) via High Pressure Flare	CO, SOx, PE/PM10 and NOx	Good Design and Good Combustion Practices of gaseous fuels only in flare
		VOC	98% DRE flare for exhausted syngas during startup and shutdown. Flare shall meet 40 CFR 60.18 requirements.
4 - Material Handling	Slag Dewatering Silos (6) and conveyor transfer	PE/PM10	Covered Conveyors, Limited drop heights, high moisture content
	Slag Storage Pile and Loadout to Trucks		Maintain high moisture content of slag, water application, minimize drop heights, covered haul truck loads.
	Fly Ash Handling System		totally enclosed fly ash intermediate storage bins with passive dust collectors, totally enclosed fly ash storage silos equipped with passive dust collectors, maintenance of high mositure content, pneumatic conveying, totally enclosed truck loading, and covering of open-bodied vehicles when transporting ash.
5 - Syngas Cleanup	Syngas Cleanup Trains (3)	CO	Process design limits on CO in exhaust to 406 ppm
		H_2S	Process design limits on H_2S in exhaust to 1 ppm
	Sulfur Recovery Trains (2)	NO_x	Low-NO_x Burners
		SO_x	Use of natural gas in TTO and NSPS Subpart J/Ja emission limits
		H_2S	Thermal Oxidation
6 - Fischer Tropsch & Product Upgrade	F-T Reactors (3) and Fractionator Heater	CO	Good combustion practices
		PE/PM10	Clean Fuels and Good Combustion Practices
		SO_x	Good Design, Good Combustion Practices, proper maintenance
		H_2S	
		VOC	Good Combustion, Design, Operation, Engineering, Clean Fuels
		NO_x	ultra low-NOx burners and common Selective Catalytic Reduction
	F-T Catalyst Vessels Reduction Gas Heater	CO	Use of either natural gas or tailgas as fuel and employ good combustion practices.
		PE/PM10	
		H_2S	
		SO_x	
		VOC	
		NO_x	
	F-T Catalyst Vessels Oxidation Gas Heater	CO	Use of either natural gas or tailgas as fuel and employ good combustion practices.
		PE/PM10	
		H_2S	
		SO_x	
		VOC	
		NO_x	
	F-T Catalyst Vessels Hydrogen Stripping Heater	CO	Use of either natural gas or tailgas as fuel and employ good combustion practices.
		PE/PM10	
		H_2S	
		SO_x	
		VOC	
		NO_x	

Table 1
Primary Emission Units and Control Technologies

Module	Primary Emission Units	Associated Pollutant(s) and Control Technologies	
6 - Fischer Tropsch & Product Upgrade (continued)	F-T Catalyst Rotary Dryer with Nitrogen and Hot Oil Heaters	CO	Use of either natural gas or tailgas as fuel and employ good combustion practices.
		PE/PM10	
		H_2S	
		SO_x	
		VOC	
		NO_x	
	Product Upgrade System	CO	Good combustion practices
		PE/PM10	Clean Fuels and Good Combustion Practices
		SO_x	Good Design, Good Combustion Practices, proper maintenance
		H_2S	
		VOC	Good Combustion, Design, Operation, Engineering, Clean Fuels
		NO_x	ultra low-NOx burners and common Selective Catalytic Reduction
	Fugitive Valve Leaks	VOC	Leakless/Sealless or low-emission pumps, valves, & compressors
	Fugitive Compressor Seal Leaks		
	Fugitive Pump Leaks		
	Fugitive Flange Leaks		LDAR
	F-T Catalyst Regeneration and Process Vents		Use of low-pressure flare burning only natural gas or tailgas
7 - Tank Farm	F-T Diesel Tanks (8)	VOC	Fixed Roof Design (low VP material)
	Off-spec Tank		Fixed Roof with Internal Floating Roof
	F-T Naphtha Tanks (3)		
8 - Product Loading	Loading Rack	VOC	Submerged fill loading to transport vehicles and VOC recovery unit on the dedicated F-T naphtha loading bay
9 - Combined Cycle Plant	Combustion Turbine Generator (CTG) 1&2	NOx	Natural gas or tailgas fuels only, water or steam injection and Selective Catalytic Reduction
		SOx	Tailgas fired in this unit shall contain no more than 0.006 grains H2S per 100 dscf or fire pipeline quality natural gas.
		PE/PM10	Natural gas or tailgas fuels only and good combustion practices.
		CO and VOC	Natural gas or tailgas fuels only and Catalytic Oxidation
	Phase 1 Boiler	CO, SOx, PE/PM10	Natural gas or tailgas fuels only and good combustion practices.
		NOx	Natural gas or tailgas fuels only, low-NOx burners, and Selective Catalytic Reduction
10 - Cooling Towers	Cooling Towers 1&2	PE/PM10	High efficiency drift eliminators achieving 0.0005% drift
11 - Emergency Generator & Fire Pumps	Emergency Generator	CO	Good Combustion Practice, Engine Design, Limited Operation, Ignition Timing Retard, Turbocharger/Aftercooler
		PE/PM10	
		VOC	
		SO_x	Good Combustion Practice, Limited Operation, Low Sulfur Diesel Fuel
		NO_x	Good Combustion Practice, Good Engine Design, Limited Operation, Ignition Timing Retard, Water Spray Injection System
	Emergency Fire Pumps 1&2	CO	Good Combustion Practice, Good Engine Design, Limited Operation, Ignition Timing Retard
		PE/PM10	
		VOC	
		SO_x	Good Combustion Practice, Limited Operation, Low Sulfur Diesel Fuel
		NO_x	Good Combustion Practice, Good Engine Design, Limited Operation, Ignition Timing Retard, Water Spray Injection System
12 - Roadways & Parking	Paved Roadways and Parking Areas	PE/PM10	Reduced speed limits, sweeping, watering, and good housekeeping control measures.

Actual Criteria Pollutant Emissions Summary (Tons per Year)

Module	Emission Unit	Description	CO	NO_x	PE	PM10	SO_x	VOC
1 - Feedstock Storage	F001	Coal Storage			25.7	12.3		
	F002	Biomass Storage			2.7	1.0		
		Module Totals:	**0.0**	**0.0**	**28.4**	**13.3**	**0.0**	**0.0**
2 - Feedstock Processing	F003	Coal & Biomass Hopper Bldg.			0.6	0.6		
	F004 to F008	Transfer Towers (5)			19.5	19.5		
	F009	Coal Crusher House			5.1	5.1		
	F010	Biomass Crusher House			5.1	5.1		
	F011	Coal Silos 1 & 2			3.0	3.0		
	F012	Coal Silos 3 & 4			3.8	3.8		
	F013	Coal Silos 5 & 6			3.8	3.8		
	F014	Biomass Silos 1 & 2			3.8	3.8		
	P001	Coal Milling and Drying Line 1	9.8	5.8	4.8	4.8	1.1	0.6
	P002	Coal Milling and Drying Line 2	9.8	5.8	4.8	4.8	1.1	0.6
	P003	Coal Milling and Drying Line 3	9.8	5.8	4.8	4.8	1.1	0.6
	P004	Coal Milling and Drying Line 4	9.8	5.8	4.8	4.8	1.1	0.6
	P005	Coal Milling and Drying Line 5	9.8	5.8	4.8	4.8	1.1	0.6
	P006	Coal Milling and Drying Line 6	9.8	5.8	4.8	4.8	1.1	0.6
	P007	Coal Milling and Drying Line 7	9.8	5.8	4.8	4.8	1.1	0.6
	P008	Biomass Milling and Drying Line 1	9.8	5.8	4.9	4.9	1.1	0.6
	P009	Biomass Milling and Drying Line 2	9.8	5.8	4.9	4.9	1.1	0.6
	P010	Biomass Milling and Drying Line 3	9.8	5.8	4.9	4.9	1.1	0.6
		Module Totals:	**97.5**	**58.0**	**93.2**	**93.2**	**10.6**	**6.4**
3 - Gasification	P020 to P025	Gasifiers (6) Startup/Shutdown Flaring	65.8	10.1	0.3	0.3	732.3	4.1
		Module Totals:	**65.8**	**10.1**	**0.3**	**0.3**	**732.3**	**4.1**
4 - Material Handling	F015 to F020	Fly Ash Handling Systems (6)			1.2	1.2		
	F021 to F026	Slag Dewatering Silos (6)			22.8	22.8		
	F027	Slag Storage Pile			2.0	1.0		
		Module Totals:	**0.0**	**0.0**	**26.0**	**25.0**	**0.0**	**0.0**
5 - Syngas Cleanup	P011	Sulfur Recovery Train 1	9.6	12.9	0.9	0.9	142.7	0.6
	P012	Sulfur Recovery Train 2	9.6	12.9	0.9	0.9	142.7	0.6
	P026	Syngas Cleanup Train 1	1,351.7					
	P027	Syngas Cleanup Train 2	1,351.7					
	P028	Syngas Cleanup Train 3	1,351.7					
		Module Totals:	**4,074.4**	**25.8**	**1.7**	**1.7**	**285.4**	**1.2**
6 - Fischer Tropsch & Product Upgrade	B002	F-T Catalyst Reduction Gas Heater	4.2	4.9	0.4	0.4	0.0	0.3
	B003	F-T Catalyst Oxidation Gas Heater	4.2	4.9	0.4	0.4	0.0	0.3
	B004	F-T Hydrogen Stripping Heater	4.2	4.9	0.4	0.4	0.0	0.3
	B005	Product Upgrade Heaters (3)	227.3	73.6	20.7	20.7	1.6	14.9
	B006	F-T System Fractionator Heater						
	P029	F-T Catalyst Regen and Process Vents	110.3	131.4	10.0	10.0	0.8	0.1
	P030	F-T Rotary Dryer and Heaters (2)	8.4	9.8	0.8	0.8	0.1	0.6
	P031	Equipment Leaks						1.7
		Module Totals:	**358.6**	**229.5**	**32.7**	**32.7**	**2.6**	**18.2**
7 - Tank Farm	T001 to T008	F-T Diesel Tanks (8)						6.4
	T009 to T011	F-T Naphtha Tanks (3)						2.6
	T012	Off-Spec Internal Floating Roof Tank						0.9
		Module Totals:	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**9.9**
8 - Product Loading	J001	Loading Rack						1.7
		Module Totals:	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.7**
9 - Combined Cycle Plant	B001	Phase 1 Boiler[1]	157.6	530.0	81.9	81.9	8.9	57.1
	P018	Combined Cycle Plant 1[2]	121.6	255.1	80.3	80.3	91.1	116.6
	P019	Combined Cycle Plant 2[2]	121.6	255.1	80.3	80.3	91.1	116.6
		Final Combined Cycle Plant Totals:	**243.1**	**510.3**	**160.5**	**160.5**	**182.2**	**233.1**
10 - Cooling Towers	P013	Cooling Tower 1			10.5	10.5		
	P014	Cooling Tower 2			10.5	10.5		
		Module Totals:			**21.0**	**21.0**		
11 - Emergency Generator & Fire Pumps	P015	Emergency Generator	3.8	6.6	0.2	0.2	0.0	0.4
	P016	Emergency Fire Pump 1	0.4	1.2	0.1	0.1	0.2	0.1
	P017	Emergency Fire Pump 2	0.4	1.2	0.1	0.1	0.2	0.1
		Module Totals:	**4.7**	**9.1**	**0.4**	**0.4**	**0.3**	**0.5**
12 - Roadways & Parking	F028	Paved Roadways and Parking			79.0	15.4		
		Module Totals:			**79.0**	**15.4**		
		FACILITY TOTALS:	**CO**	**NO_x**	**PE**	**PM10**	**SO_x**	**VOC**
			4,844.0	**842.7**	**443.1**	**363.4**	**1,213.4**	**275.0**

Notes:
1) Phase 1 Boiler operation will be discontinued after the first CTG is brought on line.
2) Includes startup/shutdown emissions (tpy): CO: 21.8, NOx: 8.6, PE/PM10: 1.6, SOx: 0.08, VOC: 1.6

Table 3
Potential HAP Emissions Summary (TPY)

Module[1, 2]	2	3	5	5	6	6	6	7	8	9	9	10	11	11		
Emission Unit → / Hazardous Air Pollutant ↓	Feedstock Processing (P001 to P010)	Gasification (P020 to P025)	Sulfur Recovery Trains (P011 & P012)	Syngas Cleanup Trains (P026 to P028)	Process Heaters (B002 to B006 and P030)	F-T Catalyst Regen and Process Vents (P029)	Equipment Leaks (P031)[3]	F-T Naphtha Tanks (T009 to T012)[4]	F-T Naphtha Loading (J001)[5]	Phase 1 Boiler (B001)[6]	Combined Cycle CTGs (P018 & P019)	Cooling Towers (P013 & P014)[7]	Emergency Generator (P015)	Emergency Fire Pumps (P016 & P017)	PHASE 1 TOTAL	PHASE 2 TOTAL
Acetaldehyde											7.68E-01		1.17E-04	8.05E-04	0.001	0.769
Acrolein											1.23E-01		3.65E-05	9.71E-05	0.000	0.123
Antimony Compounds															0.000	0.000
Arsenic Compounds	8.96E-04	5.07E-07	4.44E-05		5.91E-04	2.63E-04				2.96E-03		3.70E-06			0.005	0.002
Benzene	9.41E-03	5.33E-06	4.66E-04		6.20E-03	2.76E-03				3.10E-02	2.30E-01		3.60E-03	9.80E-04	0.054	0.253
Beryllium Compounds	5.38E-05	3.04E-08	2.66E-06		3.54E-05	1.58E-05				1.77E-04					0.000	0.000
1,3-Butadiene											8.26E-03			4.11E-05	0.000	0.008
Cadmium Compounds	4.93E-03	2.79E-06	2.44E-04		3.25E-03	1.45E-03				1.63E-02					0.026	0.010
Carbonyl Sulfide		**3.40E-01**		**8.57E+00**											8.910	8.910
Chromium Compounds	6.27E-03	3.55E-06	3.11E-04		4.13E-03	1.84E-03				2.07E-02		5.80E-06			0.033	0.013
Cobalt Compounds	3.76E-04	2.13E-07	1.86E-05		2.48E-04	1.10E-04				1.24E-03					0.002	0.001
Dichlorobenzene	5.38E-03	3.04E-06	2.66E-04		3.54E-03	1.58E-03				1.77E-02					0.028	0.011
Ethyl benzene											6.14E-01				0.000	0.614
Formaldehyde	3.36E-01	1.90E-04	1.66E-02		2.21E-01	9.85E-02				1.11E+00	1.36E+01		3.66E-04	1.24E-03	1.784	14.314
Hexane	**8.07E+00**	4.56E-03	3.99E-01		5.31E+00	2.36E+00	2.00E-01	5.00E-01	3.60E-01	2.66E+01					43.804	17.204
Lead Compounds	2.24E-03	1.27E-06	1.11E-04		1.52E-03	6.57E-04						4.22E-06			0.005	0.005
Manganese Compounds	1.70E-03	9.64E-07	8.43E-05		1.12E-03	4.99E-04				5.62E-03		8.96E-04			0.010	0.004
Mercury Compounds	1.16E-03	6.59E-07	5.77E-05		7.68E-04	3.42E-04				3.84E-03	1.37E-02	2.10E-08			0.006	0.016
Methyl Chloride															0.000	0.000
Naphthalene	2.73E-03	1.55E-06	1.35E-04		1.80E-03	8.01E-04				9.02E-03	2.50E-02			8.90E-05	0.015	0.031
Nickel Compounds	9.41E-03	5.33E-06	4.66E-04		6.20E-03	2.76E-03				3.10E-02		3.06E-05			0.050	0.019
POM/PAH	3.94E-04	2.23E-07	1.95E-05		2.60E-04	1.16E-04				1.30E-03	4.22E-02		9.81E-04	3.52E-05	0.003	0.044
Propylene Oxide											5.58E-01				0.000	0.558
Selenium Compounds	1.08E-04	6.09E-08	5.33E-06		7.09E-05	3.15E-05				3.55E-04		9.38E-06			0.001	0.000
Toluene	1.52E-02	8.62E-06	7.55E-04		1.00E-02	4.47E-03				5.03E-02	2.50E+00		1.30E-03	4.29E-04	0.082	2.532
Xylenes											1.23E+00		8.95E-04	2.99E-04	0.001	1.231
TOTAL HAP	8.466	0.345	0.419	8.570	5.571	2.476	0.200	0.500	0.360	27.902	19.752	0.001	0.007	0.004	**54.820**	**46.671**
Air Toxics																
Ammonia		0.01								224	224				224.010	224.010
Hydrogen sulfide		1.8	10.5	12											24.300	24.300

Notes:
1) There are no HAP emissions associated with Modules 1, 4, & 12.
2) Bold values indicate the highest HAP for each Module.
3) Module 6 equipment leak estimate includes BACT controls for VOC emissions.
4) Module 7 F-T naphtha tanks are subject to 40 CFR 63, Subpart EEEE and therefore reflect the use of federally-enforceable controls (internal floating roof tanks).
5) Module 8 (loading rack) is subject to 40 CFR 63, Subpart EEEE and therefore reflect the use of federally-enforceable controls (vapor recovery system).
6) Phase 1 Boiler HAP emissions will not be produced after Phase 1 (Phase 2 CTGs reflect long-term operations).
7) Module 10 emission estimates reflect use of high-efficiency drift eliminators.

EPA-R5-2019-006986_0000087

Table 4
Summary of Applicable Regulations by Application Module

Applicable Regulations	Topic	Module 1	2	3	4	5	6	7	8	9	10	11	12
	Ohio Administrative Code												
3745-15-07	Air Pollution Nuisances	X	X	X	X	X	X	X	X	X	X	X	X
3745-16	Stack Heights	X	X	X	X	X	X	X	X	X			
3745-17-07	Visible Particulate	X	X	X	X	X	X			X	X	X	X
3745-17-08	Fugitive Dust	X	X		X								X
3745-17-10	Particulate from Fuel Burning Equipment		X				X			X			
3745-17-11	Particulate from Industrial Processes		X		X					X	X	X	
3745-18-06	Sulfur Dioxide Emission Limits									X		X	
3745-21-07	Emissions of Organic Materials			X			X	X	X				
3745-21-08	Carbon Monoxide Emissions			X			X						
3745-21-09(L)	Control of VOCs							X					
3745-31	PTI for New Sources	X	X	X	X	X	X	X	X	X	X	X	X
3745-31-05	Visible Particulate									X			X
3745-31-28	Case-by-Case MACT									X			
3745-108	Mercury Rule									X			
3745-109	CAIR Rule									X			
3745-110	NOx RACT									X			
	National Emission Standards for Hazardous Air Pollutants												
40 CFR 63 Subpart CC	HAP from Petroleum Refineries					X	X						
40 CFR 63 Subpart H	Equipment Leaks								X				
40 CFR 63 Subpart SS	Closed Vent Systems, etc.								X				
40 CFR 63 Subpart TT	Equipment Leaks - Control Level 1								X				
40 CFR 63 Subpart UU	Equipment Leaks - Control Level 2								X				
40 CFR 63 Subpart UUU	Sulfur Recovery Units					X							
40 CFR 63 Subpart WW	Storage Vessels - Control Level 2							X					
40 CFR 63 Subpart ZZZZ	Stationary Reciprocating IC Engines											X	
40 CFR 63 Subpart EEEE	Organic Liquids Distribution							X	X				
	New Source Performance Standards												
40 CFR 60 Subpart Da	Electric Utility Steam Generating Units									X			
40 CFR 60 Subpart Db	Steam Generating Units									X			
40 CFR 60 Subpart GGGa	VOC Equipment Leaks in Petroleum Refineries						X						
40 CFR 60 Subpart IIII	Stationary Compression Ignition IC Engines											X	
40 CFR 60 Subpart Ja	Petroleum Refineries		X				X						
40 CFR 60 Subpart Kb	Volatile Organic Liquid Storage							X					
40 CFR 60 Subpart Y	Coal Prep Plants		X										
	Other Clean Air Act Sections												
40 CFR 68 Subpart G	Risk Management Plan						X			X			
40 CFR 89.112 & 113	Non-Fire Pump Engine Stds.											X	
Acid Rain Program										X			
CAMR (pending reinstatement)										X			
NOx CAIR Rule										X			

Regulation Applies = X

Table 5
Summary of BACT Applicability by Permit Module

Module	BACT Analysis Required?					
	PE/ PM10	CO	NO_x	VOC	SO_2	H_2S[a]
1. Feedstock Storage	YES	NO	NO	NO	NO	NO
2. Feedstock Processing	YES	YES	YES	YES	YES	NO
3. Gasification	YES	YES	YES	YES	YES	NO
4. Material Handling	YES	NO	NO	NO	NO	NO
5. Syngas Cleanup	NO	YES	NO	NO	NO	YES
6. Fischer-Tropsch and Product Upgrade	YES	YES	YES	YES	YES	NO
7. Tank Farm	NO	NO	NO	YES	NO	NO
8. Product Loading	NO	NO	NO	YES	NO	NO
9. Combined Cycle Plant	YES	YES	YES	YES	YES	NO
10. Cooling Towers	YES	NO	NO	NO	NO	NO
11. Emergency Generator & Pumps	YES	YES	YES	YES	YES	NO
12. Roadways and Parking	YES	NO	NO	NO	NO	NO

a) H_2S and other reduced sulfur compounds are addressed in the applicable BACT analysis.

Table 6

Summary of BACT Comparisons by Application Module

ORCF Process	Gilberton Pilot Plan	Secure Energy	Rentech Energy	Medicine Bow	AMP	Washington PMEC	Southeast Idaho
Feedstock Storage[1]					X		X
Feedstock Processing	X	X	X	X	X	X	X
Gasification	X	X	X	X		X	X
Material Handling		X	X		X		
Syngas Cleanup	X	X	X	X			X
FT & Product Upgrade	X		X	X			X
Tank Farm	X		X	X		X	X
Product Loading	X		X				
Combined Cycle Plant[2]	X		X	X	X	X	X
Cooling Towers	X	X	X		X	X	X
Emergency engines	X			X	X	X	X
Roadways & Parking	X	X	X		X		

Notes:

1.) Feedstock storage was combined with feedstock processing at several facilities.

2.) Several facilities did not have a combined cycle plant but had combustion equipment (turbine or boiler) of similar size to the ORCF combined cycle plant.

ATTACHMENT C

OEPA GENERAL COVER SHEET

Ohio Environmental Protection Agency
Lazarus Government Center
P.O. Box 1049
Columbus, Ohio 43216-1049

For EPA Use Only
Application
Or ID Number _____

Date Received _____

Check No. _____ Check ID No. _____

Check Date _____ Amount _____

Revenue ID No. _____

- ☐ DAPC
- ☐ DDAGW
- ☐ DHWM
- ☐ DSW
- ☐ DSIWM
- ☐ RTK
- ☐ DEFA
- ☐ TRI
- ☐ _____

GENERAL COVER SHEET

1. Facility Information

Core Place ID	
Legal Name	OHIO RIVER CLEAN FUELS, LLC
Alternate Name	
Street Address	SIXTEEN SCHOOL ROAD
City/State/Zip	WELLSVILLE, OHIO
Location	SOUTHEASTERN BORDER OF COLUMBIANA COUNTY SOUTHWEST OF WELLSVILLE
County	COLUMBIANA (PORTIONS IN JEFFERSON)

2. Owner Information

Owner Name	OHIO RIVER CLEAN FUELS, LLC
Effective Date	NEW FACILITY
Mailing Address	800 NE TENNEY ROAD
	SUITE 110, #104
City/State/Zip	VANCOUVER, WASHINGTON 98665
Phone Number	360-546-2342, EXT 317
Billing Address	SAME
City/State/Zip	

3. Operator Information

Operator Name	OHIO RIVER CLEAN FUELS, LLC
Effective Date	NEW FACILITY
Mailing Address	SAME AS OWNER
City/State/Zip	
Phone Number	360-546-2342, EXT. 317
Billing Address	SAME AS OWNER
City/State/Zip	

4. Division/Program Specific Secondary ID Numbers (for existing facilities only)

DAPC	Facility ID	NA
DAPC	TRI ID	NA
DDAGW	PWS ID	NA
DHWM	RCRA ID	NA
DSW	NPDES ID	NA
DSIWM	Facility ID	NA
RTK	RTK ID	NA
Other	(_____)	

5. Supplemental Information

Primary SIC Code	2869 - INDUSTRIAL CHEMICALS
Primary NAICS Code	325110
D&B D-U-N-S No.	TBD
Lat./Long.	40 DEG 35 MIN 27.56 SEC N LAT / 80 DEG 40 MIN 21.11 SEC W LONG
Point Description	FACILITY CENTROID

Section I - General Permit To Install (PTI) Application Information

This section should be filled out for each permit to install (PTI) application. A PTI is required for all air contaminant sources (emissions units) installed or modified after 1/1/74. See the line by line PTI instructions for additional information.

1. State the reason(s) for the application.

☒ new installation (for which construction has not yet begun)
☐ initial application for an air contaminant source already installed or under construction
☐ modification to an existing air contaminant source/facility - List previous PTI number(s) for air contaminant sources included in this application, if applicable, and describe requested modification (attach an additional sheet, if necessary):

_____

☐ reconstruction of an existing air contaminant source/facility. Please explain:
_____
☐ startup of an air contaminant source/facility that has been shutdown for _____ years.
☐ other, please explain: _____

2. Please check the appropriate boxes below. If you check exempt/not subject, explain why.

☐ not affected ☒ subject to Subparts: Da, Db, Ja, Y, GGGa, Kb, IIII (SEE NOTES BELOW) **New Source Performance Standards (NSPS)**
☐ exempt/not subject - explain below
☐ unknown

New Source Performance Standards are listed under 40 CFR 60 - Standards of Performance for New Stationary Sources.

☒ not affected ☐ subject to Subpart: _____ **National Emission Standards for Hazardous Air Pollutants (NESHAPS)**
☐ exempt/not subject - explain below
☐ unknown

National Emissions Standards for Hazardous Air Pollutants are listed under 40 CFR 61. (These include asbestos, benzene, beryllium, mercury, and vinyl chloride).

☐ not affected ☒ subject to Subparts: CC, H, TT, UU, UUU, EEEE, WW, SS, ZZZZ (SEE NOTES BELOW) **Maximum Achievable Control Technology (MACT)**
☐ exempt/not subject - explain below
☐ unknown

The Maximum Achievable Control Technology standards are listed under 40 CFR 63 and OAC rule 3745-31-28.

☐ not affected ☒ subject to regulation **Prevention of Significant Deterioration (PSD)**
☐ unknown

These rules are found under OAC rule 3745-31-10 through OAC rule 3745-31-20.

☒ not affected ☐ subject to regulation **Non-Attainment New Source Review**
☐ unknown

These rules are found under OAC rule 3745-31-21 through OAC rule 3745-31-27.

Please describe any of the above applicable rules and/or exemptions. Identify whether they apply to the entire facility and/or to specific air contaminant sources included in this PTI application (attach additional page if necessary):

Section I - General Permit To Install (PTI) Application Information

THIS APPLICATION IS DIVIDED INTO TWELVE MODULES. FACILITY-WIDE EMISSIONS EXCEED MAJOR SOURCE THRESHOLDS FOR ALL CRITERIA POLLUTANTS, THEREFORE NSR APPLIES. BECAUSE COLUMBIANA COUNTY IS IN ATTAINMENT FOR ALL CRITERIA POLLUTANTS, PSD REVIEW APPLIES TO POLLUTANTS THAT EXCEED SIGNIFICANT EMISSION RATES (SER). ALL CRITERIA POLLUTANTS EXCEED THE SER, THEREFORE PSD REVIEW APPLIES TO EACH EMISSION UNIT. NO NESHAPS APPLY TO EMISSIONS FROM THE FACILITY. NSPS AND MACT DO NOT APPLY TO SOURCES IN THE CERTAIN MODULES AS SUMMARIZED BELOW:

APPLICATION MODULE	APPLICABLE NSPS SUBPART	APPLICABLE MACT SUBPART
2	Ja, Y	
5		CC, UUU
6	Ja, GGGa	CC
7	Kb	EEEE, WW
8		H, TT, UU, EEEE, SS
9	Da, Db	
11	IIII	ZZZZ

Section I - General Permit To Install (PTI) Application Information

3. Do you qualify for permit to install registration status as determined by Ohio Administrative Code(OAC) rule 3745-31-05?

☐ yes
☒ no

If yes, are you requesting registration status per OAC rule 3745-31-05?

☐ yes
☒ no

4. Is any information included in this application being claimed as a trade secret per Ohio Revised Code (ORC) 3704.08?

WARNING: IF YOU ARE SENDING YOUR PTI APPLICATION ELECTRONICALLY, E-MAIL IS NOT A SECURE METHOD TO TRANSFER DATA. IF YOUR PTI APPLICATION CONTAINS CONFIDENTIAL INFORMATION YOU MAY NOT WANT TO SEND IT USING E-MAIL. OHIO EPA IS NOT RESPONSIBLE FOR ANY BREACH OF SECURITY THAT MAY OCCUR DURING ELECTRONIC TRANSMISSION OF THE E-MAIL.

☐ yes (A "non-confidential" version must be submitted in order for this application to be deemed complete.)
☒ no

5. Person to contact for this application:

STEPHAN M. DOPUCH — Name
VICE PRESIDENT — Title

800 NE TENNEY ROAD, SUITE 110, #104, VANCOUVER, WA 98665
Address (Street, City/Township, State and Zip Code)

(360) 546-2342 x317 — Phone
(___) ___-____ — Fax
SDOPUCH@BAARDENERGY.COM — E-mail

6. Authorized Signature: Under OAC rule 3745-31-04, this signature shall constitute personal affirmation that all statements or assertions of fact made in the application are true and complete, comply fully with applicable state requirements, and shall subject the signatory to liability under applicable state laws forbidding false or misleading statements.

Stephan M. Dopuch — Authorized Signature (for facility)
July 15, 2008 — Date

Vice President — Title

OAC rule 3745-31-04 states that applications for permits to install shall be signed:

(1) In the case of a corporation, by a principal executive officer of at least the level of vice president, or his duly authorized representative, if such representative is responsible for the overall operation of the facility.

(2) In the case of a partnership by a general partner.

Section I - General Permit To Install (PTI) Application Information

OAC rule 3745-31-04 states that applications for permits to install shall be signed:

(1) In the case of a corporation, by a principal executive officer of at least the level of vice president, or his duly authorized representative, if such representative is responsible for the overall operation of the facility.

(2) In the case of a partnership by a general partner.

(3) In the case of sole proprietorship, by the proprietor, and

(4) In the case of a municipal, state, federal or other governmental facility, by the principal executive officer, the ranking elected official, or other duly authorized employee.

NOTE: If submitting this application via e-mail, make sure you rename this file using the required format identified in the PTI instructions after inserting all of the emissions unit and EAC forms that will comprise the completed application. Failure to do so will result in a rejected application. *See the PTI instructions on how to insert the files.*