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## RECENT REGULATORY EXPERIENCE OF LOW-BTU COAL GASIFICATION

Volume 3—Supporting Case Studies

By  
E. Ackerman  
D. Hart  
M. Lethi  
W. Park  
S. Rifkin

February 1980

Work Performed Under Contract No. AC01-79RA20201

The MITRE Corporation  
Metrek Division  
McLean, Virginia

# U. S. DEPARTMENT OF ENERGY

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# Recent Regulatory Experience of Low-Btu Coal Gasification:

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## Volume III: Supporting Case Studies

E. Ackerman  
D. Hart  
M. Lethi  
W. Park  
S. Rifkin

February 1980

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Sponsor: Department of Energy  
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The MITRE Corporation  
Metrek Division  
1820 Dolley Madison Boulevard  
McLean, Virginia 22102

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## ABSTRACT

The MITRE Corporation conducted a five-month study for the Office of Resource Applications in the Department of Energy on the regulatory requirements of low-Btu coal gasification. During this study, MITRE interviewed representatives of five current low-Btu coal gasification projects and regulatory agencies in five states. From these interviews, MITRE has sought the experience of current low-Btu coal gasification users in order to recommend actions to improve the regulatory process.

This report is the third of three volumes. It contains the results of interviews conducted for each of the case studies. Volume I of the report contains the analysis of the case studies and recommendations to potential industrial users of low-Btu coal gasification. Volume 2 contains recommendations to regulatory agencies.

#### ACKNOWLEDGEMENTS

We gratefully acknowledge the guidance of Messrs. Edward Luthy and Charles Olentine of the Office of Resource Applications, Department of Energy, on this project. Mr. Arvid Strom of DOE was most helpful in establishing contact with Glen-Gery and with Acurex-Aerotherm. Mr. Edgar Gray of the DOE Regional Office in Philadelphia, Pennsylvania, assisted us in identifying contacts with the Pennsylvania state agencies.

Finally, we thank Mr. James Broderick of the MITRE Corporation for his contribution to this project.



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## 1.0 PURPOSE OF THE STUDY

The Department of Energy views the use of low-Btu coal gasification as a viable alternative to oil and gas in industrial application. The apprehension of regulatory requirements on the part of the potential users of low-Btu coal gasification is a possible constraint to rapid adoption of the technology. This study, conducted by MITRE and the Department of Energy examines the experience of state regulatory agencies and of current users of low-Btu coal gasification. From this experience, MITRE developed recommendations as to actions that can be taken by potential users or agencies to reduce regulatory delays and conflicts.

Current users whose experience was sought include the following:

- The University of Minnesota (space heating); Duluth, Minnesota
- Pike County Industrial Development Corporation (industrial park); Pikeville, Kentucky
- A manufacturing company in Pennsylvania
- CAN DO, Inc., (Humboldt Industrial Park); Hazleton, Pennsylvania
- Glen-Gery Corporation, (brick manufacturing); York, Pennsylvania

In addition, hypothetical cases were postulated in Texas and Indiana in order to examine the regulatory requirements potentially applicable to low-Btu coal gasification in these two states, which have a strong market potential for the technology.

This document reports the results of each individual case study. It is the third volume of the report. Volume 1 contains recommendations to industrial users, and volume 2 contains recommendations to regulatory agencies.

## 2.0 THE MINNESOTA CASE STUDY

This section documents the results of interviews conducted by the MITRE Corporation during August 1-3, 1979, with representatives of the University of Minnesota, the Minnesota Pollution Control Agency (MPCA), the Minnesota Occupational Safety and Health Administration, and the Duluth City government. During these meetings, MITRE solicited information concerning the regulatory requirements applicable to a low-Btu producer installed in Minnesota, the particular experience of the University of Minnesota in complying with these requirements, and the lessons to be learned from this experience.

Information contained in this paper would not have been obtained without the valuable assistance of the following individuals, who generously gave their time and shared their knowledge and experience:

From the Minnesota Energy Agency:

Arthur Adiarte  
Janice Thompson

From the Minnesota Pollution Control Agency:

Edward Wiik, Division of Air Quality  
Edward Crowley, Division of Air Quality  
Bernard Gallagher, Division of Air Quality  
Randy Burnyeat, Division of Water Quality  
Karen Ryss, Division of Solid Waste  
Clarence Johannes, Office of Environmental Analysis

From the Environmental Quality Board:

Tom Rulland, Manager, Environmental Management Program



From the Occupational Safety and Health Administration (OSHA):  
Henry Baron, Chief Boiler Inspector, Minnesota  
Department of Labor and Industry  
Ivan Russell, Director, OSHA

From the Western Lake Superior Sanitary District:

John Klaers, Manager of Planning

From the City of Duluth:

Toiva E. Oja, City Engineering Division

From the University of Minnesota:

Richard Lewis, Senior Plant Engineer, Physical Plant Dept.

We wish to express our deep appreciation to all the above individuals for their contribution to this project.

## 2.1 Lessons Learned from the Experience of the University of Minnesota

The University of Minnesota experience will not be shared by a coal gasification project started in Minnesota today. Such a project must now meet more stringent requirements. Two years ago, the University was not required to deal with the Environmental Quality Board or to write Environmental Assessment Worksheets. The University did not need to obtain permits from city and regional offices because of their status as a state institution. It was also evident that the University enjoyed advocates among high level staff of the Minnesota Pollution Control Agency (MPCA) during the permitting process. This attention may not be the case for future coal gasification proposals.

Interviews with those involved and analysis of this case did allow MITRE, however, to trace through the requirements and schedule

of the permitting process. The case gave insight into the difficulties involved with the environmental permitting process and the possible improvements to the regulatory process.

The following sections report suggestions from some of the interviewees, and summarize MITRE's analysis of the case and our recommendations.

#### 2.1.1 Suggestions from Interviewees

The University of Minnesota has had no problems with regulatory requirements for its coal gasification project. Representatives of the University attribute this success to the personal attention given the project by senior officials in the Minnesota Pollution Control Agency.

##### Sanitary District Office

The industrial applicant should contact the Sanitary District Office during or prior to preparing the Environmental Assessment Worksheet. This would allow the Sanitary District Office to point out the important waste disposal requirements of the project prior to the state permitting process. The representative from this office also pointed to the need for streamlining approvals at the state level. Based on his experience, a new coal gasifier venture involving water effluent and solid waste permit requirements could expect serious delays. The reason for this delay is the number of actors in the regulation compliance process. He suggested that the state be required to put together a review team with responsibility for

monitoring the entire permitting process and guaranteeing that results are obtained within a predetermined time period.

#### Environmental Quality Board (EQB)

The EQB representative supported the idea of a project manager inside the state government who could monitor and speed the environmental review and licensing process. At the same time, he could not see how this individual could reduce delays if the agency involved was adamant about their need for time to resolve questions. He reiterated that in an agency coordination responsibility, there are no enforcement measures available.

#### 2.1.2 Summary of Observations and Recommendations

Based on observations of the case of the University of Minnesota, three factors seem to influence the permitting process.

In decreasing order of importance these are:

- People
- Politics
- Organization.

A permit applicant must deal with a number of people in different agencies. No single individual has overall responsibility for the continuity and timeliness with which applications are processed. Delays may result from lack of attention as well as too much attention accorded to an application. For this reason, interviewees at the University of Minnesota were eager to maintain a close personal contact with regulatory agencies. This contact enhances the process.

The State Planning Agency reported that the "one-stop" Master Application Process has not yet been effective. The University of Minnesota and other applicants apparently are concerned that under the one-stop process, they lose the ability to expedite the application at each permitting step.

The larger the number of agencies involved, the greater the potential for conflict over jurisdiction. Although this has not been a problem in this particular case, the risk of conflict does exist.

Political conditions will definitely affect the permitting process. If environmental control is an intense political issue, the permitting agencies will be reluctant to grant permits without public hearings. Delays are a technique for exerting and responding to political influence.

The Minnesota state regulatory agencies are still relatively new. With any new organization, there are substantial adjustment problems relative to obtaining a smooth and efficient organization. There are staffing problems, lack of training and, most importantly, lack of experience on the part of many of the agency's staff. New problems often require extra time to handle; whereas, these same problems could possibly become routine matters when more experience is gained.

This latter organizational problem will be solved in time, particularly when there is evidence of a genuine concern about delays

in the permitting process, and when thought is given to methods for reducing these delays.

Clearly, the most important factors that could impede the process of installing coal gasification units in Minnesota are the pollution regulations and the potential difficulties with Environmental Impact Statements. Because of the multiple paths possible in most all of the permitting procedures, the industrial developer faces uncertainty in estimating the time and effort required to get his application approved.

The following statements summarize MITRE recommendations for improving the permitting process to accelerate the adoption of coal gasification technology in the state of Minnesota. The statements are a synthesis of both the comments heard during our Minnesota interviews and our own understanding of the situation.

1. Establish uniform and consistent procedures for obtaining needed permits.

The difficulty in the permitting process seems to be not so much the complexity, but the uncertainty of what needs to be done and in what time frame. The required data for each permit should be carefully set out so that the proposer can complete and submit an application with the assurance that an agency will not be calling back for more data to be able to complete their assessment. The time limitations for each phase of the permitting process, both minimum and maximum, should be published with a guarantee to the applicant that these timelines will be met.

2. Establish "drop-dead" clauses in the laws and regulations controlling the permitting process.

These clauses would provide the legal framework for guaranteeing action on a permit application within a predefined time period. The intent of the clause is that the agency must arrive at a justifiable decision on the application within a given time period or, if not, the applicant automatically obtains an approval for the proposed facility.

This type of clause would require the agencies to set priorities and to establish the sequence for reviewing permit applications.

3. Assign a government sponsor to each application. This sponsor should be responsible for monitoring the progress of the permit application as it proceeds through the approval process.

Hopefully, with the proper level of authority given to this office or individual, the timeliness of the permitting process could be enhanced. An individual who knows the structure, workings, politics, and individuals involved in the permitting process could very likely exert a positive influence in expediting the process.

4. Encourage applicants for new industrial coal gasification facilities to contact state environmental regulatory offices early in the proposal planning stages.

The early contact and communication between applicants and state regulatory officials will serve three good purposes. It will first assist the applicant in identifying potential problems in planning for the new facility. Also, it will identify data requirements (air modeling, etc...) early in the planning process. Finally, the

discussions alert the regulatory offices of the type of project being proposed and give them adequate time to establish the structure for the review before being confronted with the formal application.

The following sections of this paper describe in greater detail the background of the University of Minnesota project, its regulatory setting, and the regulatory requirements with which it must deal.

## 2.2 Background

The University of Minnesota responded to an Energy Research and Development Administration Program Opportunity Notice in 1976 and proposed a coal gasification plan for its Duluth campus. The University had been notified that natural gas supplies at its Duluth campus would be curtailed beginning in 1975, and terminated altogether in 1978. Both supply and price of the alternative source of energy for the Duluth campus, imported Canadian oil, were considered highly uncertain. Since the heating plant at the Duluth campus consists of three oil/natural gas-fired boilers, the addition of one 10' diameter two-stage fixed bed gas producer was seen as a way of converting the Duluth facility to coal without having to replace the boilers.

The proposal by the University was approved for funding by the Department of Energy (DOE). Operations started in September, 1979.

The selected gasifier is a 10' diameter two-stage fixed bed Stoic design manufactured by the Foster Wheeler Energy Corporation. The coal feed rate is 6,000 pounds/hour. The original coal used is low-sulfur Wyoming Elkol coal. The gasifier will produce gas for

two steam boilers for heating the Duluth campus of the University of Minnesota. The maximum hot gas output is 54.73 million Btu/hour. At full load, the gas cleanup system separates out approximately 3.06 million Btu/hour of oil and tar which the University plans to use as a fuel for a third oil/gas fired package boiler. The University of Minnesota felt that it can provide 100% of the heating plant's requirements with the gas and tar/oil produced from the coal gasification process.

The gasification process is expected to require 500 gallons of water per hour to be supplied by the municipal system. Water is recirculated and no liquid waste discharge is expected. Coal and ash storage areas are covered and no leaching is expected. Air emissions are expected to be below limits set by the regulations. Not only will low sulfur coal be used, about 50 percent of the sulfur is expected to remain with the ash as pyrite sulfur. Particulate emissions will be below the limits of state regulations.

Coal ash and solids from the tar/oil storage tank will be disposed of in a landfill or utilized for cinder block manufacturing.

### 2.3 The Regulatory Setting

Figure 2-1 summarizes the series of events that will occur in the preconstruction, construction, and initial operating phases of a new coal gasification facility built in the city of Duluth, Minnesota. The figure also identifies the regulatory agencies involved.



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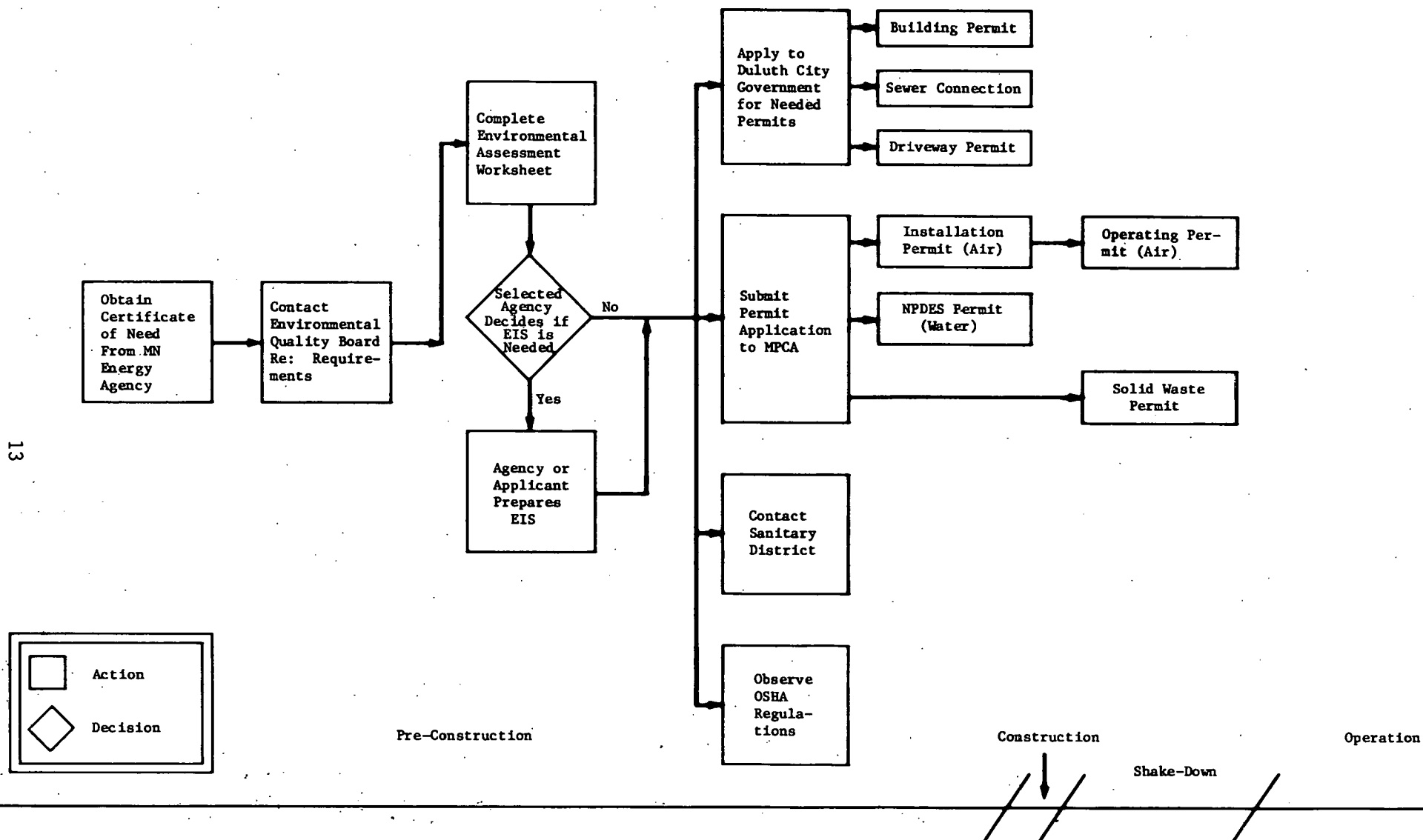


FIGURE 2-1  
OVERVIEW OF MINNESOTA PERMITTING SCHEDULE

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Each of the steps required in this process is described, in detail, in the following section of the report.

This section discusses briefly the agencies involved and their role in the coal gasification project in Minnesota. These agencies were contacted by MITRE for this study. Exceptions to the experience of the University of Minnesota are noted.

#### 2.3.1 Minnesota Energy Agency

This agency issues a Certificate of Need for energy facilities of more than 500 million Btu/hour capacity. The producers installed at the University of Minnesota are below this size and therefore exempted from this requirement. The Certificate of Need, if required, must be obtained before construction can proceed.

#### 2.3.2 Minnesota Pollution Control Agency (MPCA)

The MPCA issues the air, water and solid waste permits which are required before construction of the gasifier. Since Minnesota has been delegated the authority for the air, water, and solid waste programs, the Federal Environmental Protection Agency is not involved.

The Minnesota Pollution Control Agency Board is a committee of laypersons appointed by the governor for four-year terms. The Board makes policy for the MPCA, reviews MPCA permit decisions for all major facilities, and issues variances to the regulations if necessary.

#### 2.3.3 State Planning Agency/Environmental Quality Board

The Minnesota State Planning Agency serves an important regulatory role in the planning and licensing of new energy facilities in

the State. The Environmental Quality Board (EQB), which is supported by this agency, has the responsibility for coordinating the environmental review of a proposed project and the preparation of an environmental impact statement (EIS) when required.

The EQB also administers an environmental permit coordination program. This program was established by the Minnesota "Environmental Coordination Procedures Act" to simplify the environmental permitting process. A permit applicant may complete a Master Application Process and be assured that all required applications are covered. The Permit Coordination Center assembles the forms, transmits the paperwork between the agencies and the applicant, monitors the progress of permit review, arranges a single joint public hearing if needed, and delivers the permits to the applicant in a single package. Stringent time limitations are stipulated for agency review and response. A copy of the brochure on this subject for public distribution is included in Appendix A.

#### 2.3.4 Duluth City Government

The University of Minnesota is a state government organization. This status exempts the University from the jurisdiction of county and municipal governmental regulations, and would not normally apply to an industrial firm. For completeness of this survey, we have therefore identified the local regulations applicable to the installation of an industrial gasifier in the city of Duluth, Minnesota.

A proposer of an industrial coal gasifier has to confer with the city government on:

- Building permits.
- Zoning regulations
- Sewer connections
- Driveway permits.

#### 2.3.5 Western Lake Superior Sanitary District

The Western Lake Superior Sanitary District is a special purpose agency with the responsibility of waste water treatment and solid waste disposal for the area in and around Duluth. It owns and operates waste water treatment plants and a landfill. Its funding is derived from user charges from both of these services. Its rules and regulations are consistent with state water pollution and solid waste regulations.

#### 2.4 Requirements for Compliance with Environmental Regulations in Minnesota

Environmental regulations in Minnesota, as at the Federal level, cover the areas of air, water and solid waste. Permits are required in some cases. These permits are discussed below. The experience of the University of Minnesota is also reported.

Since most industrial low-Btu coal gasifiers will not require a Certificate of Need, the process starts with the Environmental Quality Board.

#### 2.4.1 Requirements for Environmental Impact Statement (EIS)

An industrial developer interested in installing a coal gasifier would initially contact the Environmental Quality Board (EQB) and advise them of the general nature of the proposed project. The EQB then selects a Minnesota state agency which is assigned the responsibility for determining whether an EIS is required. In the case of coal gasification units, this agency would most likely be the Minnesota Pollution Control Agency. The selected agency is required to prepare an environmental assessment worksheet (EAW) on the proposed project. The purpose of the EAW is to provide information on the project so that one can assess rapidly whether an EIS is required. There is no time limitation on the EAW preparation by the agency. However, if the proposer prepares and submits a partial EAW to the Agency,\*\* then the Agency must respond within 30 days with its findings. The Agency's response will be either a Negative Declaration Notice (i.e., no EIS required) or an EIS Preparation Notice. In either case, the notice is published in the EQB Monitor, a weekly bulletin containing all notices of impending actions that may have significant environmental effects. In the case of a Negative Declaration Notice, if no objections are filed within 30 days, the environmental review process is complete and the proposer may initiate applications for construction and operating permits.

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\*See Appendix B for an EAW form.

\*\*Sections I through IV of the EAW in Appendix B.

If, however, at least 500 individuals submit a petition challenging the Negative Declaration, then the EQB must review the decision, and if deemed necessary, hold a public hearing. After the hearing the EQB must decide to uphold the Negative Declaration Notice or to require an EIS.

If the response to the EAW is an EIS Preparation Notice, the proposer and other state agencies have 30 days from the date of publication of the notice in the Monitor, to object to the finding. As above, the EQB must review the decision and hold a public hearing if necessary. The EQB must either uphold or reject its earlier Preparation Notice decision. If an EIS is required, the proposer may not apply for construction or operating permits until the final EIS has been approved.

The EIS preparation is a major effort. Depending on the project estimated cost, a portion of the state EIS preparation cost is assessed to the proposer. Based on recent experiences at the EQB, proposer costs for an EIS are significantly higher than the assessed cost. Most proposers will prepare and submit their own draft EIS.

A major weakness to the environmental review process stems from imprecise wordings of the law. An EIS is required if the proposed action is "major" and has potential for "significant" environmental effects. These conditions are not well defined and must be based on the judgment of state officials and the EQB. This uncertainty could



lead to reluctance on the part of proposers to initiate coal gasification plans.

The EQB is presently working to reduce this uncertainty and to speed the EAW-EIS process. Plans are in progress to establish a joint EIS and permitting process. The analysis required for the EIS is often identical to that required for a construction permit. The EQB is hoping to develop a procedure so that all construction permits for a new facility are presented at the end of the environmental review.

The University of Minnesota gasifier project did not require an EIS.

#### 2.4.2 Air Permits

##### Installation Permit

The industrial manager must obtain an Installation Permit before installing or building the gasifier, associated equipment, or control equipment. The process begins with the submission of detailed plans and specifications to the Director of the Minnesota Pollution Control Agency. Information must be included concerning:

- the expected composition of the emission stream, both before and after installation of the control system, including the emission rate, concentration, volume, and temperature;
- the expected physical characteristics of particulate emissions;
- the type of emissions controls that will be used;
- the location and elevation of the emission point and other factors relating to dispersion and diffusion of the contaminants;

- the relation of emission points to nearby structures, window openings, and other information necessary to appraise the possible effects of the emissions; and
- any other "reasonable and pertinent" information requested by the Director of the Agency.

Depending on the proposed location of the gasification system, the permit application will be processed along one of two paths, as shown in Figure 2-2. If the facility is proposed for construction in an Attainment Area\* and is a major new stationary source or major modification, the Minnesota Pollution Control Agency (MPCA) must perform a Prevention of Significant Deterioration (PSD) Review of the facility and its expected impacts on ambient air quality. In order to comply with this review, the applicant may be required to conduct background monitoring for one year, as well as dispersion modeling. Where MPCA determines that such data collection is indicated, the applicant must pay for it.

If the proposed facility is not a major stationary source or a major modification, the MPCA will review the application and issue a permit.

If the gasifier is to be located in a nonattainment area, the plant's design must satisfy the Trade-Off Policy,\*\* as described in the Minnesota State Implementation Plan. In addition, the facility must operate at the Lowest Achievable Emission Rate (LAER), defined

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\*An area that is meeting national ambient air quality standards.

\*\*This policy requires reductions in emissions equal to the amount of emissions that the new facility will be adding.

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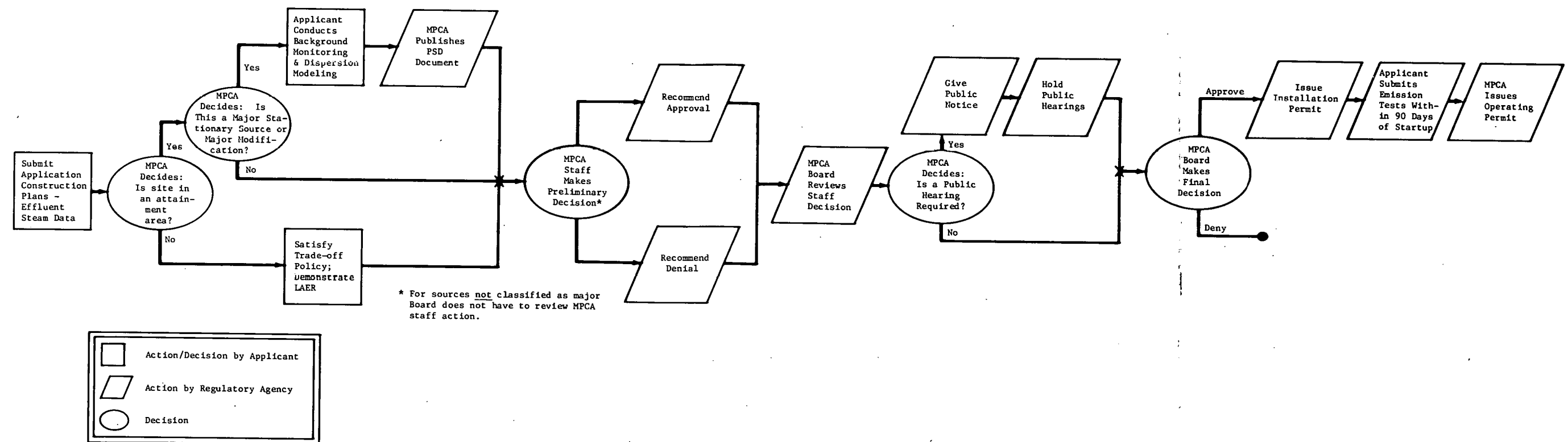


FIGURE 2-2  
MINNESOTA PERMITTING PROCESS—AIR

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as the most stringent emissions standards prescribed in the State Implementation Plan, or the most stringent emissions control which is achieved in practice, whichever is more restrictive. Nonattainment compliance review has not yet been formalized in Minnesota.

All initial decisions of the MPCA may be challenged by the applicant or the public. Usually permits for small facilities are not challenged. However, for proposed facilities with potential public controversy, or if petitioned, the MPCA and/or the MPCA Board will schedule public hearings and review their decision based on the results of the hearings.

#### Operating Permit

Under the terms of the Installation Permit, the facility can operate for 90 days without an Operating Permit. During this time, the MPCA will generally require the applicant to conduct emissions tests, as specified in applicable EPA test procedures, to demonstrate compliance with the emissions limitations specified in the Installation Permit. If the facility is operating according to design specifications, the Operating Permit is issued.

Installation and Operating Permits granted for a coal gasification facility embody a series of Minnesota State air emissions standards, promulgated by the Minnesota Pollution Control Agency. Under no circumstances will the Agency grant an Operating Permit if the gasification system will violate Minnesota ambient air quality standards. These standards are included in Appendix C.

In addition to ambient air quality standards, the coal gasifier must also comply with numerous other air quality standards, which are incorporated as conditions of the Installation and Operating permits as appropriate.

Among these standards are:

- The Minnesota Standards of Performance for Fossil Fuel Burning Indirect Heating Equipment
- Particulate, sulfur dioxide, and nitrogen oxide emissions standards for new systems
- Standards for release of odors
- Standards for storage of petroleum liquids.

The Director of the Minnesota Pollution Control Agency may require continuous emission monitoring of a coal gasification system, or any other emissions source if he judges other methods of measurement or calculation to be inadequate in identifying the level or variation of emissions to ensure compliance with applicable regulations.

#### Experience of the University of Minnesota

The University of Minnesota has been well aware of the need for careful preparation and planning for the environmental regulatory compliance in the construction of the coal gasifier. The University submitted preliminary plans to the Minnesota Pollution Control Agency (MPCA) in April of 1976 to obtain direction from the Agency as to the regulatory requirements. The MPCA sent the University a letter outlining the law and basic environmental requirements. This letter was

submitted as part of the University's coal gasifier proposal to the Energy Research and Development Administration (ERDA). An initial environmental assessment section was also included in the proposal.

The award of funding from ERDA to the project brought the requirement for a formal Environment Impact Assessment (EIA). This assessment was performed by The MITRE Corporation under separate contract to ERDA.\* The EIA provided additional environmental background information for the project.

On June 8, 1977, the University of Minnesota made formal application to MPCA for an installation permit. However, pertinent discussions on the project had been going on with MPCA prior to that date. Communication extended to the Region V office of the Environmental Protection Agency (EPA) in Chicago in April of 1977 concerning the need for a Prevention of Significant Deterioration review on the proposed project. On May 5, 1977, the Chicago EPA office confirmed by letter that such a review was not necessary.

The MPCA completed the Installation Permit on the Duluth campus coal gasifier on June 17, 1977. This permit is included in Appendix D of this section.

#### 2.4.3 Water Permits

In Minnesota, water quality is regulated via the National Pollutant Discharge Elimination System (NPDES), an EPA-developed system of standards and enforcement mechanisms administered by the Minnesota

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\*Contract EX-76-C-01-2453.



Pollution Control Agency. Any industrial developer seeking to install and operate a low-Btu coal gasification system in the state must obtain an NPDES Permit and a Minnesota State Disposal System Permit. Since Minnesota has been delegated authority for issuance of NPDES permits by EPA, the NPDES Permit and the State Disposal System Permit are considered to be equivalent; in effect, the industrial developer need only obtain the NPDES Permit.

The applicant must file an NPDES/State Disposal System Permit Application at least 180 days before start up, detailing final construction plans and specifications, and characterizing the effluent stream.

As illustrated in Figure 2-3, the first step in the NPDES approval process is a review for completeness. The Minnesota NPDES regulations do not specify any time limit for this review.

In cases where the applicant is proposing to operate a disposal system which will discharge to a body of water from which residential users receive their water supply directly (i.e., without treatment), Minnesota may require the applicant to post a construction bond or contractual commitment to guarantee construction and operation of the treatment system as provided in the permit application.

The Minnesota Pollution Control Agency (MPCA) then makes a Preliminary Determination whether to issue or deny the NPDES Permit. If the Agency decides tentatively to issue the permit, it prepares a Draft Permit, specifying the effluent limitations the operator/owner

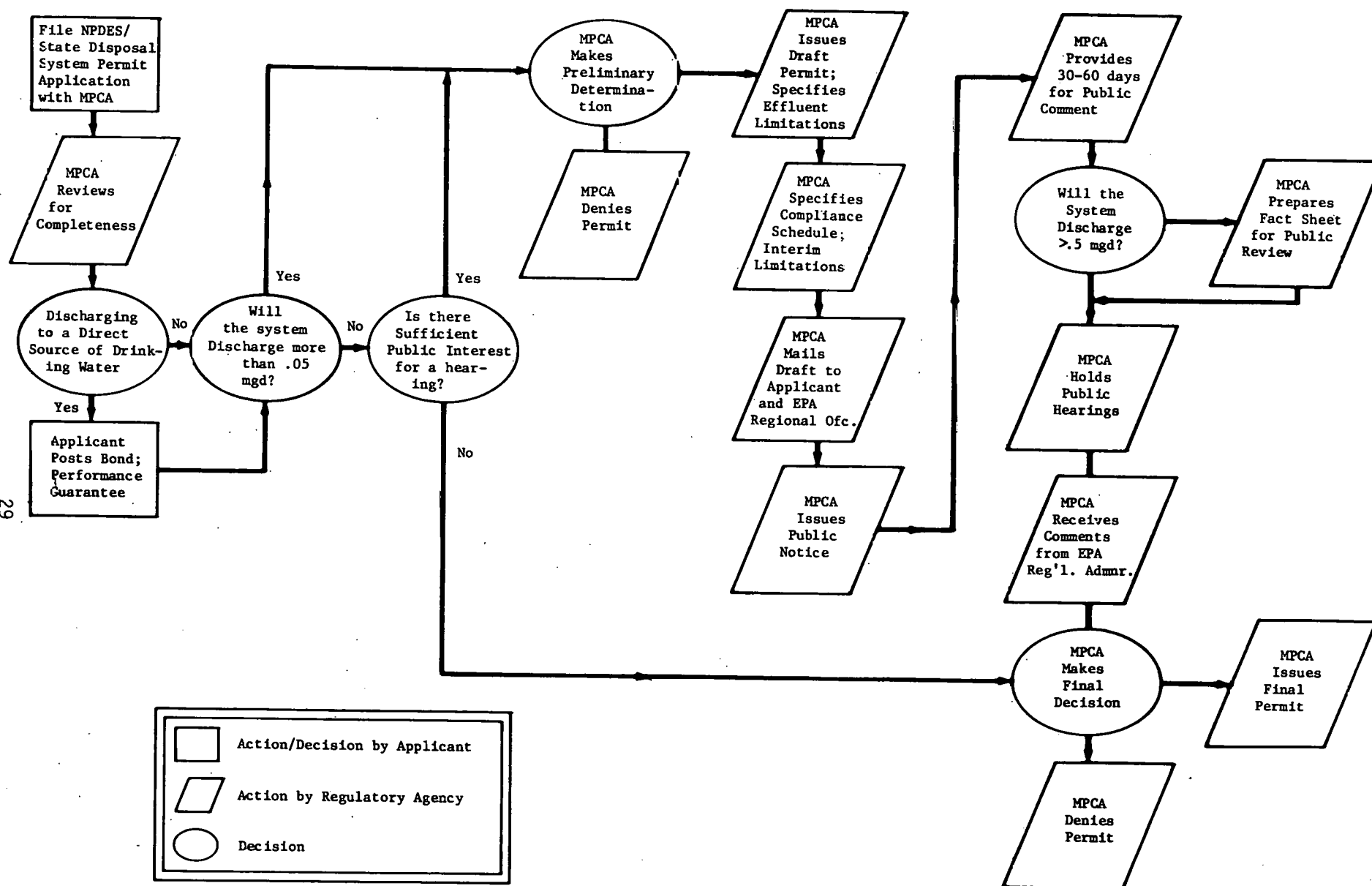


FIGURE 2-3  
MINNESOTA NPDES APPROVAL PROCESS

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must observe, and delineating a schedule of compliance for meeting the effluent standards in cases where the operator cannot meet the limits immediately. The schedule will impose interim standards and dates for compliance, which will become progressively more stringent until the final limitation is satisfied. The Draft Permit is mailed to the applicant and to the Regional Administrator of EPA.

The MPCA notifies the public of its preliminary decision by posting the application and the Draft Permit in public places and newspapers of "general circulation" in the geographical area of the proposed discharge. A 30-day public comment period follows, during which any interested party can submit written comments to the Agency. The public comment period can be extended past the 30-day period at the discretion of the Director of the Agency.

To facilitate public comment on the application, the Agency must prepare a Fact Sheet on the proposed disposal system if it will discharge more than 500,000 gallons per day at any time during the year. The Director may prepare a Fact Sheet on smaller systems if he feels it is warranted.

During the public comment period, any interested person may file a petition for a public hearing on the application, and if the Agency determines that there is "sufficient public interest" in the application, a public hearing will be scheduled in the affected geographical area. Public notice must be given at least 30 days in advance of the hearing.

Disposal systems discharging less than 50,000 gallons per day may avoid the need for a preliminary decision and the requirement for public notice and comments if the Director of the Agency determines that there is "insufficient public interest" to warrant these steps.

The effluent limitations specified in the Draft and Final NPDES Permit are developed by the Minnesota Pollution Control Agency, to ensure compliance with both Federal and Minnesota State standards.

Industrial users must submit monthly reports to the Minnesota Pollution Control Agency describing the operation of the waste disposal system, (i.e., effluent flow, characteristics of the effluent, and receiving intrastate waters).

Also as part of the NPDES Permit, the MPCA will monitor and report discharges. Where the discharge is determined to be "not a minor discharge," the industrial developer is required to monitor:

- flow in gallons per day discharge or other specified units;
- the discharge of specific pollutants.

In addition, the industrial developer is required to record all information developed as a result of monitoring activities. Required data elements include:

- the date, exact place and time of sampling
- the dates analyses were performed;
- the person who performed the analyses;
- the analytical techniques, procedures or methods used; and
- the results of the analyses.

This information must be submitted to the Agency on an NPDES Reporting Form, at least once a year.

Oil storage regulations may also be applicable if a by-product oil will be produced during gasification and stored on site. Since the product is flammable, a further permit is required from the Minnesota State Fire Marshall certifying that the facility meets the requirements of the Marshall's Flammable Liquids Code.

The University of Minnesota did not need to obtain water permits from the MPCA because water supply comes from the municipal supply, and waste water is routed to the Duluth city sewage system. No additional permit was needed for storage of heavy oils from the coal gasification system because the University has been burning oil in its heating system.

#### 2.4.4 Solid Waste Permits

Solid waste collection, handling, storage, and disposal are covered by Minnesota Solid Waste Disposal Regulations. For the operator of a gasification facility, the degree of compliance required will depend on the method of disposal used. If gasifier wastes are to be disposed of off-site, at a facility not operated by the owner of the gasification facility, state compliance requirements are minimal. The developer must characterize the wastes proposed for the landfill, and perform leachate tests to determine their compatibility with landfill disposal. A letter of approval is required from MPCA before actual disposal.

If, on the other hand, solid wastes are to be disposed of on-site, the operator must obtain a Permit to Construct and Operate a disposal facility. State regulations for sanitary landfills specify acceptable design and operating parameters.

#### 2.4.5 Time Required for Compliance with Environmental Regulations

Table 2-1 shows the wide range of time involved in complying with environmental regulations. The factors that influence this time include:

- the requirement for an EIS
- the requirement for public hearing
- the size of the operation (or source) for which compliance is sought
- the location of this source in an attainment or nonattainment area
- the source from which the operation withdraws its water
- the method of discharge of water and solid waste.

The University of Minnesota encountered a minimum of delay because its status in relation to the above factors lead it to be exempted from regulatory requirements.

#### 2.5 Requirements for Compliance with Occupational Safety and Health (OSH) Regulations

Minnesota has been implementing the OSHA Act since 1973. The Minnesota OSHA enforces both Federal occupational standards and Minnesota State standards through site inspections conducted by Minnesota State officials. The administration does have authority

TABLE 2-1

## REQUIREMENTS FOR COMPLIANCE WITH ENVIRONMENTAL REGULATIONS

DOCUMENT/PERMIT REQUIRED BEFORE CONSTRUCTION	RESPONSIBLE AGENCY	STATUTORY LIMITS (OR AGENCY EXPERIENCE)	ACTUAL EXPERIENCE OF UNIVERSITY OF MINNESOTA
Certificate of Need ↓	Minnesota Energy Agency	Est. 6 months	Not required
Environmental Assessment Worksheet/Environmental Impact Statement	Environmental Quality Board	6 months/60 days for Negative Declara- tion Notice	Not required
Air Installation Permit	Minnesota Pollution Control Agency	30-60 days for minor source 90-120 days for major source 120-180 days for trade off policy	90 days Not required Not required
Air Operating Permit	Minnesota Pollution Control Agency	90 days after issu- ing Installation Permit	Not yet obtained
NPDES (Water) Permit	Minnesota Pollution Control Agency	180 days (5 year permit)	Not required
Minnesota State Disposal System Permit*	Minnesota Pollution Control Agency	180 days	Not required
Solid Waste Permit	Minnesota Pollution Control Agency	Not specified	Not required

\* NPDES Permit and State Disposal System Permit are equivalent



to issue citations in the event of standards violations, but neither the Minnesota OSHA nor the Federal OSHA issue permits of any kind.

Coal gasification facilities are subject to general industry standards regarding monitoring, reporting, and recordkeeping. Pursuant to Section 6 (655) of the Act, the Occupational Safety and Health Administration within the Department of Labor has promulgated General Industry Safety Standards (29 CFR 1910), which encompass:

- general industry safety standards
- general industry noise standards
- general industry toxic and hazardous substance exposure limits for: sulfur dioxide, carbon monoxide, hydrogen sulfide, benzene, toluene, and ammonia.

During the construction phase of operations, Construction Industry Standards (29 CFR 1926) apply.

As applied to coal gasifiers, these standards would dictate the use of:

- CO sensors, connected to an automatic shut-off, or automatic warning systems;
- respiratory equipment to protect workers against exposure to H<sub>2</sub>S and CO during emergencies;
- evacuation procedures to allow for rapid evacuation of contaminated areas during accidental releases; and
- guard railings.

Other areas of potential concern include noise levels in the gasifier building and potential electrical code violations. Occupational

exposure to gasifier by-product oil, a known carcinogen, would receive especially close scrutiny.\*

Pursuant to General Recordkeeping and Reporting Requirements (29 CFR 1904), OSHA requires that any gasifier operator submit an "annual log" and "annual summary" of operations by completing the standard OSHA Form #200.

Should an OSHA inspection take place, OSHA inspectors would be careful to check "environment controls" in the gasifier building, meaning systems for circulating air into and out of the work place. Inspectors would be sensitive to the potential for contamination of air brought into the work place.

Boiler regulations will have very little impact on the design and operation of an industrial gasifier. The essential consideration is that all reactor and/or pressure vessels comply with standard ASME\*\* Code specifications.

The State Boiler Inspector Division is concerned mainly with steam generators and steam-turbine equipment. If the project is a retrofit application, the boiler has already received a permit from

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\*While OSHA has not issued standards specific to coal gasification systems, two recent criteria documents developed by the National Institute of Occupational Safety and Health do indicate the likely direction of future standards development. They are: "Recommended Health and Safety Guidelines for Coal Gasification Pilot Plants," USDHEW 78-120, and "Criteria for a Recommended Standard," USDHEW 78-191. Both are available from the Government Printing Office.

\*\*American Society of Mechanical Engineers.

this Division. If a gasification project involves a new boiler, a boiler permit would be needed. The gasifier itself is of no concern to the Boiler Division.

## 2.6 Other Regulatory Requirements and Permits

Prior to constructing any new facility in the City of Duluth, the industrial developer must consult with the City of Duluth for the following:

- Zoning regulations
- Sewer connections
- Building permits
- Driveway permits.

The site selected for an industrial coal gasifier must be zoned for industrial use.

Sewer and driveway applications are made by the proposer at the appropriate city office desk. Unless substantial new construction is required, permitting is routine. If sewer hookup requires the installation of extensive new municipal sewer lines, a public hearing is likely. MITRE representatives were told that the sewer permitting process could take as long as six months if public hearings are required.

If septic tanks are used in lieu of the city sewers, the proposer must obtain approval for the septic system from the St. Louis County Health Department.

Only the building permit requires an application form. A building energy use computation form must be attached to the application. City engineers review the building designs and, if adequate, issue building permits. Duluth uses the 1976 Uniform Building Code as the standard for new construction. A copy of the building permit for the University of Minnesota is included in Appendix E.

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## TABLE OF APPENDICES

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APPENDIX A  
PUBLIC INFORMATION ON ENVIRONMENTAL  
PERMIT COORDINATION PROGRAM



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# **Environmental Permit Coordination Program**



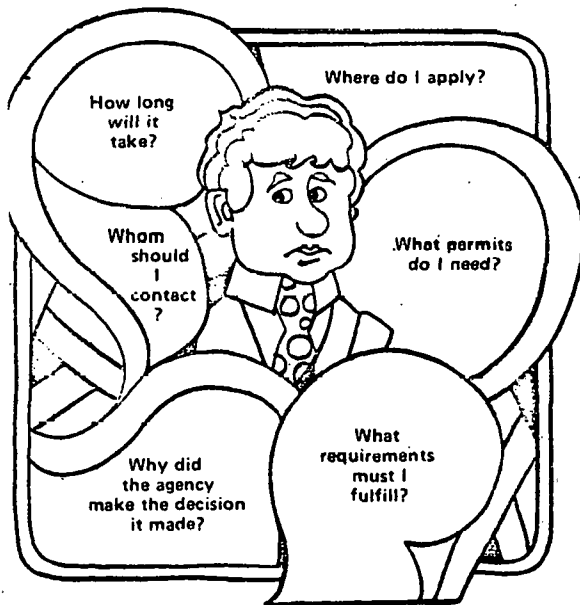
A GUIDE THROUGH THE MAZE  
OF ENVIRONMENTAL REGULATIONS

**MINNESOTA  
ENVIRONMENTAL  
QUALITY  
BOARD**

## GOALS OF THE PERMIT COORDINATION PROGRAM

Recognizing the difficulties many people have in working their way through the governmental maze of permit requirements, the Minnesota Legislature passed the "Environmental Coordination Procedures Act" in 1976. This law provides for a new state permit application procedure called the "Master Application Process," and establishes information centers to help people understand state permit requirements. These services are provided by the Permit Coordination Unit of the Minnesota Environmental Quality Board (EQB).

The Permit Coordination Program eliminates much of the guesswork and confusion of the permit process. It answers the questions:



## WHAT IS THE MASTER APPLICATION PROCESS?

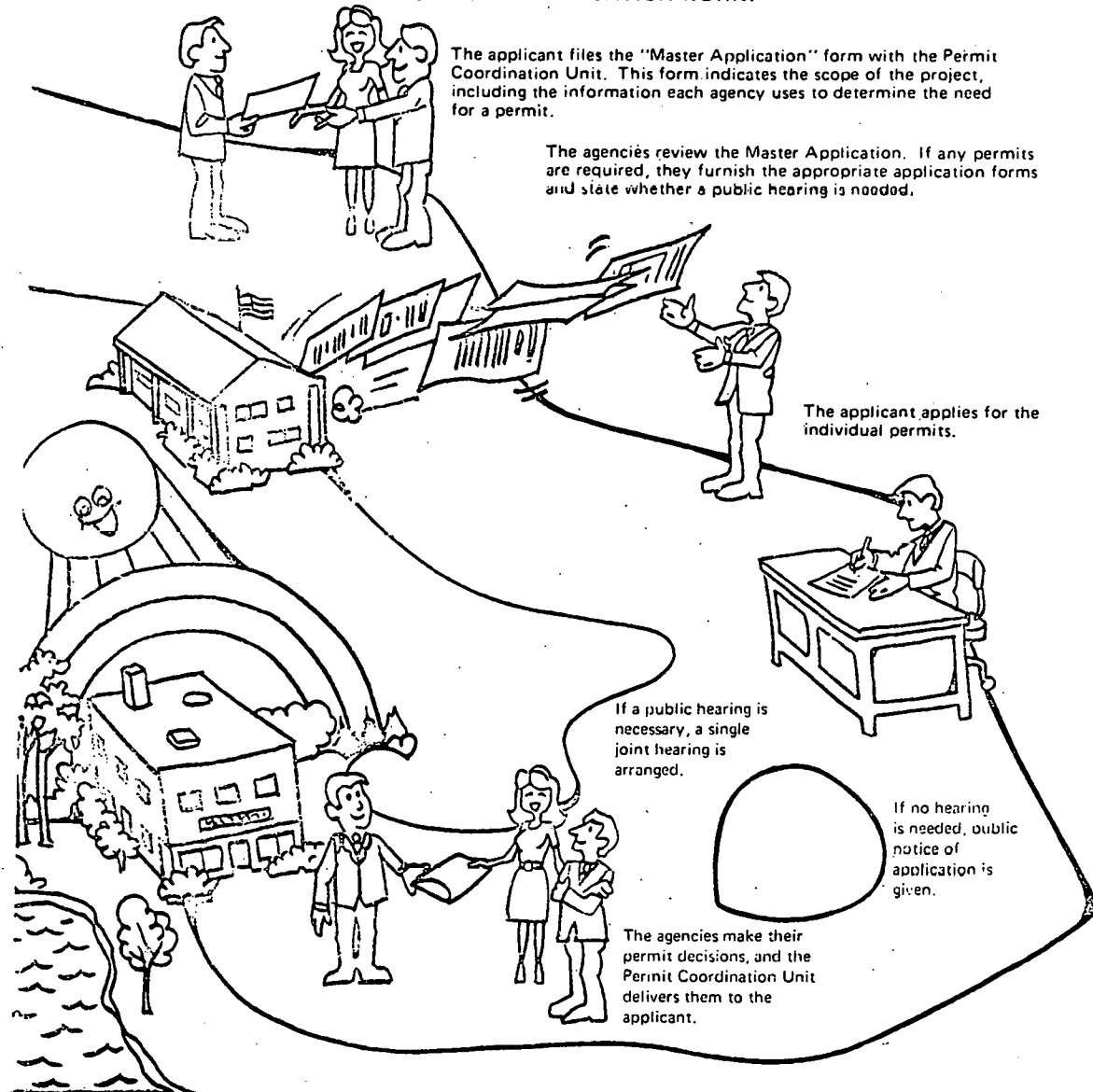
For projects that would affect the natural environment, the Master Application Process is a way to get all the necessary state permits by going through a single office. It is a predictable understandable procedure which coordinates permit review by all state agencies, and sets up standard procedures and time limits to which all involved agencies must adhere.

With the Master Application Process, the Permit Coordination Unit does the legwork for the applicant. It assembles the forms, transmits paperwork between the agencies and the applicant, monitors the progress of permit review, arranges a single joint hearing if needed, and delivers the permits to the applicant in a single package.

## BENEFITS OF MASTER APPLICATION

- The Permit Coordination Unit does the legwork.
- Time limits are placed on all phases of permit review.
- Agencies may not later require a permit after failing to respond in time to the Master Application or after initially responding that no permit is needed.
- The single joint hearing saves time and expense and promotes coordination among the reviewing agencies.
- The agencies give the reasons for their decisions on the permit application.
- The services of the Permit Coordination Unit are provided free.

## HOW DOES MASTER APPLICATION WORK?



## MASTER APPLICATION

### *To Participate . . . .*

**Prerequisites.** The Master Application Process is available to anyone proposing a project that would affect the state's air, land, water or other natural resources when more than one state permit is needed. To initiate the Master Application Process, two forms of certification must first be obtained:

1. Local Certification — stating the project complies with local land use and environmental regulations.
2. EQB Certification — from the Environmental Quality Board, stating that an Environmental Impact Statement has been completed or is not needed.

### *Or Not to Participate . . . .*

**Ineligible Projects.** The following types of proposals are not eligible for the Master Application Process.

1. Projects requiring permits pertaining to reservations, permits and leases of state owned mineral lands.
2. Projects requiring a certificate of need for a large energy facility.
3. Projects initiated for taconite tailings disposal or mining.
4. Projects initiated for producing or beneficiating copper, nickel, or copper-nickel.

## ENVIRONMENTAL MANAGEMENT INFORMATION CENTERS

The Environmental Management Information Centers, or EMICs, are open in St. Paul and around the state to help people find out about the many governmental permits and programs regulating the state's air, land, water and other natural resources.

These centers have information on permit requirements and application procedures as well as on grant programs and environmental management services administered by the government. The St. Paul center staff also operates the Master-Application Process.

The information available at the Environmental Management Information Centers includes:

1. A list of state environmental permits and regulatory programs.
2. Fact sheets on each permit and program describing application procedures, criteria for approvals, special considerations and fees, and listing contact persons.
3. Application forms.
4. Relevant laws and state regulations.
5. Directory of contact people in state agencies, both in the central and regional offices.

The address of the St. Paul Center is:

Environmental Management Information Center  
106 Capitol Square Bldg.  
550 Cedar St.  
St. Paul, MN 55101

Callers within the Metropolitan Dialing Area may call 296-8540 or 296-8541. Others may call collect at (612) 296-9034.

The branch EMICs are located in the Regional Development Commission offices listed on the back of this brochure.

**REGIONAL ENVIRONMENTAL  
MANAGEMENT INFORMATION CENTERS**

**Region 1**

425 Woodland Avenue  
Crookston, MN 56716  
218/281-1396

**Region 2**

Mental Health Building  
Box 584  
Bemidji, MN 56601  
218/751-3108

**Region 3**

200 Arrowhead Place  
211 West Second Street  
Duluth, MN 55802  
218/722-5545

**Region 4**

Administration Bldg.  
Fergus Falls Community College  
Fergus Falls, MN 56537  
218/739-3356

**Region 5**

102 6th Street North  
Staples, MN 56479  
218/894-3233

**Region 6E**

City Auditorium  
311 West 6th Street  
Willmar, MN 56201  
612/235-8504

**Region 6W**

323 West Schlieman  
Appleton, MN 56208  
612/289-1981

**Region 7E**

Kanabec County Courthouse  
18 North Vine Street  
Mora, MN 55051  
612/679-4065

**Region 7W**

2700 1st Street North  
St. Cloud, MN 56301  
612/253-7870

**Region 8**

Peoples State Bank  
25th and Broadway  
Slayton, MN 56172  
507/836-8549

**Region 9**

120 South Broad Street  
(Old Library Building)  
Mankato, MN 56001  
507/285-2550

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APPENDIX B

MINNESOTA ENVIRONMENTAL QUALITY BOARD ENVIRONMENTAL  
ASSESSMENT WORKSHEET (EAW) AND NOTICE OF FINDINGS



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APPENDIX B

MINNESOTA ENVIRONMENTAL QUALITY BOARD  
ENVIRONMENTAL ASSESSMENT WORKSHEET (EAW)  
AND NOTICE OF FINDINGS

DO NOT WRITE IN THIS SPACE

E.R. # \_\_\_\_\_

NOTE: The purpose of the Environmental Assessment Worksheet (EAW) is to provide information on a project so that one can assess rapidly whether or not the project requires an Environmental Impact Statement. Attach additional pages, charts, maps, etc, as needed to answer these questions. Your answers should be as specific as possible. Indicate which answers are estimated.

I. SUMMARY

A. ACTIVITY FINDING BY RESPONSIBLE AGENCY (PERSON)

☐ Negative Declaration (No EIS) ☐ EIS Preparation Notice (EIS Required)

B. ACTIVITY IDENTIFICATION

1. Project name or title \_\_\_\_\_

2. Project proposer(s) \_\_\_\_\_

Address \_\_\_\_\_

Telephone Number and Area Code ( ) \_\_\_\_\_

3. Responsible Agency or Person \_\_\_\_\_

Address \_\_\_\_\_

Person in Responsible Agency (Person) to contact for further information  
on this EAW: \_\_\_\_\_ Telephone \_\_\_\_\_

4. This EAW and other supporting documentation are available for public inspection and/or copying at: Location \_\_\_\_\_

Telephone \_\_\_\_\_ Hours \_\_\_\_\_

5. Reason for EAW Preparation

☐ Mandatory Category -cite ☐ Petition ☐ Other  
MEQB Rule number(s) \_\_\_\_\_

C. ACTIVITY DESCRIPTION SUMMARY

1. Project location

County \_\_\_\_\_ City/Township name \_\_\_\_\_

Township number \_\_\_\_\_ (North), Range Number \_\_\_\_\_ East or West (circle one),

Section number(s) \_\_\_\_\_ Street address (if in city) or legal description: \_\_\_\_\_

2. Type and scope of proposed project:

3. Estimated starting date (month/year) \_\_\_\_\_

4. Estimated completion date (month/year) \_\_\_\_\_

5. Estimated construction cost \_\_\_\_\_

6. List any federal funding involved and known permits or approvals needed from each unit of government and status of each:

Unit of Government (federal, state, regional, local)	Name or Type of Permit/Approval or Federal Funding	Status

7. If federal permits, funding or approvals are involved, will a federal EIS be prepared under the National Environmental Policy Act? NO YES UNKNOWN

## II. ACTIVITY DESCRIPTION

A. Include the following maps or drawings:

1. A map showing the regional location of the project.
2. An original 8½ x 11 section of a U.S.G.S. 7½ minute, 1:24,000 scale map with the activity or project area boundaries and site layout delineated. Indicate quadrangle sheet name. (Original U.S.G.S. sheet must be maintained by Responsible Agency; legible copies may be supplied to other EAW distribution points.)
3. A sketch map of the site showing location of structures and including significant natural features (water bodies, roads, etc).
4. Current photos of the site must be maintained by the Responsible Agency. Photos need not be sent to other distribution points.

B. Present land use.

1. Briefly describe the present use of the site and lands adjacent to the site.

2. Indicate the approximate acreages of the site that are:

- |   |   |
|---|---|
| a. Urban development _____ acres                | f. Wetlands (Type III, IV, V) _____ acres |
| b. Urban vacant _____ acres                     | g. Shoreland _____ acres                  |
| c. Rural developed _____ acres                  | h. Floodplain _____ acres                 |
| d. Rural vacant _____ acres                     | i. Cropland/Pasture land _____ acres      |
| e. Designated Recreation/Open Space _____ acres | j. Forested _____ acres                   |

3. List names and sizes of lakes, rivers and streams on or near the site, particularly lakes within 1,000 feet and rivers and streams within 300 feet.

C. Activity Description

1. Describe the proposed activity, including staging of development (if any), operational characteristics, and major types of equipment and/or processes to be used. Include data that would indicate the magnitude of the proposed activity (e.g. rate of production, number of customers, tons of raw materials, etc).

2. Fill in the following where applicable:

- |   |   |
|---|---|
| a. Total project area _____ acres<br>or<br>Length _____ miles | g. Size of marina and access channel (water area) _____ sq. ft. |
| b. Number of housing or recreational units _____              | h. Vehicular traffic trips generated per day _____ ADT          |
| c. Height of structures _____ ft.                             | i. Number of employees _____                                    |
| d. Number of parking spaces _____                             | j. Water supply needed _____ gal/da<br>Source: _____            |
| e. Amount of dredging _____ cu. yd.                           | k. Solid waste requiring disposal _____ tons/yr                 |
| f. Liquid wastes requiring treatment _____ gal/da             | l. Commercial, retail or industrial floor space _____ sq. ft.   |

III. ASSESSMENT OF POTENTIAL ENVIRONMENTAL IMPACT

A. SOILS AND TOPOGRAPHY

1. Will the project be built in an area with slopes currently exceeding 12%? \_\_\_\_\_ No \_\_\_\_\_ Yes
2. Are there other geologically unstable areas involved in the project, such as fault zones, shrink-swell soils, peatlands, or sinkholes? \_\_\_\_\_ NO \_\_\_\_\_ YES
3. If yes on 1 or 2, describe slope conditions or unstable area and any measures to be used to reduce potential adverse impacts.

4. Indicate suitability of site soils for foundations, individual septic systems, and ditching, if these are included in the project.

5. Estimate the total amount of grading and filling which will be done:

\_\_\_\_\_ cu. yd. grading \_\_\_\_\_ cu. yd. filling

What percent of the site will be so altered? \_\_\_\_\_ %

6. What will be the maximum finished slopes \_\_\_\_\_ %

7. What steps will be taken to minimize soil erosion during and after construction?

#### B. VEGETATION

1. Approximately what percent of the site is in each of the following vegetative types:

Woodland	_____ %	Cropland/ Pasture	_____ %
Brush or shrubs	_____ %	Marsh	_____ %
Grass or herbaceous	_____ %	Other (specify)	_____ %

2. How many acres of forest or woodland will be cleared, if any? \_\_\_\_\_ acres

3. Are there any rare or endangered plant species or areas of unique botanical or biological significance on or near the site? (See DNR publication The Uncommon Ones.) \_\_\_\_\_ NO \_\_\_\_\_ YES

If yes, list the species or area and indicate any measures to be used to reduce potential adverse impact.

#### C. FISH AND WILDLIFE

1. Are there any designated federal, state or local wildlife or fish management areas or sanctuaries near or adjacent to the site? \_\_\_\_\_ NO \_\_\_\_\_ YES

2. Are there any known rare or endangered species of fish and wildlife on or near the site? (See DNR publication The Uncommon Ones.) \_\_\_\_\_ NO \_\_\_\_\_ YES

3. Will the project alter or eliminate wildlife or fish habitat? \_\_\_\_\_ NO \_\_\_\_\_ YES

4. If yes on any of questions 1-3, list the area, species or habitat, and indicate any measures to be used to reduce potential adverse impact on them.

**D. HYDROLOGY**

1. Will the project include any of the following?  
If yes, describe type of work and mitigative measures to reduce adverse impacts.

	<u>NO</u>	<u>YES</u>
a. Drainage or alteration of any lake, pond, marsh, lowland or groundwater supply	_____	_____
b. Shore protection works, dams, or dikes	_____	_____
c. Dredging or filling operations	_____	_____
d. Channel modifications or diversions	_____	_____
e. Appropriation of ground and/or surface water	_____	_____
f. Other changes in the course, current or cross-section of water bodies on or near the site	_____	_____
2. What percent of the area will be converted to new impervious surface? \_\_\_\_\_ %
3. What measures will be taken to reduce the volume of surface water runoff and/or treat it to reduce pollutants (sediment, oil, gas, etc)?
4. Will there be encroachment into the regional (100 year) floodplain by new fill or structures? \_\_\_\_\_ NO \_\_\_\_\_ YES  
If yes, does it conform to the local floodplain ordinance? \_\_\_\_\_ NO \_\_\_\_\_ YES
5. What is the approximate minimum depth to groundwater on the site? \_\_\_\_\_ feet

**E. WATER QUALITY**

1. Will there be a discharge of process or cooling water, sanitary sewage or other waste waters to any water body or to groundwater? \_\_\_\_\_ NO \_\_\_\_\_ YES  
If yes, specify the volume, the concentration of pollutants and the water body receiving the effluent.
2. If discharge of waste water to the municipal treatment system is planned, identify any toxic, corrosive or unusual pollutants in the wastewater.
3. Will any sludges be generated by the proposed project? \_\_\_\_\_ NO \_\_\_\_\_ YES  
If yes, specify the expected volume, chemical composition and method of disposal.

4. What measures will be used to minimize the volumes or impacts identified in questions 1-3?

5. If the project is or includes a landfill, attach information on soil profile, depth to water table, and proposed depth of disposal.

F. AIR QUALITY AND NOISE

1. Will the activity cause the emission of any gases and/or particulates into the atmosphere? ☐ NO ☐ YES

If yes, specify the type and origin of these emissions, indicate any emission control devices or measures to be used, and specify the approximate amounts for each emission (at the source) both with and without the emission control measures or devices.

2. Will noise or vibration be generated by construction and/or operation of the project? ☐ NO ☐ YES

If yes, describe the noise source(s); specify decibel levels [dB(A)], and duration (hrs/da) for each and any mitigative measures to reduce the noise/vibration.

3. If yes on 1 or 2, specify whether any areas sensitive to noise or reduced air quality-(hospitals, elderly housing, wilderness, wildlife areas, residential developments, etc) are in the affected area and give distance from source.

G. LAND RESOURCE CONSERVATION, ENERGY

1. Is any of the site suitable for agricultural or forestry production or currently in such use? ☐ NO ☐ YES

If yes, specify the acreage involved, type and volume of marketable crop or wood produced and the quality of the land for such use.

2. Are there any known mineral or peat deposits on the site? ☐ NO ☐ YES  
If yes, specify the type of deposit and the acreage.

3. Will the project result in an increased energy demand?        NO        YES  
Complete the following as applicable:

a. Energy requirements (oil, electricity, gas, coal, solar, etc.)

Type	Estimated Annual Requirement	Peak Demand (Hourly or Daily)		Anticipated Supplier	Firm Contract or Interruptible Basis?
		Summer	Winter		

b. Estimate the capacity of all proposed on-site fuel storage.

c. Estimate annual energy distribution for:

space heating                   %                      lighting                   %  
 air conditioning                   %                      processing                   %  
 ventilation                   %

d. Specify any major energy conservation systems and/or equipment incorporated into this project.

e. What secondary energy use effects may result from this project (e.g. more or longer car trips, induced housing or businesses, etc)?

H. OPEN SPACE/RECREATION

1. Are there any designated federal, state, county or local recreation or open space areas near the site (including wild and scenic rivers, trails, lake accesses)?            NO            YES  
If yes, list areas by name and explain how each may be affected by the project. Indicate any measures to be used to reduce adverse impacts.



**I. TRANSPORTATION**

1. Will the project affect any existing or proposed transportation systems (highway, railroad, water, airport, etc)?        NO        YES  
If yes, specify which part(s) of the system(s) will be affected.  
For these, specify existing use and capacities, average traffic speed and percentage of truck traffic (if highway); and indicate how they will be affected by the project (e.g. congestion, percentage of truck traffic, safety, increased traffic (ADT), access requirements).

2. Is mass transit available to the site?        NO        YES
3. What measures, including transit and paratransit services, are planned to reduce adverse impacts?

**J. PLANNING, LAND USE, COMMUNITY SERVICES**

1. Is the project consistent with local and/or regional comprehensive plans?        NO        YES  
If not, explain:

If a zoning change or special use permit is necessary, indicate existing zoning and change requested.

2. Will the type or height of the project conflict with the character of the existing neighborhood?        NO        YES  
If yes, explain and describe any measures to be used to reduce conflicts.

3. How many employees will move into the area to be near the project? \_\_\_\_\_  
How much new housing will be needed? \_\_\_\_\_
4. Will the project induce development nearby--either support services or similar developments? \_\_\_\_\_ NO \_\_\_\_\_ YES  
If yes, explain type of development and specify any other counties and municipalities affected.
5. Is there sufficient capacity in the following public services to handle the project and any associated growth?

Public Service	Amount required for project	Sufficient Capacity?
water	gal/da	
wastewater treatment	gal/da	
sewer	feet	
schools	pupils	
solid waste disposal	ton/mo	
streets	miles	
other (police, fire, etc.)		

If current major public facilities are not adequate, do existing local plans call for expansion, or is expansion necessary strictly for this one project and its associated impacts?

6. Is the project within a proposed or designated Critical Area or part of a Related Actions EIS or other environmentally sensitive plan or program reviewed by the EQB? \_\_\_\_\_ NO \_\_\_\_\_ YES  
If yes, specify which area or plan.
7. Will the project involve the use, transportation, storage, release or disposal of potentially hazardous or toxic liquids, solids or gaseous substances such as pesticides, radioactive wastes, poisons, etc.? \_\_\_\_\_ NO \_\_\_\_\_ YES  
If yes, please specify the substance and rate of usage and any measures to be taken to minimize adverse environmental impacts from accidents.

8. When the project has served its useful life, will retirement of the facility require special measures or plans? ☐ NO ☐ YES  
If yes, specify:

**K. HISTORIC RESOURCES**

1. Are there any structures on the site older than 50 years or on federal or state historical registers? ☐ NO ☐ YES
2. Have any arrowheads, pottery or other evidence of prehistoric or early settlement been found on the site? ☐ NO ☐ YES  
Might any known archaeologic or paleontological sites be affected by the activity? ☐ NO ☐ YES
3. List any site or structure identified in 1 and 2 and explain any impact on them.

**L. OTHER ENVIRONMENTAL CONCERNS**

Describe any other major environmental effects which may not have been identified in the previous sections.

**IV. OTHER MITIGATIVE MEASURES**

Briefly describe mitigative measures proposed to reduce or eliminate potential adverse impacts that have not been described before.

## V. FINDINGS

A. The project is a private ( ) government ( ) action. The Responsible Agency (Person), after consideration of the information in this EAW, and the factors in Minn. Reg. MEQB 25, makes the following findings.

1. The project is ( ) is not ( ) a major action.  
State reasons:

2. The project does ( ) does not ( ) have the potential for significant environmental effects.  
State reasons:

3. (For private actions only.) The project is ( ) is not ( ) of more than local significance.  
State reasons:

## VI. CONCLUSIONS AND CERTIFICATION

NOTE: A Negative Declaration or EIS Preparation Notice is not officially filed until the date of publication of the notice in the EQB Monitor section.

A. I, the undersigned, am either the authorized representative of the Responsible Agency or the Responsible Person identified below. Based on the above findings, the Responsible Agency (Person) makes the following conclusions. (Complete either 1 or 2.)

1.        NEGATIVE DECLARATION NOTICE  
No EIS is needed on this project, because the project is not a major action and/or does not have the potential for significant environmental effects and/or, for private actions only, the project is not of more than local significance.

## 2.            EIS PREPARATION NOTICE

An EIS will be prepared on this project because the project is a major action and has the potential for significant environmental effects. For private actions, the project is also of more than local significance.

- a. The MEQB Rules provide that physical construction or operation of the project must stop when an EIS is required. In special circumstances, the MEQB can specifically authorize limited construction to begin or continue. If you feel there are special circumstances in this project, specify the extent of progress recommended and the reasons.

- b. Date Draft EIS will be submitted: \_\_\_\_\_  
(month) (day) (year)

(MEQB Rules require that the Draft EIS be submitted within 120 days of publication of the EIS Preparation Notice in the EQB Monitor. If special circumstances prevent compliance with this time limit, a written request for extension explaining the reasons for the request must be submitted to the EQB Chairman.)

- c. The Draft EIS will be prepared by (list Responsible Agency(s) or Person(s)):

- B. Attach an affidavit certifying the date that copies of this EAW were mailed to all points on the official EQB distribution list, to the city and county directly impacted, and to adjacent counties or municipalities likely to be directly impacted by the proposed action (refer to question III.J.4. on page 9 of the EAW). The affidavit need be attached only to the copy of the EAW which is sent to the EQB Administrator.

- C. Billing procedures for EQB Monitor Publication.

**State agency ONLY:** Attach to the EAW sent to the EQB Administrator a completed OSR 100 form (State Register General Order Form--available at Center Stores). For instructions, please contact your Agency's Liaison Officer to the State Register or the Office of the State Register--(612) 296-8239.

I hereby certify that the information contained in this document is true and correct to the best of my knowledge.

SIGNATURE

TITLE

DATE \_\_\_\_\_

**APPENDIX C**

**MINNESOTA STATE AMBIENT AIR QUALITY STANDARDS**

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APPENDIX C

MINNESOTA STATE  
AMBIENT AIR QUALITY STANDARDS

Pollutant/Air Contaminant	Concentration	Remarks
(1) Hydrogen Sulfide <sup>(a)</sup> (primary standards)	0.05 ppm by volume (70.0 micrograms per cubic meter)	½ hr. average not to be exceeded over 2 times per yr.
	0.03 ppm by volume (42.0 micrograms per cubic meter)	½ hr. average not to be exceeded over 2 times in any 5 consecutive days
(2) Photochemical <sup>(a)</sup> Oxidants (primary and secondary standards)	0.07 ppm by volume (130 micrograms per cubic meter)	maximum 1 hr. concentration not to be exceeded more than once per yr.
(3) Carbon Monoxide <sup>(a)</sup> (primary and secondary standards)	9 ppm by volume (10 milligrams per cubic meter)	maximum 8 hr. concentration not to be exceeded more than once per yr.
	30 ppm by volume (35 milligrams per cubic meter)	maximum 1 hr. concentration not to be exceeded more than once per yr.
(4) Hydrocarbons <sup>(a)</sup> (primary and secondary standards)	0.24 ppm by volume (160 micrograms per cubic meter)	maximum 3 hr. concentration (6 to 9 a.m.) not to be exceeded more than once per yr., corrected for methane
(5) Sulfur Oxides <sup>(b)</sup> (primary and secondary standards)	0.02 ppm by volume (60 micrograms per cubic meter)	maximum annual arithmetic mean
	0.1 ppm by volume (260 micrograms per cubic meter)	maximum 24 hr. concentration not to be exceeded more than once per yr.
	0.25 ppm by volume (655 micrograms per cubic meter)	maximum 3 hr. concentration not to be exceeded more than once per yr.
(6) Particulate <sup>(c)</sup> Matter (primary standard)	75 micrograms per cubic meter	maximum annual geometric mean
	260 micrograms per cubic meter	maximum 24 hr. concentration not to be exceeded more than once per yr.
Particulate Matter (secondary standard)	60 micrograms per cubic meter	maximum annual geometric mean
	150 micrograms per cubic meter	maximum 24 hr. concentration not to be exceeded more than once per yr.
(7) Nitrogen Oxides <sup>(d)</sup> (primary and secondary standards)	0.05 ppm (100 micrograms per cubic meter)	maximum annual arithmetic mean

Footnotes:

- (a) All standards apply throughout the State of Minnesota.
- (b) All measurements of ambient air quality are corrected to a reference temperature of 25° C. and a reference pressure of 760 mm of mercury.
- (c) All measurements and tests shall be conducted by the methodology referenced herein, or other methodology as the Director shall hereafter approve.
- (d) By methylene blue, or other method approved by the Director.
- (e) Neutral-buffered one percent potassium iodide colorimetric detection technique corrected for SO<sub>2</sub> and NO<sub>2</sub> interference, gas phase chemiluminescence, or other method approved by the Director.
- (f) Nondispersive infrared spectrometry (N.D.I.R.), or other method approved by the Director.
- (g) Flame ionization, or other method approved by the Director.
- (h) By pararosaniline, coulometric, or other method approved by the Director.
- (i) High volume method, or other method approved by the Director.
- (j) Jacobs-Hochheiser, or other method approved by the Director.

Source: Bureau of National Affairs, Inc.



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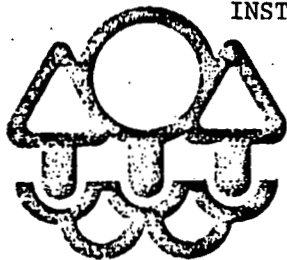
APPENDIX D

INSTALLATION PERMIT FOR THE UNIVERSITY OF MINNESOTA

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APPENDIX D

INSTALLATION PERMIT FOR THE UNIVERSITY OF MINNESOTA



# Minnesota Pollution Control Agency

612-296-7373

June 17, 1977

W.E. Soderberg, Director  
Physical Plant  
200 Shops Building  
Minneapolis, Minnesota 55455

Subject: University of Minnesota in Duluth, Minnesota  
Upper Campus  
Low BTU Coal Gasification Facility  
Installation Permit

Dear Mr. Soderberg:

Enclosed is Installation Permit #86D-77-I-1 for the captioned facility.

You should note that, per Paragraph 7 of Exhibit A, which is attached to the Installation Permit, you are required to submit Bi-Monthly Reports on the progress of the installation.

Sincerely,

*Frank L. Blackhall*

FRANK L. BLACKHALL, P.E.  
Engineering Section  
Division of Air Quality

FLB/an

Enclosures:  
I.P. #86D-77-I-1  
Exhibit A

cc: DAQ File #86D  
J. Pegors (R. Hamilton)  
Enforcement Section, DAQ  
Permit File (rg)



# Minnesota Pollution Control Agency

612-296-7373

INSTALLATION PERMIT  
for  
Low BTU Coal Gasification Facility  
and its  
Pollution Abatement Equipment

UNIVERSITY OF MINNESOTA  
in  
Duluth, Minnesota  
Upper Campus

INSTALLATION PERMIT #86D-77-I-1

Pursuant to authorization by the State of Minnesota Pollution Control Agency and in accordance with the provisions of Minnesota Statutes, Chapters 115 and 116, plans are approved and an Installation Permit is hereby issued to the University of Minnesota for the installation of a low BTU coal gasifier at the Upper Campus of the University of Minnesota in Duluth, Minnesota.

Permittee has submitted the following exhibits as evidence of future compliance with the State of Minnesota Air Pollution Control Regulations:

- 1) Letter dated June 8, 1977, from W.E. Soderberg, Director, Physical Plant, University of Minnesota to Edward M. Wiik, Director, Division of Air Quality, requesting Installation Permit. This letter, marked as ROUGH DRAFT, also included the following:
  - a) Information and calculations relative to predicted emissions.
  - b) Emission Mass and Heat Balance.
  - c) Elkol coal and ash mineral analysis.
  - d) Environmental Considerations and Socioeconomic Impact.
  - e) Geological Survey Topographical Map.
  - f) Topographic Map of Campus Area.
  - g) Windrose, weather data.
- 2) Letter dated May 05, 1977, from David Kee, Chief, Air Enforcement Branch, Enforcement Division, U.S. EPA Region V to Warren E. Soderberg, Director, Physical Plant. This letter confirms that the gasification project is not subject to U.S. EPA review under 40 CFR 52.21.

3) Foster Wheeler drawings:

No. OP-772-500  
No. OP-761-501  
No. OP-761-500  
No. OP-761-502  
No. 1881-1-50-1

- 4) Letter dated June 9, 1976, from W.E. Soderberg, Director to Frank Blackhall, Division of Air Quality, Minnesota Pollution Control Agency with Tar-Gas analysis enclosure.

This installation shall include, but not be limited to, the following equipment:

- 1) Foster Wheeler Stoic Gasifier
- 2) Top Gas Electrostatic Precipitator
- 3) Bottom Gas Cyclone Collector
- 4) By-Pass Gas Cyclone Collector
- 5) All other Associated Equipment for Above.

1) FOSTER WHEELER STOIC GASIFIER

Type - 2 stage gasifier

Dimensions - 10'-6" diameter x 42'-2" high

Coal Feed Capacity - 3 Tons per hour of Elkol Wyoming Coal

BTU/HR input.....61.604 x 10<sup>6</sup>

BTU/HR outputs

Hot Cleaned Gas.....54.713 x 10<sup>6</sup>

Oil..... 3.084 x 10<sup>6</sup>

Total.....57.797 x 10<sup>6</sup>

Efficiency of Gasification

$$\text{Efficiency} = \frac{57.797}{61.604} \times 100 = 93.8\%$$

Fuel Characteristics (Elkol Coal)

Proximate Analysis

	As Received	Dry Basis
% Moisture	18.75	xxxx
% Ash	5.37	6.61
% Volatile	32.69	40.23
% Fixed Carbon	43.19	53.16
	<u>100.00</u>	<u>100.00</u>
BTU/lb.	10259	12626
% Sulfur	0.41	0.50

2) TOP GAS ELECTROSTATIC PRECIPITATOR

Type - tube-type  
Purpose - removal of tar oil from volatile gases  
Top Gas Temperature - 250°F  
Tar Oil Removal - 186.6 lbs. per hour  
Heating Value - 16,400 BTU per lb.  
Total Heating Value -  $3.084 \times 10^6$  BTU per hour

3) BOTTOM GAS CYCLONE COLLECTOR

Bottom Gas Temperature.....1200°F  
Type - single barrel refractory lined  
Operating Efficiencies  
Above 60 microns.....100%  
60 to 10 microns.....98.7%  
10 to 6 microns.....84%  
6 to 4 microns.....48%  
4 to 2 microns.....32%  
2 to 1 microns.....10%  
1 to 0 microns.....0%  
  
Estimated overall efficiency.....90.765%

4) BY-PASS GAS CYCLONE COLLECTOR

Type.....Single Cylinder  
Overall Efficiency.....N.A.

POLLUTANT EMISSION RATES (Estimated)

Fiscal Year 1977-1978 (gasifier not in service)  
Sulfur dioxide.....1.59 lbs. per  $10^6$  BTU input  
Particulates.....0.15 lbs. per  $10^6$  BTU input

Fiscal Year 1978-1979 (gasifier in service)  
Sulfur dioxide.....0.753 lbs. per  $10^6$  BTU input  
Particulates.....0.052 lbs. per  $10^6$  BTU input

PLUME OPACITY (gasifier in service)

Opacity is predicted to be less than 20%

APPLICABLE AIR POLLUTION CONTROL REGULATIONS APC 4:

Sulfur dioxide.....none  
Particulates.....0.4 lbs. per  $10^6$  BTU input  
Opacity.....20% with excursions as specified.

ANNUAL POLLUTANT EMISSIONS (Estimated)

Fiscal Year 1977-1978 (gasifier not in service)  
Sulfur dioxide emissions.....98.26 T  
Particulate emissions.....7.54 T

Fiscal Year 1978-1979 (gasifier in service)


Sulfur dioxide emissions.....51.114 T

Particulate emissions.....6.0375 T

This permit is contingent upon future effective performance of the equipment within air pollution emission standards, and compliance with the General Conditions attached hereto as Exhibit A and hereby incorporated into this permit.

Installation shall commence in July, 1977. Estimated completion date is March, 1978.

DATED: June 17, 1977

  
EDWARD M. WIIK, P.E.  
Director  
Division of Air Quality

EMW:FLB/an

Attachment: Exhibit A



## GENERAL CONDITIONS

FOR INSTALLATION PERMIT NO. 86D-77-I-1

1. This Permit shall not release the Permittee from any liability, penalty, or duty imposed by Minnesota or federal statutes or regulations or local ordinances except the obligation to obtain this Permit.
2. This Permit shall not prevent the future adoption by the Agency of any pollution control regulations, standards, or orders more stringent than those now in existence or prevent the enforcement of such regulations, standards or orders against the Permittee.
3. The Permittee shall install the emission facility or control equipment covered by this Permit in accordance with plans and specifications submitted to the Agency and referenced in this Permit.
4. The Permittee shall not knowingly make any false statement, representation or certification in any record, report, plan, or other document required to be submitted to the Agency under this Permit. The Permittee shall immediately upon discovery report to the Agency any errors in such records, reports, plans, or other documents.
5. The Permittee shall allow the Agency, or any authorized employee or agent of the Agency, when authorized by law and upon the presentation of proper credentials, to examine and copy any books, papers, records or memoranda pertaining to the installation of the emission facility or control equipment covered by this Permit.

6. The Permittee shall allow the Agency, or any authorized employee or agent of the Agency, when authorized by law and upon presentation of proper credentials, to enter upon the property of the Permittee for the purpose of obtaining information or examining records or conducting surveys or investigations pertaining to the installation of the emission facility or control equipment covered by this Permit.

7. The Permittee shall submit periodic progress reports to the Agency reciting progress and problems occurring in the installation of the emission facility or control equipment covered by this Permit. These progress reports shall be submitted on a Bi-Monthly basis, the first such report being due on September 15, 1977.

8. The Permittee shall advise the Agency immediately upon completion of installation of the emission facility or control equipment covered by this Permit.

9. This Permit shall expire ninety (90) days after installation of the emission facility or control equipment is completed or on June 17, 1978 (one year after the date of this Permit) if installation has not begun. Installation shall be deemed to have begun if a continuous program of construction has been undertaken. Interruptions resulting from matters beyond the control of the Permittee shall be considered by the Agency in determining whether installation has begun.

EXHIBIT A

10. This Permit may not be assigned or transferred by the Permittee without the approval of the Agency.

11. This Permit is subject also to any Special Conditions contained in this Permit.

EXHIBIT A



UNITED STATES  
ENVIRONMENTAL PROTECTION AGENCY  
REGION V  
230 SOUTH DEARBORN ST.  
CHICAGO, ILLINOIS 60604

Mr. Warren E. Soderberg, Director  
Physical Plant  
University of Minnesota  
200 Shops Building  
Minneapolis, Minnesota 55455

MAY 05 1977

*cc: Dick L...*

Re: Duluth Campus Coal-Gasification Unit

Dear Mr. Soderberg:

This is to confirm our determination that the above-cited coal-gasification unit will not be subject to 40 C.F.R. §52.21, regulations for Prevention of Significant Deterioration of Air Quality as related to your Mr. Richard Lewis by Mr. Eric Cohen of my staff in a telephone conversation on April 27, 1977.

If you have any questions regarding this or any other future construction in the University of Minnesota system, do not hesitate to contact us.

Very truly yours,

A handwritten signature in dark ink, appearing to read "David Kee".

David Kee, Chief  
Air Enforcement Branch  
Enforcement Division

cc: Edward Wiik, Director  
Division of Air Quality  
Minnesota Pollution Control Agency

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APPENDIX E  
UNIVERSITY OF MINNESOTA  
BUILDING PERMIT APPLICATION

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APPENDIX E  
BUILDING AND APPLICATION PERMIT  
UNIVERSITY OF MINNESOTA  
BUILDING APPLICATION and PERMIT

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PERMIT NUMBER

~~100500~~  
~~100514~~

### APPLICATION

This Permit Application is to be filled out in five copies. (No carbon necessary when sufficient pressure is applied.)  
A numbered copy, signed by the Building Official, will be returned to be used as the construction permit. Please fill  
in all pertinent information.

Name of building/project Coal Gasification Plant - Duluth Heating Plant

PROJECT NUMBER  
1572

Do not write in this space

Description of work Install Stoic Coal Gasifier and related equipment

Location  
or campus Duluth

Building  
number 531

Estimated  
value of work \$2,652,212

Source  
of estimate University proposal to ERDA

Proposed use  
or occupancy Produce gas from coal for burning in boilers New work? X Remodeling?     

Type of  
laboratories (if any)     

Type of  
shops (if any)     

	Yes	No
Is use of space being changed?	<u>X</u>	<u>    </u>
Will explosives be used or stored?	<u>    </u>	<u>X</u>
Will flammable dusts be generated?	<u>    </u>	<u>X</u>
Will L.P. gas be used or stored?	<u>    </u>	<u>X</u>
Is supporting structure being altered?	<u>X</u>	<u>    </u>
Is loading being changed?	<u>    </u>	<u>X</u>

	Yes	No
Are exit routes being affected by this work?	<u>    </u>	<u>X</u>
Have structural changes been reviewed with architect/engineer?	<u>X</u>	<u>    </u>
Name of architect/engineer <u>Orr-Schelen-Mayeron</u> <u>and Associates Inc.</u>		
Was the project reviewed with the Planning Office?	<u>X</u>	<u>    </u>
If so, name of individual <u>Paul Kopietz</u>		

#### Note to Applicant:

Retain GOLD copy.

Forward all other copies to:

University of Minnesota  
Planning Office  
321 Morrill Hall  
Minneapolis, Minnesota 55455

WHITE copy becomes PERMIT when approved  
and numbered.

Person making application:

Signature [Signature]

Title Director - Physical Plant

Date June 15, 1977

### PERMIT

NOTICE: This Permit is not valid until numbered and signed by the University of Minnesota Building Official.

Reviewed by:

     Engineering and Construction  
     Environmental Health and Safety  
     Physical Planning  
     Physical Plant

PERMISSION IS HEREBY GIVEN TO PERFORM THE WORK DESCRIBED IN THE ABOVE APPLICATION.

Building Official [Signature]

Date JUL 26 1977



## CITY OF DULUTH,

BUILDING INSPECTION  
DIVISION

## BUILDING PERMIT APPLICATION

IMPORTANT - Complete ALL items. Mark boxes where applicable.

LOCATION OF BUILDING	Street Address		Zone	Plot & Parcel
	Lot			
	Block	Subdivision		

## TYPE AND COST OF BUILDING—All applicants complete Parts A-D

<b>13 A. TYPE OF IMPROVEMENT</b> 1 <input type="checkbox"/> New building 2 <input type="checkbox"/> Addition (If residential, enter number of new housing units added, if any, in Part D) 3 <input type="checkbox"/> Repair, replacement or Alteration (See 2 above) 4 <input type="checkbox"/> Wracking (If multifamily residential, enter number of units in building in Part D) 5 <input type="checkbox"/> Moving (relocation) 6 <input type="checkbox"/> Foundation only		<b>57 D. PROPOSED USE - For "Wracking" most recent use.</b> <b>RESIDENTIAL</b> 01 <input type="checkbox"/> One family 02 <input type="checkbox"/> Two family 03 <input type="checkbox"/> Three family 04 <input type="checkbox"/> Four family 05 <input type="checkbox"/> Five or more family 06 <input type="checkbox"/> Transient hotel, motel, or dormitory - Enter number of units _____ 07 <input type="checkbox"/> Other - Specify _____		<b>NON-RESIDENTIAL</b> 09 <input type="checkbox"/> Amusement, recreational 10 <input type="checkbox"/> Church, other religious 11 <input type="checkbox"/> Industrial 12 <input type="checkbox"/> Parking garage 13 <input type="checkbox"/> Service station, repair garage 14 <input type="checkbox"/> Hospital, institutional 15 <input type="checkbox"/> Office, bank, professional 16 <input type="checkbox"/> Public utility 17 <input type="checkbox"/> School, library, other educational 18 <input type="checkbox"/> Stores, mercantile 19 <input type="checkbox"/> Other - Specify _____
<b>14 B. OWNERSHIP</b> 1 <input type="checkbox"/> Private (individual, corporation, nonprofit institution, etc.) 2 <input type="checkbox"/> Public (Federal, State, or local government)				
<b>15 C. COST. DATE</b> 21 Cost of improvement \$ _____ To be installed but not included in above cost 27 a. Electrical _____ 33 b. Plumbing _____ 39 c. Heating, air conditioning _____ 45 d. Other (elevator, etc.) _____ 51 TOTAL COST OF IMPROVEMENT \$ _____		(Omit cents)	Describe in detail proposed use of buildings, e.g., food processing plant, machine shop, laundry building at hospital, elementary school, secondary school, college, parochial school, parking garage for department store, rental office building, office building at industrial plant. If use of existing building is being changed, enter proposed use.	

## III SELECTED CHARACTERISTICS OF BUILDING - For new buildings and additions, complete Parts E - L; for wracking, complete only Part J, for all others skip to IV.

<b>59 I. TYPE OF MECHANICAL</b> Will there be central air conditioning? 1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No Will there be an elevator? a <input type="checkbox"/> Yes - <input type="checkbox"/> No		<b>61 G. TYPE OF SEWAGE DISPOSAL</b> 1 <input type="checkbox"/> Public or private company 2 <input type="checkbox"/> Individual (septic tank, etc.) <b>62 H. TYPE OF WATER SUPPLY</b> 1 <input type="checkbox"/> Public or private company 2 <input type="checkbox"/> Individual (well, cistern)		<b>J. DIMENSIONS</b> 64 Number of stories _____ Total square feet of floor area, all floors, based on exterior dimensions _____ Total land area, sq. ft. _____	
<b>60 E. PRINCIPAL TYPE OF FRAME</b> 1 <input type="checkbox"/> Masonry (wall bearing) 2 <input type="checkbox"/> Wood frame 3 <input type="checkbox"/> Structural steel 4 <input type="checkbox"/> Reinforced concrete 5 <input type="checkbox"/> Other - Specify _____		<b>63 PRINCIPAL TYPE OF HEATING FUEL</b> 1 <input type="checkbox"/> Gas 2 <input type="checkbox"/> Oil 3 <input type="checkbox"/> Electricity 4 <input type="checkbox"/> Coal 5 <input type="checkbox"/> Other - Specify _____		<b>K. NO. OF OFF-STREET PARKING SPACES</b> 66 Enclosed _____ 68 Outdoors _____	
				<b>L. RESIDENTIAL BUILDINGS ONLY</b> 70 Number of bedrooms _____ 73 Number of bathrooms } Full _____ 74 } Partial _____	

## IV. IDENTIFICATION - To be completed by all applicants.

Name	Mailing address - Number, street, city, and State	ZIP code	Tel. No.
1. Owner			
2. Contractor			
3. Architect			

The owner of this building and the undersigned agree to conform to all applicable laws of DULUTH, MINNESOTA

Signature of applicant	Address	Application date

DO NOT WRITE IN THIS SPACE - FOR OFFICE USE

Approved by	Permit fee \$	Date permit issued	Permit Number
			75

MINNESOTA STATE BUILDING CODE DIVISION  
CITY OF DULUTH  
EXTERIOR ENVELOPE AVERAGE "U" COMPUTATION

OWNER \_\_\_\_\_  
SITE ADDRESS \_\_\_\_\_  
CONTRACTOR \_\_\_\_\_ DATE \_\_\_\_\_ PHONE \_\_\_\_\_

Determine working square footage of each.

1. Total exposed wall area ..... sq. ft. x \_\_\_\_\_ =   
2. Total roof/ceiling area ..... sq. ft. x \_\_\_\_\_ =

Total exposed wall area above floor = \_\_\_\_\_

- a. Total wall window area.....  
b. Total door area .....  
c. Total sliding glass door area .....  
d. Total fireplace wall area.....  
e. Total wall framing area (average 10%).....  
f. Total net wall area above floor .....  
g. Total rim joist area .....

Total exposed foundation area = \_\_\_\_\_

- h. Total foundation window area.....  
i. Total net foundation area above grade .....

Determine "U" value of each wall segment.

- a. \_\_\_\_\_ X "U" \_\_\_\_\_ = \_\_\_\_\_  
b. \_\_\_\_\_ X "U" \_\_\_\_\_ = \_\_\_\_\_  
c. \_\_\_\_\_ X "U" \_\_\_\_\_ = \_\_\_\_\_  
d. \_\_\_\_\_ X "U" \_\_\_\_\_ = \_\_\_\_\_  
e. \_\_\_\_\_ X "U" \_\_\_\_\_ = \_\_\_\_\_  
f. \_\_\_\_\_ X "U" \_\_\_\_\_ = \_\_\_\_\_  
g. \_\_\_\_\_ X "U" \_\_\_\_\_ = \_\_\_\_\_  
h. \_\_\_\_\_ X "U" \_\_\_\_\_ = \_\_\_\_\_  
i. \_\_\_\_\_ X "U" \_\_\_\_\_ = \_\_\_\_\_

3.....Total =

If item #3 is the same as, or less than item #1, you have met the intent of SBC 6006(c)2.

Total exposed roof/ceiling area = \_\_\_\_\_

- j. Total skylight area.....  
k. Total roof/ceiling framing area (average 10%)...  
l. Total net insulated roof/ceiling area.....

Determine "U" value for each roof/ceiling segment.

j. \_\_\_\_\_ X "U" \_\_\_\_\_ = \_\_\_\_\_

k. \_\_\_\_\_ X "U" \_\_\_\_\_ = \_\_\_\_\_

l. \_\_\_\_\_ X "U" \_\_\_\_\_ = \_\_\_\_\_

4.....Total =

If total of #4 is the same as, or less than #2, you have met the intent of SBC 6006(c)1.

#### Alternate Building Envelope Design

To utilize the total envelope system method, the values established by the sum of items #3 and #4 shall not be greater than the sum of items #1 and #2.

1. \_\_\_\_\_ + 2. \_\_\_\_\_ = \_\_\_\_\_

3. \_\_\_\_\_ + 4. \_\_\_\_\_ = \_\_\_\_\_

### 3.0 THE KENTUCKY CASE STUDY

This section presents a brief history of the Pike County Coal Gasification Facility project in Kentucky and reports the results of the site visits conducted by MITRE on August 8, 9, and 10, 1979.

MITRE personnel interviewed representatives of Pike County as well as the regulatory agencies involved. The major regulations affecting the Pike County project relate to environmental protection and occupational health and safety. Even though Pike County plans to sell the gas produced from its coal gasifier, this sale is not subject to rate approval by the Public Utilities Commission because the facility will be owned by the county. At the time of this study, the state of Kentucky has received partial delegation for enforcement of air quality standards from the Environmental Protection Agency (EPA). Enforcement of standards for water quality remains with the EPA Regional Office in Atlanta, Georgia. Consequently, MITRE conducted interviews with both Federal and State-level agencies.

Information contained in this section would not have been obtained without the valuable assistance of the following individuals, who gave their time generously and shared their knowledge and experience:

Russel W. Cook, Jr.; Mason & Hanger-Silas Mason Co., Inc.  
George W. Eckert, Project Manager; Pike County  
Douglas C. Griffin; Kenvirons, Inc.  
Guy R. Puffer; Mason & Hanger-Silas Mason Co., Inc.  
Gary H. Revlett; Kenvirons, Inc.

From the Environmental Protection Agency, Region IV:

Joseph Franzmathes; New Source Coordinator  
John Herrmann; Hazardous Waste  
William Phillips; Attorney for Air, Water, Discharge, and  
Resource Conservation and Recovery Act  
William Wagner; Air Programs  
Robert Wooten; Water Enforcement  
Harriott Yancey; Program Analyst

From the Kentucky Department for Natural Resources and Environmental  
Protection:

George D. Allyeier, Division of Water Quality  
Clyde P. Baldwin, Division of Water Quality  
Russel Barnett, Office of Policy and Program Analysis  
Charles W. Richie, Division of Hazardous Materials and Waste  
Management  
Gautam Trivedi, Bureau of Environmental Protection  
Joseph Wilson, Bureau of Environmental Protection

From the Kentucky Department of Occupational Safety and Health:

Michael Ragland, Executive Director  
Robert W. Harrison, Standards Specialist  
Fred J. Sackfield, Chemical Specialist, Education and Training  
Division  
George Schauburger, Assistant Director for Occupational Safety  
and Health Compliance

We wish to express our deep appreciation to all the above individuals for their contribution to this project.

### 3.1 Lessons Learned From the Pike County Experience

The difficulties which caused delays in the Pike County Coal Gasification project are not of a regulatory nature. However, the experience of Pike County with regulatory compliance still points to possible improvements of the process.

Environmental regulations present the most significant requirements and the greatest potential for delays and conflicts. Pike

County representatives, as well as all interviewees from environmental regulatory agencies, unanimously recommend that regulatory compliance be an integral part of project planning. The suggestions made for specific actions to avoid regulatory conflicts and delays are listed below, by source

Pike County

- In planning a project today, the industrial manager should consult regulatory agencies as soon as the concept is developed and before undertaking any detailed design. The traditional approach to engineering design may cause many costly design changes to meet environmental requirements. (As a corollary, budget planning for the project should take into account the cost of complying with regulations and the required lead time). Early consultation with the regulators would also alert the applicant to the problems in air quality compliance created by its choice of site for the coal gasification facility.

Department of Natural Resources and Environmental Protection (DNREP)

- Project managers should plan for compliance with environmental regulations and not try to short cut them. If proper consideration to environmental control is given at the outset, much conflict and delay can be avoided.
- Project engineers should meet informally with State regulatory staff before preparing or submitting a permit application. DNREP will provide guidance as requested.
- Concerning projects sponsored by the Department of Energy (DOE), a formal system should be established for DOE to notify the State in which it is considering such projects prior to approval of the proposals. The State could then inform DOE of any potential problem. The example cited was the Air Products SRC 1 project. Air Products discussed this project with DNREP even before submitting the proposal to DOE. Consequently, this project has encountered no regulatory delay.

## Environmental Protection Agency, Region IV, Atlanta

- The same recommendation is made by the Regional Office of the Environmental Protection Agency (EPA). EPA is attempting to set up a memorandum of understanding with DOE on this subject.
- If DOE wants to accelerate commercialization of coal gasification, it can attempt to obtain from the Federal Environmental Protection Agency (EPA) a statement of priority, such as the one currently given for power plants. In that case, the PSD review could be shortened to less than one year if EPA Headquarters would waive the requirements for air monitoring.
- The process for the National Pollutant Discharge Elimination System (NPDES) permit could also be shortened if companies submit sufficient and accurate information initially. This comment applies equally to the other regulatory requirements.

The following sections of this report provide more detail on the background of this project, its regulatory setting, and the regulatory requirements with which it must deal.

### 3.2 Background\*

In July 1976, Pike County responded to a Program Opportunity Notice from the Energy Research and Development Administration (ERDA) for demonstration of low/medium-Btu coal gasification. The Pike County proposal was accepted. ERDA (now the Department of Energy) was to provide 50 percent of the project's estimated total cost of 6 million dollars. Fifty percent was expected to be shared by the Appalachian Regional Commission and the Kentucky State Department

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\*Technical information on the project contained in this section comes from "Environmental Assessment, Coal Gasification Facility and Related Douglas Site Development, Pike County, Kentucky"; U.S. Department of Energy, January 1979.

of Energy. The planned date for construction completion was January 1979. However, schedule slippages have occurred, which contributed to cost escalation beyond the expected level. Future developments on this project depend on a current review of the project scope by the Department of Energy.

The coal gasification system was proposed as part of a larger development at the Douglas site in Pike County, KY. This site originally consisted of 65 acres deeded to Pike County by the Kentucky Department of Transportation for use as an industrial park. Subsequently, Pike County acquired additional property and expanded the site to its current 115 acres. The site was selected for the gasification project because of its ready access by U.S. Route 23, the Pikeville Airport, and the Chessie Railroad system. Coal gasification is attractive to Pike County because of the abundant local coal supply.

#### 3.2.1 Project Configuration

The coal gasification plant is designed to supply low-Btu gas to fuel a boiler which will produce steam and a hot and chilled water supply for heating and cooling a planned community consisting of:

- a fire station
- a 120-bed capacity nursing facility
- a day-care facility for approximately 80 pre-school children
- a consolidated school for approximately 750 students
- a 10,000 sq. ft. shopping center



- a 500 multi-unit dwelling

Construction and operation of the facility is planned in two phases.\* During Phase 1, the raw producer gas will be directly used in the boiler. During Phase 2, clean up systems will be added, the boiler will be converted to use clean gas, tars and oils from the gas clean up system and fuel oil.

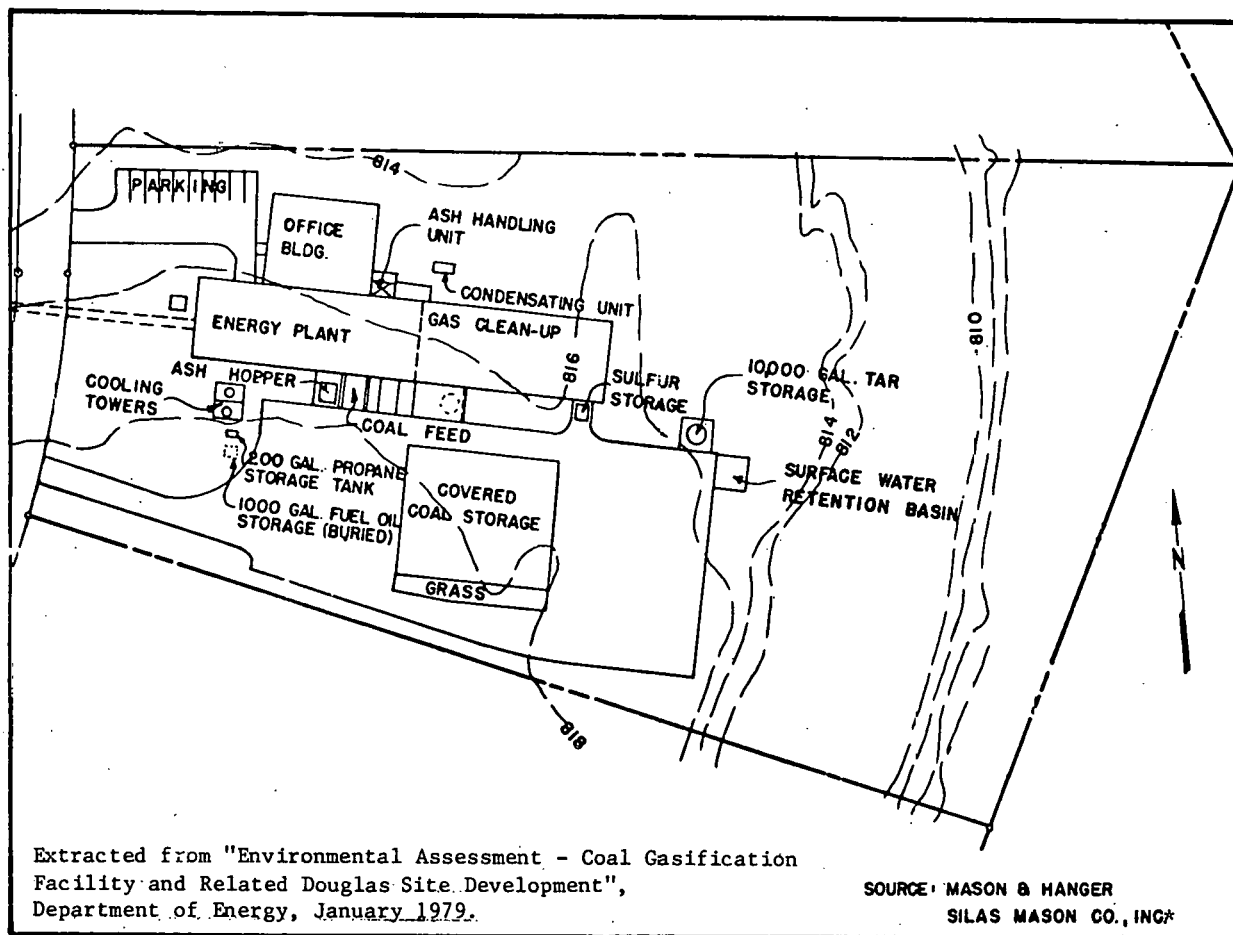
Figure 3-1 shows the layout of the coal gasification plant. The plant systems can be grouped into: coal handling, gasification, steam production, hot and cold water supply, and gas clean up. Ancillary systems include ash handling cyclones for particulate removal, a back up fuel source and flaring systems.

The coal handling system is simple. Coal will be delivered to the site by truck. The storage area is designed to accommodate a 30-day coal supply. The storage area is covered and floored in order to prevent excessive particulate emissions and drainage. The coal dump station will be equipped with a spray system.

Two gasifiers will be installed for the project. They are fixed-bed Wellman-Galusha agitated gasifiers, 6.5 feet in diameter, with a coal input capacity of 3,000 pounds/hour each. The coal feed rate may be turned down to 250 pounds/hour. At full operating load, each gasifier will produce approximately 200,000 scf/hr of fuel gas

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\*A possible change resulting from the current DOE review of the Pike County project is the combination of these two phases into a single one.



**FIGURE 3-1**  
**LAYOUT OF THE PIKE COUNTY**  
**COAL GASIFICATION FACILITY**

with a heating value of 150 Btu per scf. Figure 3-2 is a diagram of the gasifier.

The gasifiers will consume standard Eastern Kentucky coal, mined locally in Pike County. Treated water for the facility will come from the Marrowbone Creek Water District. Water requirements for the gasification facility vary, but will not exceed 175,000 gallons/day.

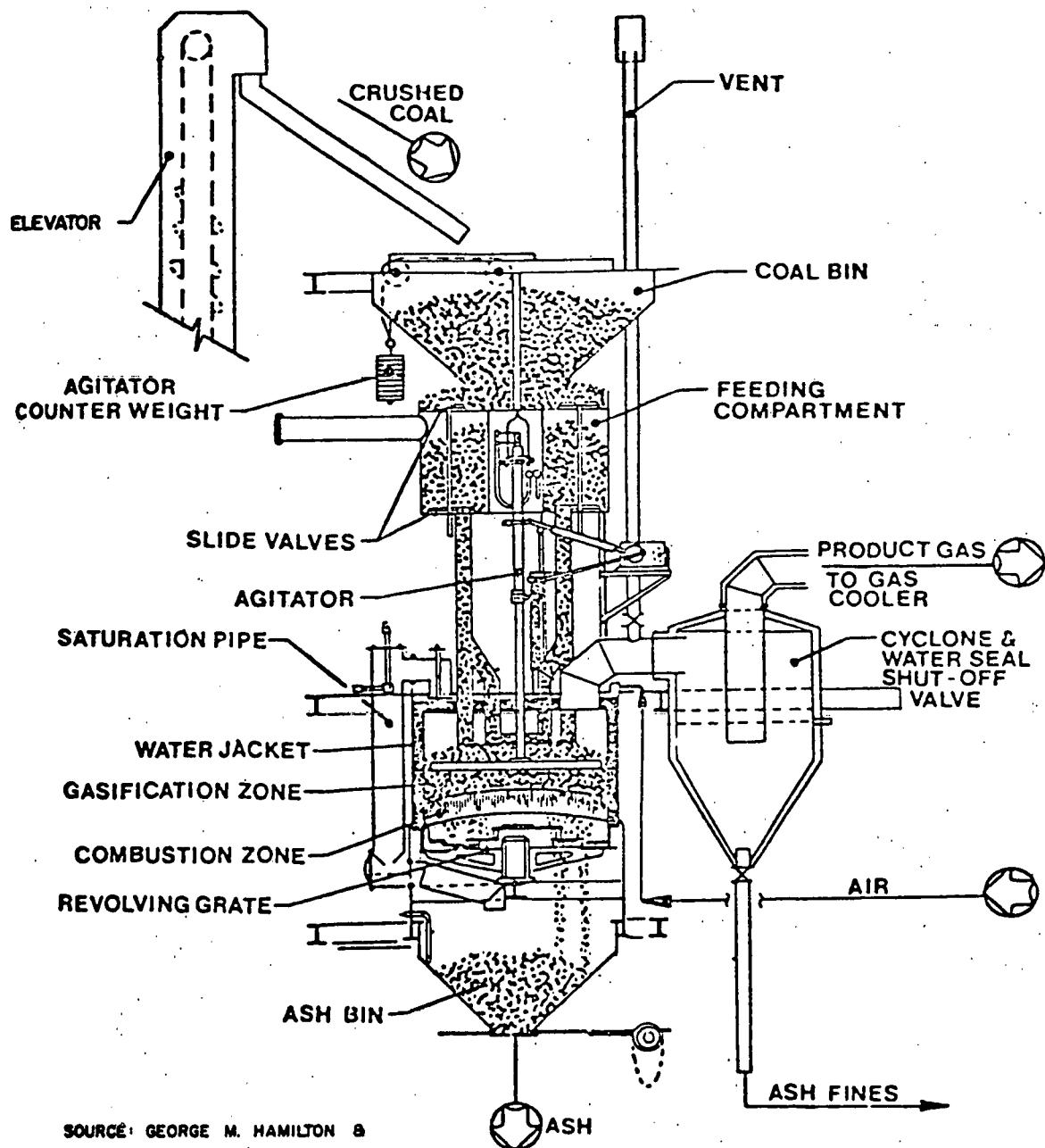
The flaring system on each gasifier serves to burn any vent gases produced during startup, shutdown, and emergency conditions.

During Phase 1, the boilers will fire producer gas directly. In Phase 2, the boilers will have a mix of fuels available which will include: clean producer gas, and tars and oils from the clean up system. The clean up system will operate in three stages: (1) quench cooling and heavy tar removal, (2) additional cooling and light tar and oil removal, (3) hydrogen sulfide removal. In Phase 2, a Holmes Stretford H<sub>2</sub>S removal system will be added. The boilers will be capable of firing No. 2 fuel oil as a standby fuel should gasifier shut down be required at any time. Current plans include underground storage of 1,000 gallons of No. 2 fuel oil.

### 3.2.2 Process Effluents

#### Solid Wastes

Approximately 2,426 pounds/day of ash is expected to be generated by the gasifier in Phase 1. In Phase 2, the gasifiers will operate at maximum capacity, and ash production will increase to 9,000 pounds/day. Current plans call for this ash to be disposed



SOURCE: GEORGE M. HAMILTON &  
THE McDOWELL-WELLMAN  
ENGINEERING COMPANY (1961)

Extracted from "Environmental Assessment - Coal Gasification Facility and Related Douglas Site Development," Department of Energy, January 1979.

**FIGURE 3-2**  
**WELLMAN-GALUSHA AGITATED GASIFIER**

of at the State approved landfill near Elkhorn City. Ash will be collected and transported in closed containers, to avoid dusting.

Sulfur from the desulfurization process will be collected as a wet cake, then either mixed with the ash or disposed of as is at the State approved landfill.

#### Water Discharges

Since much of the process water will be recirculated, water discharges should be limited. These discharges will be routed either to the sanitary or storm sewer systems for the Douglas site.

Runoff from the coal handling operations will be collected since the coal storage area will be covered and floored. This runoff will be discharged into a settling pond, which, in turn, will discharge into the storm drainage system for the Douglas Site.

#### Atmospheric Emissions

The major sources of emissions will be the boiler exhausts. Table 3-1 describes these expected emissions.

A 127 foot tall stack is designed to handle combustion gases from the boilers. Dust and particulates from the boilers are partially removed in the multiple cyclone dust collectors before being emitted from the stack.

Sulfur dioxide will be removed by the Holmes Stretford system during Phase 2. Finally, in order to deal with concentrations of dangerous vapors from the gasification and clean up process which may build up in the building, proper ventilation and clean up of

TABLE 3 -1

## ATMOSPHERIC EMISSIONS FROM BOILERS

POLLUTANT	EXPECTED EMISSION	ALLOWABLE LEVEL
SO <sub>2</sub>	Phase 1: 17.8 lb/hr * Phase 2: 11.5 lb/hr	17.85 lb/hr
Particulates	Phase 1: 0.3 lb/hr * Phase 2: 1.6 lb/hr	7.3 lb/hr
NO <sub>2</sub>	Phase 1: 12.6 lb/hr * Phase 2: 12.6 lb/hr	Exempt

Extracted from "Environmental Assessment - Coal Gasification Facility and Related Douglas Site Development", Department of Energy, January 1979.

\*As a result of the scope change, Phase 2 may incorporate burning of clear gas. Atmospheric emissions will be quantified as soon as design of the gas cleaning system is completed.

vent gases are proposed. This should satisfy occupational health and safety standards and prevent these vapors from becoming ambient pollutants.

### 3.3 The Regulatory Setting

The major regulatory requirements of a coal gasification project relate to the construction and operation phases of the project. This section identifies the regulatory agencies involved in the Pike County Coal Gasification Facility case. Deviations from this case are also noted. The detailed requirements for environmental protection are discussed in the next section since they represent the most significant part of the regulatory process for a coal gasification plant.

Table 3-2 summarizes the experience of Pike County Coal Gasification Facility to date. As shown, most permits are required prior to construction. In Kentucky, the major requirements come from Federal and State regulatory agencies. Because Kentucky has not been delegated total authority for environmental regulations, both the Kentucky Department of Natural Resources and Environmental Protection, and the Environmental Protection Agency are involved.

#### 3.3.1 Kentucky Department for Natural Resources and Environmental Protection

A company which plans to install a coal gasifier currently must submit permit applications to several Divisions within this Department. The Division of Air Pollution reviews the applications and issues the construction and operation permits for air emissions.

TABLE 3-2

## REGULATORY AGENCIES AND THEIR ROLES

AGENCY	ROLE BEFORE CONSTRUCTION	ROLE BEFORE STARTUP & OPERATION	ROLE DURING OPERATION**
Kentucky Department for Natural Resources and Environmental Protection	Issues construction permits for: air, water discharge, water withdrawal*, solid waste, and floodway construction	Issues operating permits for air, water, and solid waste	Enforces conditions of operating permits
U.S. Environmental Protection Agency, Region IV Office,	Issues construction permits for air and water	Issues operating permits for air, water, and solid waste	Enforces conditions of operating permits
Kentucky Occupational Safety and Health Standards Board	None	None	Inspects plant and enforces regulations concerning occupational safety and health
Kentucky Department of Housing, Building and Construction	Issues building permit after inspection by the Fire Marshall	Certifies facility after construction and issues electrical permit	None
Kentucky Department of Health	Issues plumbing permit	None	None

\* Pike County did not need a water withdrawal permit.

\*\* These are anticipated roles. The project is not yet operating.



This Division has prepared instructions for permit applications. A draft of these instructions is included in Appendix F(1). The Division of Water Quality is responsible for permits for water discharge. The Division of Hazardous Materials and Solid Waste management grants operating permits for solid waste disposal.

If a company plans to withdraw more than 10,000 gallons/day of water, it must obtain a permit from the Division of Water Resources. Pike County did not need this permit because water withdrawal for the coal gasification project will be from the municipal system. The city, as owner of the municipal system, would be responsible for obtaining the proper permit.

The Division of Water Resources also reviews and grants the floodway construction permit, which must be obtained before any physical modification to the site can be made (i.e., earth moving).

For FY 1980, the Kentucky Department for Natural Resources and Environmental Protection has included funding in its proposed budget for a Central Permit Coordination Unit. Such a unit has been recommended in a recent study conducted by the state. The Central Permit Coordination Unit would present a single point of contact for industry. It would provide all the necessary information for permit application and would receive all these applications.

Permit review and issuance will remain with the individual Divisions. However, the Department is making an effort to keep these reviews coordinated.

### 3.3.2 Environmental Protection Agency; Region IV (EPA)

The Regional EPA Office issues Federal operating and construction permits for air and water. At the time of the site visits, it has developed documentation on permit procedures. This office works closely with the Kentucky Department for Natural Resources and Environmental Protection. For example, for the Prevention of Significant Deterioration (PSD) review, the State does the engineering evaluation of the submissions, EPA reviews the results and recommendations by the State and issues the permit accordingly. The State and EPA schedule simultaneous public comment periods in order to limit the lag time for issuing the State and Federal permits.

This office reported that they are trying to consolidate the review process. The date of October 1, 1980, has been set for combining all the administrative aspects of permit review and issuance. Technical reviews will be combined by that date for all permits except air. Air permit technical review will be combined with the other reviews by October 1, 1981.

### 3.3.3 Kentucky Occupational Safety and Health Standards Board

This regulatory Board is part of the Kentucky Department of Labor. It does not issue permits. It only inspects the working environment and assures compliance with regulations during the operation of the plant.

### Kentucky Department of Housing, Buildings, and Construction

This Department is responsible for issuing a building permit for any construction (and not just coal gasification plants) which exceeds 20,000 square feet or houses more than 100 employees. It reviews the construction plans and engineering drawings of the projects, as well as boilers in the case of Pike County, for their safety features (e.g. sound construction, absence of fire hazards, adequate fire escapes, etc.). This permit process is a familiar one to industry and poses no delay problem. The average time requirement is two weeks.

### Other Regulatory Bodies

Additional agencies may be involved beyond those with which Pike County was involved.

Forty-four counties in Kentucky have their own construction regulations which must be complied with. Twenty large urban counties require a zoning permit before construction.

Other regulatory agencies include:

- the Department of Transportation, if the transportation of coal and solid wastes exceeds defined weight and frequency limits (which is not the case with Pike County)
- the Federal Aviation Administration, if the site is near an airport
- the Corps of Engineers, if water is discharged into or withdrawn from navigable waterways. Requirement for a permit from the Corps of Engineers starts a potentially lengthy process because it may trigger the National Environmental Protection Act (NEPA) process.

### 3.4 Regulatory Requirements for Environmental Protection in the State of Kentucky

The regulatory requirements for environmental protection cover three main areas: Air, Water and Solid Waste. The legislative bases for these requirements are listed in Table 3-3. The Environmental Protection Agency, Region IV and the Kentucky Department of Natural Resources and Environmental Protection are responsible for enforcing the environmental regulations. This section describes the nature of these requirements, the necessary actions for compliance, and the time required for such compliance.

#### 3.4.1 Air Emissions

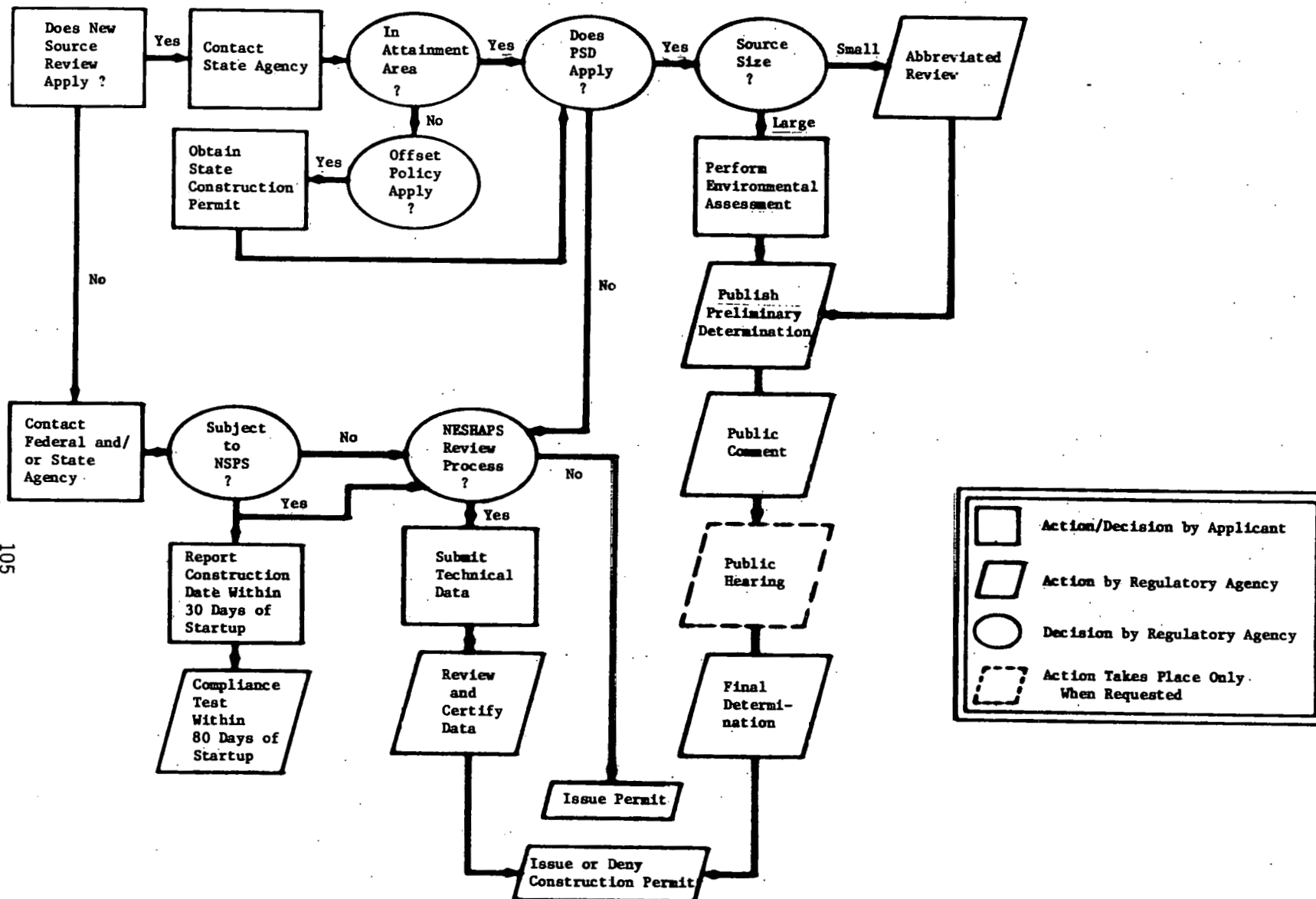
For industrial applications of low-Btu coal gasification, air quality-related regulatory requirements are by far the most complex and time consuming. They are perceived by Pike County to be the greatest deterrent to expanded industrial adoption of this technology. Figure 3-3 summarizes the action path which was followed by Pike County to comply with these requirements. The following paragraphs of this subsection highlight the significant decisions along this path and discusses deviations from this experience, where significant.

In the case of Pike County, KY, Federal and State authorities are involved. Counties may also have jurisdiction in some other cases.

TABLE 3-3

LEGISLATIVE BASIS FOR REGULATORY REQUIREMENTS  
FOR ENVIRONMENTAL PROTECTION-KENTUCKY

- Clean Air Act
- Clean Water Act
- Resource Conservation and Recovery Act
- Kentucky Air Pollution Control Regulations
- Kentucky Waste Discharge Permits Regulations
- Kentucky Solid Waste Regulations



**FIGURE 3-3**  
**AIR QUALITY REGULATORY COMPLIANCE**  
**IN KENTUCKY—ACTION PATH**

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To comply with air standards regulations, the project is subject to four types of review consistent with the requirements of the Clean Air Act:

- the New Source Review Program (NSR)
- the Prevention of Significant Deterioration Program (PSD)
- the National Emission Standards for Hazardous Air Pollutants Program (NESHAPS)
- the New Source Performance Standards Program (NSPS)

Not all sources are subject to these four reviews. Briefly, a project is subject to NSR, also called "nonattainment review" if it is classified as a "new source". During this review, the state agency determines whether the project is located in an attainment or a nonattainment area,\* and determines whether the project is subject to PSD review (attainment) or to offset policy.

Full PSD review is necessary if the potential pre-control emissions of any regulated pollutant exceed 250 tons/year.\*\* For coal gasification, the regional EPA office currently examines only SO<sub>2</sub> and particulate emissions. The applicant must submit to the State agency data from one year of monitoring meteorological data at the proposed site for the gasification plant. These data may be developed by the applicant or obtained from another approved source

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\*i.e., area meeting or not meeting ambient air quality for a given air pollutant.

\*\*A proposal to change the limit to "post control" emissions (i.e. measured after introduction of control equipment) has been published in the September 5, 1979 Federal Register. This proposal is expected to be adopted at the end of the public comment period.



(e.g. a nearby weather station). They are used by the State to model the impacts of the operations on the surrounding air quality. The applicant subject to PSD must also submit to the State proof of best available control technology. This amounts to the applicant demonstrating that several alternative control technologies have been evaluated. A small plant, with actual emissions below the stated limits, is exempted from a full PSD review, including proof of best available control technology (BACT) and monitoring data. In either case (large or small plant), a construction permit is required. If the applicant is subject to the offset policy, the state permit must be granted before a final PSD determination can be made. Thus, for offset and PSD permits, both the Kentucky Department for Natural Resources and Environmental Protection and the Federal Environmental Protection Agency are involved.

The NESHAPS currently applies to sources which emit asbestos, mercury and vinyl chloride. It also requires a construction permit. The NSPS review, on the other hand, does not. Both of these reviews are performed by the state and Federal agencies. Pike County was exempted from both reviews because of the nature of its emissions and because there are no NSPS standards for coal gasification.

In all of the above cases, the applicant must obtain and fill out the proper application forms. These forms specify the types of data to be submitted. Design of the gasification plant and emission data are required.

Pike County was subject to the full PSD review. As of the time of the MITRE interview, it had obtained its air construction permit. A copy of this permit is included in Appendix F (2). It details all the conditions to be met while operating the gasifier. The county must submit further data to obtain an operating permit. The applicant felt that the time delay experienced in obtaining its air permit was due to the fact that there was no precedent to Pike County and that the State was learning how to regulate coal gasification. There were apparently questions about whether the coal gasification process should be classified as a chemical process. The county representatives reported that the air quality modeling was done twice by the state, using two different models. Compounding the problem was the change of Pike County's classification from being an attainment area to being a nonattainment area.

From our conversation with the Kentucky Department for Natural Resources and Environmental Protection, we believe that the problem is not due to the lack of familiarity with coal gasification. Instead, it may come from the insufficient data submitted. Because of the location of the gasifier in a depression, the boiler can operate only at half capacity at any time in order to comply with air quality standards.\* Consequently, the estimated cost of producing gas will

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\*The plant is also operating at half capacity at this time due to insufficient demand for gas.

be higher than originally anticipated according to a county representative. In addition, the Pike County representative reported that it was extremely difficult to obtain, even from the manufacturer of the gasifier, data on operation of the gasifier at partial capacity because all previous experience had been with full capacity operation.

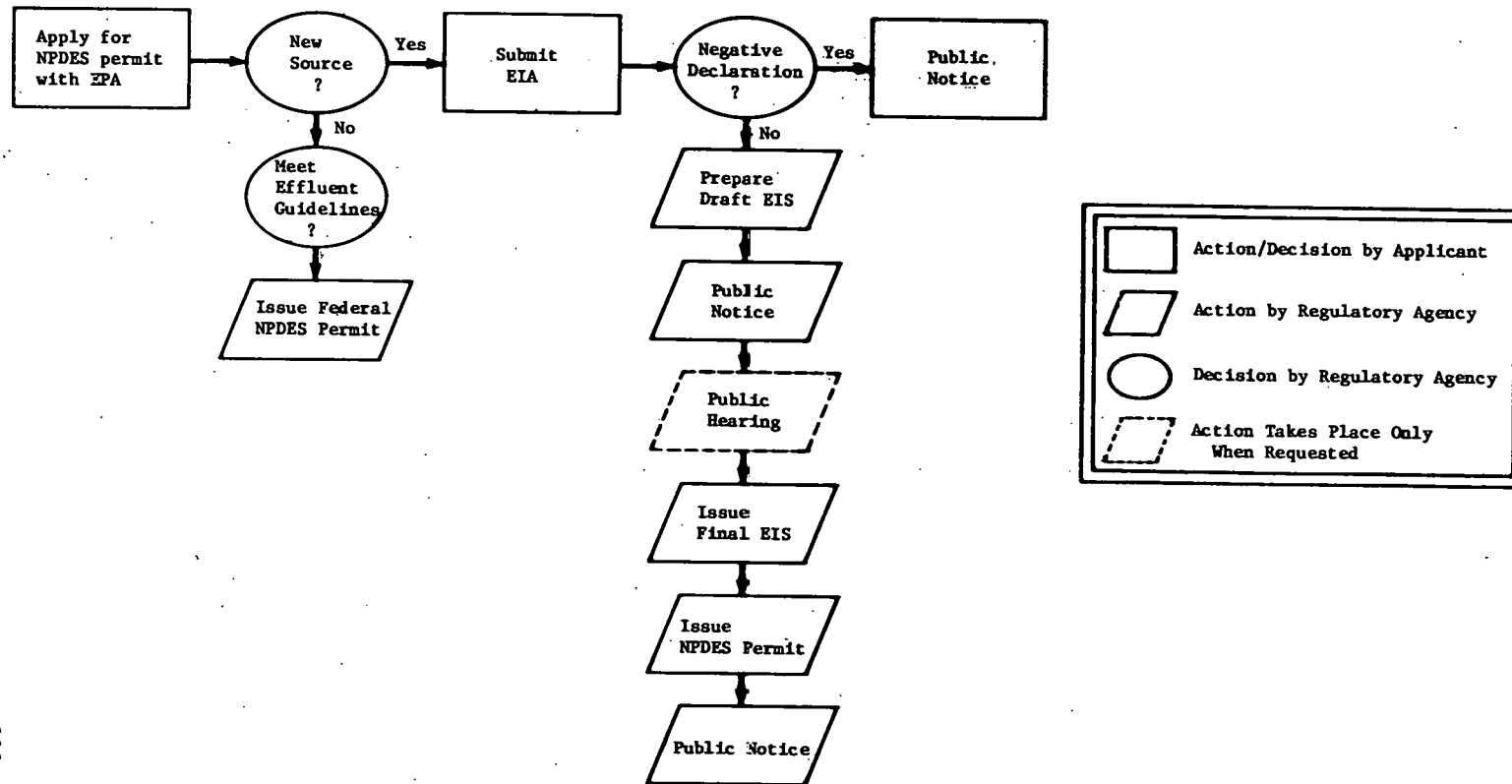
Appendix G is Pike County's application for the air permit. Appendix H contains the preliminary determination by the Kentucky Department for Natural Resources and Environmental Protection. These appendices illustrate the amount of information which the applicant must submit, and the amount of analysis that must be performed by the State agency.

#### 3.4.2 Water Discharge

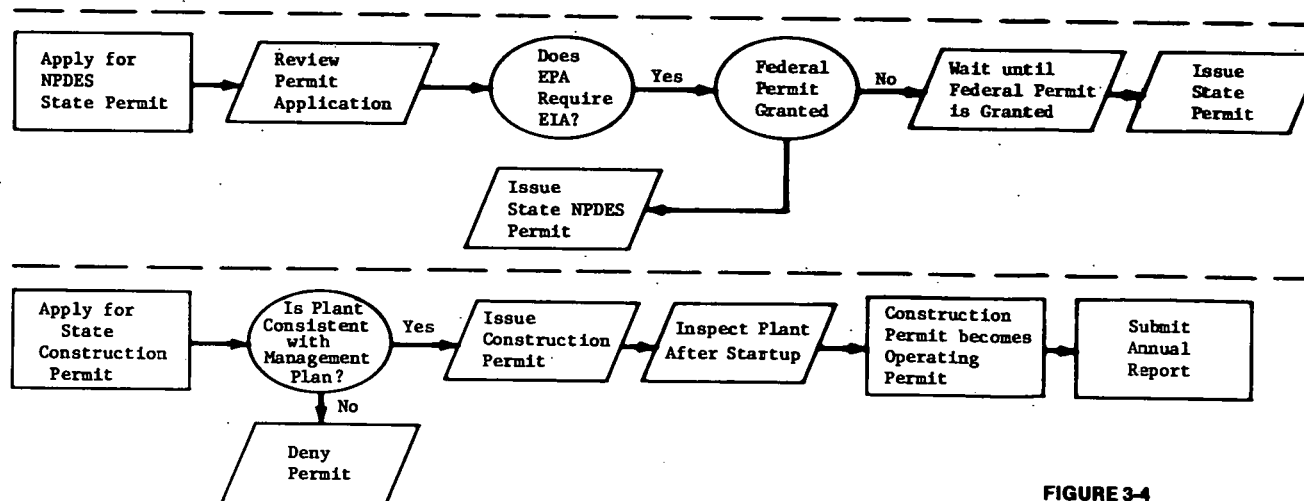
Construction and operation permits must be obtained from the Kentucky Department for Natural Resources and Environmental Protection (DNREP). A National Pollutant Discharge Elimination System (NPDES) permit must be obtained from the Regional EPA office and, a similar one from the Kentucky DNREP.

The action path for complying with water discharge regulations in the case of Pike County is shown in Figure 3-4.

For the NPDES permit, the Regional EPA office defines as "new source" any source for which construction starts after the effective date of an effluent guideline which reasonably covers this source. A plant modification is considered a new source only if alterations constitute the total reconstruction of an existing source.



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**FIGURE 3-4**  
**WATER DISCHARGE REGULATORY COMPLIANCE**  
**IN KENTUCKY—ACTION PATH**

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The National Environmental Protection Act (NEPA), requiring an Environmental Impact Statement (EIS) applies to a new plant if:

- it is covered by a new source performance standard and therefore is classified as a "new source," and if
- the plant is to be located in a state where the State agency has not assumed responsibility for the permit process (as is the case for Kentucky).

If an EIS is required by the regional EPA, the State DNREP will not issue the permit until the EIS process has been complied with.

The construction permit has to be obtained in accordance with the Kentucky Waste Discharge Permits Regulations (401KAR 5:005). This permit is granted by the Division of Water Quality in the Kentucky DNREP. The applicant must submit three sets of detailed plans of the proposed facilities and information on the waste characteristics. If the facility discharges 50,000 gallons/day or more, topographic information on the site must also be submitted.

The construction permit becomes an operating permit automatically following inspection of the plant after construction and start-up and approval by DNREP. This operating permit is valid for five years. The same process (i.e. inspection and approval) applies for renewing the operating permit.

Pike County was classified as an existing source by the EPA regional office and did not have to prepare an EIS for EPA. It originally obtained an NPDES permit from EPA based on the statement that all liquid wastes were going to the municipal system. In its review of the NPDES permit application from Pike County, DNREP required that

the coal storage area be floored and covered, and that a settling pond be provided. The NPDES permit from the Regional EPA office was rescinded because EPA requires that the settling pond have an NPDES permit. Representatives of Pike County reported that the application for this NPDES permit encountered a three month delay because of EPA's misunderstanding as to which of the contractors to Pike County applied for the permit.

To date, Pike County has obtained the state NPDES permit and construction permit for the coal gasification facility. The county has also obtained the construction permit from DNREP for the settling pond. An operating permit must be obtained at the proper time. The EPA has reassured the county that the NPDES permit for the settling pond will be issued, but has not yet actually done so.

#### 3.4.3 Solid Waste Discharge

The Division of Hazardous Materials and Waste Management in DNREP is the only agency involved in this case. Ash generated from a coal gasifier is currently classified as non-hazardous. However, this classification may be changed by new EPA rules on hazardous waste, expected to be issued in December 1979. If classified as hazardous, the ash cannot be disposed of in Kentucky according to current state regulations.

According to the Kentucky Solid Waste Regulations (401 KAR 2:010), the applicant who disposes of non-hazardous solid waste on his site must obtain a landfill construction permit and an operating

permit. Application for the construction permit must include four sets of plans, a site analysis and a description of the wastes to be disposed of. The state reviews this application and gives public notice. If no hearing is requested, a construction permit is issued. The applicant who wants to construct a landfill on a private site must post a bond of \$3,000 plus \$500/acre. The operating permit is issued following review of the analysis of the solid wastes. This permit is valid for one year.

Pike County does not have to obtain a landfill construction permit because it disposes of the ash at an approved existing landfill. However, once the ash is generated, DNREP will analyze it and determine whether or not to grant an operating permit.

#### 3.4.4 Time Required for Environmental Regulatory Compliance

Table 3-4 summarizes the time requirement for complying with major environmental regulations in Kentucky. The time indicated in this table is measured from the date of submission of the application, and does not include preliminary contacts between the parties. In the worst case, i.e. if public hearings are requested at every step, if the project is subject to all regulations, the time lag of the compliance process may be a sufficient obstacle to stop the project because of the economic costs of these regulatory delays. In the case of Pike County, it appears that the regulatory agencies have stayed within the statutory time limits for their actions. Even so, the process took at least 19 months.



TABLE 3-4

## TIME REQUIRED FOR ENVIRONMENTAL REGULATORY COMPLIANCE IN KENTUCKY

ACTION	AGENCY INVOLVED	TIME REQUIREMENT	
		Statutory Time Limit (or defined by Agency)	Experienced by Pike County
AIR	Kentucky Department for Natural Resources and Environmental Protection (DNREP)	30 days for minor source	14 months
		150 days for major source	
		1 year maximum following receipt of <u>complete</u> application	
		None Specified	
• New Source Review Program	DNREP Regional EPA Office	None Specified	
• Prevention of Significant Deterioration (PSD) Review Program	Regional EPA Office	None Specified	
• National Emission Standards for Hazardous Air Pollution (NESHAPS) Program	Regional EPA Office	None Specified	
• New Source Performance Standards (NSPS) Program	Regional EPA Office	None Specified	

TABLE 3-4 (cont'd)

## TIME REQUIRED FOR ENVIRONMENTAL REGULATORY COMPLIANCE IN KENTUCKY

ACTION	AGENCY INVOLVED	TIME REQUIREMENT	
WATER		Statutory Time Limit (or defined by Agency)	Experienced by Pike County
<ul style="list-style-type: none"> <li>• National Pollutant Discharge Elimination System (NPDES) Permit</li> </ul>	Regional EPA and DNREP	6 months for existing source	} 4-5 months
<ul style="list-style-type: none"> <li>• Construction Permit</li> </ul>	DNREP	Up to 24 months for new source	
<ul style="list-style-type: none"> <li>• Operating Permit</li> </ul>	DNREP	30-60 days maximum (if no public hearing)	
<ul style="list-style-type: none"> <li>• Water Withdrawal Permit</li> </ul>	DNREP	None specified, but should be short	Not yet applied for
<ul style="list-style-type: none"> <li>• Floodway Construction Permit</li> </ul>	DNREP	20-30 days	Not required
		30 days	Not required

TABLE 3-4 (concluded)

## TIME REQUIRED FOR ENVIRONMENTAL REGULATORY COMPLIANCE IN KENTUCKY

ACTION	AGENCY INVOLVED	TIME REQUIREMENTS	
		Statutory Time limit (or defined by Agency)	Experienced by Pike County
SOLID WASTE			
• Landfill construction permit	DNREP	60-120 days (without public hearing)  Up to one year if public hearing required	Not required
• Operating permit	DNREP	30 days	30 days

### 3.5 Regulatory Requirements for Occupational Safety and Health in the State of Kentucky

The Federal Occupational Safety and Health Administration (OSHA) has approved the Kentucky Occupational Safety and Health Program. This program is the responsibility of the Kentucky Occupational Safety and Health Standards Board and the Kentucky Occupational Safety and Health Review Commission. The former promulgates the standards and the latter enforces them.

No permits are required for compliance with Occupational Health and Safety Standards. Consequently, these standards do not present any potential for delaying a project start. However, violation of the promulgated standards can lead to stoppage of the project operations. These violations are identified by state inspectors through spot inspections of the project when it is operating.

Standards for general industry currently apply to coal gasification activities in the absence of specific applicable standards.\* However, the National Institute of Occupational Safety and Health (NIOSH) has conducted a study and recently recommended standards for coal gasification. Whether or not OSHA will adopt these recommended standards is an uncertainty which greatly concerns the representatives of the Pike County coal gasification project.

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\*Kentucky Department of Labor, Occupational Safety and Health Program, "Kentucky Occupational Safety and Health Standards for General Industry-(29CFR Part 1910 as adopted by 803 KAR 2:220)" Promulgated by the Occupational Safety and Health Standards Board.

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APPENDIX F(1)

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND  
ENVIRONMENTAL PROTECTION, DIVISION OF AIR POLLUTION  
CONTROL - PERMIT APPLICATION AND INSTRUCTIONS



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APPENDIX F(1)  
KENTUCKY DEPARTMENT FOR NATURAL RESOURCES  
AND ENVIRONMENTAL PROTECTION  
DIVISION OF AIR POLLUTION

PERMIT APPLICATION INFORMATION AND INSTRUCTIONS

1. When Must a Permit be Secured?

A permit for an air contaminant source must be secured prior to any construction, modification or operation of the source and its air pollution control equipment.

Air Contaminant - includes smoke, dust, soot, grime, carbon, or any other particulate matter, radioactive matter, noxious acids, fumes, gases, odor, vapor, or any combination thereof.

2. What Criteria Requires a Construction Permit?

- A. When a new facility is to be constructed.
- B. When an existing facility proposes an equipment modification, addition or replacement which will effect the amount and/or control of the air contaminants released.
- C. When an existing facility is to be moved to a new address.

3. What Criteria Requires an Operating Permit?

- A. All operating air contaminant sources must have a Permit to Operate.
- B. When a new or significantly modified existing facility is ready for start-up of operation.
- C. When a former existing facility has been moved to a new address and is ready for start-up of operation.

4. How Can a Permit to Construct or Operate be Obtained?

A written application must be filed and a written authorization must be obtained.

5. What Classes of Equipment Require Permits?

- A. Basic Equipment. This class includes any article, machine equipment or contrivance, the use of which may CAUSE the issuance of air contaminants.
- B. Air Pollution Control Equipment. This class includes any article, machine, equipment or contrivance, the use of which may ELIMINATE, REDUCE, or CONTROL the issuance of air contaminants.

In general, one application will suffice for each facility provided all equipment and sources of pollutants within that facility are included in the application.

6. Who Must Submit and Sign a Permit Application?

Applications for permits shall be signed by the corporate President, his authorized agent; or by an equivalently responsible officer in the case of organizations other than corporation; or in other cases, by the source owner or operator; or, in the case of political subdivisions, by the highest elected official of such subdivision. Such signature shall constitute personal affirmation that the statements made in the application are true and complete.

7. What Information Must be Submitted With an Application?

- A. The type information required is described on the permit application and application instructions which follow. The information requested in the application shall, when specifically requested by the Division, include an analysis of the characteristics, properties, and volume of the air contaminants taken under normal operating conditions. Failure to supply the information required or deemed necessary for the Division to enable it to act upon the permit application may result in administrative or legal action.
- B. In order to receive a permit, the applicant must meet all emission and ambient air quality standards specified by regulation or have a properly approved compliance schedule and the ambient air standards. In cases where no standards have been prescribed by regulation the applicant shall be required to use all available practical and reasonable methods to prevent and control air pollution.

8. Are Permits Transferable?

Permits are not transferable. This rule applies to both facility location and ownership changes. For transfer of ownership, only Form APC 110 will be required, provided the other information has been previously submitted and is current.

9. What is the Fee for a Permit?

There are no fees involved in obtaining a construction or an operating permit.

10. When Do Permits Terminate?

Construct - indefinite provided construction is started within time specified on permit (usually one year), or unless otherwise conditioned on the permit.

Operate - usually indefinite unless otherwise conditioned on the permit.

11. How May Permit Applications and Permit Information Be Obtained?

Applications, information and instructions may be obtained by writing or calling the Engineering and Permits Program, Division of Air Pollution, Department for Natural Resources and Environmental Protection, Capital Plaza Tower, 5th. Floor, Frankfort, Kentucky 40601 / (502)564-6844.

12. This pamphlet is for informational purposes only and is subject to modification by the staff without notice.

### PERMIT APPLICATION INSTRUCTIONS

The permit application forms (APC 110 series) for an air contaminant source are to be used by all facilities applying for a permit in Kentucky other than Jefferson County. The forms are general in format and can be used for all types of operations.

The APC 110 form series includes the following subdivisions:

APC 110	Administrative Information	2 pages
APC 110 A	Indirect Heat Exchanger	3 pages
APC 110 B	Manufacturing or Processing Operations	4 pages
APC 110 C	Incinerators and/or Waste Burners	2 pages
APC 110 D	Coal Refuse Areas	2 pages
APC 110 E	Monitoring Equipment	2 pages
APC 110 F	Episode Standby Plan	5 pages
APC 110 G	Compliance Schedules	1 page

Completion of a particular subdivision will be governed by the type of operations for which the facility is applying.

#### General Instructions

1. A site plan and flow diagram are always required.
2. The "point of emission number" referred to on Forms APC-110A, B, C, E, F, and G must be unique for each point of emission within the facility and must agree with those labels on the site plan. This is a number beginning at "01" and ranging sequentially on "99". For emission points in excess of "99" contact this office. This reference will be used in all future correspondence.
3. Confidential or unique process information should be so marked and submitted under separate enclosure.
4. Item numbers on the instructions correspond with numbers on the forms.

#### Form APC 110, Administrative Information Instructions

- Item 2 - Mailing Address - This address may be a Post Office box number and may or may not be identical to the facility location.
- Item 3 - Facility Location - Show the street address or other exact location at which the equipment or control apparatus is to be used.
- Item 4 - Previous Registration or Identification Number - Complete if the previous registration, identification number or permit number as assigned by the Division is known. Otherwise, leave blank.

- Item 5 - General Nature of Business - Refers to the type of business conducted. The standard industrial classification (SIC) number may be used where known.
- Item 6 - Type of Permit Required - Only two types of permits are issued; a permit to construct or a permit to operate. A construction permit should be requested when basic equipment or air pollution control equipment is to be constructed, installed, or modified. The operating permit is required for all sources which releases air contaminants into the atmosphere.
- Item 9 - Attached Forms - Give the quantity of each type of form submitted. For example, if you have three boilers you would submit three indirect heat exchangers forms.
- Item 10 - Other Attachments - List other materials which are a part of the official submittal. A site plan is always required and must be to scale. Identify the following: property lines, building heights, adjacent property, existing and proposed facilities, equipment and points of air contaminant emission. Flow diagrams should also be listed here.
- Item 12 - Signature - The application will not be accepted unless signed by the appropriate person as described in Regulation AP-1. This signature shall constitute personal affirmation that the statements made in the application are true and complete.

The remaining items are self explanatory.

#### Form APC 110A, Indirect Heat Exchanger Instructions

- Item 1 - Must be completed for exempted units, however, the remaining items other than items 7, 8, and 9 may be omitted.
- Item 8 - The actual fuel source (for example: 11 W KY coal seam) must be given if known. If the source is not known, give the name and address of the fuel supplier.
- Item 11 - Examples of "Basis of Estimate" would be: manufacturers guarantee, stack sample, material balance or emission factors.
- Item 16 - Structural details are not required. Drawings should be to scale with as many sections as are required to show clearly the operation of the equipment. The manufacturer's catalog may be submitted in lieu of the above.

The remaining items are self explanatory. Appropriate units should be used as indicated on the form.

## Form APC 110B, Manufacturing or Processing Operations Instructions

- Item 2 - The height of release should be measured from ground level. The quantity of gases discharged should be indicated in actual cubic feet per minute. Examples of basis for estimate would be: manufacturer's guarantee, stack sample, material balance or emission factors.
- Item 3 - Units used should be of a type readily converted to pound per hour. The maximum quantity input per hour should be established as follows:
- (a) For continuous or long-run steady-state source operations, the total process weight for the entire period of continuous operation or for a typical portion thereof, divided by the number of hours of such period or portion thereof at maximum or peak operation.
  - (b) For cyclical or batch unit operations, or unit processes, the total process weight for a period that covers a complete operation or an integral number of cycles, divided by the hours of actual process operation during such a period.

Where the nature of any process operations or the design of any equipment is such as to permit more than one interpretation of this definition, the interpretation which results in the minimum value for allowable emission shall apply.

- Item 4 - The equipment operating capacity should be for maximum conditions.
- Item 5 - Indirect heat exchangers must be reported on a separate form. The rated burner capacity should be the total capacity of all burners associated with the point of emission. The percent sulfur and percent ash shall be on the "as received" basis (ultimate analysis for sulfur, proximate analysis for ash).
- Item 7 - Attach extra sheets as necessary.  
8, 9

The remaining items are self explanatory. Appropriate units should be used as indicated on the form.

## Form APC 110C, Incinerators and/or Waste Burner Instructions

- Items 1 - This information can be obtained from the manufacturers, name plate on the incinerator.  
2, 3
- Item 4 - Each incinerator permit is conditioned to burn a specific type of waste at a specific rate. A list of types of waste follows.

## CLASSIFICATION OF WASTES

- Type 0 - Trash, a mixture of highly combustible waste such as paper, cardboard cartons, wood boxes, and combustible floor sweepings, from commercial and industrial activities. The mixtures contain up to 10% by weight of plastic bags, coated paper laminated paper, treated corrugated cardboard, oily rags, and plastic or rubber scraps.

This type of waste contains 10% moisture, 5% incombustible solids and has a heating value of 8500 BTU's per pound as fired.

- Type 1 - Rubbish, a mixture of combustible waste such as paper, cardboard cartons, wood scrap, foliage and combustible floor sweepings, from domestic, commercial and industrial activities. The mixture contains up to 20% by weight of restaurant or cafeteria waste, but contains little or no treated papers, plastic or rubber wastes.

This type of waste contains 25% moisture, 10% incombustible solids and has a heating value of 6500 BTU's per pound as fired.

- Type 2 - Refuse, consisting of an approximately even mixture of rubbish and garbage by weight.

This type of waste is common to apartment and residential occupancy, consisting of up to 50% moisture, 7% incombustible solids, and has a heating value of 4300 BTU's per pound as fired.

- Type 3 - Garbage, consisting of animal and vegetable wastes from restaurants, cafeteria, hotels, hospitals, markets and like installations.

This type of waste contains up to 70% moisture, up to 5% incombustible solids, and has a heating value of 2500 BTU's per pound as fired.

- Type 4 - Human and animal remains, consisting of carcasses, organs and solid organic wastes from hospitals, laboratories, abattoirs, animal pounds and similar sources, consisting of up to 85% moisture, 5% incombustible solids, and having a heating value of 1000 BTU's per pound as fired.

- Type 5 - By-product waste, gaseous, liquid, or semi-liquid, such as tar, paints, solvents, sludge, fumes, etc., from industrial operations. B.T.U. values must be determined by the individual materials to be destroyed.

- Type 6 - Solid by-product waste, such as rubber, plastics, woodwaste, etc., from industrial operations. B.T.U. values must be determined by the individual materials to be destroyed.

- Item 17 - A complete test report of a stack test performed on the incinerator or waste burner certifying compliance with the allowable emissions specified in Regulation AP-3, Section 1 must accompany the application. If a test report previously accepted for an identical unit is on file with the Division, a new report is not required. All stack tests must be conducted in accordance with the Division "Incinerator Performance Guidelines".

The remaining items are self explanatory. Appropriate units should be used as indicated on the form.

Form APC 110D, Coal Refuse Disposal Instructions

All the items are self explanatory except for item 3. Where applicable, use the recommended units. One form must be submitted for each disposal area.

- Item 3 - (Coal Refuse) Briefly describe the type of coal preparation which has produced the coal refuse.

Form APC 110E, Monitoring Equipment Instructions

Persons owning or operating air contaminant sources may be required to install, use, and maintain stack gas and ambient air monitoring equipment. It is further required that sampling methods shall comply with those prescribed by the Division and that a record of same be established and maintained for making periodic emission reports available to the Division as requested.

WHO SHOULD MONITOR

Pursuant to Regulation AP-1, Section 6(1) the following sources may be required to have instack monitoring devices:

- (a) - Indirect Heat Exchangers with a heat input equal to or greater than 300 million BTU/hour except where gas or light oil (No. 2 or lighter) is burned;
- (b) - Process operation with an uncontrolled pollutant emission potential, vented through a stack, which is, (1) Equal to or greater than 100 tons per year, and (2) Regulated by duly adopted emission standards.
- (c) - Incinerators with a capacity equal to or greater than 50 tons per day.

In special cases, sources not in the above classification may be required to install, use and maintain monitoring equipment.

- Item 1 - Stack Gas Monitoring Equipment - Selection, use, maintenance, records and reports of stack gas monitors must be in accord with "Guidelines for Implementing Instack Monitoring Requirements", Division of Air Pollution Control, Publication No. TS-18.
- Item 2 - Additional Stack Gas Monitoring Data - Entries must include the additional parameters listed in publication No. TS-18, "Guidelines for Implementing Instack Monitoring Requirements". Recording and Reporting of Data section, page 7.
- Item 3 - Ambient Monitoring Equipment - Selection, use, maintenance records, and reports of ambient air monitoring networks must be in accord with the "Guidelines for the Implementation of Ambient Air Monitoring Requirements", Division of Air Pollution Control, Publication No. TS-19.



- Item 4 - The information requested under these items is self explanatory  
5, 6 and must be included in the application.

#### Form APC 110F, Episode Standby Plan Instructions

Any person responsible for the operation of a source of air pollutants as set forth in Tables 1.1 - 1.3 of Regulation AP-1, Section 9, shall prepare standby plans for reducing the emission of air pollutants during episode periods (Air Pollution Alert, Warning and Emergency). The standby plans shall be designed to reduce or eliminate emissions of air pollutants in accordance with the objectives set forth in Tables 1.1 - 1.3 of Regulation AP-1, Section 9.

For proper completion of the Episode Standby Plan, consult Regulation AP-1, Section 9 to determine the specific source requirements at the alert, warning and emergency levels. All items are self explanatory, however, recommended units should be used as indicated on the form.

#### Form APC 110G, Compliance Schedule Instructions

New installation shall comply as of start-up of operation.

Existing installations shall comply as indicated in the following portions of the regulations:

All Sources -----AP-1, Section 11  
Indirect Heat Exchangers (Particulate)-----AP-3, Section 2(7)  
Indirect Heat Exchangers (Sulfur Compounds)-----AP-4, Section 6  
Process Operations-----AP-3, Section 3(7)  
Incinerators-----AP-3, Section 1(5)

The "Point of Emission Number" on the form must correspond with the identifiers used on the site plan and on other portions of the permit application. The "Source Description" is a brief description of the process or equipment associated with the point of emission. The "Control Plan Description" is an indication of the type of air pollution control equipment to be used for this source (if known). The pollutants and regulations involved must also be given. Example: 26, Indirect Heat Exchanger, Electrostatic Precipitator, Particulates, AP-3, Section 2.

Note that it may be necessary to list different sets of dates for various pollutants associated with a given point of emission.

The six compliance schedule step dates are always required and are described as follows:

- Step 1 - The initiation of a control study is the time of the first discussion between the source and the prime contractor.
- Step 2 - An order for control equipment is then placed or a contract is signed. Testing and preliminary engineering necessary for the contractor to bid would have been completed at this time.

- Step 3 - The source then approves the contractors drawings necessary for fabrication.
- Step 4 - Control equipment is then delivered to the site. Final engineering and site preparation should have been completed at this time.
- Step 5 - Completion of construction would be the time at which the equipment is ready for operation.
- Step 6 - A final acceptance test for compliance will be made after a start-up and debugging period.

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APPENDIX F(2).

KENTUCKY DEPARTMENT FOR NATURAL RESOURCES AND  
ENVIRONMENTAL PROTECTION, DIVISION OF AIR POLLUTION  
CONTROL - CONSTRUCTION PERMIT

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Appendix F(2)



# Kentucky Department for Natural Resources and Environmental Protection

## Division of Air Pollution Control

Office of the County Judge  
Pike County Court House  
Main Street  
Pikeville, Kentucky 41501  
Source Location: Douglas, Pike County, Kentucky

Pursuant to your application received by this office on November 14, 1977 the Division of Air Pollution, by authority of Kentucky Revised Statutes Chapter 224, authorizes the issuance of this construction permit for the installation of the equipment specified herein in accordance with the plans, specifications, and other information submitted with your application. This permit is subject to all conditions and operating limitations contained herein.

Point of Emission	Affected Facility	Conditions
01, 02 (01, 02)	Two (2) 6' diameter Wellman-Galusha Low BTU Coal Gasifiers With Emergency Flares	The flares shall be equipped with smokeless tips.
03 (03)	Two (2) Indirect Heat Exchangers equipped with gas/#2 Fuel Oil Burners and Multiclone Collectors	The maximum heat input shall not exceed 20 mm BTU/hour for each Indirect Heat Exchanger.
04 (06, 07, 08)	Coal Handling Operations (Truck Dump, Conveyors, Screens and Crusher) with Enclosure and Wet Suppression	

### GENERAL CONDITIONS:

- For purposes of this permit, the terms "Phase I" and "Phase II" as used hereafter shall have the following meaning:

Phase I - represents the source operating mode during which the entire gaseous fuel output from Emission Points 01 and 02, Low - BTU Gasifiers and Supplemental #2 Fuel Oil will be burned in Emission Point 03, Indirect Heat Exchangers.

Phase II - represents the source operating mode during which the fuel gas produced by Emission Point 01 and 02, Low - BTU Gasifiers, will be desulfurized and made available for sale as a gaseous fuel. Emission Point 03, Indirect Heat Exchangers will burn only desulfurized fuel gas, #2 Fuel Oil and the oils and tar from the gas desulfurization system.

(ADDITIONAL CONDITIONS-ON REVERSE SIDE)

No deviation from the plans and specifications submitted with your application or the conditions specified herein is permitted, unless authorized in writing by the Division of Air Pollution. This permit shall become null and void at any time the terms and conditions contained herein are violated. All rights of inspection by the representatives of this Division of Air Pollution are reserved. Responsibility of satisfactory conformance to all Air Pollution Control Regulations must be borne by the permittee.

PERMIT NUMBER: C-78-21

Issued this 19th. day of September 1978

FILE NUMBER: 101-3300-0187

REGION: Appalachian

COUNTY: Pike

SIC CODE: 4925

*Eugene F. Moxley*  
Secretary, Department for Natural Resources  
and Environmental Protection

*John T. Smith*  
Director, Division of Air Pollution Control

GENERAL CONDITIONS (con't).

2. The following emission standards shall be applicable to the source:
  - A. Phase I and II
    - (a) The sulfur dioxide emission rate from Emission Point 03, Indirect Heat Exchangers, shall at no time exceed 17.84 pounds/hour or 1.70 pounds per million BTU heat input, whichever is less.
    - (b) The particulate emission rate from Emission Point 03, Indirect Heat Exchangers, shall not exceed 7.03 #/hour or 0.40 pounds per million BTU heat input, whichever is less. Opacity shall not exceed 20%.
  - B. Phase II
    - (a) The low BTU producer gas shall be desulfurized by a Stretford-Holmes Desulfurization System or its equivalent, design to provide a level of cleaning such that the hydrogen sulfide content of the treated gas does not exceed 5 ppm at 85° F and 6.5" W.C. pressure. Compliance shall be demonstrated by the applicable EPA reference method.
    - (b) Odors from tar and light oil cleanup shall be controlled in accordance with 401 KAR 3:020, Section 4(10). Plans, specifications and drawings of the odor control systems shall be submitted to and be subject to approval by the Division of Air Pollution Control prior to installation of the systems.
3. Emission Point 03, Indirect Heat Exchangers, shall be equipped with an EPA approved continuous in-stack sulfur dioxide monitoring device which shall be installed, and operated in accordance with the manufacturer's specifications as approved by the U.S. EPA. Performance specifications and specification performance test procedures shall be as contained in Appendix B of 40 CFR 60.
4. Emission Point 04, Coal Handling Operations, shall be equipped with an engineered wet suppression and enclosure system to comply with Regulation 401 KAR 3:060, Section 14, Control of Fugitive Emissions. The wet suppression system shall be provided with winter freeze protection for all weather operating capability. Plans, specifications and drawings of the wet suppression and enclosure system for fugitive particulate emissions control shall be submitted to and be subject to approval by the Division of Air Pollution Control prior to installation of the system.
5. The owner and/or operator of the affected facilities specified on this permit shall furnish to the Division of Air Pollution Control the following:
  - (a) Written notification, postmarked within 15 days, of the date construction commenced on Phase I and Phase II of the project.
  - (b) An application for a permit to operate at least 15 days, prior to the initial start-up of any of the affected facilities listed on this permit under Phase I and Phase II of the project.
  - (c) Written notification of the actual date of start-up of each of the affected facilities listed on this permit. This notification must be postmarked within 15 days after this start-up.
6. Unless construction is commenced on or before one year from the date of this permit or if construction is commenced and then stopped for any consecutive period of six months or more, then this construction permit shall be null and void.
7. This permit shall allow time for the initial start-up and operation of the affected facilities specified herein for the period of time required to adjust, calibrate, or modify the control equipment to attain normal operating conditions, but not to exceed 30 days.
8. Unless notification and justification to the contrary are received by this Division, the date of achieving the maximum production rate at which the affected facilities will be operated shall be deemed to be 30 days after initial start-up.
9. This construction permit shall allow time for the initial start-up, operation, and performance testing of the affected facilities listed herein. However, within 60 days after achieving the maximum production rate at which the affected facilities will be operated, but not later than 90 days after initial start-up of such facilities, the owner or operator shall conduct performance tests on the Indirect Heat Exchangers, Emission Point 03, and furnish the Division a written report of the results of such performance tests. The Division shall be notified at least 10 days prior to the test.
10. The authority to construct is based solely on the Kentucky Air Pollution Control Regulations adopted pursuant to KRS 224.033 and codified at 401 KAR 3:010 or federal regulations promulgated pursuant to the Clean Air Act and codified at 40 CFR 60 and 40 CFR 61 for which authority has been delegated to this agency. It does not constitute authorization for construction from other agencies of this Department, other Departments, or any other Federal, State or Local Regulatory Agency which may have regulations that apply to this construction.

APPENDIX G

DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL  
PROTECTION, DIVISION OF AIR POLLUTION CONTROL - PERMIT  
APPLICATION FOR AIR CONTAMINANT SOURCE



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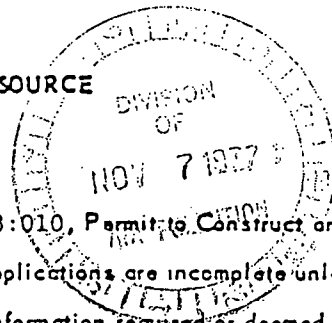
## DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

Division of Air Pollution

Frankfort, Kentucky 40601

## PERMIT APPLICATION FOR AIR CONTAMINANT SOURCE

## ADMINISTRATIVE INFORMATION



The completion and return of this form is required under Regulation No. 401 KAR 3:010, Permit to Construct and Operate on Air Contaminant Source, pursuant to the Kentucky Air Pollution Control Law. Applications are incomplete unless accompanied by copies of all plans, specifications and drawings. Failure to supply information required or deemed necessary by the Division to enable it to act upon the Permit Application shall result in denial of the permit.

1. Name of Firm or Institution: Pike County
2. Mailing Address:
 

Number	Street	City	County	Zip
	Office of the County Judge; Pike County Court House; Main Street;	Pikeville,	Kentucky	41501
3. Facility Location:
 

Number	Street	City	County	Zip
	Douglas Site Gasification Project; Pike County	Kentucky		41501
4. Previous Registration, Identification, or Permit Numbers: None
5. General Nature of Business: Demonstration of Production of Industrial Fuel Gas from Coal.
6. Type of Permit Required:

Pursuant to the provisions of Regulation No. 401 KAR 3:010 of the Kentucky Division of Air Pollution, application is hereby made for authority to construct X or operate \_\_\_\_\_ on air contaminant source.

## 7. Estimated cost of equipment or of alteration.

Total Facility (including existing air pollution control equipment)	\$ 7,500,000 Est.
Air Pollution Control Equipment existing as of date of application	\$ 3,000,000 Est. (Tars, oils & sulfur cleanup)
New Air Pollution Control Equipment to be installed	\$ New Installation
Modification to existing Air Pollution Control Equipment	\$ 40,000 Est. (dust collectors for boilers and gas producers).
	\$ New Installation

## 8. Present status of equipment: (Check and complete applicable items)

(a) For Existing Facilities: Date Construction Completed Under design.

(b) Equipment to be modified or constructed

Basic Equipment

Air Pollution Control Equipment



(c) Transfer of ownership pending

☐

Log # \_ \_ \_ \_

(d) Transfer of location pending

☐

For b, c, or d:

Estimate starting date March, 1978

Estimate completion date April 13, 1979

9. The following forms are attached and made a part of this application: (Indicate quantity of each form)

<u>4</u> APC 110A Indirect Heat Exchanger	<u>1</u> APC 110E Monitoring Equipment
<u>1</u> APC 110B Manufacturing or Processing Operations	<u>1</u> APC 110F Episode Standby Plan
<u>1</u> APC 110C Incinerators and/or Waste Burners	<u>1</u> APC 110G Compliance Schedule
<u>    </u> APC 110D Coal Refuse Areas	

10. Other attachments are attached and are part of the official submittal. (Site Plan Required)

Appendix I - Project Description

Appendix II - Chemical Composition of Industrial Fuel Gas

Attachment 1 - Site Layout

Attachment 2 - Process Flow Sheet and Mass Balance

11. Are any of the following materials emitted into the atmosphere from any operation or process at this location? (Check the applicable item(s)).

<u>Trace</u> Arsenic	<u>Trace</u> Beryllium	<u>0</u> Lead	<u>0.1 percent</u> Silica
			of coal weight
<u>0</u> Asbestos	<u>Trace</u> Cadmium	<u>Trace</u> Mercury	

12. Signature, title, phone number of person submitting application as required by Regulation 401 KAR 3:010.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date of Application

\_\_\_\_\_

For Office Use Only

UTM Coordinates

Horizontal \_ \_ \_ . \_

Vertical \_ \_ \_ . \_

ID Number \_ \_ \_ \_ \_

DEPARTMENT FOR  
NATURAL RESOURCES AND  
ENVIRONMENTAL PROTECTION  
DIVISION OF AIR POLLUTION  
FRANKFORT, KENTUCKY 40601

INDIRECT HEAT EXCHANGER

Boiler #1 - Phase I

Point of Emission Number 03

3. A completed form (No. APC 110A) shall be submitted for each individual unit. The following types of units are exempted from this portion of the application:

- ☐ A. Indirect heat exchangers used solely for heating residential buildings not exceeding a total of six apartment units;
- ☐ B. New installations with a capacity of less than 1 million BTU per hour input;
- ☐ C. New installations using natural or liquified petroleum gas, including those having distillate fuel oil as standby fuel with a capacity of less than 50 million BTU per hour input;
- ☐ D. Marine installations and locomotives;
- ☐ E. Internal combustion engines and vehicles used for transportation of passengers or freight.

If your indirect heat exchanger is in one of the above categories please check that category and disregard the remaining portions of APC-110A.

New installations are those for which construction commenced after April 9, 1972.

2. Type of Unit Water tube boiler A. Manufacturer's Name Energy Div., Zurn Ind., Inc.
- B. Manufacturer's Model Number Zurn-VL Two Drum C. Date Installed Mid 1978  
Bent Water Tube Boiler
3. Rated Capacity-Input (BTU/Hr.) 20.0 x 10<sup>6</sup>
4. Type of Combustion Unit (Coal) With fly ash reinjection ☐ Without fly ash reinjection ☒
- A. Pulverized ☐ C. Stoker-fired ☐  
Dry Bottom ☐ Spreader Stoker ☐  
Wet Bottom ☐ Other Stoker ☐
- B. Cyclone ☐ D. Hand-fired ☐
- E. Other (Specify) Low Btu Industrial Fuel  
Gas from Coal.
5. Type of Combustion Unit (oil) Standby Fuel
- A. Tangentially-fired ☐  
B. Horizontally-fired ☒
6. Type of Combustion Unit (Wood)
- With fly ash reinjection ☐ Without fly ash reinjection ☐
- A. Pile ☐  
B. Thin Bed ☐  
C. Cyclonic ☐

# INDIRECT HEAT EXCHANGER (CONT'D)

7. Type and Quantity of Fuel (List both primary and standby):

Boiler #1 - Phase I

Type of Fuel	Percent Ash*			Percent Sulfur*			BTU per Unit** (specify units)			
	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	
Coal	3.5	6.5	5.0	0.4	0.7	0.6	-----	Pounds	-----	Primary fuel to Producer Supplementary
Fuel Oil							13,000	13,800	13,500	
1,2,4,5,6, (Circle One)	0	0	0	0.05	0.25	0.10	19,100	19,800	19,500	
Natural Gas										
Propane										
Butane										
Wood										
Other										

Type of Fuel	Units	Qty. Per Yr.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Coal (0.6%S)	Tons													
Fuel Oil	Gallons													
1,2,4,5,6 (circle one)														
Natural Gas	MCF (10 <sup>3</sup> cu. ft.)		(SEE APPENDIX I FOR EXPLANATION)											
Propane	Gallons													
Butane	Gallons													
Wood	Tons													
Other														

8. Fuel Source Coal - Eastern Kentucky (Pike County) Elkhorn #2 or Elkhorn #3  
Fuel Oil - Still to be established

9. Normal Operating Schedule:

52 Weeks per year, 7 Days per week, 24 Hours per day

\* As received basis. (Proximate analysis for ash, ultimate analysis for sulfur)

\*\* Higher heating value.

# INDIRECT HEAT EXCHANGER (CONT'D)

10. Purpose (If multipurpose, describe percent in each use category)

Boiler #1 - Phase I

Space Heat 66 % and 34 % (Air Conditioning)

Process Heat \_\_\_\_\_

Power \_\_\_\_\_

11. Type of Control Equipment

Control Efficiency  
Particulates SO<sub>2</sub> Other (Specify)

Basis of Estimate

\_\_\_\_\_ Electrostatic Precipitator \_\_\_\_\_

\_\_\_\_\_ ☒ Cyclone (After Producer) 80% \_\_\_\_\_

\_\_\_\_\_ ☒ Multiple Cyclone (After 92.5% \_\_\_\_\_

\_\_\_\_\_ Wet Scrubber Boiler) \_\_\_\_\_

\_\_\_\_\_ Settling Chamber \_\_\_\_\_

\_\_\_\_\_ Other (Specify) \_\_\_\_\_

\_\_\_\_\_ Equipment Guarantee

\_\_\_\_\_ Equipment Guarantee

12. Stack

A. Outlet temperature 500 °F

B. Outlet velocity 38 ft/sec

C. Height 55 feet

D. Inside diameter (outlet) 42 inches

E. Number of sampling ports provided one

F. Nearest distance from sampling port downstream to stack outlet, bend or obstruction Still in Design feet

G. Nearest distance from sampling port upstream to bend or obstruction Still in Design feet

H. List other sources vented to this stack

13. Combustion air: Natural draft \_\_\_\_\_ Induced X

Forced pressure .22 lbs./sq.in.

Excess air (total air supplied in excess of theoretical air required) 15/20 %

14. Describe fuel transport, storage methods and related dust control measures.

Truck Transport (Coal & Oil)

Covered Storage (Coal) - Sprinkled as required.

Underground Storage (Oil)

15. Describe fly ash (or other collected air contaminants) disposal, transportation methods and related dust control measures.

Fly ash, dust and sulfur cake will be removed by truck to landfill.

16. Attach manufacturer's literature and guaranteed performance data for the indirect heat exchanger and air pollution control equipment. Include information concerning fuel input, burners and combustion chamber dimensions.

Plant still under design.

DEPARTMENT FOR  
NATURAL RESOURCES AND  
ENVIRONMENTAL PROTECTION  
DIVISION OF AIR POLLUTION  
FRANKFORT, KENTUCKY 40601

INDIRECT HEAT EXCHANGER

Boiler #2 - Phase I

Point of Emission Number 03

1. The completed form (No. APC 110A) shall be submitted for each individual unit. The following types of units are exempted from this portion of the application:

- ☐ A. Indirect heat exchangers used solely for heating residential buildings not exceeding a total of six apartment units;
- ☐ B. New installations with a capacity of less than 1 million BTU per hour input;
- ☐ C. New installations using natural or liquified petroleum gas, including those having distillate fuel oil as standby fuel with a capacity of less than 50 million BTU per hour input;
- ☐ D. Marine installations and locomotives;
- ☐ E. Internal combustion engines and vehicles used for transportation of passengers or freight.

If your indirect heat exchanger is in one of the above categories please check that category and disregard the remaining portions of APC-110A.

New installations are those for which construction commenced after April 9, 1972.

2. Type of Unit Water Cooled Boiler A. Manufacturer's Name Energy Div., Zurn Industries, Inc.  
B. Manufacturer's Model Number Zurn-VL Two Drum Bent Water Tube Boiler C. Date Installed Mid-1978
3. Rated Capacity-Input (BTU/Hr.) 20.0 x 10<sup>6</sup>
4. Type of Combustion Unit (Coal) With fly ash reinjection ☐ Without fly ash reinjection ☒
- A. Pulverized ☐  
Dry Bottom ☐  
Wet Bottom ☐
- B. Cyclone ☐
- C. Stoker-fired ☐  
Spreader Stoker ☐  
Other Stoker ☐
- D. Hand-fired ☐
- E. Other (Specify) Low Btu Industrial Fuel Gas From Coal
5. Type of Combustion Unit (oil) Standby Fuel
- A. Tangentially-fired ☐  
B. Horizontally-fired ☒
6. Type of Combustion Unit (Wood)
- With fly ash reinjection ☐ Without fly ash reinjection ☐
- A. Pile ☐  
B. Thin Bed ☐  
C. Cyclonic ☐

# INDIRECT HEAT EXCHANGER (CONT'D)

7. Type and Quantity of Fuel (List both primary and standby):

Boiler #2 - Phase I

Type of Fuel	Percent Ash*			Percent Sulfur*			BTU per Unit** (specify units)			
	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	
Coal	3.5	6.5	5.0	0.4	0.7	0.6	13,000	13,800	13,500	Primary Fuel to Producer
Fuel Oil										
1,2,4,5,6, (Circle One)	0	0	0	0.05	0.25	0.10	19,100	19,800	19,500	Supplementary
Natural Gas										
Propane										
Butane										
Wood										
Other _____										

Type of Fuel	Units	Qty. Per Yr.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Coal	Tons													
Fuel Oil	Gallons													
1,2,4,5,6 (circle one)														
Natural Gas	MCF (10 <sup>3</sup> cu. ft.)													
Propane	Gallons													
Butane	Gallons													
Wood	Tons													
Other _____														

(SEE APPENDIX I FOR EXPLANATION)

8. Fuel Source Coal - Eastern Kentucky (Pike County) Elkhorn #2 or Elkhorn #3  
Fuel Oil - Still to be Established.

9. Normal Operating Schedule:

52 Weeks per year, 7 Days per week, 24 Hours per day

\* As received basis. (Proximate analysis for ash, ultimate analysis for sulfur)

\*\* Higher heating value.



# INDIRECT HEAT EXCHANGER (CONT'D)

10. Purpose (If multipurpose, describe percent in each use category)

Boiler #2 - Phase I

Space Heat 66% and 34% (Air Conditioning)

Process Heat \_\_\_\_\_

Power \_\_\_\_\_

11. Type of Control Equipment

Control Efficiency	Particulates	SO <sub>2</sub>	Other (Specify)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Basis of Estimate

\_\_\_\_\_ Electrostatic Precipitator \_\_\_\_\_

\_\_\_\_\_ X Cyclone (After Producer) 80% \_\_\_\_\_

\_\_\_\_\_ X Multiple Cyclone (After 92.5% \_\_\_\_\_

\_\_\_\_\_ Wet Scrubber Boiler) \_\_\_\_\_

\_\_\_\_\_ Settling Chamber \_\_\_\_\_

\_\_\_\_\_ Other (Specify) \_\_\_\_\_

\_\_\_\_\_ Equipment Guarantee

\_\_\_\_\_ Equipment Guarantee

12. Stack

A. Outlet temperature 500 °F

B. Outlet velocity 38 ft/sec

C. Height 55 feet

D. Inside diameter (outlet) 42 inches

E. Number of sampling ports provided 1

F. Nearest distance from sampling port downstream to stack outlet, bend or obstruction Still in Design feet

G. Nearest distance from sampling port upstream to bend or obstruction Still in Design feet

H. List other sources vented to this stack

13. Combustion air: Natural draft \_\_\_\_\_ Induced X

Forced pressure .22 lbs./sq.in.

Excess air (total air supplied in excess of theoretical air required) 15/20 %

14. Describe fuel transport, storage methods and related dust control measures.

Truck Transport (Coal & Oil)

Covered Storage (Coal) - Sprinkled as required.

Underground Storage (Oil)

15. Describe fly ash (or other collected air contaminants) disposal, transportation methods and related dust control measures.

Fly ash, dust and sulfur cake will be removed by truck to landfill.

16. Attach manufacturer's literature and guaranteed performance data for the indirect heat exchanger and air pollution control equipment. Include information concerning fuel input, burners and combustion chamber dimensions.

Plant still under design.

DEPARTMENT FOR  
NATURAL RESOURCES AND  
ENVIRONMENTAL PROTECTION  
DIVISION OF AIR POLLUTION  
FRANK FORT, KENTUCKY 40601

Boiler #1 - Phase II

INDIRECT HEAT EXCHANGER

Point of Emission Number 03

1. Completed form (No. APC 110A) shall be submitted for each individual unit. The following types of units are exempted from this portion of the application:

- ☐ A. Indirect heat exchangers used solely for heating residential buildings not exceeding a total of six apartment units;
- ☐ B. New installations with a capacity of less than 1 million BTU per hour input;
- ☐ C. New installations using natural or liquified petroleum gas, including those having distillate fuel oil as standby fuel with a capacity of less than 50 million BTU per hour input;
- ☐ D. Marine installations and locomotives;
- ☐ E. Internal combustion engines and vehicles used for transportation of passengers or freight.

If your indirect heat exchanger is in one of the above categories please check that category and disregard the remaining portions of APC-110A.

New installations are those for which construction commenced after April 9, 1972.

2. Type of Unit Water Cooled Boiler A. Manufacturer's Name Energy Div., Zurn Industries, Inc.
- B. Manufacturer's Model Number Zurn-VL Two Drum Bent Tube Boiler C. Date Installed Mid-1978
3. Rated Capacity-Input (BTU/Hr.) 20.0 x 10<sup>6</sup>
4. Type of Combustion Unit (Coal) With fly ash reinjection ☐ Without fly ash reinjection ☒
- A. Pulverized ☐  
Dry Bottom ☐  
Wet Bottom ☐
- C. Stoker-fired ☐  
Spreader Stoker ☐  
Other Stoker ☒ Underfeed Vibrating Grate Stoker
- B. Cyclone ☐
- D. Hand-fired ☐
- E. Other (Specify) ☐
5. Type of Combustion Unit (oil) Standby Fuel
- A. Tangentially-fired ☐
- B. Horizontally-fired ☐
6. Type of Combustion Unit (Wood)
- With fly ash reinjection ☐ Without fly ash reinjection ☐
- A. Pile ☐
- B. Thin Bed ☐
- C. Cyclonic ☐

# INDIRECT HEAT EXCHANGER (CONT'D)

Boiler #1 - Phase II

## 7. Type and Quantity of Fuel (List both primary and standby):

Type of Fuel	Percent Ash*			Percent Sulfur*			BTU per Unit** (specify units)			
	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	
Coal	3.5	6.5	5.0	0.4	0.7	0.6	13,000	13,800	13,500	Primary Fuel to Boiler
Fuel Oil	3.5	6.5	5.0	0.4	1.5	1.2	13,000	13,800	13,500	Primary Fuel to Product
1,2,4,5,6, (Circle One)	0	0	0	0.05	0.25	0.10	19,100	19,800	19,500	Supplementary er
Natural Gas										
Propane										
Butane										
Wood										
Other _____										

Type of Fuel	Units	Qty. Per Yr.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Coal	Tons													
Fuel Oil	"													
1,2,4,5,6 (circle one)	Gallons													
Natural Gas	MCF (103 cu. ft.)													
Propane	Gallons													
Butane	Gallons													
Wood	Tons													
Other _____														

(SEE APPENDIX I FOR EXPLANATION)

8. Fuel Source Coal - Eastern Kentucky (Pike County) Elkhorn #2 or Elkhorn #3  
Fuel Oil - Still to be established.

## 9. Normal Operating Schedule:

52 Weeks per year, 7 Days per week, 24 Hours per day

\* As received basis. (Proximate analysis for ash, ultimate analysis for sulfur)

\*\* Higher heating value.

# INDIRECT HEAT EXCHANGER (CONT'D)

10. Purpose (If multipurpose, describe percent in each use category)

Boiler #1 - Phase II

Space Heat 66% - 34% (Air Conditioning)

Process Heat                     

Power                     

11. Type of Control Equipment

Control Efficiency  
Particulates SO<sub>2</sub> Other (Specify)

Basis of Estimate

<u>Electrostatic Precipitator</u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>Cyclone</u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>X Multiple Cyclone (After-</u>	<u>92.5%</u>	<u>                    </u>	<u>                    </u>
<u>Wet Scrubber Boiler)</u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>Settling Chamber</u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>Other (Specify)</u>	<u>                    </u>	<u>                    </u>	<u>                    </u>

12. Stack

A. Outlet temperature 520 °F

B. Outlet velocity 38 ft/sec

C. Height 55 feet

D. Inside diameter (outlet) 42 inches

E. Number of sampling ports provided 1

F. Nearest distance from sampling port downstream to stack outlet, bend or obstruction Still in Design feet

G. Nearest distance from sampling port upstream to bend or obstruction Still in Design feet

H. List other sources vented to this stack

13. Combustion air: Natural draft                      Induced X  
Forced pressure .22 lbs./sq.in.

Excess air (total air supplied in excess of theoretical air required) 15/20 %

14. Describe fuel transport, storage methods and related dust control measures.

Truck Transport (Coal & Oil)

Covered Storage (Coal) - Sprinkled as required.

Underground Storage (Oil)

15. Describe fly ash (or other collected air contaminants) disposal, transportation methods and related dust control measures.

Fly ash, dust and sulfur cake will be removed by truck to landfill.

16. Attach manufacturer's literature and guaranteed performance data for the indirect heat exchanger and air pollution control equipment. Include information concerning fuel input, burners and combustion chamber dimensions.

Plant still under design.

DEPARTMENT FOR  
NATURAL RESOURCES AND  
ENVIRONMENTAL PROTECTION  
DIVISION OF AIR POLLUTION  
FRANKFORT, KENTUCKY 40601

INDIRECT HEAT EXCHANGER

Boiler #2 - Phase II

Point of Emission Number 03

1. Completed form (No. APC 110A) shall be submitted for each individual unit. The following types of units are exempted from this portion of the application:

- ☐ A. Indirect heat exchangers used solely for heating residential buildings not exceeding a total of six apartment units;
- ☐ B. New installations with a capacity of less than 1 million BTU per hour input;
- ☐ C. New installations using natural or liquified petroleum gas, including those having distillate fuel oil as standby fuel with a capacity of less than 50 million BTU per hour input;
- ☐ D. Marine installations and locomotives;
- ☐ E. Internal combustion engines and vehicles used for transportation of passengers or freight.

If your indirect heat exchanger is in one of the above categories please check that category and disregard the remaining portions of APC-110A.

New installations are those for which construction commenced after April 9, 1972.

2. Type of Unit Water Cooled Boiler A. Manufacturer's Name Energy Division, Zurn Industries Inc.  
B. Manufacturer's Model Number Zurn-VL Two Drum Bent Water Tube Boiler C. Date Installed Mid-1978

3. Rated Capacity-Input (BTU/Hr.) 20.0 x 10<sup>6</sup>

4. Type of Combustion Unit (Coal) With fly ash reinjection ☐ Without fly ash reinjection ☒

A. Pulverized  
Dry Bottom ☐  
Wet Bottom ☐

C. Stoker-fired  
Spreader Stoker ☐  
Other Stoker ☒ Underfeed Vibrating Grate Stoker

B. Cyclone ☐

D. Hand-fired ☐

E. Other (Specify) ☐

5. Type of Combustion Unit (oil) Standby Fuel

A. Tangentially-fired ☐  
B. Horizontally-fired ☐

6. Type of Combustion Unit (Wood)

With fly ash reinjection ☐ Without fly ash reinjection ☐

A. Pile ☐  
B. Thin Bed ☐  
C. Cyclonic ☐

# INDIRECT HEAT EXCHANGER (CONT'D)

Boiler #2 - Phase II

7. Type and Quantity of Fuel (List both primary and standby):

Type of Fuel	Percent Ash*			Percent Sulfur*			BTU per Unit** (specify units)			
	Min.	Max.	Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	
Coal	3.5	6.5	5.0	0.4	0.7	0.6	13,000	13,800	13,500	Primary Fuel to Boiler
Fuel Oil	3.5	6.5	5.0	0.4	1.5	1.2	13,000	13,800	13,500	Primary Fuel to Produc-
1,2,4,5,6, (Circle One)	0	0	0	0.05	0.25	0.10	19,100	19,800	19,500	Supplementary er
Natural Gas										
Propane										
Butane										
Wood										
Other										

Type of Fuel	Units	Qty. Per Yr.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Coal	Tons													
Fuel Oil	Gallons													
1,2,4,5,6 (circle one)	Gallons													
Natural Gas	MCF (10 <sup>3</sup> cu. ft.)													
Propane	Gallons													
Butane	Gallons													
Wood	Tons													
Other _____														

(SEE APPENDIX I FOR EXPLANATION)

8. Fuel Source Coal - Eastern Kentucky (Pike County) Elkhorn #2 or Elkhorn #3  
Fuel Oil - Still to be established.

9. Normal Operating Schedule:

52 Weeks per year, 7 Days per week, 24 Hours per day

\* As received basis. (Proximate analysis for ash, ultimate analysis for sulfur)

\*\* Higher heating value.

# INDIRECT HEAT EXCHANGER (CONT'D)

10. Purpose (If multipurpose, describe percent in each use category)

Boiler #2 - Phase II

Space Heat 66% and 34% (Air Conditioning)

Process Heat \_\_\_\_\_

Power \_\_\_\_\_

11. Type of Control Equipment

Control Efficiency  
Particulates SO<sub>2</sub> Other (Specify)

Basis of Estimate

_____ Electrostatic Precipitator	_____	_____	_____	_____
_____ Cyclone	_____	_____	_____	_____
_____ X Multiple Cyclone (After	92.5%	_____	_____	Equipment Guarantee
_____ Wet Scrubber Boiler)	_____	_____	_____	_____
_____ Settling Chamber	_____	_____	_____	_____
_____ Other (Specify)	_____	_____	_____	_____

12. Stack

A. Outlet temperature 520 °F  
 B. Outlet velocity 38 ft/sec  
 C. Height 55 feet  
 D. Inside diameter (outlet) 42 inches  
 E. Number of sampling ports provided 1  
 F. Nearest distance from sampling port downstream to stack outlet, bend or obstruction N/A feet  
 G. Nearest distance from sampling port upstream to bend or obstruction N/A feet  
 H. List other sources vented to this stack

13. Combustion air: Natural draft \_\_\_\_\_ Induced \_\_\_\_\_ X  
 Forced pressure .22 lbs./sq.in.  
 Excess air (total air supplied in excess of theoretical air required) 15/20 %

14. Describe fuel transport, storage methods and related dust control measures.

Truck Transport (Coal & Oil)  
 Covered Storage (Coal) - Sprinkled as required  
 Underground Storage (Oil)

15. Describe fly ash (or other collected air contaminants) disposal, transportation methods and related dust control measures.

Fly ash, dust and sulfur cake will be removed by truck to landfill.

16. Attach manufacturer's literature and guaranteed performance data for the indirect heat exchanger and air pollution control equipment. Include information concerning fuel input, burners and combustion chamber dimensions.

Plant still under design

DEPARTMENT FOR  
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DIVISION OF AIR POLLUTION  
FRANKFORT, KENTUCKY 40601

Phase I & II

INCINERATORS AND/OR WASTE BURNERS

Point of Emission Number 01 & 02

This section must be completed for any apparatus used to ignite and burn solid, liquid or gaseous combustible wastes. Items 1, 2, 3, and 4 are design criteria on the incinerator manufacturer's name plate. The name plate should be in a conspicuous place on the incinerator.

1. Manufacturer's Name Unknown (Part of Producer Package)

2. Model Number Unknown

3. Rated Capacity 1,000scfm lb. per hour, or \_\_\_\_\_ tons per hour

4. Type of Waste: 0 1 2 3 4 5 6 (Circle Type)

5. Type: 1). Incinerator, Single Chamber ☐ Multiple Chamber ☐

2). Waste Burner (teepee, truncated cone, silo, other) Flare on Producer

6. Are instructions for the operation of the incinerator posted in a conspicuous place near the incinerator?

Yes ☒ No ☐ They will be when the project goes into operation.

7. Quantity of waste burned (e.g., tons/year, cubic yards/day, pounds/hour) Phase I - 700 to 1400 lb/hr max.  
(Circle appropriate units) Phase II - 5000 to 6000 lb/hr max.

8. Operation schedule:

Hours per day 4 to 6 Days per week \_\_\_\_\_  
Weeks per year \_\_\_\_\_ Other Once per quarter for maintenance.

9. Type of waste burned:

	Percent by Volume	or	Percent by Weight
Paper	_____		_____
Cardboard	_____		_____
Wood	_____		_____
Plastic	_____		_____
(Indicate Chemical Composition)	_____		_____
Rubber	_____		_____
(Indicate Chemical Composition)	_____		_____
Garbage	_____		_____
Pathological Waste	_____		_____
Gaseous, Liquid, or Semi-liquid wastes	<u>See Attachment #1</u>		_____
(Indicate Chemical Composition)	_____		_____
Incombustibles	_____		_____
Other (Specify)	_____		_____

10. Photograph of unit—enclose a minimum size photograph of 5" x 7". Project still in design.

11. Plan of the unit — manufacturer's drawing or drawing clearly illustrating all dimensions and construction details must be submitted.  
Project still in design.



## 12. Combustion Air

## (a) Draft

Natural Draft ☐Induced Draft ☐Forced Draft ☒Pressure 6 in. H<sub>2</sub>O

## (b) Air Distribution N/a

OverfireUnderfireSecondary

No. of Ports

Port Size (sq. in.)

Air Flow (SCFM)

## 13. Stack Flare is used

(a) Inside diameter \_\_\_\_\_ inches

(b) Height above grates to top of stack \_\_\_\_\_ feet

(c) Height of stack above any building or obstacle within 25 feet of the incinerator \_\_\_\_\_ feet

(d) Spark Arrestor Height \_\_\_\_\_ inches Screening openings \_\_\_\_\_ inches

## (e) Stack Shell

Type of material and thickness \_\_\_\_\_

Type of refractory, thickness and temperature rating \_\_\_\_\_

## 14. Shell Construction N/A

(a) Type of material and thickness \_\_\_\_\_

(b) Type of insulation and thickness \_\_\_\_\_

(c) Type of refractory, thickness and temperature rating \_\_\_\_\_

(d) Type of seams \_\_\_\_\_

(e) Method used to tie refractory to outside shell \_\_\_\_\_

## 15. Auxiliary Equipment N/A

## (a) Damper:

Barometric ☐Guillotine ☐None ☐

## (b) Primary burner (combustion chamber)

Fuel \_\_\_\_\_

BTU/hour rating \_\_\_\_\_

## (c) Secondary burner

Fuel \_\_\_\_\_

BTU/hour rating \_\_\_\_\_

## (d) Other (Specify) \_\_\_\_\_

## 16. Control Equipment None

(a) Afterburner on stack exit ☐ Type \_\_\_\_\_(b) Scrubber ☐ Type \_\_\_\_\_

(c) Other (Specify) \_\_\_\_\_

## 17. Regulation Compliance Units still in Design

(a) Have stack tests been performed on the unit? Yes ☐ No ☐(b) Are the results of the stack tests enclosed and made a part of this permit application? Yes ☐ No ☐(c) Are the results of the stack tests on file in the Commission office? Yes ☐ No ☐

DEPARTMENT FOR  
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DIVISION OF AIR POLLUTION  
FRANKFORT, KENTUCKY 40601

MANUFACTURING OR PROCESSING OPERATIONS

Phase I & II\*

1. Normal Schedule of Operation

A. Hours per day 24 B. Days per week 7 C. Weeks per year 52

D. Peak production season (circle one) (1) steady year round (2) summer (3) fall (4) winter (5) spring

2. Emissions to the atmosphere (each point of emission to the atmosphere should be noted separately on the Site Plan and Process Flow Diagram, i.e., stack, vent, and other points of discharge to the atmosphere).

Point of Emission Number	Height of Release (feet)	Diameter of Stack or Vent (feet)	Quantity of Gases Discharged (acfm)	Temperature of Gases Discharged (°F)	Type of Air Pollution Control Equipment	Date Installed	Control Efficiency by Percent Weight and Basis for Estimate (efficiency basis)
157 01 & 02	75 Feet	Flare	2,250	1050 °F	Combustion	Mid-1978	N/A Nearly Complete Combustion
04	50 Feet	6"	400	85° to 115°	None Required	Mid-1978	N/A
05	50 Feet	12"	2,500	70 °F	None Required	Mid-1978	N/A

NOTE: Phase I - Has only emission points 01 & 02.

Phase II - Has emission points 01, 02, 04 and 05.

# MANUFACTURING OR PROCESSING OPERATIONS (cont'd)

Phase I & II

## 3. Manufacturing or Processing Units (list all processes or operations)

<u>Point of Emission Number</u>	<u>Type of Process or Operation</u>	<u>Is Process Continuous or Batch</u>	<u>Type Input or Raw Materials used</u>	<u>Maximum Quantity Input per Hour (specify units)</u>	<u>Type of Products</u>	<u>Maximum Quantity Output per Hour (specify units)</u>	<u>Average Quantity Output per Year (specify units)</u>
01	Gas Producer	Continuous	Coal, Water, & Air	3000 lbs/hr. Coal	Fuel Gas	195,000 SCFH	600 x 10 <sup>6</sup> SCF
02	Gas Producer	Continuous	Coal, Water & Air	3000 lb/hr. Coal	Fuel Gas	195,000 SCFH	600x10 <sup>6</sup> SCF
04	Oxidizer	Continuous	Expended Liquor	24,000 GPH	Replenished Liquor	24,000 GPH	106x10 <sup>6</sup> Gal.
05	Gas Dryer	Continuous	Ind'l Fuel Gas	195,000 SCFH	Dried Gas	195,000 SCFH	120x10 <sup>9</sup> SCF

## 4. Equipment used in each process or operation

<u>Point of Emission Number</u>	<u>Type of Equipment</u>	<u>Make</u>	<u>Model Number</u>	<u>Operating Capacity (specify units)</u>	<u>Rated Capacity (specify units)</u>	<u>Date Installed</u>
01	Gas Producer	Wellman-Galusha	6.6' Diam.	28,000 lbs coal/hr	3000 lbs/coal/hr	Mid-1978
02	Gas Producer	Wellman-Galusha	6.6' Diam	28,000 lbs coal/hr	3000 lbs/coal/hr	Mid-1978
04	Oxidizer	Peabody	N/A	400 gpm	400 gpm	N/A
05	Dryer	N/A	N/A	364,000 SCFH	390,000 SCFH	N/A

# MANUFACTURING OR PROCESSING OPERATIONS (cont'd)

Fuel use and equipment for process heat excluding heat supplied by indirect heat exchanger (See Form No. APC 110A for indirect heat exchangers)

<u>Point of Emission Number</u>	<u>Type of Fuel</u>	<u>Fuel Usage Quantity/Hour (specify units)</u>	<u>Rated Burner Capacity (BTU/Hour)</u>	<u>Percent Sulfur</u>	<u>Percent Ash</u>	<u>Type of Air Pollution Control Equipment</u>	<u>Control Efficiency by Percent Weight and Basis for Estimate (efficiency basis)</u>
01	Coal	3000 lbs/hr	N/A	Less than 1.2	5.0 Avg.	Flare Furnace	100% Combustion
02	Coal	3000 lbs/hr	N/A	Less than 1.2	5.0 Avg.	Flare Furnace	100% Combustion.

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Pollutants emitted from manufacturing or processing operation (attach emission estimate calculations)

<u>Point of Emission Number</u>	<u>Pollutant Name</u>	<u>Chemical Composition</u>	<u>Inlet Loading (grains/SCF)</u>	<u>Outlet Loading (grains/SCF)</u>	<u>Amount Emitted Pounds/Hour</u>	<u>Basis of Emission Estimate</u>
01	Flared Ind'l.	See Appendix II - for details.			300 - 700 Phase I	
02	Fuel Gas				3000 - 6000 Phase II	Calculation
04	Water Saturated Air - Not considered pollutant					
05	Water Saturated Air - Not considered pollutant					

## MANUFACTURING OR PROCESSING OPERATIONS (cont'd)

### 7. Describe storage and transportation of processed and raw materials and related air pollution control measures.

Clean Industrial Fuel Gas will be distributed to users via a distribution (pressured) pipeline. Raw material is coal; it will be delivered by truck.

### 8. Describe disposal, re-use, storage, and transportation of contaminants collected by air pollution control devices. Indicate the weight of each contaminant collected, disposed, re-used, stored, and transported.

Ashes from Gas Producers - 206 lbs/hr

Dust from Dust Collector - 50 lbs/hr

Sulfur cake from Holmes-Stretford Process - .77 TPY Max.

All of these materials will be stored on site in containers (protected from the weather) and disposed of by trucking to the Pike County sanitary landfill.

### 9. Submit a Process Flow Diagram. Label: (1) input of raw materials, (2) production processes, process fuel combustion, process equipment and air pollution control equipment, and (3) all numbered points of emission of air contaminants.

COMMONWEALTH OF KENTUCKY  
DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION  
ENVIRONMENTAL QUALITY  
DIVISION OF AIR POLLUTION  
FRANKFORT, KENTUCKY 40601  
(502) 564-6844

MONITORING EQUIPMENT

1. Stack Gas Monitoring Equipment

<u>Point of Emission Number</u>	<u>Pollutant Monitored</u>	<u>Monitoring Start-up Date</u>	<u>Equipment</u>		<u>Calibration Frequency</u>	<u>Distance to Nearest Flow Disturbance (feet)</u>	
			<u>Make</u>	<u>Model</u>		<u>Downstream</u>	<u>Upstream</u>
03	Oxygen Recorder	4/13/79	Still in Design		Depending on Specifications	Still in Design	
03	SO <sub>2</sub> Recorder	4/13/79	"	"		"	"

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2. Additional Stack Gas Monitoring Data

<u>Point of Emission Number</u>	<u>Additional Parameters Monitored</u>	<u>Normal Parameter Rate</u>
---	--	--------------------------------------

N/A

3. Ambient Monitoring Equipment    None Planned

<u>Monitoring Station Number</u>	<u>Pollutant Monitored</u>	<u>Monitoring Start-up Date</u>	<u>Measurement Method</u>	<u>Equipment Make      Model</u>	<u>Sampling Frequency or Interval</u>	<u>Calibration Frequency</u>
--	--------------------------------	---	-------------------------------	--------------------------------------	---	----------------------------------

4. Attach Scale Drawings of all stacks having monitoring equipment, showing locations of those stack gas monitoring devices. Also, include performance specifications for each stack gas monitoring device.

Still in Design

5. Attach a topo map showing locations of all points of emissions and the locations of all ambient monitoring equipment. See Appendix 3.
6. Attach a copy of the diffusion equation calculations used to determine the locations of the ambient monitoring equipment. Also, include performance specifications for each ambient monitoring device.

No ambient readings planned.



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FRANKFORT, KENTUCKY 40601

EPISODE STANDBY PLAN \*

ID NUMBER \_\_\_\_\_

1. Name of Firm or Institution: Douglas Site Gasification Project  
Pike County, Kentucky.

2. Facility Location:

*Street*

*City*

*County*

3. Person to contact regarding an air pollution episode:

Name To be hired in future Title \_\_\_\_\_

Office Phone \_\_\_\_\_ Home Phone \_\_\_\_\_

Alternate person to contact:

Name Rod Clark Title Director, Development and Planning, Pike County

Office Phone (606) 432-2553 Home Phone \_\_\_\_\_

\*REQUESTING EXEMPTION SEE PAGE 2



DEPARTMENT FOR  
NATURAL RESOURCES AND  
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DIVISION OF AIR POLLUTION  
FRANKFORT, KENTUCKY 40601

Log # \_ \_ \_ \_

EPISODE STANDBY PLAN

GENERAL SOURCE INFORMATION

Point of Emission Number  
and Source Description

Normal Emissions (lbs/hr)				
Particulates	SO <sub>2</sub>	HC	CO	NO <sub>x</sub>

Basis for  
Estimate

Requesting exemption from Episode Standby Plan  
as the facility is acting as a utility supplying  
hot water for space heating and chilled water for  
air conditioning in commercial establishments and  
residences.

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DIVISION OF AIR POLLUTION  
FRANKFORT, KENTUCKY 40601

Log # \_ \_ \_ \_

EPISODE STANDBY PLAN

ALERT LEVEL STANDBY PLAN

Point of  
Emission  
Number

Pollutant(s)

Description of Action

Resulting  
Emissions  
(lbs/hr)

Reduction  
from Normal  
(%)

Time  
Required  
(hrs)

See Page 2

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FRANKFORT, KENTUCKY 40601

EPISODE STANDBY PLAN

WARNING LEVEL STANDBY PLAN

Point of  
Emission  
Number

Pollutant(s)

Description of Action

Resulting  
Emissions  
(lbs/hr)

Reduction  
from Alert  
(%)

Time  
Required  
(hrs)

See Page 2

DEPARTMENT FOR  
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DIVISION OF AIR POLLUTION  
FRANKFORT, KENTUCKY 40601

EPISODE STANDBY PLAN

EMERGENCY LEVEL STANDBY PLAN

Point of  
Emission  
Number

Pollutant(s)

Description of Action

Resulting  
Emissions  
(lb & hr)

Reduction  
from Warning  
(%)

Time  
Required  
hrs

See Page 2

# DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

DIVISION OF AIR POLLUTION - FRANKFORT, KENTUCKY 40601

## COMPLIANCE SCHEDULES

Point of Emission Number  
and Source Description

Control Plan Description

Pollutants

Step  
Code

Step  
Date

Pikeville Gasification Project

Gas Site - Pikeville, Ky

### Compliance Schedule

#### Phase I - Demonstration Project

Step I - Completed as evidenced by submittal of Construction Permit.

Step II - Anticipated by October 15, 1977

Step III - Anticipated by February 1, 1978

Step IV - Anticipated by August 15, 1978

Step V - Anticipated by February 15, 1979

Step VI - Anticipated by April 15, 1979

#### Phase II

Step I - Completed as evidenced by submittal of Construction Permit.

Step II - Still to be determined.

Step III - Still to be determined.

Step IV - Still to be determined.

Step V - Still to be determined.

### Step Codes

1. Initiation of a control study.
2. Air pollution control equipment purchase order.
3. Approval of control equipment contractors drawings.
4. On site delivery of control equipment.
5. Completion of construction of control equipment.
6. Final acceptance test for compliance.

\_\_\_\_\_  
Signature and Title of person  
submitting compliance schedule

DATE \_\_\_\_\_

## APPENDIX I

### PROJECT DESCRIPTION

1. This application is for a construction permit for Coal Gasification Facility which is to be built at the Douglas Industrial Park in Pike County, Kentucky. This venture is part of a two phased program involved with the production and use of Industrial Fuel Gas from coal.
2. Phase I will be a demonstration program funded by ERDA, KCER, ARC, and Pike County to test the use of boilers fired with raw (unclean) producer gas. The operating mode will involve the use of one or two of the boilers. However, total Industrial Fuel Gas produced will be limited by the max. steam demand for residual heating and cooling as well as the maximum limit of  $SO_2$  emissions (as dictated by the Kentucky Department for Natural Resources and Environmental Protection, Division of Air Pollution) of 17.2 pounds per hour.

The maximum hourly demand for steam has been calculated to be 21,648 pounds per hour which will require 2225 pounds per hour of coal to be feed to the producers. The quantity of coal allowable will be ultimately dependent upon the sulfur content in the coal. Table 1 lists coal consumption predicted by engineering calculations relative to sulfur content from 0.4% to 0.7%. The higher the sulfur content the less coal which can be burned during a period of time when the amount of  $SO_2$  emitted would be greater than the limit.

% S in Coal	Coal Feed to Producer Max. Rate LBS/HR
0.4	2263
0.5	1791
0.6	1508
0.7	1284

Table 1

By comparison only 0.4% sulfur coal could be used during hours where 2225 pounds per of coal was required. Thus it may be necessary to use No. 2 Fuel Oil as a supplementary fuel if a coal is used with a sulfur content exceeding 0.4%.

As contracts for coal have not been finalized at this point in time, Table 2 was prepared to assist Pike County authorities in making a selection on which coal or coals and quantities would be required relative to sulfur content. Obviously a variety of options are available and the choices will require economic evaluation.

3. Phase II will be initiated after the demonstration phase and will be operated as follows:

Both boilers will be converted to underfeed vibrating grate stoker fired boilers. Boilers will also be used to incinerate tars, oils and waste liquor which will be generated from cleanup of Industrial Fuel Gas.

Both producers will be used to furnish clean, desulfurized Industrial Fuel Gas for use by industries which elect to locate in the Douglas Site.

Consideration of SO<sub>2</sub> emissions will be maintained with one or more of the fuel alternates available and still require economic evaluation. (See Table 3).

One additional factor to be noted is that, when the producers are operating at the maximum capacity of 6000 pounds per hour of steam may be available from the waste heat boiler thus reducing the rate of coal required for feed to the boilers to a level that 0.6% sulfur coal be burned even during maximum steam demand periods and SO<sub>2</sub> emission would be in compliance.

4. This application for construction permit is submitted with the following agreed condition: Pike County will provide appropriate evidence of contractual agreements for fuel (coal and/or No. 2 Fuel Oil) required to meet the SO<sub>2</sub> maximum hourly emission rate allowable of 17.2 pounds of SO<sub>2</sub> per hour prior to start up of the facility.
5. There is no evidence at this time of a problem with particulate emissions as they will be under the allowable rate of .95 pounds per hour.

PHASE I - ESTIMATED FUEL CONSUMPTION  
ALTERNATIVES

	Coal 0.7%S T/MO	Fuel Oil GAL/MO	Coal 0.6%S T/MO	Fuel GAL/MO	Coal 0.5%S T/MO	Fuel Oil GAL/MO	Coal 0.4%S T/MO	Fuel Oil GAL/MO
JAN	468	16,700	500	9,300	500	1,490	500	
FEB	407	1,200	408		408		408	
MAR	312	1,100	312		312		312	
APR	149		149		149		149	
MAY	145		145		145		145	
JUN	424	1,700	424		424		424	
JUL	468	30,300	550	20,900	600	9,550	632	
AUG	468	26,900	550	17,800	575	7,390	584	
SEP	313	1,600	313		313		313	
OCT	128		128		128		128	
NOV	286		286		286		286	
DEC	<u>426</u>	<u>3,900</u>	<u>426</u>	<u>300</u>	<u>426</u>	<u>      </u>	<u>426</u>	<u>      </u>
TOTAL	3,994	83,400	4,191	48,300	4,266	18,970	4,307	-0-

TABLE 2



PHASE II - ESTIMATED FUEL CONSUMPTION

ALTERNATIVES

	Coal 0.7%S T/MO	Fuel Oil GAL/MO	Coal 0.6%S T/MO	Fuel Oil GAL/MO	Coal 0.5%S T/MO	Fuel Oil GAL/MO	Coal 0.4%S T/MO	Fuel Oil GAL/MO
JAN	398	15,200	398	8,060	398		398	
FEB	310	360	310		310		310	
MAR	237	340	237		237		237	
APR	113		113		113		113	
MAY	127		127		127		127	
JUN	372	650	372		372		372	
JUL	468	28,730	550	17,600	555	6,140	555	
AUG	468	25,150	513	14,720	513	4,310	513	
SEP	274	610	274		274		274	
OCT	97		97		97		97	
NOV	217		217		217		217	
DEC	324	4,620	324		324		324	
TOTAL	3,400	75,660	3,332	40,380	3,537	10,450	3,537	-0-

TABLE 3

## APPENDIX II

### CHEMICAL COMPOSITION OF INDUSTRIAL FUEL GAS

<u>Constituent</u>	<u>Percent by Weight</u>
N <sub>2</sub>	52.73
CO	27.46
CO <sub>2</sub>	6.79
CH <sub>4</sub>	1.84
H <sub>2</sub>	0.99
H <sub>2</sub> S	0.13
COS	0.05
O <sub>2</sub>	0.35
HCN	0.05
NH <sub>3</sub>	0.05
H <sub>2</sub> O	6.62
TARS	2.61
ASH	<u>0.33</u>
	100.00

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APPENDIX H  
PRE-CONSTRUCTION REVIEW AND PRELIMINARY DETERMINATION  
ON THE APPLICATION OF OFFICE OF COUNTY JUDGE,  
PIKE COUNTY, KENTUCKY

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Appendix H

PRE-CONSTRUCTION REVIEW AND PRELIMINARY DETERMINATION  
ON THE APPLICATION OF  
OFFICE OF COUNTY JUDGE, PIKE COUNTY, KENTUCKY

to construct

A LOW-BTU COAL GASIFICATION PLANT NEAR DOUGLAS, KENTUCKY

Review and Analysis by

Gautam Trivedi

March 1, 1978

KYEIS NUMBER:	101-3300-0187	SIC CODE:	4925
REGION:	Appalachian	COUNTY	Pike
LOG NUMBER:	4516	DATE RECEIVED:	November 14, 1977
UTM COORDINATES:	363.9E, 4137.9N	TYPE OF REVIEW:	NSR and PSD

Division of Air Pollution Control  
DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION  
Frankfort, Kentucky 40601

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## EXECUTIVE SUMMARY

### 1. BACKGROUND

The Office of Pike County Judge, Pike County, Kentucky, has proposed the construction of a low BTU coal gasification plant at Douglas, Kentucky. The proposed source is to be constructed in two phases. During Phase I, two 6-1/2 foot diameter Wellman-Galusha low BTU gasifiers and two 20 mm BTU/hr. rated gas fired indirect heat exchangers will be installed. During Phase II, the indirect heat exchangers will be converted to coal firing and the low BTU gas from the gasifiers sold to future industry that may locate at the proposed Douglas Industrial Park.

### 2. EMISSIONS ANALYSIS

The initial application received from Pike County indicated that the source would be subject to the Prevention of Significant Deterioration (PSD) regulations for sulfur dioxide during both Phase I and Phase II. It was not approvable because the control technology was not the Best Available and ambient modeling indicated that the available PSD increments would be exceeded. Pike County subsequently revised its application so that the SO<sub>2</sub> emission potential of the source was reduced below 100 tons/yr. during Phase I. Under the revised plans, the proposed source will be classified a major emitter of sulfur dioxide in a Class II area during Phase II. It will, therefore, be required to meet the increment and BACT requirements of 40 CFR 52, Prevention of Significant Deterioration (PSD) for sulfur dioxide during Phase II. During the ambient increment review, modeling showed that the SIP allowable rates for the Indirect Heat Exchangers during both Phase I and II would cause the available PSD 24-hour average increments for SO<sub>2</sub> and particulates to be exceeded. The allowable emission rates for both pollutants were therefore determined from the ambient modeling so as not to exceed the available PSD increments. The BACT requirement, however, will not apply to the source for SO<sub>2</sub> during Phase I nor for particulate matter during both Phase I and II as it was not found to be a major emitter under PSD rules.



The means used to reduce the emission potential for SO<sub>2</sub> to below 100 TPY during Phase I was based on using 0.6% average sulfur coal at a reduced gasifier coal feed rate. Additional fuel for the boilers was to be provided by using supplemental #2 Fuel Oil of 0.25% sulfur content. This is acceptable under applicable PSD rules. During Phase II, however, a Stretford Holmes Desulfurization System would be required for coal gas cleanup to meet the BACT criteria of PSD.

As presently envisioned, the source will be constructed such that during Phase I, low sulfur coal (0.6% S) will be gasified at a rate not to exceed 1500 #/hr. (50% of rated capacity for one gasifier) when no supplemental #2 Fuel Oil is used. When load requirements go up to the point where the amount of coal gas alone cannot meet the fuel needs, supplemental #2 Fuel Oil will be used but the coal feed rate will be reduced to compensate for the sulfur in the fuel oil. The overall governing factor will be the allowable sulfur dioxide emission rate which may at no time exceed 17.2 #/hr. A continuous SO<sub>2</sub> in-stack monitor will be provided for SO<sub>2</sub> emissions measurement and would also enable plant personnel to adjust the coal feed rates to maintain compliance as the load requirements change.

During Phase II, with the low BTU gasifiers using BACT for SO<sub>2</sub> (Holmes Stretford Desulfurization), the boilers will be operated on coal and #2 Fuel Oil. The SO<sub>2</sub> emission limitation will remain at 17.2 #/hr.

Owing to the restrictions on coal usage for SO<sub>2</sub> emissions compliance and the mechanical collectors provided, particulate emission rates from the boilers are expected to be within the allowable during both Phase I and Phase II of the project.

Coal handling operations will use wet suppression and enclosures for compliance with 401 KAR 3:060, Section 14, Control of Fugitive Dust and the gasifier flares will be equipped with smokeless tips to comply with 401 KAR 3:060, Section 14, Prohibition of Open Burning.

### 3. AMBIENT AND INCREMENT ANALYSES

The source will be located in a PSD class II area for SO<sub>2</sub> and particulates where the full PSD increments are presently available. Air quality modeling indicates that the source allowable emission rates for both SO<sub>2</sub> and particulates will consume all available 24-hour average increments but that smaller amounts of the increments available over other averaging times will be consumed. The source will not cause or exacerbate any known ambient air quality standard violations.

#### 4. ECONOMIC ANALYSIS

On the basis of data supplied by the source, the cost of air pollution control was found to be \$313/ton for particulates and \$88/ton for SO<sub>2</sub> during Phase I. During Phase II, the added cost of the Holmes-Stretford Desulfurization resulted in the cost of air pollution control being approximately 11¢/mcf of fuel gas produced.

#### 5. CONCLUSIONS AND RECOMMENDATIONS

The source as proposed in the permit application with the conditions of approval contained in the draft construction permit will be in compliance at start-up of both Phase I and Phase II with all emission, ambient and PSD requirements. Consequently, a preliminary determination is made that a permit to construct be issued to the source by the Division after the necessary public comment period and a satisfactory resolution of any adverse comments. Furthermore, it is recommended that the USEPA be advised of the preliminary determination regarding compliance with the requirements of 40 CFR 52. It is this Division's recommendation that the preconstruction approval pursuant to 40 CFR 52 be granted by EPA if that Agency concurs with this review and determination.

## I. BACKGROUND

The Office of the Pike County Judge (hereafter "Pike County") has applied to the Division of Air Pollution Control for a permit to construct a low-BTU Coal Gasification Plant near Douglas, Kentucky.

The project is to be implemented in two phases. Phase I will involve the installation of two 6-1/2 foot diameter Wellman-Galusha type coal gasifiers which will manufacture producer gas (low BTU). This raw gas will be used to fire two 20 mm BTU/hr. boilers for generating utility steam for a 200 unit public housing project being located near the Douglas site. The housing project is being constructed for local residents who have been displaced by the U.S. Hwy. 23 construction in Pike County. The actual site is an area which has been reclaimed by landfilling with material excavated during the highway construction. Phase I will last approximately three years and will be partially funded by the U. S. Department of Energy under a research and development grant to study the operation of the gasifiers under swing loads as would occur in utility steam generation.

Phase II of the project will involve conversion of the two boilers to coal firing and sale of desulfurized producer gas to future industries which may locate in the proposed Douglas Industrial Park.

The coal will be received by truck and unloaded in a suitable three-sided enclosure equipped with wet suppression. It will then be stored in a stockpile. Once a day, the coal will be screened, crushed and conveyed by bucket elevator to the day hopper atop the gasifier. This hopper will feed coal through an air lock type valve into the reactor vessel. The Wellman-Galusha gasifiers are rated at 3000 # coal/hr and produce 195,000 scfh gas each. During Phase I, the producer gas will be cleaned of particulate matter only in a cyclone prior to being fired in the boilers. The ashes from the gasifier grates and the cyclone hopper will be landfilled. The boilers will be equipped with multiclones for further particulate removal before discharge of the products of combustion to the atmosphere.

During Phase II, the boilers will be equipped with vibrating underfeed stokers and burn coal exclusively. The gasifiers will be operated solely to supply fuel gas. This gas will be cleaned using electrostatic precipitators for tar removal and a Holmes-Stretford Desulfurization System for hydrogen sulfide removal. The waste tars and oils will be burned in the boilers and the clean gas sold to industrial customers. The recovered sulfur will be landfilled although some use for it may be found at a later date.

The initial application received by the Division indicated that the coal conversion plant would have, or result in the emission of, over 100 T/yr of sulfur dioxide under both Phase I and II. It was, therefore, found to constitute a major source of SO<sub>2</sub> emissions subject to the increment and BACT requirements of 40 CFR 52, Prevention of Significant Deterioration (PSD). Pike County subsequently revised the permit application to reduce the Phase I SO<sub>2</sub> emission potential below 100 TPH. This was through agreement to comply with permit conditions which would

1. limit the gasifiers to being operated at a lower than rated coal feed rate
2. limit the sulfur content of the coal input to the gasifiers, and
3. supplement the boilers with #2 Fuel Oil in addition to burning the raw producer gas

Under these constraints, Phase I is no longer subject to PSD requirements although a permit to construct is required from the Division.

Under Phase II, the source proposes to convert the indirect heat exchangers to coal firing and use both gasifiers at their rated capacity to produce low BTU gas for sale. Under these conditions, it constitutes a major emitting source of sulfur dioxide and is, therefore, subject to the increment and BACT requirements of PSD (40 CFR 52) as well as a SIP New Source Review. In order to conserve time, the Phase I and Phase II reviews (NSR and PSD) of the project have been combined together in this report.

Ambient modelling of the stack emissions (particulate and SO<sub>2</sub>) from the proposed source was performed for the increment analyses under Phase II. It was found that the allowable emissions from the indirect heat exchangers under Regulation 401 KAR 3:050, Section 3 during Phase II would consume more than the available particulate and SO<sub>2</sub> PSD increments for the Class II area under consideration. The Phase II boiler emission rates allowable for particulates and SO<sub>2</sub> are therefore determined not on the basis of the allowable under the State Implementation Plan (401 KAR 3:050, Section 3) but rather as the emission rates of the respective pollutants which would use up no more than the available PSD increments. Since the SIP allowables during Phase I were found to be in excess of the maximum rates permissible due to the PSD increment constraint under Phase II, the Phase I particulate and SO<sub>2</sub> allowables were similarly reduced to use up no more than the available PSD increments in the area. These translate into no more than 17.2 #/hr SO<sub>2</sub> and 7.03 #/hr of particulate matter emissions from the source during either Phase I or Phase II. This is discussed further in Sections III and IV of this report.

## II. INFORMATION GIVEN AND ASSUMED

Throughout this analysis, the maximum allowable SO<sub>2</sub> emission rate of 17.2 #/hr. was found to be the controlling factor in the determination of permissible operating rates, fuel quality, amount of supplementary #2 fuel oil required, etc. Pike County has submitted data to substantiate the maximum anticipated steam load on the boilers during Phase I with gas and #2 fuel oil firing and during Phase II with coal and #2 fuel oil firing.

During Phase I, information provided by Pike County indicates that coal averaging 13,500 BTU/lb, .6% sulfur and 5% ash will be used. The #2 fuel oil will have a maximum sulfur content of 0.25% and a heating value of 143,000 BTU/gal. During Phase II, the boilers will use the same coal but the gasifiers will operate on 1.2% sulfur and 5% ash coal.

Each pound of coal is assumed to produce 65 scf of fuel gas with a heating value of 150 BTU/scf and that 20 gallons of tar and oil of 1% sulfur are produced per ton of coal input. Emissions from the fuel gas combustion are calculated from the emission factors listed in EPA publication AP-42, "Compilation of Air Pollutant Emission Factors", Table 1.4-1, Emission Factors for Natural Gas Combustion, with the exception that the NOx emission factor is assumed to be the maximum given in the table since low - BTU gas combustion is known to cause higher NOx emissions than natural gas combustion. The emission factors for coal combustion during Phase II are assumed as given in AP-42, Table 1.1-2.

The emission factors for coal handling operations are assumed as follows:

Coal unloading	-	.5 # particulates/ton coal
Coal crushing	-	.2 # particulates/ton coal
Screening, Conveying & Transferring	-	.7 # particulates/ton coal

The efficiencies of the control equipment are assumed to be as supplied by Pike County in the permit application, viz.,

Boiler multiclone efficiency	= 92.5%
Wet Suppression/enclosure efficiency	= 90 %
Holmes Stretford efficiency	= 99.9%

It is further assumed that 95% of all sulfur present in the coal is gasified while 5% remains in the ash clinker in the gasifier.

### III. EMISSIONS ANALYSIS

The source will have slightly different emissions during the two phases of the project. Phase I emissions will occur during the first three years of the project and the Phase II values thereafter if funds for the desulfurization equipment can be obtained by Pike County. Should the desulfurization system for the low BTU gas not be funded, Phase I operations will continue due to the dependence of the public housing project on the plant boilers for residential heating and cooling.

In the emissions analysis that follows, it is to be noted that the allowable emission rates for particulate matter and sulfur dioxide are calculated on the basis of the air quality modeling and are not the allowable values under the SIP emission standard applicable to the affected facility. Sample step by step calculations are given in Appendix A and the actual and allowable emission rates summarized below:

XXXXXXXXXX

TABLE III - 1

PHASE I: Two 6-1/2' diameter Wellman-Galusha Low BTU Gas Producers  
Two 20 mm BTU/hr Gas Fired Indirect Heat Exchangers with #2 Oil Supplement.  
POLLUTANTS OF CONCERN

EIS NO.	APPLI- CATION EM. PT. NO.	SOURCE	POLLUTANT	#/HR. ACTUAL	#/HR. ALLOW- ABLE	APPLI- CABLE REGULA- TION	TONS PER YEAR				
							ALLOW- ABLE EMISSIONS	ACTUAL EMISSIONS	UNCON- TROLLED EMISSION POTENTIAL	EMISSION ADDITION	EMISSION PREVEN- TION
01	01	Gasifier Emergency Flare	Part. SO <sub>2</sub>	16.1 17.2	NA	3:060(15)	NA	SEE NOTE 1 BELOW			
02	02	Gasifier Emergency Flare	Part. SO <sub>2</sub>	16.1 17.2	NA	3:060(15)	NA	SEE NOTE 1 BELOW			
186	03	Two 20mm BTU/hr Indirect Heat Exchanger (SEE NOTE 2 BELOW)	Part. SO <sub>2</sub>	.32 17.2	6.59 17.2	40CFR52	28.8 75.1	1.4 75.1	18.7 75.1	1.4 75.1	17.3 0
			CO <sub>2</sub>	1.76	EXEMPT	3:050(3)	EXEMPT	7.7	7.7	7.7	0
			HC	.32	EXEMPT	3:050(3)	EXEMPT	1.4	1.4	1.4	0
			NOx	21.1	EXEMPT	3:050(3)	EXEMPT	91.7	91.7	91.7	0
04	06,07 08	Coal Unloading Crushing, Screen- ing, Conveying, Stockpile	Part.	.44	NA	3:060(14)	NA	.45	4.5	.45	4.0

NOTE 1: The flares will be used when lighting up the gasifiers or during emergencies. Light up is required only a few times per year and lasts between 2 to 4 hours. A mixture of wood and coal is generally used as the initial charge. The emissions shown would occur rarely because the gasifier can be banked and turned down during most emergencies.

NOTE 2: Emissions indicated are for both boilers combined through a common stack. The emission rates allowable under 401 KAR 3:050(3) are 1.7 # SO<sub>2</sub>/mm BTU and 0.40 # particulates/mm BTU.

~~XXXXXXXXXX~~

TABLE III - 2

PHASE II: Two 20 mm BTU/hr coal fired boilers with #2 Oil Supplement  
Two 6-1/2' diameter low BTU gasifiers with Holmes Stretford Desulfurization

POLLUTANTS OF CONCERN

SIS NO.	APPLI- CATION EM.PT. NO.	SOURCE	POLLUTANT	#/HR. ACTUAL	#/HR. ALLOW- ABLE	APPLI- CABLE REGULA- TION	TONS PER YEAR				
							ALLOW- ABLE EMISSIONS	ACTJAL EMISSIONS	UNCON- TROLLED EMISSION POTENTIAL	EMISSION ADDITION	EMISSION PREVEN- TION
01	01	Gasifier Emergency Flare	Part. SO <sub>2</sub>	37.49 68.4	NA	3:060(15)	SEE NOTE 1 UNDER PHASE I				
02	02	Gasifier Emergency Flare	Part. SO <sub>2</sub>	37.49 68.4	NA	3:060(15)	SEE NOTE 1 UNDER PHASE I				
187	03	Two 20 mmBTU/hr Indirect Heat Exchangers (SEE NOTE 3 BELOW)	Part. SO <sub>2</sub>	1.41 17.2	6.59 17.2	40CFR52	28.8 75.1	5.2 75.1	82.4 75.1	4.8 0	76.2 0
			HC <sup>2</sup>	.75	EXEMPT	3:050(3)	EXEMPT	3.3	3.3	1.9	0
			CO	1.51	EXEMPT	3:050(3)	EXEMPT	5.6	6.6	-1.1	0
			NOx	5.66	EXEMPT	3:050(3)	EXEMPT	24.6	24.6	-67.0	0
04	06,07, 08	Coal Unloading Crushing, Screening Conveying, & Stockpiling	Part.	.44	NA	3:060(14)	NA	1.6	16.0	+1.2	14.4

NOTE 3: Emission additions are those occurring in Phase II over Phase I conditions. Minus sign indicates a reduction from Phase I. The emission rates allowable under 401 KAR 3:050(3) are 2.7 # SO<sub>2</sub>/mm BTU and 0.40 # particulates/mm BTU.



Additionally, during Phase II, the two gasifiers will result in emission of the products of combustion of the low-BTU gas at the Douglas Industrial Park which is proposed to be located approximately 1.5 km from the gasification plant. Both gasifiers are to be operated at the rated capacity of 3000 #/hr. of coal each with the coal averaging 1.2% sulfur and 5% ash. Hence the SO<sub>2</sub> emission potential of the gasifiers during Phase II totals 598 TPY. Of this, 556 TPY will be prevented, 41.4 TPY SO<sub>2</sub> will be emitted from the boiler stack due to the tar and light oil burning and 0.6 TPY SO<sub>2</sub> will be emitted at the Douglas Industrial Park. The exact stack parameters of the latter are unknown so that the exact impact cannot be modeled. Based on knowledge of air quality modeling, it is safe to predict that no significant air quality impact would result from the combustion of the clean producer gas.

The control technology proposed by the source under Phase II (Holmes-Stretford Desulfurization) is considered the Best Available Control Technology for this type of source. (Region IV EPA Determination, Irvin Industrial Development, Inc. Georgetown, Ky., 1977)

#### IV. AIR QUALITY ANALYSIS

##### 1. Sulfur Dioxide

The ambient air quality at the plant site is considered to be in attainment with SO<sub>2</sub> ambient standards. The SO<sub>2</sub> air quality monitoring data for the site nearest the plant, viz., Station No. 1034, Pikeville Water Plant, is summarized below:

TABLE IV - 1

REPORTING PERIOD	24-HOUR AVERAGE, ug/m <sup>3</sup>			ARITHMETIC MEANS, ug/m <sup>3</sup>
	MAX	2 <sup>nd</sup> Max	TIMES > 360	
76/01 - 76/12	34.9	22.6	0	5.9

There is, therefore, no SO<sub>2</sub> air quality problem in the area under consideration.

Using the EPA Valley Model, the impact of the source stack allowable emissions was also modeled. The receptor network is as shown in Appendix B. For a 1 gm/sec emission rate, E-Stability and 2.5 m/sec wind speed, the 24-hour average ground level concentrations were as given in Appendix C. Since the plant allowable emission rate will be 2.17 gm/sec (17.2 #/hr.), the maximum 24-hour average GLC was found to be 91 ug/m<sup>3</sup>. This is the total allowable PSD increment for SO<sub>2</sub> on a 24-hour average basis for the Class II area under consideration. No further significant deterioration in SO<sub>2</sub> air quality for the receptors in question is permissible in the future unless increments are created by emission reductions at the source.

Since suitable modeling techniques are not available for checking compliance with the 3-hour and annual average increments, the method of R. I. Larsen, "A New Mathematical Model of Air Pollution Concentration Averaging Time and Frequency," JAPCA, Vol. 18, No. 1, Jan. 1969, was used. A standard geometric deviation of 2.16 (Table IV, Ibid) was assumed. The results of the increment analysis are tabulated below:

TABLE IV - 2

##### INCREMENT ANALYSIS FOR SO<sub>2</sub>

Pollutant	Averaging Time	Allowable Class II Increment ug/m <sup>3</sup>	Actual Increment, ug/m <sup>3</sup>
SO <sub>2</sub>	24-hour	91	91
	3-hour	512	175
	Annual	20	14

## 2. Particulate Matter

Pike County has been identified as attaining the particulate NAAQS although the nearest monitoring site, Station 10134, in the City of Pikeville, is designated non-attainment. A 24-hour average background of  $86 \text{ ug/m}^3$  is therefore, assumed in this analysis for the plant site\*. The air quality analysis for particulate matter is required to consider the possible exacerbation at the Pikeville monitoring site and an increment analysis. Owing to the hilly terrain, the allowable emission rate of 6.6#/hr for stack emissions and the distance from the Pikeville monitor (15 km), it is not expected that any significant impact will occur at the Pikeville receptor. For the increment analysis, a 1 gm/sec emission rate produced a  $42 \text{ ug/m}^3$  ambient impact (Appendix C) at the receptor network shown in Appendix B. Consequently the plant allowable emission rate of 7.03 #/hr. will consume all the  $37 \text{ ug/m}^3$  (24-hour average) Class II PSD increment available at the receptor in question.

Using the method of Larsen, the corresponding Annual Arithmetic Mean was found to be  $5.7 \text{ ug/m}^3$ . Consequently, less than  $5.7 \text{ ug/m}^3$  of the allowable  $19 \text{ ug/m}^3$  annual geometric mean will be consumed. The results are tabulated below:

TABLE IV - 3            INCREMENT ANALYSIS FOR PARTICULATE MATTER

Pollutant	Averaging Time	Allowable Increment, $\text{ug/m}^3$	Actual Increment, $\text{ug/m}^3$
Particulate Matter	24-hour	37	37
	Annual	19	5.7**
	Geometric Mean		

\* Based on the Division of Air Pollution Control Compliance Manual, Section 9.1.1 (Dec. 14, 1977), for the case where no measured air quality data for the impact area exists and the area is unaffected by other existing "man-made" sources. It involves analysis of eight years of data for Station 2026 in Franklin County. The annual geometric mean for particulates is correspondingly found to be  $35 \text{ ug/m}^3$ .

\*\*Since the annual arithmetic mean has been calculated to be  $5.7 \text{ ug/m}^3$ , the annual geometric mean will definitely be smaller.

## V. ECONOMIC ANALYSIS

The actual cost of air pollution control for the Pike County project will be different during the two phases of the project. During Phase I, the equipment cost will be for the producer cyclones and boiler multiclones whereas during Phase II, the cost of the Holmes Stretford desulfurization equipment will also be added on.

Additional operating expenses will result from the use of supplementary #2 Fuel Oil in place of the cheaper coal due to the emission restrictions resulting from the PSD increment requirements.

The following assumptions are made in the analysis:

1. A straight line fifteenyear straight line depreciation period is assumed (6-2/3% per year)
2. Capital charges are assumed at 10%.
3. Maintenance costs are assumed at 3% of the total installed equipment cost.
4. The cost of coal is assumed at \$40. per ton and that of #2 Fuel Oil at 50¢ /gal. for purposes of determining the costs due to use of the more expensive fuel oil.

The results of the analysis are tabulated below:

TABLE V - 1. AIR POLLUTION CONTROL COSTS

i) Equipment & Installation Cost	\$40,000
ii) Depreciation @ 6-2/3%	2,668
iii) Capital Charges @ 10%	4,000
iv) Annual Capital Cost	6,668
v) Annual Operating Cost (Fuel Supplement Cost)	19,500
vi) Annual Maintenance Cost	1,200
vii) Total Annual Cost	27,368
viii) Cost per ton pollutant removed	
a) Particulate matter prevention	23.1 Tons/year
Cost per ton	313
b) Sulfur dioxide prevention	221.5 Tons/year
Cost per ton	88

TABLE V - 2

## PHASE II AIR POLLUTION CONTROL COSTS

i)	Equipment and Installation Cost (Holmes-Stretford Desulfurization)	
a)	Spray Towers	\$ 91,000
b)	ESP and Sulfur Removal	1,500,000
c)	Tar and Oil Removal	224,400
	TOTAL	1,815,400
ii)	Depreciation @ 8.33%	151,280
iii)	Capital Charges @ 10%	15,130
iv)	Annual Capital Cost (Desulfurization)	166,500
v)	Annual Capital Cost (Phase I)	6,668
vi)	Total Annual Capital Cost	173,168
vii)	Annual Operating Costs	
a)	Fuel Supplement Cost	19,500
b)	Desulfurization Unit	125,000
viii)	Annual Maintenance Cost	55,650
ix)	Total Annual Cost of Air Pollution Control	373,300
x)	Cost per ton pollutant removed	
a)	Particulate matter prevented	91.3 tons/year
b)	SO <sub>2</sub> prevented	557 tons/year
c)	Cost per ton pollutant removed	567

It is apparent that the cost increase per ton of pollutant removed will increase sharply during Phase II. On the basis of the gas produced, the cost increase per million BTU equivalent heating value due to air pollution control is \$0.73 (or 11¢/mcf low BTU gas). This may be compared to the maximum cost of natural gas of 1 mm BTU equivalent heating value, viz., \$2.46 (Texas Intrastate Natural Gas price/mcf)

## VI. DISCUSSION AND CONCLUSIONS

On the basis of the emissions analysis, the proposed source has been found to have actual emission rates on start-up at or within the allowables contained in the Kentucky Air Pollution Control Regulations during both Phase I and II of the project.

The controls proposed for sulfur dioxide during Phase II have been determined to meet the best available control technology criteria of 40 CFR 52, Prevention of Significant Deterioration. Although the specific question of odor control from the low BTU gasifiers tar and oil cleanup has not been discussed, past experience with similar applications indicates that the problem can be controlled adequately by suitable collection hooding over the tar and light oil decanters and venting of the odor-laden air to the gasifier for incineration. This will, therefore, be a design standard condition of the permit in order that the Holmes-Stretford Cleanup System may not create an odor problem while cleaning up the sulfur emissions.

With regard to control of fugitive particulate matter from coal handling, the source has proposed the use of wet suppression and enclosures. Since the source is expected to operate year round, winter freeze protection will be required on all wet suppression systems as an equipment standard. This is to ensure operability of the control equipment during the winter months.

Ambient air quality modeling of the proposed source has shown that the increments of air quality available for  $\text{SO}_2$  and particulates under 40 CFR 52, PSD would be exceeded if the SIP allowable emission rates were permitted. The allowable emission rates are, therefore, determined for both pollutants on the basis of the modeling such that no significant deterioration of air quality occurs. As a result, however, all of the 24-hour average increments available for  $\text{SO}_2$  and particulate matter will be consumed at certain receptors in the vicinity of the plant.

Owing to the sulfur dioxide emission rate being the controlling factor in determining overall plant compliance, a continuous  $\text{SO}_2$  in-stack monitoring device will be required in the boiler stack as a permit condition. This would not only provide the reviewing authority with continuous source compliance status data but would also provide plant operating personnel with a means of adjusting the coal and fuel oil firing rates so as to maximize coal usage while maintaining compliance, and optimizing costs by saving fuel oil, especially under low steam load conditions.

## VII. RECOMMENDATIONS

On the basis of the plans, specifications and other data submitted by the source and the writers evaluation as contained in Sections I through V of this report, a preliminary determination is made that the proposed low-BTU coal gasification plant at Douglas, Kentucky, will be in compliance at start-up with all applicable emission and ambient standards and the requirements of 40 CFR 52, PSD. It is, therefore, this writer's recommendation that a permit to construct be issued by the Division after public notification and comment. It is further recommended that the U. S. EPA be advised of this preliminary determination and requested to exercise it's authority under the Clean Air Act, to issue the source the necessary preconstruction approval under 40 CFR 52, Prevention of Significant Deterioration, provided the U.S. EPA concurs with this determination and all adverse public comments are satisfactorily resolved.

The affected facilities to be permitted for construction and the conditions of approval are as given in the attached draft permit.

Source: Pike County Coal Gasification Project  
Douglas, Kentucky - I.D.# 101-3300-0187

## PHASE I

## A. Allowable Emission Rates

1. Indirect Heat Exchangers 2 @ 20mmBTU/hr. each or 40mmBTU/hr. total combined heat input

## a) Particulates

From 401 KAR 3:050(3)

$$\text{Allowable emission rate, } y = 0.9634 \times .2356$$

$$= 0.40 \text{ \#/mmBTU} \quad (i)$$

From ambient air quality modelling (Section IV)

$$5 \text{ ug/m}^3 \text{ impact produced by } 0.95 \text{ \#/hr.}$$

$$37 \text{ ug/m}^3 \text{ impact produced by } \frac{.95}{5} \times 37 \text{ \#/hr.} = 7.03 \quad (ii)$$

where  $37 \text{ ug/m}^3$  is the 24-hour available particulate PSD increment.

Hence, plant particulate emissions may not exceed (ii). However, particulate emissions from coal handling = .44 #/hr.

$$\begin{aligned} \text{Hence, indirect heat exchanger allowable} &= 7.03 - .44 \\ &= 6.59 \text{ \#/hr.} \quad (iii) \end{aligned}$$

Consequently, boiler particulate allowable rate is the lesser of the values represented by (i) and (iii)

## b) Sulfur Dioxide

From 401 KAR 3:050(3)

$$\text{Allowable emission rate, } y = 7.7223 \times .4106$$

$$= 1.70 \text{ \#/mmBTU} \quad (iv)$$

From ambient air quality modelling

$$42 \text{ ug/m}^3 \text{ impact produced by } = 7.94 \text{ \#/hr. SO}_2$$

$$\begin{aligned} 91 \text{ ug/m}^3 \text{ impact produced by} &= \frac{7.94}{42} \times 91 \\ &= 17.2 \text{ \#/hr.} \quad (v) \end{aligned}$$



The lesser of the values given in (iv) and (v) is the allowable  $\text{SO}_2$  emission rate.

c)  $\text{HC}$ ,  $\text{CO}$ , and  $\text{NO}_x$  are exempt under 401 KAR 3:050(3)

2. Emergency Gasifier Flares: Regulation 401 KAR 3:060(15) requires that flares be equipped with a smokeless tip. This is an equipment standard. No other emission standard is applicable.
3. Coal Handling (Unloading, Crushing, Screening, and Conveying): The particulate emissions are fugitive in nature and no specific #/hr. is applicable. Opacity is to be limited to 20% under the Federal NSPS as contained in 40 CFR 60 and 401 KAR 3:060(14), Control of Fugitive Emissions.

#### B. Uncontrolled and Actual Emission Rates

##### 1. Indirect Heat Exchangers:

###### a) Particulates

Assuming that the  $X$  #/hr coal gasified in the average coal of 5% average ash and 0.6% S, and  $y$  gals/hr of #2 Fuel Oil is burned.

Sulfur balance:

$\text{SO}_2$  emissions =  $\text{SO}_2$  from coal gas +  $\text{SO}_2$  from #2 fuel oil

$$\text{i.e. } 17.2 = (X \times .006 \times .95 \times \frac{64}{32}) + 142 \times \frac{0.25}{1000} y$$

whence  $0.011X + 0.036 y = 17.2$  \_\_\_\_\_ (vi)

Heat Balance:

Heat value under maximum load = heat value from gas + heat value from oil

$$(2225 \text{ \#/hr.} \times 65 \text{ scf/\#} \times 150 \text{ BTU/ft}^3) = X \times 65 \times 150 + 143,000 y$$

$$\text{or } z = \frac{2225 - X}{14.67} \text{ _____ (vii)}$$

solving (vi) and (vii)  $x = 1313$  #/hr. coal

$$z = 62 \text{ gal/hr \#2 fuel oil}$$

Hence, Uncontrolled particulate emissions

$$\begin{aligned} &= \text{ash in coal gas}^* + \text{part. from \#2 oil} + \text{part. from coal gas comb.} \\ &= (3.6/72.5 \times 1313 \times 0.05) + 62 \times 2/1000 + 1313 \times 65 \times 10/10^6 \\ &= 4.24 \text{ \#/hr. or } 18.7 \text{ TPY} \end{aligned}$$

\* From Bureau of Mines Morgantown Gasifier Data.

$$\begin{aligned} \text{Actual Particulate} &= (1 - \text{Cyclone Effy}) 4.24 \\ &= (1 - .925) 4.24 \\ &= 0.32 \text{ \#/hr. or } 1.4 \text{ TPY} \end{aligned}$$

b)  $\text{SO}_2$

$$\begin{aligned} \text{Assumed maximum actual} &= \text{allowable} = \text{uncontrolled} \\ &= 17.2 \text{ \#/hr.} \\ &\text{or } 75.1 \text{ TPY} \end{aligned}$$

c) HC, CO, and  $\text{NO}_x$

Under maximum load, 1313 #/hr. coal and 62 gals/hr. #2 oil are burned. Coal produces  $(1313 \times 65)$  scf gas/hr = 0.0853 mm cu.ft./hr.

$$\begin{aligned} \text{NO}_x &= \text{NO}_x \text{ from coal gas comb.} + \text{NO}_x \text{ from oil comb.} \\ &= 0.0853 \text{ mm cu.ft./hr. } 230 \text{ \#/mm cu.ft.} + 0.062 \times 10^3 \text{ gal} \\ &\quad \times 22/10^3 \text{ \#/gal} = 21 \text{ \#/hr.} \\ &\quad \text{or } 91.7 \text{ TPY} \end{aligned}$$

Similarly HC = .32 #/hr. or 1.4 TPY

and CO = 1.76 #/hr. or 7.7 TPY

## 2. Emergency Gasifier Flares.

a)  $\text{SO}_2$

Assuming that all sulfur in coal gas is flared

$$\text{Actual } \text{SO}_2 = 17.2 \text{ \#/hr.}$$

b) Particulate: Since the flares are located prior to the producer cyclone, the particulate emission rate will be the ash inlet loading to the cyclone provided all else is burned to  $\text{CO}_2$  and water. Assuming that 25% of ash in coal input is entrained,

$$\begin{aligned} \text{Particulate emissions} &= 1313 \times 5/100 \times 25/100 \\ &= 16.41 \text{ \#/hr.} \end{aligned}$$

### 3. Coal Handling

The coal handling emissions will be the sum of the emissions from the various operations, viz, unloading, crushing, stockpiling, screening and conveying. Using emission factors as given in Section II, we have

Uncontrolled Emission Rate = unloading rate T/hr. x .5 #/ton

+ Screen, Conv. & Transfer Rate T/hr x .7 #/ton

+ Crushing rate, T/hr. x 0.2 #/ton

=  $12.5 \times .5 + 32.5 \times .7 + 32.5 \times .2 = 4.4$  #/hr.

For 2000 hrs/yr operation, Uncontrolled = 4.4 TPY

Actual =  $(1 - \text{effy}_{\text{wet supp.}})$  (Uncontrolled rate) =  $(1 - 0.9) \times 4.4$

= .44 #/hr.

or .45 TPY for 2000 hrs/yr (1 shift)

### PHASE II Calculations

#### SO<sub>2</sub> Potential of Gasifiers

1. Both gasifiers are to be operated at the maximum rated capacity of 3000 # coal/hr, avg. S = 1.2%, Ash = 5%

Since 95% of the sulfur is gasified, SO<sub>2</sub> emission potential/gasifier

=  $95/100 \times 3000 \times 1.2/100 \times 64/32$  #/hr.

= 68.4 #/hr.

Annual Potential Emission (8736 hrs.yr) = 298.8 TPY

Per gasifier, 1 ton coal produces = 20 gals tar and oil

3000 # coal produces = 30 gals/hr. tar and oil @ 1% S.

Hence, assuming tar and oil to have density of 7.6 #/gal.

Wt. of tar and oil =  $7.6 \times 30$  #/hr.

Hence, SO<sub>2</sub> potential of tar and oil =  $(7.6 \times 30) \times .01 \times 2 = 4.56$  #/hr.

Hence, SO<sub>2</sub> potential of producer gas =  $68.4 - 4.56$  #/hr.

= 63.84 #/hr.

= 278.9 TPY

Assuming 99.9%  $\eta$  for Holmes-Stretford.

$$\text{Actual SO}_2 \text{ emissions/gasifier} = .001 \times 63.84$$

$$= .064 \text{ \#/hr.}$$

$$= .28 \text{ TPY}$$

$$\text{SO}_2 \text{ emission prevention/gasifier} = 63.84 - .06$$

$$= 63.78 \text{ \#/hr.}$$

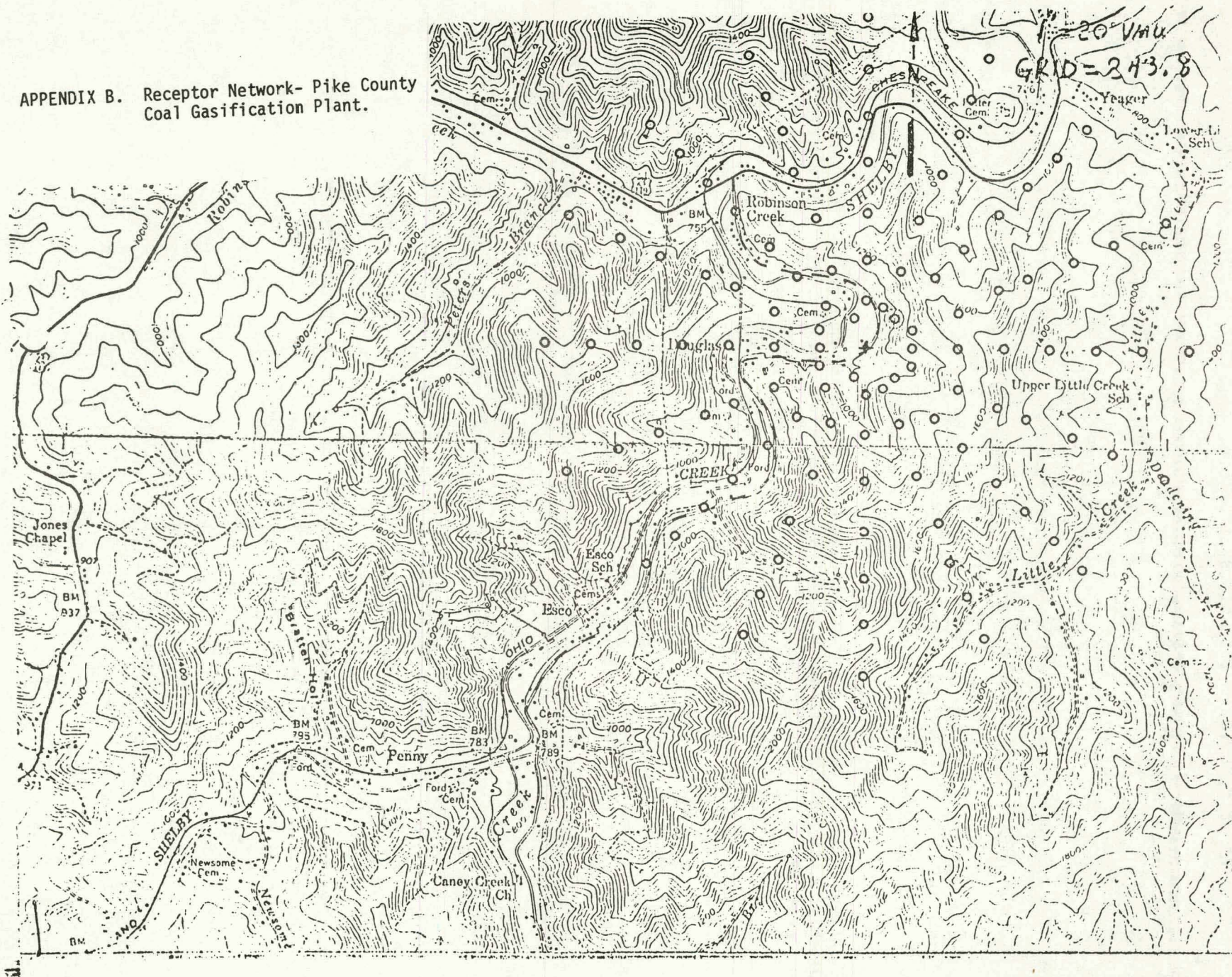
$$= 278.6 \text{ TPY}$$

$$= 557 \text{ TPY for both gasifiers.}$$

Other PHASE II calculations were performed in a similar manner as discussed for PHASE I. The results are summarized in Tables III.1 and III.2 in Section III of the report.



APPENDIX B. Receptor Network- Pike County Coal Gasification Plant.







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#### 4.0 THE PENNSYLVANIA CASE STUDIES

This section includes three case studies in Pennsylvania:

- Can Do, Inc. in Hazleton, PA
- Glen Gery Corporation In York, PA
- A manufacturing company in Pennsylvania

Interviews were conducted with the Pennsylvania Department of Environmental Resources on 13 August 1979; with representatives of Can Do, Inc. and Ebeco Associates on 14 August 1979, with a representative from the Acurex Corporation for the Glen Gery case on 22 August 1979; and with a representative from Gilbert/Commonwealth for the case of the manufacturing company in Pennsylvania on September 27, 1979.

##### 4.1 Regulatory Setting in Pennsylvania

In preparing for the construction and operation of a gasification facility, a company must deal with several federal and state agencies, as discussed below. The counties in which the case projects are located are not involved in regulating the construction and operation of industrial plants.

##### 4.2 Federal Agencies

Pennsylvania has not been delegated the authority for Prevention of Significant Deterioration (PSD) review, and thus, the Federal Environmental Protection Agency (EPA) is involved in this review. None of the cases studied in Pennsylvania were subject to the PSD review,



however, because their levels of air emissions fall below the lower limits of the PSD regulations. EPA has little involvement in water quality permits because this authority has been delegated to the state of Pennsylvania.

#### 4.3 State Agencies

Within the state, all environmental permits are issued by the Pennsylvania Department of Environmental Resources (DER). All DER permits for existing industrial facilities, such as the projects included in this study, are handled through DER regional offices.

Construction and operation permits issued by the DER require air quality control information, as detailed in Table 4-1. Permits for discharge of pollutants into surface water under the National Pollutant Discharge Elimination System (NPDES) are issued by DER under its delegated authority from EPA and approved by EPA. They provide effluent information and limitations, as shown in Table 4-2. The DER is also responsible for regulating the disposal of solid waste, as shown in Table 4-3. Local agencies have some authority for land use permitting, depending upon the size of the project, although DER issues the earth-moving permit, as shown in Table 4-4.

DER strongly recommends that companies consult with the appropriate regional office during the earliest phases of a project. Pennsylvania has recently instituted a one-stop service for new industries coming into the state and needing environmental permits. A single person in DER will be the contact for all industries coming

TABLE 4-1  
AIR PERMITS APPLICABLE TO LOW-BTU COAL GASIFICATION

REGULATION	TYPE OF PERMIT	GRANTING AGENCY	SUBMITTAL
PA Air Pollution Control Act, Permits, 6.1	Authority for construction and operation permit	Department of Environmental Resources (DER)	Such information as the department shall prescribe, and detailed plans and specifications
PA Air Pollution Control Regulations, Approvals and Permits, 127.11 and 127.12	Construction, modification, or reactivation of any air contamination source or the installation of any air cleaning device	DER	<p>Show:</p> <ol style="list-style-type: none"> <li>1. Location of source</li> <li>2. Information necessary for evaluation</li> <li>3. Monitoring facilities</li> <li>4. Compliance with Act and EPA</li> <li>5. Emissions will be minimum attainable through use of BAT</li> <li>6. When requested, that source will not not adversely affect attainment of AAQS</li> <li>7. Plan for reduction of emissions during air pollution episodes</li> </ol>
PA Air Pollution Control Regulations, Permit to Operate, 127.21 and 127.22	Operation of any source or air cleaning device	DER	<p>Points 2-6 above, plus:</p> <ol style="list-style-type: none"> <li>1. Responsible individual</li> <li>2. Construction in accordance with permit</li> <li>3. Source can be operated in accordance with good practices</li> </ol>
PA Air Pollution Control Regulations, Temporary Permits, 127.23	Temporary permit for shake-down, pending issuance of permit, or for evaluation of source	DER	None stated

Sources: Environment Reporter, 1977a. Pennsylvania Air Pollution Control Act. Bureau of National Affairs, Inc., Washington, D.C.  
Environment Reporter, 1979b. Pennsylvania Air Pollution Control Regulations. Bureau of National Affairs, Inc., Washington, D.C.

TABLE 4-2  
WATER PERMITS APPLICABLE TO LOW-BTU COAL GASIFICATION

REGULATION	TYPE OF PERMIT	GRANTING AGENCY	SUBMITTAL
Clean Streams Law, Section 303	Discharge of Industrial Waste (information, not permit)	Department of Environmental Resources (DER)	Kind, character, and rate of flow of wastes and treatment works
NPDES Permit Regulations (PA is approved for issuance of NPDES permits)	Discharge of pollutants from a point source into navigable waters defined by PA as all surface streams. Includes discharge from coal storage area. Not required for discharges into sewer system.	DER	NPDES application
PA Water Resources General Provisions, Applications and Permits, 91.21 - 91.26	Pollution control projects, including sewage treatment plants.	DER	Engineers report, plans, specifications

SOURCES: Environment Reporter, 1978b. Pennsylvania Water Resources General Provisions. Bureau of National Affairs, Inc., Washington, D.C.  
Environment Reporter, 1979a. Pennsylvania Clean Streams Law. Bureau of National Affairs, Inc., Washington, D.C.

TABLE 4-3  
SOLID WASTE PERMITS APPLICABLE TO LOW-BTU COAL GASIFICATION

REGULATION	TYPE OF PERMIT	GRANTING AGENCY	SUBMITTAL
PA Solid Waste Regulations (amended June 1977), 75.22 and 75.23	Operation of a solid waste processing or disposal facility	Department of Environmental Resources (DER). Some counties may issue own permits, carrying out DER requirements and surveillance.	<u>Phase 1:</u> Collection of existing data <ul style="list-style-type: none"> <li>• Description of soils</li> <li>• Hydrogeologic characteristics</li> <li>• Geologic foundation materials</li> <li>• Chemical analysis of waste and leachate</li> <li>• Site description</li> <li>• Climate data</li> </ul> <u>Phase 2:</u> Design plans and specifications (Industrial Waste Permit Module needed from either industry or waste handler) <ul style="list-style-type: none"> <li>• Volume of waste</li> <li>• Source and type of material</li> <li>• Chemical analysis of waste</li> <li>• Leaching analysis of waste</li> </ul>
75.37	Disposal of fly ash, bottom ash, or slag	DER	Industrial Waste Module
75.38	Industrial and hazardous waste disposal	DER	Industrial Waste Module

SOURCE: Environment Reporter, 1977b. Pennsylvania Solid Waste Regulations.  
Bureau of National Affairs, Inc., Washington, D.C.

TABLE 4-4  
LAND USE PERMITS APPLICABLE TO LOW-BTU COAL GASIFICATION

REGULATION	TYPE OF PERMIT	GRANTING AGENCY	SUBMITTAL
PA Erosion Control Regulations (amended through Jan. 1978), 102.31	Earthmoving, but not required if: <ul style="list-style-type: none"> <li>• Less than 25 acres and not a protected watershed</li> <li>• Permit was required under Clean Streams Law, Surface Mining Act</li> </ul>	Department of Environmental Resources	Erosion and sedimentation control plan (must be available at site)
102.42 and 102.43	Building permit	Local governing body, subject to zoning approval	Local issuer of building permits must notify DER upon receipt of application for a permit involving 5 acres or more. Local issuer cannot issue permit for activity requiring earthmoving permit until DER has issued earthmoving permit.

SOURCE: Environment Reporter, 1978a. Pennsylvania Erosion Control Regulations. Bureau of National Affairs, Inc., Washington, D.C.

into the state (Department of Environmental Resources, 1979). Appendix I shows the information disseminated by DER to the public on this subject.

In addition to the Department of Environmental Resources, the company also has dealt with the Department of Labor and Industry. A building permit must be obtained from this Department. This permit is granted upon satisfactory compliance with the Pennsylvania Fire and Panic Code. The company must comply also with standards set by the Pennsylvania Occupational Safety and Health Administration (OSHA). As in all other states, OSHA inspects plants only after operation has begun, and no permit is involved.

The Bureau of Inspection of the Department of Labor and Industry must approve the facility, but does not approve plans. Approval is not determined until construction is complete.

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## 5.0 SUMMARY OF CAN DO EXPERIENCE

The economics of using coal gas are a far more important consideration for CAN DO than regulations. The use of local anthracite and the aid of Federal grants for capital investment make gasification competitive in price with natural gas for its industrial park.

CAN DO has been very pleased with their experience with Pennsylvania Commonwealth agencies and officials. The project staff have met with representatives of state agencies on a regular basis since the early part of its project design. As a result, very few changes to the project design have been necessary because of environmental regulations.

However, CAN DO has experienced confusion on the part of the U.S. Environmental Protection Agency. There are no environmental regulations specific to the gasification of anthracite. The Philadelphia EPA Office has told CAN DO that they might need Federal permits but has not taken any action. Usually, Federal permits are not required when the state has received delegation of authority from EPA, as demonstrated by the cases of the University of Minnesota and the manufacturing company in York, Pennsylvania.

Another problem brought out during the interview with CAN DO concerns compliance with OSHA regulations. Ebeco Associates has asked the Pennsylvania OSHA office to review the project plans for compliance with OSHA regulations. However, this agency felt that its responsibility does not begin until the plant is operating and,



therefore, reviewing plans would be overstepping its authority. This creates an uncertainty for the project.

Both the company and the Department of Environmental Resources advise potential users of low-Btu coal gasification to consult with the regulatory agencies early in the process. Representatives from DER are very willing to assist industrial users and felt that the regulatory process can be improved, although they did not identify these possible improvements.

The following sections describe in greater detail the background of this project, its regulatory setting, and the regulatory requirements that it had to meet.

#### 5.1 Background

The coal gasification facility at the Humboldt Industrial Park (HIP), Hazleton, Pennsylvania, will generate producer gas from locally mined anthracite coal. The gas will be cooled, cleaned, and compressed for distribution in the Humboldt Park, a 1140-acre industrial complex located approximately five miles from the city of Hazleton. The initial distribution system will comprise approximately 9000 feet of pipe, serving more than 20 sites for prospective industry in a newly developed 250-acre section of the five-year-old park (Campbell, 1979).

The HIP is a project of CAN DO (Community Area New Development Organization, Inc.). The purpose of CAN DO is to work toward the development of additional industrial job opportunities by providing

land and buildings for new industries through lease, rental, or purchase agreements. Raising funds to be used for community development was the sole reason for the creation of this organization (CAN DO, 1974). The HIP is the second industrial park developed by CAN DO, the first one being the Valmont Industrial Park.

CAN DO, Inc. received grants from the Economic Development Administration (EDA) of the Department of Commerce (DOC) and from the Appalachian Regional Commission (ARC) for the HIP. Funds from these agencies have allowed CAN DO to initiate the coal gasification project. This project is designed both to meet the energy requirements of the manufacturing plants in the HIP and to create a new industrial base using local anthracite resources (CAN DO, 1974). The Department of Energy has also been approached for funds for startup and initial operating costs. Revenue from any gas sold during the period of the grant would be deducted from the amount of the grant. Cost of an effluent monitoring plan developed at the request of DOC will be shared, with EDA paying 50 percent, ARC 30 percent, and CAN DO 20 percent of the \$200,000 total (Yenchko, 1979).

CAN DO received bids on construction of the gasification plant in September and broke ground for it in October.

#### 5.1.1 Operation of the Gasifier

The gasification facility will use two Wellman-Galusha, ten-foot diameter, fixed bed, water jacketed, agitating gasifiers, each capable of converting one ton of anthracite coal per hour to low-Btu gas

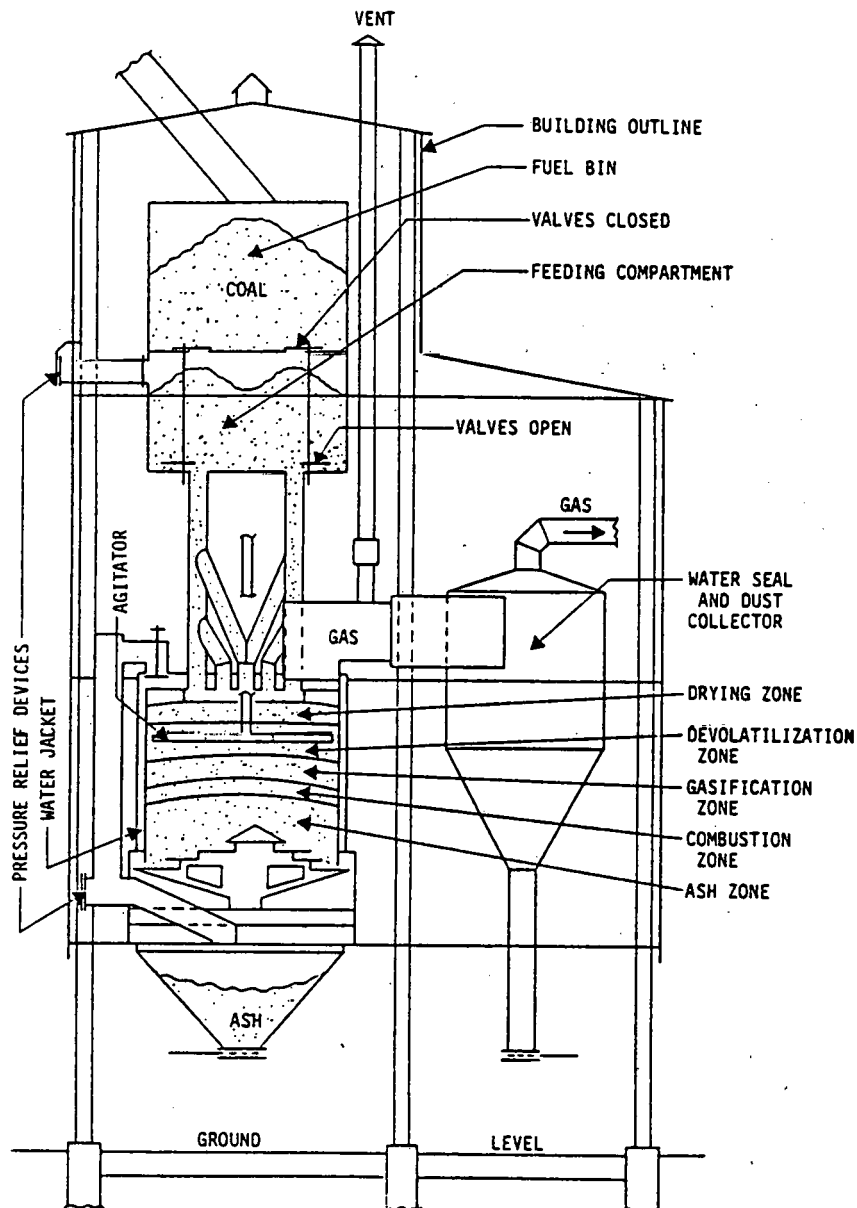
(Figure 5-1). This gasifier consists of a cylindrical shell with systems for feeding coal into the shell from the top and air from the bottom. A rotating grate removes ash at the bottom. Thus, the coal is fed downward and the moist air flows up through the ash zone to the combustion zone. A more detailed description of the operation of the gasifier is given in Appendix J.

#### 5.1.2 Feedstocks, Feedrates, and Gas Produced

The gasifier will use Pennsylvania anthracite, typical of that found in lower Luzerne and upper Schuylkill Counties. The approximate composition of the coal is given in Table 5-1. Based on the data in this table, the following specifications for the feedstock coal have been established (Campbell, 1979):

- Ash - no more than 12%
- Sulfur - no more than 0.7%
- Tar and oil - no more than 0.5%
- Heating value - not less than 12,500 Btu per pound, with a nominal value of 13,000 Btu per pound

The rate at which the coal can be converted to gas is a function of grate size, depth of coal bed, coal size, and the pressure drop across the coal bed. The gasification rate for each Wellman-Galusha producers ranges from 1500 pounds of anthracite coal per hour to 2200 pounds per hour, with an expected average rate of 2000 pounds per hour. Each gasifier produces 2500 SCF per minute. It is possible to lower the rate of gasification to meet lowered demand by throttling the saturated air flow into the gasifier.



Source: Gilbert/Commonwealth, 1977. Fixed Bed Coal Gasification for Production of Industrial Fuel Gas. Prepared for the Assistant Secretary for Energy Technology, Department of Energy. Reading, Pennsylvania.

**FIGURE 5-1**  
**WELLMAN-GALUSHA GASIFIER WITH AGITATOR**

TABLE 5-1

## TYPICAL COMPOSITION OF PENNSYLVANIA ANTHRACITE

A. Proximate Analysis (Dry)		
Ash		11.13%
Volatile		6.43%
Fixed Carbon		82.44%
B. Ultimate Analysis (Dry)		
Ash		11.13%
Carbon		80.92%
Hydrogen		3.11%
Total Sulfur		0.56%
Nitrogen		0.66%
Oxygen		3.42%
C. Sulfur Forms		
Pyritic		0.11%
Sulfatic		0.01%
Organic		0.44%
Total		0.56%
D. Caloric Value, Net		14,938 Btu/pound
E. Analysis of Ash		
Silica	(SiO <sub>2</sub> )	49.0 %
Alumina	(Al <sub>2</sub> O <sub>3</sub> )	31.4 %
Ferrous Oxide	(Fe <sub>2</sub> O <sub>3</sub> )	11.5 %
Titanium Dioxide	(TiO <sub>2</sub> )	1.03%
Magnesium Oxide	(MgO)	0.50%
Calcium Oxide	(CaO)	0.45%
Potassium Oxide	(K <sub>2</sub> O)	2.16%
Other		3.96%

Source: Campbell, Hugh L., III, 1979. Process and Instrumentation of an Anthracite Coal Gasification Facility, Humboldt Industrial Park, Hazleton, Pennsylvania. Ebeco Associates, Hazleton, Pennsylvania.

The processed gas leaving the producer plant will enter a distribution system that will service more than 20 industrial sites, spread over 250 acres. Because of the nature of the gas and the low distribution pressure, the pipeline will have a large diameter. The design of the distribution system is based upon providing to each site an energy capability twice that of the average energy requirement of a typical CAN DO industry. The distribution system for the HIP was designed such that sites located at the ends of the system would have a potential energy supply of not less than 125 million Btu per site per day. Sites located closer to the facility would have a much larger potential energy availability, up to the total output of the plant (one billion Btu per day), which would be available to a site adjacent to the facility.

#### 5.1.3 Potential Pollutants Resulting from Gasifier Operation

Emissions of potential pollutants from the gasification facility are of three types--gaseous, aqueous, and solid. The occurrence and nature of each of these for the CAN DO project are discussed below. None of these is expected to cause a major environmental problem.

##### Gaseous Emissions

During the normal course of operation, negligible gaseous emissions will be produced by the gasifier from the poke holes and valve leakages. The producer gas will pass through the gas cleanup system and be delivered to the users. The fuel gas generated in the

producer will be burned by the users and will appear as stack emissions from the exhaust systems of the users. The major constituent in the producer gas that is of environmental concern is sulfur, which is relatively low, (i.e., below 0.7 percent) in the anthracite. In the proposed facility, a gas scrubber will be used to reduce the amount of particulates in stack emissions.

During initial "light-up" and banked operation, the stack valve is open to the atmosphere and venting will occur. During light-up, the vent gas will consist of combustion products of the fuel used to ignite the coal, usually charcoal. As coal burns, the vent gas will gradually become low-Btu gas. During banked periods, the vent gas will be also low-Btu gas. Vent gas from the stack will be flared during both of these operations. The composition of the flared products will be carbon dioxide, water vapor, and nitrogen, the normal products of combustion.

During the light-up or banked periods, the gasifier vent bypasses the cleanup system and consequently, small quantities of sulfur oxides and particulates will be emitted. The producer plant will operate in either of these modes for less than 24 hours once or twice a year. Coal consumption should be close to the 500 pounds usually used by other gasifiers in the region (e.g., the Hazleton Brick Company and the Glen-Gery Brick Company) during these operations, and therefore, total emissions will be small and within the regulatory limits.

### Aqueous Effluents

The following four wastewater streams will result from operation of the gasifier:

- Water from the gas cleanup system
- Cooling water from the gasifier water jacket
- Storm drainage
- Sanitary wastes generated in the office or locker room facility

Water used in the gas cleanup system will be circulated in a loop through a water scrubbing tower, then into a separator along with the tar and oil removed from the hot raw gas in the scrubber. The clarified water will be cooled in a heat exchanger and then used again in the scrubber. Blowdown or spillage from the gasifier water jacket as well as the cleanup system will enter the storm drainage system and go into a settling tank to remove solids before being discharged into a holding tank. The pH of the water will be monitored in the first tank and corrected, if necessary, in the second tank. Gasifier water jacket cooling water also will be recirculated through cooling towers and only blowdown will be discharged to the storm drainage system. Sanitary wastes will be discharged directly into the local sanitary sewerage system, and the remaining effluents will be processed in the storm drainage system, which has been described.



### Solid Wastes

The amount of solid wastes generated depends upon the amount of coal used and the ash content of that coal. With a coal feed rate of 2200 pounds per hour, an ash content of 12 percent, and operation 24 hours a day, each producer will generate a maximum of 6336 pounds of solid wastes per day. These wastes will be removed daily and may be sold, along with particles recovered from the settling tanks of the storm drainage system, as a constituent in building block. If the ash cannot be sold, it will be discarded in a landfill in a manner consistent with Federal and state requirements. Leaching tests will be performed on the solid waste after the gasifier is in operation.

## 5.2 Regulatory Requirements Applicable to Can Do

### 5.2.1 Environmental Requirements

All environmental permits--construction and operation--should be applied for from DER prior to beginning construction. The Regional Office will assist in informing the applicant of any potential problems.

The area most likely to cause problems is compliance with air quality standards. A gasification facility of the size proposed for CAN DO would have few air emission problems. Emissions only occur during startup and banked operations, which take place for short periods once or twice a year. Therefore, the facility would not come under the review procedures for the PSD provisions of the Clean Air Act Amendments (Public Law 95-95).

The application to the DER Bureau of Air Quality Control is for both plan approval to construct and a permit to operate. The five sections of the application form are as follows (Commonwealth of Pennsylvania, 1979a):

- A - Identity and Location of Air Contamination Source
- B - General Source Information
- C - Control Equipment
- D - Flue and Air Contaminant Emission Information
- E - Miscellaneous Information

A copy of the completed form is included as Appendix K. CAN DO has obtained this permit.

The NPDES Application for Permit to Discharge is sent to both the DER Bureau of Water Quality Management in Wilkes Barre and the EPA Regional Office in Philadelphia, Pennsylvania. For CAN DO, this application was the Short Form A (EPA Form 7550-6), (Michel, 1978), included as Appendix L. No NPDES permit would be required if all wastes went into a municipal sewer system. A Water Quality Management Permit is also required for the construction or operation of an establishment whose operation would result in the discharge of industrial waste to the waters of the Commonwealth (Commonwealth of Pennsylvania, 1971). The Industrial Waste Application (Commonwealth of Pennsylvania, 1976) used for securing the permit consists of 27 modules, which comprise the engineer's report mentioned in Table 5-2. Each module provides for the presentation of a certain aspect of a

TABLE 5-2  
TIME REQUIRED FOR ENVIRONMENTAL REGULATORY COMPLIANCE

ACTION	AGENCY INVOLVED	TIME REQUIREMENT	EXPERIENCE OF CAN DO
<b>AIR</b>			
<ul style="list-style-type: none"> <li>• Pollution source--construction, modification, or reactivation</li> <li>Cleaning device--installation</li> </ul>	Department of Environmental Resources (DER)	Not specified. Limited permit may be extended	2 month average, 3 month maximum
<ul style="list-style-type: none"> <li>• Operating source or cleaning device</li> </ul>	DER	Not specified. Limited permit, may be extended	Usually 1 week
<ul style="list-style-type: none"> <li>• Source shutdown or evaluation (optional temporary permit)</li> </ul>	DER	Not specified. 60 day permit with 60 day extensions	-----
<b>WATER</b>			
<ul style="list-style-type: none"> <li>• NPDES</li> </ul>	DER	60 days 5 yr. maximum permit	4-6 months
<ul style="list-style-type: none"> <li>• Pollution control project permit</li> </ul>	DER	Not specified	-----
<b>SOLID WASTE</b>			
<ul style="list-style-type: none"> <li>• Construction/operating</li> </ul>	DER	60 days from submittal of Phase 2 (see Table 3-3)	Not yet issued
<b>LAND USE</b>			
<ul style="list-style-type: none"> <li>• Earthmoving permit (may not be necessary, see Table 3-4)</li> </ul>	DER	Not specified	-----
<ul style="list-style-type: none"> <li>• Building Permit--state</li> </ul>	PA Department of Labor & Industry, & Industrial Board (for unique structure)	Not specified	2 days usually 1 week
<ul style="list-style-type: none"> <li>• Building permit--local</li> </ul>	Local governing body	Not specified	-----

TABLE 5-2 (CONCLUDED)  
TIME REQUIRED FOR ENVIRONMENTAL REGULATORY COMPLIANCE

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SOURCES: Environment Reporter, 1977a. Pennsylvania Air Pollution Control Act. Bureau of National Affairs, Inc., Washington, D.C.  
 Environment Reporter, 1977b. Pennsylvania Solid Waste Regulations. Bureau of National Affairs, Inc., Washington, D.C.  
 Environment Reporter, 1978a. Pennsylvania Erosion Control Regulations. Bureau of National Affairs, Inc., Washington, D.C.  
 Environment Reporter, 1978b. Pennsylvania Water Resources General Provisions. Bureau of National Affairs, Inc., Washington, D.C.  
 Environment Reporter, 1979a. Pennsylvania Clean Streams Law. Bureau of National Affairs, Inc., Washington, D.C.  
 Environment Reporter, 1979b. Pennsylvania Air Pollution Control Regulations. Bureau of National Affairs, Inc., Washington, D.C.

project. The engineer can select from the list of modules those that apply to a particular project.

The solid waste permit from the DER has not been issued, although a conditional approval for disposal of ash has been granted pending leachate tests on the actual ash from the gasifier (Karl, 1977). The application procedure for this permit has two phases-- 1) collection of existing data, and 2) design and operation plans. The DER recommends that the Phase 1 submission be approved before the development of the Phase 2 submission, although they may be submitted simultaneously (Commonwealth of Pennsylvania, 1979b).

The time required for CAN DO to secure the environmental permits is summarized in Table 5-2. All the permits except for the solid waste have been issued.

#### 5.2.2 Occupational Health and Safety Requirements

In Pennsylvania, the Bureau of Inspection of the Department of Labor and Industry and the Industrial Board play a role in ensuring occupational health and safety since they determine if safety conditions have been met in a new facility. CAN DO has secured plan approval from these agencies. Approval required two days because the application was hand-carried; the normal period is approximately one week.

No permit is required from the Pennsylvania Occupational Safety and Health Administration, but standards set for general industry must be met by the coal gasification plant.

### 5.2.3 Other Permits and Licenses

CAN DO has submitted an application to the Public Utilities Commission (PUC) for operation. They have received water and sewer permits from the PUC.

### 5.3 References

Campbell, Hugh L., III, 1979. Process & Instrumentation of an Anthracite Coal Gasification Facility, Humboldt Industrial Park, Hazleton, Pennsylvania. Ebeco Associates, Hazleton, Pennsylvania.

CAN DO, Inc., 1974. The CAN DO Story: A Case History of Successful Community Industrial Development. Hazleton, Pennsylvania.

Commonwealth of Pennsylvania, 1971. Industrial Waste Manual: A Guide for the Preparation of Applications, Reports, and Plans. Department of Environmental Resources, Bureau of Water Quality Management. Publication No. 14. Harrisburg, Pennsylvania.

Commonwealth of Pennsylvania, 1976. Industrial Waste Application. Department of Environmental Resources, Bureau of Water Quality Management. ER-BWQ-51.2, Rev. 11/76. Harrisburg, Pennsylvania.

Commonwealth of Pennsylvania, 1979a. Application for Plan Approval to Construct, Modify or Reactivate an Air Contamination Source and/or Air Cleaning Device and for a Permit to Operate. Department of Environmental Resources, Bureau of Air Quality Control. ER-AQ-16: Rev. 3/79. Harrisburg, Pennsylvania.

Commonwealth of Pennsylvania, 1979b. Industrial Waste Disposal at Permitted Sites. Department of Environmental Resources, Bureau of Solid Waste Management. ER-SWM-14, 5/79. Harrisburg, Pennsylvania.

Department of Environmental Resources, 1979. DER Initiates One-Stop Permits. Pennsylvania Econotes, Volume VII, No. 5, May-June. Harrisburg, Pennsylvania.

Environment Reporter, 1974. Pennsylvania NPDES Permit Regulations. Bureau of National Affairs, Inc., Washington, D.C.

Environment Reporter, 1977a. Pennsylvania Air Pollution Control Act. Bureau of National Affairs, Inc., Washington, D.C.

Environment Reporter, 1977b. Pennsylvania Solid Waste Regulations. Bureau of National Affairs, Inc., Washington, D.C.

Environment Reporter, 1978a. Pennsylvania Erosion Control Regulations. Bureau of National Affairs, Inc., Washington, D.C.

Environment Reporter, 1978b. Pennsylvania Water Resources General Provisions. Bureau of National Affairs, Inc., Washington, D.C.

Environment Reporter, 1979a. Pennsylvania Clean Streams Law. Bureau of National Affairs, Inc., Washington, D.C.

Environment Reporter, 1979b. Pennsylvania Air Pollution Control Regulations. Bureau of National Affairs, Inc., Washington, D.C.

Karl, Frederick J., 1977. Letter of April 22 to Joseph Michel, P.E., Ebeco Associates, Hazleton, Pennsylvania. Regional Solid Waste Director, Department of Environmental Resources, Wilkes-Barre, Pennsylvania.

Michel, Joseph, 1978. Letter of August 14 to Joseph Yenchko, CAN DO, Inc., Hazleton, Pennsylvania, with NPDES permit application attached. Ebeco Associates, Hazleton, Pennsylvania.

Yenchko, Joseph, 1979. Personal Conversation, CAN DO, Inc., Hazleton, Pennsylvania.

## 6.0 SUMMARY OF GLEN-GERY EXPERIENCE

The only Federal agency that Glen-Gery has dealt with in conjunction with its low-Btu coal gasification operation is the Department of Energy who funded the instrumentation for data collection purposes. The only state agency that Glen-Gery has dealt with is the Department of Environmental Resources (DER). DER was only involved at the time of the gasifier start-up in October 1977; a DER representative was present to view the start-up operations. Glen-Gery has not dealt with DER since that date.

The gasifier has been classified by DER and the county as process equipment and not a new source. Thus, no building or construction permits were required. The brick plant in which the gasifier was installed was in operation, and no additional operating permits were required. Glen Gery may become more involved with the National Institute of Occupational Safety and Health (NIOSH) in the future. The environment within such a structure is the responsibility of NIOSH, which is concerned with fugitive emissions of carbon monoxide (CO), such as might result from poke holes in the gasifier. NIOSH is attempting to establish criteria for coal gasification.

The use of anthracite coal also contributed to limiting regulatory requirements. The anthracite used has a sulfur content of about 0.7 percent, and sulfur emissions are less than 0.5 pounds per million Btu, which is below Federal and state standards. Of the fly ash produced in the gasification process, 94 percent is combusted in



the kiln. The ultimate particulate emissions are, therefore, well below the standards of .4 grains per scf. The ash generated by the gasification is dumped into a quarry. No tars or oils are produced during the gasification of anthracite. Water is recycled, with about three gallons per minute required for makeup.

Since all these effluents are presently being produced at the Glen-Gery Plant, no additional permits were required when the gasifier involved in the DOE-supported project was installed.

#### 6.1 General Background

Glen-Gery Corporation has added a used coal gas producer to an existing building at its brick manufacturing plant at York, Pennsylvania. This gas producer will supplement another gasifier already onsite. The Acurex Corporation has instrumented this second producer to provide data for economic and technical feasibility evaluations of low-Btu anthracite gasification. Details of the project are given below.

In 1976, the Acurex and Glen-Gery Corporations initiated a project in anthracite gasification with support for data collection from the Department of Energy. The project involved the installation, instrumentation, operation, and evaluation of a 10-foot diameter, non-agitating, Wellman-Galusha gasifier at Glen-Gery's brick manufacturing plant at York, Pennsylvania. The gasifier used for this demonstration was an additional gasifier at the York plant. The first gas producer was installed in the late fifties when the plant

was built, and supplied all gas required for plant operation until the mid-sixties, when natural gas became readily available. The gasifier used in this project was one of five units originally installed in 1943 at the New England Lime Company plant in Caanan, Connecticut, where they were used for about four years before being deactivated. Glen-Gery purchased four of the units in 1975 from Pullman-Kellogg, which had bought them from New England Lime in anticipation of a project that did not materialize. Because of the lack of use in many years, much refurbishment of the gasifier was necessary.

The gasifier in this project is used to fire the Number Two tunnel kiln, which has a rated production of one million brick equivalents per week. The gasifier has been continuously on-line from October 1977 to April 1979, when natural gas became more economical, with the exception of three weeks in February 1978 (due to production slowdown) and three weeks in October 1978 (for maintenance). The gasifier was restarted in October 1979.

The project first established a baseline set of anthracite gasification data corresponding to the following historical operational procedures of Glen-Gery Corporation:

- Coal usage: approximately 24 tons per day of anthracite (one ton per hour)
- Coal size: 50 percent buckwheat, 50 percent pea (anthracite sizes are given in Table 6-1)
- Air saturation temperature: 146°F to 150°F

TABLE 6-1

## PENNSYLVANIA ANTHRACITE STANDARDS

	<u>Size of Coal</u>	<u>Test Mesh-Round</u>	
		<u>Through</u>	<u>Over</u>
1	Broken	10"	3-1/4"
2	Egg	3-1/4" - 3"	2-7/16"
3	Stove	2-7/16"	1-5/8"
4	Nut	1-5/8"	13/16"
5	Pea	12/16"	9/16"
6	Buckwheat	9/16"	5/16"
7	Rice	5/16"	3/16"

- Ash depth: 10 to 12 inches

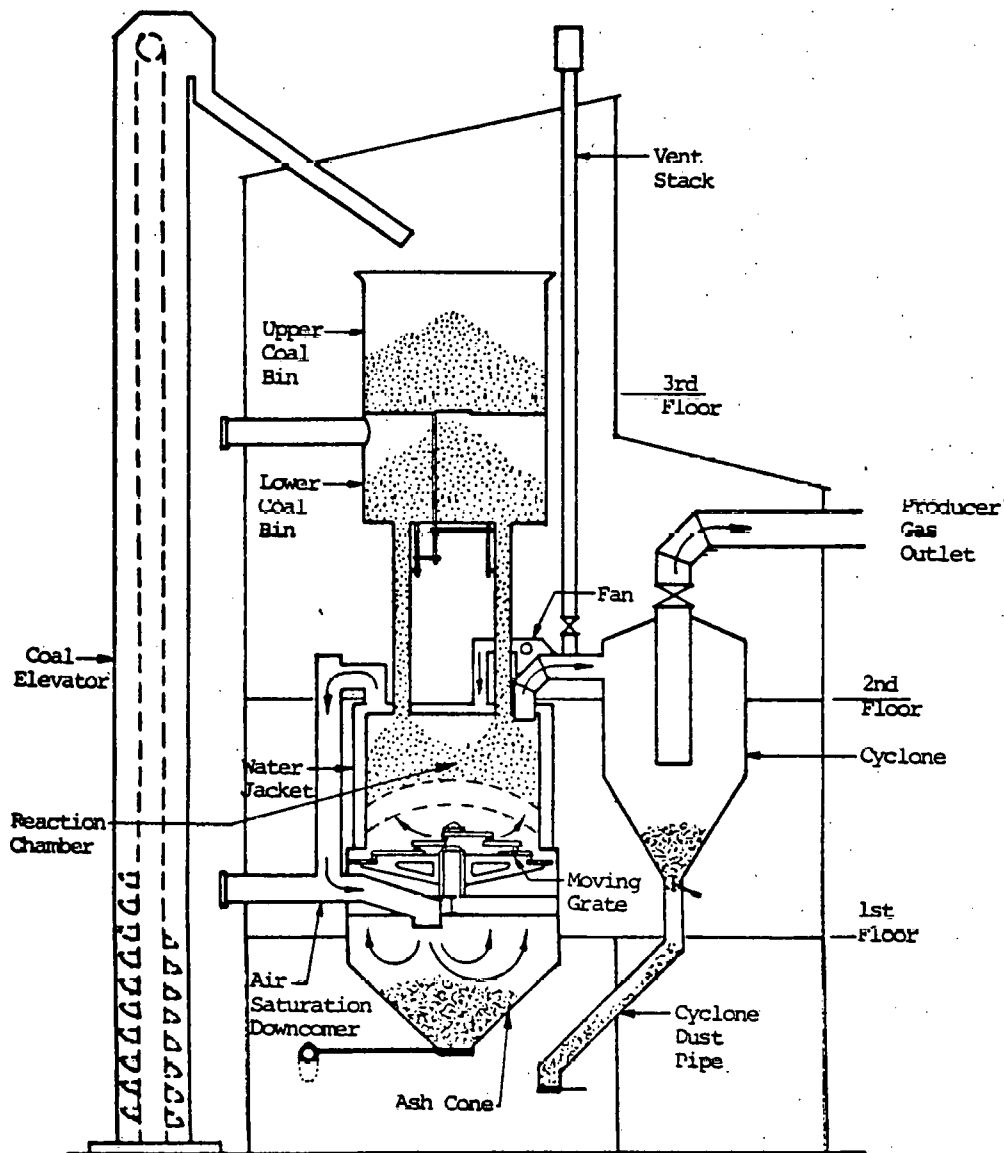
Once the gasifier performance was established at these conditions, operational conditions were varied. The four variables and their ranges studied in the project were:

- Load: limited operation at 70 percent of capacity
- Coal size: rice through nut
- Air saturation temperature: 140°F through 156°F
- Ash depth: 10 to 12 inches

Kiln operation constrained the extent to which operational conditions could be varied. The gasifier load was limited to two levels--1) nominally full capacity (22 to 24 tons of anthracite per day) or 2) 70 percent of capacity (16 to 18 tons per day). These loads correspond to the kiln using producer gas in either 1) the entire preheat and fire zone or 2) only the preheat zone. In addition, constraints imposed by the brick production resulted in the gasifier being put on low fire or being periodically banked (February 1978). Supplies of the size of anthracite scheduled were not always available.

## 6.2 Operation of the Gasifier

The gasifier instrumented by Acurex Corporation is a ten-foot diameter Wellman-Galusha without an agitator. It is capable of processing one ton of coal per hour. Figure 6-1 is a schematic of the gasifier. Typically, this gasifier consists of a cylindrical shell with a system for feeding coal from the top and air from the bottom.



Source: Maurer, Rolf E., Dean Lonick, Gary Poe, and Larry Babb. 1979 Integration and Evaluation of Low-Btu Gasifier at the Glen-Gery Corporation Plant, York, Pennsylvania. Draft Final Report, Prepared for United States Department of Energy, Division of Fossil Fuel Processing, Washington, D.C., by Acurex Corporation, Mountain View, California.

**FIGURE 6-1**  
**WELLMAN-GALUSHA NON-AGITATING GASIFIER**

An ash removal system is at the bottom. Thus, the coal is fed downward and the moist air flows up through the ash zone to the combustion zone.

### 6.3 Feedstocks, Feedrates, and Gas Produced

The gasifier uses anthracite mined in the vicinity of Pottsville, Pennsylvania, by the Tuscarora Coal Corporation. Majority interest in Tuscarora was purchased by Glen-Gery to ensure a continuous coal supply. Tuscarora produces 200,000 to 300,000 tons per year, which is more than adequate to supply Glen-Gery's needs. The coal is crushed to about 1/2 inch - 1/4 inch diameter (buckwheat to pea), cleaned in a heavy media liquid separator, and trucked to the gasifier. The resultant feedstock is very clean (8 to 12 percent ash) with a low sulfur content (less than one percent). It is essentially all fixed carbon and thus gasifies more slowly than the lower rank, high volatile coals. An ultimate analysis of the coal is given in Table 6-2.

The gasifier requires one ton of coal, 1500 gallons of water as steam, and 228,000 standard cubic feet (scf) of air per hour to produce 200,000 scf of low-Btu gas per hour at 650°F with the composition given in Table 6-3. The producer gas flows through insulated ducting about 100 yards to the kiln burners. Water is recycled, so that makeup required is about three gallons per minute.

TABLE 6-2  
COAL ULTIMATE ANALYSIS  
(Dry, Ash-Free)

Carbon	(C)	93.5%
Hydrogen	(H)	2.6%
Oxygen	(O)	2.3%
Sulfur	(S)	0.7%
Nitrogen	(N)	0.9%
Btu Content		12,700 Btu per pound

TABLE 6-3

## PRODUCER GAS COMPOSITION

(Dry)

Carbon Monoxide	(CO)	26.0%
Hydrogen	(H)	12.0%
Methane	(CH <sub>4</sub> )	0.5%
Carbon Dioxide	(CO <sub>2</sub> )	6.0%
Nitrogen	(N)	55.5%
Btu Content		130 Btu per standard cubic foot



#### 6.4 Process Effluents

Few effluents in excess of those from the kilns result from the operation of the gasifier. Sulfur oxide emission levels from the gasification of anthracite are low because of the low sulfur content of the coal (about 0.7 percent). Particulates in the gas are approximately 0.2 grains per scf, with about 94 percent of this being combusted in the kilns. The resulting emissions of about 0.012 grains per scf are within the Pennsylvania process emissions limitations for particulates of 0.04 grains per scf at the gas volume of the gasifier.

About 2.5 tons of ash per day are generated by the gasifier, based on an ash content of 10 percent in the coal. The ash consists of about 80 percent aluminum silicate and about 20 percent carbon, with some traces of metal oxides. This ash may be used as landfill, in cinder block production, or in road cindering, with the usual method of disposal being quarry fill.

No tars or oils are produced during the gasification of anthracite.

#### 6.5 Recommendations From Sources Interviewed

Recommendations from both the Department of Environmental Resources and the Acurex representative on improvements in the regulatory process are summarized below.

#### 6.6 Recommendations from the DER

- Companies considering any construction that might require permits should consult with the appropriate DER regional

office during the earliest phase of a project. (A list of DER regional offices is included in Appendix I.)

- An industry building or modifying a facility is encouraged to use existing services where possible (sewer, landfill, utilities) rather than build new ones.
- If the company anticipates permit requirements, it should allow adequate time for securing the necessary data and permits, and adjust its construction schedules accordingly.

#### 6.7 Recommendations from Acurex

- To other potential users - The company should be prepared to explain the technology to the state and Federal agencies that may not be familiar with coal gasification.
- To regulating agencies - Regulators should be aware of the differences in feedstocks (anthracite vs. bituminous coal), processes, and locations in setting and enforcing regulatory requirements.

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## 7.0 SUMMARY OF THE EXPERIENCE OF THE MANUFACTURING COMPANY IN PENNSYLVANIA\*

The company experienced no delay due to regulatory requirements.

The coal gasification process was clean and the company worked closely with the staff of the regulatory agencies during the process of obtaining permits. On the basis of this experience, recommendations were made for early cooperation between permit applicants and regulatory staff. According to the company, the regulatory process could be further improved if a central source of information existed, which would help companies identify which regulations are applicable to their projects.

### 7.1 Background

The company's interest in an alternative to natural gas was spurred by shortages of this fuel during two consecutive winters, 1973-74 and 1974-75 at its Pennsylvania plant. The company believed that this shortage would repeat in winter 1975-76. In the fall of 1975, the company examined possible alternative fuels. Fuel costs are not the major component of product costs, thus, the company could afford to consider more expensive technologies. It selected low-Btu coal gasification.

In addition to security of supply, coal gasification provides the added protection against future high natural gas prices resulting from the deregulation of these prices.

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\*The company wishes to remain unnamed at this time.

#### 7.1.1 Coal Gasification System

Two coal gasifiers have been installed at the Pennsylvania plant. Start-up took place in mid-October, 1979.

The gasifiers are the 10' diameter two-stage fixed bed Wellman-Incandescent type. The operational features are summarized in Table 7-1. The gasifiers are enclosed in a building. The gas produced from this operation will be used for firing furnaces which heat treat metal parts. The produced gas is distributed around the plant, over a maximum distance of one mile. Because the process requires very clean gas, a Stretford system has been added to remove  $H_2S$ .

To compensate for the high cost of the cleanup system, the company uses very high-sulfur bituminous coal, which is less expensive. The process was designed to use coal with the characteristics shown in Table 7-2. Currently, the company uses Eastern Kentucky coal, which is delivered to the plant, already screened and sized, by truck. The coal handling system is totally housed. Coal dust exhausts through a baghouse.

Water for the coal gasification process represents the single largest water requirement. All other requirements are small. This water comes from the municipal system.

#### 7.1.2 Emissions and Effluents

The process as designed has two air emission sources: from a thermal oxidizer and from a baghouse. The coal gasification process

TABLE 7-1

OPERATIONAL CHARACTERISTICS OF LOW-BTU COAL GASIFIERS  
AT COMPANY'S PLANT IN PENNSYLVANIA

Rated Capacity:	1.25 billion Btu/day each
Heat Value:	175 Btu/cubic foot
Type of Coal Used:	Eastern Kentucky high sulfur bituminous
Coal Feed Rate:	6000 pounds/hour each
Major Water Requirement:	1500 pounds/hour each
Water Discharge:	None
SO <sub>2</sub> Emission:	Very low (5 ppm of hydrogen sulfide)
Ash:	1 ton/day
By-Products:	Oil (burned) and tar (sold)

TABLE 7-2

## COAL CHARACTERISTICS USED AS DESIGN BASE

FSI	3
Ash Fusion Temperature	>2200°F
Volatile Matters	28% - 30% weight
Ash Content	5% - 12%
Sulfur	3.8%
Fixed Carbon	55%
Heating Value	11,500 - 12,000 Btu/pound
Size	3/4" X 1-1/2"

produces a liquid stream of 10 gallons/minute which has a high phenol concentration. The company installed a thermal oxidizer to evaporate the water and burn the phenol. When the incinerator is properly designed, the combustion products are CO and water. The baghouse is designed to handle the coal dust from the coal handling system. Permits were obtained for both the oxidizer and the baghouse.

Since the oxidizer solves the liquid stream problem, there is no other liquid effluent. The process produces tar and oil. The company plans to burn the oil. A local asphalt company has expressed interest in purchasing the tar. Storage of the oil required a permit from the State Fire Marshall.

The company will take the ash to a state approved landfill. Sulfur from the strétford system has been judged by the State Department of Environmental Resources to be an acceptable landfill material. However, a local agricultural company may purchase this sulfur for use as fertilizer.

## 7.2 Company's Experience With Regulatory Process

The company in this case obtained two construction permits from the Pennsylvania Department of Environmental Resources (DER): one for the thermal oxidizer and one for the baghouse. A copy of the permit application form is shown in Appendix M. Only a modification to the existing National Pollutant Discharge Elimination System (NPDES) permit was required. No permit was needed for disposal of



ash at an approved landfill. The company also obtained a construction permit from the Department of Labor and Industry. Finally, a permit was obtained from the State Fire Marshall for the storage of oil and tar.

The greatest difficulty in complying with regulations was reported in this case to be the identification of which regulations and agencies have to be dealt with. Although the architect-engineer (A & E) firm which assisted the company is familiar with the Pennsylvania regulatory setting, it was not sure which regulations apply to low-Btu coal gasification. The same confusion existed among the regulatory agencies. However, the A & E firm reported that the regulatory agencies were most cooperative and no project delay occurred.

The A & E firm worked very closely with the regulatory agencies as soon as the project started. As soon as its contract for the engineering design of the plant was signed in February 1977, it immediately convened a meeting with the Federal Environmental Protection Agency (EPA) regional representatives and the Pennsylvania Department of Environmental Resources (DER). By March 25, 1977, the decision was made by EPA that only DER should be involved in this case.

The A&E firm had to explain the coal gasification process to DER, the Department of Labor and Industry and the State Fire Marshall. In all cases, it helped the regulators determine which regulations apply. Permit applications were filled with the help of the

agencies. This very much contributed to the expeditious handling of the company's applications.

The time required for obtaining permits was as follows:

Air Permits from DER:	6 weeks
Building Permit from Department of Labor & Industry:	4 months
Permit for oil storage from State Police:	2 months

The design process took about 10 months, and the permits were obtained well within that time.

Another factor which influenced the regulatory situation of the company is the fact that it is the largest industry in the area. As a result, regulatory agencies have been keeping a close watch on the company's operations. They have worked with the company on previous occasions and a relationship had been established. The company has a plant engineer whose responsibility is to interface with DER.

Finally, the company has a philosophy of maximum compliance with regulations. For example, while it was aware that no NSPS standards exist yet for coal gasification, it had requested that the A & E firm still design to meet these standards. The reputation for this attitude certainly influenced the regulators. Appendix N shows the standards which the plant complies with. Many of these standards are not mandatory.

The representative of the A & E firm felt that the company may have set a precedent with the Department of Labor and Industry for future coal gasification buildings. This is not the case with the

DER. A company with a new coal gasification plant would have to go through another education process because this new plant is likely not to have the same process requirements for extremely clean gas. Consequently, DER would have to learn how to regulate a plant with more emissions and effluents.

The A & E firm felt that the confusion among regulatory agencies is not peculiar to coal gasification. Such confusion always occurs at the beginning of a project. It gave this advice to the companies considering coal gasification: get the Federal and State agencies involved early in the process, demonstrate that their advices and assistance are being sought for a well thought-out project. An improvement desired by the company is a central source which can identify all the applicable regulations. The company feels very uncertain that it has not missed a major regulatory requirement.

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APPENDIX I

PUBLIC INFORMATION ON THE PENNSYLVANIA DEPARTMENT  
OF ENVIRONMENTAL RESOURCES ONE-STOP PERMITS

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## DER initiates one-stop permits

The Department of Environmental Resources has created a one-stop-service for new industries coming into Pennsylvania and needing permits or licenses from DER.

DER Secretary Clifford L. Jones named Richard M. Boardman, associate deputy secretary for technical programs, to be the single contact person in DER for all industries moving into the state.

"In the past, representatives of a new industry would have to search out for themselves all the various bureaus and divisions with which they would have to deal in seeking DER approval for their facilities," Jones said.

"This got to be very frustrating and time consuming, especially if they mistakenly overlooked one.

"Now, however, they need only contact Boardman and he will see that they get all the information they need and are helped through the bureaucratic mazes to have their applications processed expeditiously."

Industries already having facilities in Pennsylvania will continue to deal with the Department's Environmental Protection Office's seven regional directors on their permit matters.

"We have been working for years to make Pennsylvania's environment attractive to new

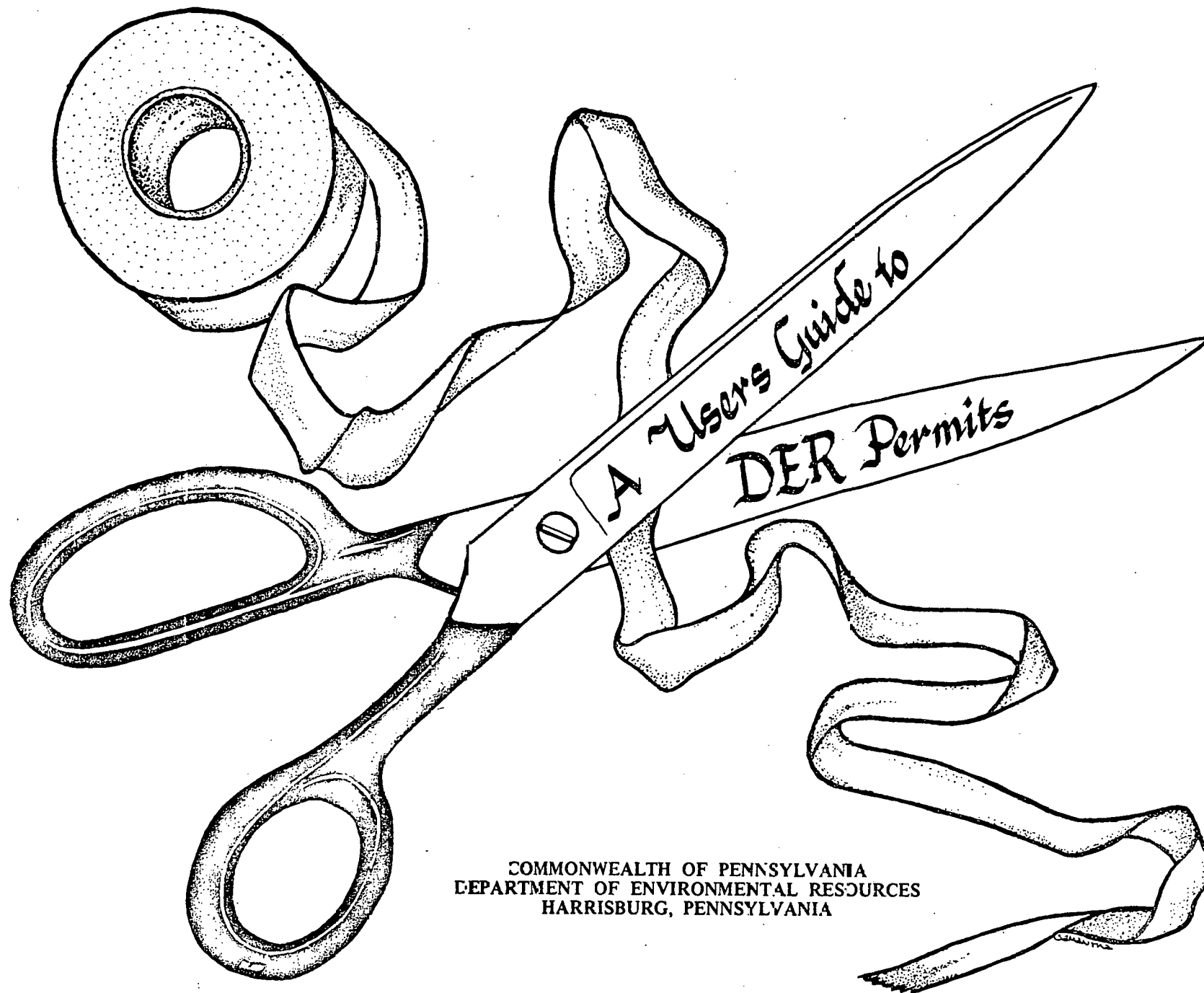
industry," Jones said. "People like to live in areas that have clean air and water and pleasant surroundings.

"With the appointment of Dick Boardman as our ambassador to new industry, we want to make Pennsylvania's regulatory environment more attractive, too."

Boardman, 44, is one of DER's key trouble shooters and problem solvers.

"We want to make things as easy as possible for industries to get the information and answers they need so they will know exactly what is expected of them," Boardman said.





COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL RESOURCES  
HARRISBURG, PENNSYLVANIA

This USERS GUIDE TO DER PERMITS is intended to provide someone seeking a permit issued by the Department of Environmental Resources with an initial point of contact within the Department as well as a statement of the fees involved.

Specific information on application procedures and the forms and materials needed for an application to be processed is available from the contacts listed here.

There is no automatic guarantee that a permit will be issued. The laws under which these processes operate were adopted to protect the Commonwealth's people and their environment and that is the concern of the Department of Environmental Resources when it considers a permit application.

We must take the time necessary to assure our technical staff that the conditions laid down in the applicable laws will be met if we grant approval for a citizen to undertake the activity for which a permit is sought. Such technical evaluations often are time-consuming but they must be carried out completely and fully so we can faithfully perform our duty under the law. Applicants can aid the process by submitting complete and correct applications and responding promptly to requests for further detail or clarification.

In many instances, several different permits are required from DER and the agency's policy is to coordinate their issuance as much as possible.

While obviously not an all-inclusive document regarding DER permits, we hope this material will be useful. We will issue revised versions when timely and attach change sheets as we learn of changes in procedure or contact personnel. We welcome your comments and suggestions.

Office of Public Information  
Department of Environmental Resources

Revised, March, 1977

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BUREAU OF AIR QUALITY AND NOISE CONTROL

ITEM	TYPE OF APPROVAL	CONTACT	FEE
Air Quality Plan Approval		Regional or District Office	None
Air Quality Temporary Operating Permit	Permit	Regional or District Office	None
Air Quality Operating Permit	Permit	Regional or District Office	None

*Note: Philadelphia and Allegheny County have autonomous air pollution control programs. Questions on their permit procedures should be directed to:*

*John P. Daley  
Air Management Services  
4320 Wissahickon Avenue  
Philadelphia, PA 19129  
(215) 686-7840*

*J.D. Graham  
Plan Review Section  
301 39th Street  
Pittsburgh, PA 15201  
(412) 681-9600*

Contacts regarding DER Air Quality and Noise Control permits in any other county should be directed to the Engineering Services Chief, Bureau of Air Quality and Noise Control, in the seven regional environmental protection offices listed on the inside back cover or to the District Supervisor in the Lawistown or Ebensburg District Offices.

Questions of a general nature concerning DER's air quality permit procedures should be directed to:

Douglas L. Leshner  
Chief, Permit Section  
Division of Abatement and Compliance  
Bureau of Air Quality and Noise Control  
18th Floor, Fulton Building  
200 N. Third Street  
Harrisburg, PA 17120  
(717) 787-4324

BUREAU OF COMMUNITY ENVIRONMENTAL CONTROL (CEC)

ITEM	TYPE OF APPROVAL	CONTACT	FEE
Campground	Permit	CEC County Office	None
Organized Camp	Permit	CEC County Office	None
Organized Camp - Registration Certificate	Certificate	CEC County Office	\$10
Public Eating or Drinking Place	License	CEC County Office	\$1
Bottled Water Dealer	Permit	CEC County Office	None
Shellfish Dealer	Permit	CEC County or Central Office	None
Mobilehome Park - Certificate of Registration	Permit	CEC County Office	None
Migrant Labor Camp	Permit	CEC County Office	None
Nursing Home and Day Care Center	Plan review for issuance of license or approval by Dept. of Public Welfare or Dept. of Health	CEC County Office	None
Private Academic School	Site inspection for Dept. of Education license	CEC County Office	None

CEC Central Office:

Bureau of Community Environmental Control  
16th Floor, Fulton Building  
200 N. Third Street  
Harrisburg, PA 17120  
(717) 787-9036

# CEC COUNTY OFFICES

ADAMS, 103 W. Middle Street, Gettysburg 17325. 717-334-8175.  
 ARMSTRONG, 303 Court House, Kittanning 16201. 412-545-5201.  
 BEAVER, 487 Hull Street, Rochester 15074. 412-774-8651.  
 BEDFORD, BLAIR AND FULTON, 615 Howard Avenue, Altoona 16601. 814-946-0861.  
 BERKS, 16 Angelica Street, Reading 19611. 215-378-4366.  
 BLAIR (See Bedford).  
 BRADFORD AND SULLIVAN, 2 Washington Street, Towanda 18848. 717-265-8121.  
 BUCKS (Contact County Health Department).  
 BUTLER, V.A. Hospital, Building 79, Butler 16001. 412-287-1769.  
 CAMBRIA, Prave Building, 2nd Floor, Ebensburg 15931. 814-472-5071.  
 CAMERON AND ELK, RD1, Box 1-B, Emporium 15834. 814-486-6305.  
 CARBON (See Schuylkill).  
 CENTRE, Box 37, RD2, Bishop Street Extended, Bellefonte 16823. 814-355-5458.  
 CHESTER (Contact County Health Department).  
 CLARION AND FOREST, 708 Main Street, Clarion 16214. 814-226-7180.  
 CLEARFIELD, 28 E. Scribner Avenue, DuBois 15801. 814-371-8890.  
 CLINTON (See Lycoming).  
 COLUMBIA, 1121 Old Berwick Road, Bloomsburg 17815. 717-389-3611.  
 CRAWFORD, 1012 Water Street, Box 578, Meadville 16335. 814-724-8520.  
 CUMBERLAND AND PERRY, 125 S. Hanover Street, Carlisle 17013. 717-249-7500.  
 DAUPHIN, 7th Floor, Executive House, 2nd and Chestnut Streets, Box 2357, Harrisburg 17120. 717-787-9687.  
 DELAWARE, 151 W. Fifth Street, Chester 19013. 215-876-8118.  
 ELK (See Cameron).  
 ERIE (Contact County Health Department).  
 FAYETTE, 95 W. Fayette Street, Uniontown 15401. 412-437-2831.  
 FOREST (See Clarion).  
 FRANKLIN, 518 Cleveland Avenue, Chambersburg 17201. 717-264-8012.  
 FULTON (See Bedford).  
 GREENE, 195 E. High Street, Waynesburg 15370. 412-627-6624.  
 HUNTINGDON (See Mifflin).  
 INDIANA, 125 N. Fifth Street, Indiana 15701. 412-357-2745.  
 JEFFERSON, 101 Foundry Street, Punxsutawney 15767. 814-938-3154.  
 JUNIATA (See Mifflin).  
 LACKAWANNA, SUSQUEHANNA AND WYOMING, Chamber of Commerce Building, Mulberry and Washington Streets, Scranton 18500.  
 717-961-4521.  
 LANCASTER, 10 S. Prince Street, Lancaster 17603. 717-299-3681.  
 LAWRENCE, 101 S. Mercer Street, New Castle 16101. 412-658-1694.  
 LEBANON, Agway Building, 17th and Cumberland Streets, Lebanon 17042. 717-273-8951.  
 LEHIGH (See Northampton).

LUZERNE, 90 E. Union Street, Wilkes-Barre 18701. 717-825-7511.  
 LYCOMING AND CLINTON, 224 E. Fourth Street, Williamsport 17701. 717-326-2681.  
 MCKEAN, 137 N. Bennett Street, Bradford 16701. 814-362-2203.  
 MERCER, 900 N. Hermitage Road, Sharon 16146. 412-346-3571.  
 MIFFLIN, JUNIATA AND HUNTINGDON, 29 Chestnut Street, Lewistown 17044. 717-242-0389.  
 MONROE, PIKE AND WAYNE, 480 Clearview Lane, Stroudsburg 18360. 717-424-3006.  
 MONTGOMERY, 750 E. Johnson Highway, Norristown 19401. 215-631-2280.  
 MONTOUR, NORTHUMBERLAND, SNYDER AND UNION, 247 Pennsylvania Avenue, Sunbury 17301. 717-286-8531.  
 NORTHAMPTON AND LEHIGH, 520 E. Broad Street, Bethlehem 18000. 215-865-5750.  
 NORTHUMBERLAND (See Montour)  
 PERRY (See Cumberland)  
 PIKE (See Monroe)  
 POTTER, 353 E. Second Street, Coudersport 16915. 814-274-8270.  
 SCHUYLKILL AND CARBON, 108 S. Claude A. Lord Boulevard, Pottsville 17901. 717-622-8181.  
 SNYDER (See Montour)  
 SOMERSET, 651 S. Center Avenue, Somerset 15501. 814-443-2618.  
 SULLIVAN (See Bradford)  
 SUSQUEHANNA (See Lackawanna)  
 TIOGA, 5 East Avenue, Wellsboro 16901. 717-724-1762.  
 UNION (See Montour)  
 VENANGO, 2 Drake Building, Oil City 16301. 814-676-5437.  
 WARREN, 1 N. Carver Street, Warren 16365. 814-723-3273.  
 WASHINGTON, 203 S. Washington Boulevard, McMurray 15317. 412-941-5855.  
 WAYNE (See Monroe)  
 WESTMORELAND, 115 W. Otterman Street, Greensburg 15601. 412-836-2300.  
 WYOMING (See Lackawanna)  
 YORK, 150 S. Duke Street 17403. 717-771-4481.

#### BUREAU OF LAND PROTECTION

ITEM	TYPE OF APPROVAL	CONTACT	FEE
Coal Refuse Disposal Area	Permit	Division of Solid Waste Management	\$500 plus \$10 per acre in excess of 50 acres
Solid Waste Processing and/or Disposal Facilities	Permit	Division of Solid Waste Management	None
Bituminous Coal Mine Surface Support	Permit	Division of Mine Subsidence Regulation	None

ITEM	TYPE OF APPROVAL	CONTACT	FEE
Coal Area Oil/Gas Well Drilling	Permit	Division of Oil and Gas	None
Non-Coal Area Oil/Gas Well Drilling	Permit	Division of Oil and Gas	None
Conservation Oil/Gas Well Drilling	Permit	Division of Oil and Gas	\$25
Oil/Gas Well Pillar Permit	Permit	Division of Oil and Gas	None
Project Oil/Gas Well Drilling	Permit	Division of Oil and Gas	None
Plugging Number Application (Single Oil/Gas Well)	Permit	Division of Oil and Gas	None
Plugging Number Application (Project Oil/Gas Wells)	Permit	Division of Oil and Gas	None
Spacing Order	Order	Division of Oil and Gas	\$250
Integration Order	Order	Division of Oil and Gas	\$100

Solid Waste permit applications should be submitted to the Regional Solid Waste Director in the seven environmental protection regional offices listed on the inside back cover.

Division of Mine Subsidence Regulation  
203 S. Washington Street  
McMurray, PA 15317  
(412) 941-7100

Division of Oil and Gas  
1205 Kossman Building  
100 Forbes Avenue  
Pittsburgh, PA 15222  
(412) 565-5075

BUREAU OF RADIOLOGICAL HEALTH

Use or Possession of non-NRC Licensed Materials	License	Division of Radiation Control	None
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ITEM	TYPE OF APPROVAL	CONTACT	FEE
Use of Radiation-Producing Equipment	Permit	Division of Radiation Control	None
	Division of Radiation Control 5th Floor, Fulton Building 200 N. Third Street Harrisburg, PA 17120 (717) 787-2163		
<u>BUREAU OF SURFACE MINE RECLAMATION</u>			
Surface Mine Drainage (Coal and Non-Coal; more than 2,000 tons)	Permit	Division of Mine Drainage Control and Reclamation	\$25
Surface Mining (Non-coal, less than 2,000 tons)	Permit	Division of Mine Drainage Control and Reclamation	None
260 Surface Mining (Non-coal, more than 2,000 tons)	Permit	Division of Mine Drainage Control and Reclamation	
Surface Mining (Coal)	Permit	Division of Mine Drainage Control and Reclamation	None
Surface Mining (Coal and non-coal)	License	Division of Licensing and Bonding	\$500 annual renewal - \$300
Surface Mining (Non-coal, less than 2,000 tons)	License	Division of Licensing and Bonding	\$50 annual renewal - \$50
Blasters Examination	License	Division of Explosives	\$10/app \$5/ license

Bureau of Surface Mine Reclamation  
7th Floor, Fulton Building  
200 N. Third Street  
Harrisburg, PA 17120  
(717) 787-5103

Division of Mine Drainage Control and Reclamation  
(717) 783-8845

Division of Licensing and Bonding  
(717) 787-4827

Division of Explosives  
(717) 787-2458

BUREAU OF WATER QUALITY MANAGEMENT

ITEM	TYPE OF APPROVAL	CONTACT	FEE
261 Water Obstructions (Stream channel changes and crossings, intake and outfall structures, docks and piers, bank protection, fills, levees, dikes, bulkheads, flood walls, etc.)	Permit	Division of Dams and Encroachments	None
Dredging	Permit	Division of Dams and Encroachments	None
Sewer Stream Crossing	Permit	Bureau Regional Offices	None
Emergency Stream Clearance and Restoration	Permit	Bureau Regional Offices	None
Dam Construction and Maintenance	Permit	Division of Dams and Encroachments	None
Water Allocation	Permit	Division of Dams and Encroachments	\$25
Operation of Deep Mine	Permit	Bureau Regional Offices	\$25
Industrial Waste	Permit	Bureau Regional Offices	\$25

ITEM	TYPE OF APPROVAL	CONTACT	FEE
Sewerage	Permit	Bureau Regional Offices	\$25
Public Bathing Places	Permit	Bureau Regional Offices	\$10
Erosion and Sedimentation Control (Generally involves areas of 25 or more acres)	Permit	County Conservation District Offices	\$200

Bureau of Water Quality Management regional offices are located in the seven environmental protection offices listed on the back cover.

Division of Dams and Encroachments  
11th Floor, Fulton Building  
200 N. Third Street  
Harrisburg, PA 17120  
(717) 787-6826

#### County Conservation District Offices:

ADAMS, 44 S. Franklin Street, Gettysburg 17325.  
ALLEGHENY, Room G-3, 4 Parkway Center, 875 Greentree Road, Pittsburgh 15220.  
ARMSTRONG, c/o William Schall, Star Route, Apollo 15613.  
BEAVER, 2nd Floor, Post Office Building, Beaver 15009.  
BEDFORD, 120 W. John Street, Bedford 15522.  
BERKS, Leesport, PA 19533  
BRADFORD, c/o Anthony Barrett, RD1, Athens 18810.  
BLAIR, Highland Hall Annex, Hollidaysburg 16648.  
BUCKS, 57 W. Court Street, Doylestown 18901.  
BUTLER, Courthouse, Butler 16001.  
CAMBRIA, c/o Clair J. Dumm, Box 187, Ebensburg 15931.  
CAMERON, c/o William Bierly, Four Mile Road, RD1, Emporium 15834  
CARBON, Courthouse, Jim Thorpe 18229.  
CENTRE, c/o Mrs. Hazel M. Peters, RD4, Box 111, Bellefonte 16823.  
CHESTER, 1 West Gay Street, West Chester 19380.  
CLARION, Box 469, Clarion 16214  
CLEARFIELD, c/o Mrs. Leeanna Heuser, Box 89, Clearfield 16830  
CLINTON, 326 Main Street, Mill Hall 17751.

COLUMBIA, 1117 Old Berwick Road, Bloomsburg 17815.  
CRAWFORD, 154 Park Avenue Plaza, Box 478D, Meadville 16335.  
CUMBERLAND, c/o Donald Deckman, RD2, Mechanicsburg 17055.  
DAUPHIN, c/o Jay Book, RD2, Box 706, Elizabethtown 17022.  
DELAWARE, c/o John C. Doerrman, 1671 N. Providence Road, Media 19063.  
ELK, Box 57, Bennezzette 15821.  
ERIE, RD5, Route 19, Waterford 16441.  
FAYETTE, c/o Mrs. Thelma Adams, RD4, Box 257C, Uniontown 15401.  
FOREST, c/o Paula Stevenson, Star Route 1, Marienville 16239.  
FRANKLIN, 550 Cleveland Avenue, Chambersburg 17201.  
FULTON, Washabaugh Building, McConnellsburg 17233.  
GREENE, 63 N. Morris Street, Waynesburg 15370.  
HUNTINGDON, c/o Mrs. Maxine Sipe, 500 Mount Vernon Avenue, Huntingdon 16652.  
INDIANA, RD3, Box 243B, Indiana 15701.  
JEFFERSON, c/o George Miller, RD1, Brockway 15824.  
JUNIATA, c/o Richard Hackenberger, RD2, Mifflintown 17059.  
LACKAWANNA, c/o Kenneth Seamans, Berens Building, RD1, Clarks Summit 18411.  
LANCASTER, 1383 Arcadia Road, Lancaster 17601.  
LAWRENCE, c/o Rosalind Tricoli, Courthouse, New Castle 16101.  
LEBANON, c/o Mrs. Vera Seavers, Box 93, Lebanon 17042.  
LEHIGH, 119 Pine Street, Catasauqua 18032.  
LUZERNE, 71 N. Market Street, Nanticoke 18634.  
LYCOMING, 48 W. Third Street, Courthouse, Williamsport 17701.  
MCKEAN, c/o Joseph Cehovin, RD1, Box 71, Kane 16735.  
MERCER, c/o James Mondok, Courthouse, Mercer 16137.  
MIFFLIN, 18-32 Juniata Street, Lewistown 17044.  
MONROE, 2115 N. Fifth Street, Stroudsburg 18360.  
MONTGOMERY, c/o Maynard King, 4th Floor, Courthouse, Norristown 19404.  
MONTOUR, Courthouse, SCS Office, Danville 17821.  
NORTHAMPTON, Courthouse, Easton 18042.  
NORTHUMBERLAND, USDA Building, Route 61, Sunbury 17801.  
PERRY, Box 36, New Bloomfield 17068.  
PIKE, Courthouse, Annex 1, Milford 18337.  
POTTER, Box 144, Maple View, Coudersport 16915.  
SCHUYLKILL, Davis Building, North Claude Road, Pottsville 17901.  
SNYDER, c/o Ilah Snook, RD2, Middleburg 17842.  
SOMERSET, c/o M. Lowe Moore, RD5, South Lynn Avenue, Somerset 15501.  
SULLIVAN, c/o Arthur Rohe, Dushore 18614.

SUSQUEHANNA, c/o Clifford Tinklepaugh, RD1, Thompson 18465.  
 TIOGA, 5 East Avenue, Wellsboro 16901.  
 UNION, 241 N. Derr Drive, Lewisburg 17837.  
 VENANGO, c/o Harry Fowler, Courthouse, Franklin 16323.  
 WARREN, c/o Jack Reddecliff, 55 Highland Drive, Apt. F-2, Warren 16365  
 WASHINGTON, c/o Mrs. Glass, 37 Highland Avenue, Washington 15301.  
 WAYNE, 222 Willow Avenue, Honesdale 18431.  
 WESTMORELAND, 975 Old Salem Road, Greensburg 15601.  
 WYOMING, c/o Edgar Engelman, Noxen 18636.  
 YORK, Box 212, Emigsville 17318.

BUREAU OF OPERATIONS

ITEM	TYPE OF APPROVAL	CONTACT	FEE
Occupancy Agreement (Schuylkill River Project and flood control lands)		Division of Completed Projects	\$30
	Division of Completed Projects 213 Evangelical Press Building Third and Reily Streets Harrisburg, PA 17120 (717) 787-1785		

BUREAU OF FORESTRY

Seismic Survey	Permit	Minerals Section	\$50
Prospecting	Permit	Minerals Section	\$25
Right-of-Way over State Forest (telephone, electric service or antenna site)	License	District Forester	Variable
Use of State Forest Road	Permit	District Forester	Variable
Fuel Wood from State Forest	Permit	District Forester	\$1-\$5/cord
Stone from State Forest	Permit	District Forester	Variable

ITEM	TYPE OF APPROVAL	CONTACT	FEE
Snowmobile Registration	Registration	Snowmobile Unit	\$10/ 2 yrs.
	Minerals Section Division of State Forest Management 105 Evangelical Press Building Third and Reily Streets Harrisburg, PA 17120 (717) 787-5992, 4835		
	Snowmobile Unit Division of State Forest Management 110 Evangelical Press Building Third and Reily Streets Harrisburg, PA 17120 (717) 783-1364		
Michaux Forest District 1, RD2, Fayetteville 17222.	(717) 352-2211.		
Buchanan Forest District 2, RD1, McConnellsburg 17233.	(717) 485-3148.		
Tuscarora Forest District 3, Box 67, Blain 17006.	(717) 536-3191.		
Forbes Forest District 4, 132 W. Main Street, Ligonier 15658.	(412) 238-9533.		
Rothrock Forest District 5, 401 Penn Street, Box 403, Huntingdon 16652.	(814) 643-2340.		
Gallitzin Forest District 6, 131 Hillcrest Drive, Ebensburg 15931.	(814) 472-8320.		
Bald Eagle Forest District 7, Buffalo Valley Shopping Center, Box 111, Mifflinburg 17844.	(717) 966-1401.		
Kittanning Forest District 8, RD1, Box 471, Clarion 16214.	(814) 764-3251.		
Moshannon Forest District 9, 1229 S. Second Street, Box 341, Clearfield 16830.	(814) 765-5361.		
Sproul Forest District 10, Star Route, Box 247, Renovo 17764.	(717) 923-1450.		
Lackawanna Forest District 11, 100 Chamber of Commerce Building, 426 Mulberry Street, Scranton 18503.	(717) 961-4561.		
Tiadaghton Forest District 12, 423 E. Central Avenue, So. Williamsport 17701.	(717) 326-3576.		
Elk Forest District 13, RD1, Rte. 155, Emporium 15834.	(814) 483-3354.		
Cornplanter Forest District 14, 6 S. Hammon Road, Box 807, Warren 16365.	(814) 723-6951.		
Susquehannock Forest District 15, 8 E. Seventh Street, Coudersport 16915.	(814) 274-8474.		
Tioga Forest District 16, Box 94, 96 West Avenue, Wellsboro 16901.	(717) 724-2868.		
Valley Forge Forest District 17, RD2, Rte. 23, Pottstown 19464.	(215) 469-6217.		
Weiser Forest District 18, Box 98, Cressona 17929.	(717) 385-2545.		
Delaware Forest District 19, Box 150, 474 Clearview Lane, Stroudsburg 18360.	(717) 424-3001.		
Wyoming Forest District 20, Box 439, Old Berwick Highway, Bloomsburg 17815.	(717) 389-3606.		

ITEM	TYPE OF APPROVAL	CONTACT	FEE
<u>BUREAU OF STATE PARKS</u>			
Right-of-Way on State Park Land	Permit	Division of Maintenance and Resource Management	Variable
	Project Coordination Section Division of Maintenance and Resource Management Bureau of State Parks B-18 Evangelical Press Building Third and Reily Streets Harrisburg, PA 17120 (717) 787-7398		
<u>BUREAU OF TOPOGRAPHIC AND GEOLOGIC SURVEY</u>			
Water Well Drillers and Rigs	License/Permit	Division of Environmental Geology	\$3/license \$5/rig permit
	Division of Environmental Geology Bureau of Topographic and Geologic Survey 912 Executive House 2nd and Chestnut Streets Harrisburg, PA 17120 (717) 787-5828		
<u>OFFICE OF DEEP MINE SAFETY</u>			
Persons seeking information regarding opening of a deep mine are advised to contact the District Mine Inspector employed by the Department of Environmental Resources. Names and addresses of the inspectors are available from:			
	Office of Deep Mine Safety 6th Floor, Fulton Building 200 N. Third Street Harrisburg, PA 17120 (717) 787-1376		

NOTE: Other required permits must be obtained from issuing bureaus with the Department of Environmental Resources before any deep mine can be opened. This includes a water quality permit as shown on page 7 of this booklet.

AIR QUALITY AND NOISE CONTROL, SOLID WASTE MANAGEMENT AND WATER QUALITY MANAGEMENT REGIONAL OFFICES:

BUCKS, CHESTER, DELAWARE, MONTGOMERY AND PHILADELPHIA, 1875 New Hope Street, Norristown 19401.

BRADFORD, LACKAWANNA, LUZERNE, MONROE, PIKE, SULLIVAN, SUSQUEHANNA, TIOGA, WAYNE AND WYOMING, Thomas C. Thomas Building, 90 E. Union Street, Box 659, Wilkes-Barre 18701.

BERKS, CARBON, LEHIGH, NORTHAMPTON AND SCHUYLKILL, 16 Angelica Street, Reading 19611.

ADAMS, CUMBERLAND, DAUPHIN, FRANKLIN, LANCASTER, LEBANON, PERRY AND YORK, 1003 Health and Welfare Building, Harrisburg 17120. (Air Quality on 7th Floor, Executive House, 2nd and Chestnut Streets, Harrisburg 17120).

BEDFORD, BLAIR, CAMBRIA, CENTRE, CLINTON, COLUMBIA, FULTON, HUNTINGDON, JUNIATA, LYCOMING, MIFFLIN, MONTGOMERY, NORTHUMBERLAND, SNYDER, SOMERSET AND UNION, 736 W. Fourth Street, Williamsport 17701.

ALLEGHENY, ARMSTRONG, BEAVER, BUTLER, FAYETTE, GREENE, INDIANA, WASHINGTON AND WESTMORELAND, Kossman Building, 100 Forbes Avenue, Pittsburgh 15222.

CAMERON, CLARION, CLEARFIELD, CRAWFORD, ELK, ERIE, FOREST, JEFFERSON, LAWRENCE, MCKEAN, MERCER, POTTER, VENANGO AND WARREN, 1012 Water Street, Meadville 16335.

CENTRE, HUNTINGDON, JUNIATA, MIFFLIN AND SNYDER (Air Quality Only), 29 Chestnut Street, Lewistown 17044.

BEDFORD, BLAIR, CAMBRIA, FULTON AND SOMERSET (Air Quality Only), Prave Building, Second Floor, 120 S. Center Street, Ebensburg 15931.



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APPENDIX J  
OPERATION OF THE CAN DO GASIFIER

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## OPERATION OF THE GASIFIER\*

Coal is fed into the upper bin of each gasifier by the coal handling system and, from that point, flows through the gasifier by gravity. The upper and lower coal bins of the gasifier are separated by rotating, gas-tight valves, which are interlocked to valves located between the lower bin and the coal feed tubes. During normal operation, the lower valves are open, so that coal from the lower bin flows continuously through the coal feed pipes and into the gasifier vessel. At this time the valve between the upper and lower bins is closed to prevent the upward flow of gas.

During coal recharging, the valves are rotated, and the upper valve is opened, which allows coal to flow from the upper bin, replenishing the lower bin. Opening the upper valve automatically closes the lower valve, which prevents the escape of gas during this replenishing period. This "coaling-up" valve configuration is maintained only long enough to fill the lower bin, so that once coal stops flowing from the upper bin the valves are rotated to the "operating" configuration, i.e., the lower bin is sealed at the top and the coal feed tubes are opened to the flow of coal from the lower bin. This process ensures that the coal feed tubes, and the gasifier vessel, are filled at all times. (In the Humboldt facility, the flow of coal into and out of the upper bin will be monitored in the control room via a television camera located above the upper bin.)

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\*This section is adapted from Campbell, 1979.

The gasifier vessel in which the coal is converted to gas consists of a metal-walled cylinder with no refractory having one-inch thick walls on the sides and top and open on the bottom. This cylinder is surrounded, top and sides, by a water jacket. The bottom of the vessel consists of an eccentric revolving grate.

The grate of the gasifier is covered with a bed of cinder, 6 to 14 inches deep, formed by the ash from the burned out coal. Above the cinder bed is the bed of burning coal, the "fire zone", where the heat for the gasification process is generated. Above the burning fire zone is a deep bed of coal that is maintained by the constant flow of coal described in the preceeding section. In this bed of hot coal, the gasification reactions take place, converting the combustion products generated in the fire zone into a combustible fuel gas.

The air for combustion of the coal in the gasifier vessel is provided by a primary blower located on the ashpit floor. Atmospheric air collected by this blower is piped to the top of the gasifier and is blown across the water at the top of the water jacket.

While the water jacket surrounding the sides and top of the gasifier vessel is fed by a constant inflow of water, an overflow at the top of the vessel controls the water level in the cooling jacket. Air from the primary blower passes over the cooling water surface and evaporates sufficient moisture for the gasification reaction. This saturated air is blown down through the saturation pipe and up under the grates in the ashpit. The volume of air determines the amount of gas produced and the rate at which coal is burned.

In the burning zone, the oxidation of the carbon in the coal produces carbon dioxide ( $\text{CO}_2$ ). The moisture picked up by the air stream is vaporized, and the heat absorbed by this vaporization acts to control the fire bed temperature. The degree of saturation of the air stream is important since too little moisture will raise the fire bed temperature, causing the ash to stick and form a glassy mass or clinker. Too much moisture in the primary air will lower the fire bed temperature and diminish the gas quality. The optimum moisture is that which is just sufficient to prevent clinkering.

The natural tendency of the fire zone to burn its way upward is countered by the discharge of ash below the burning coals. In a Wellman-Galusha Gasifier, the grates are eccentric, and as they rotate ash is pushed into the open center of the grates, where it drops by gravity into the ash cone. At intervals, the ash is flushed from the cone by means of a water spray. A truck, or loader placed under the ash slide valve, receives the ash for disposal or re-use elsewhere.

The motion of the grates is produced and controlled by a variable speed drive located on the ashpit level. The drive is adjusted by the operator based upon the results of his fire tests.

In the CAN DO facility, the hot raw gas will be further treated to make it suitable for distribution in the industrial park. This further treatment will consist of the following:

- Cooling the gas
- Primary scrubbing

- Compressing
- Secondary scrubbing
- Chilling and dehumidifying
- Reheating
- Distribution

The composition of the gas is a function of the chemical nature of the coal and the operating characteristics of the gas production facility. For the type of anthracite coal that will be used and air saturated at about 140°F, the coal gas produced will have the composition given in Table J-1. Included in the hot, raw gas leaving the gas producer will be moisture and a dust component of fly ash and powdered coal. Approximately 40 percent of this particulate matter is removed in the refractory lined cyclone that receives the producer gas output. The remainder is carried in the gas stream. As the gas leaves the dust cyclone, it will have the characteristics as given in Table J-2. Following further cleanup (cooling, scrubbing, and compressing), the gas leaving the facility and entering the distribution system will have the characteristics given in Table J-3.

TABLE J-1

CHEMICAL CONTENT OF ANTHRACITE PRODUCER GAS  
(PERCENTAGES SHOWN ARE VOLUME OF A DRY GAS)

Carbon Monoxide	(CO)	26 %
Hydrogen	(H <sub>2</sub> )	16 %
Nitrogen	(N <sub>2</sub> )	50 %
Carbon Dioxide	(CO <sub>2</sub> )	7 %
Methane	(CH <sub>4</sub> )	0.5%
Other		0.5%
Hydrogen Sulfide	(H <sub>2</sub> S)	
Oxygen	(O <sub>2</sub> )	
Ammonia	(NH <sub>3</sub> )	

Source: Campbell, Hugh L., III, 1979. Process and Instrumentation of an Anthracite Coal Gasification Facility, Humboldt Industrial Park, Hazleton, Pennsylvania. Ebeco Associates, Hazleton, Pennsylvania.



TABLE J-2

GAS CHARACTERISTICS OF HOT RAW GAS LEAVING CYCLONE

Temperature:	Normal: 600°F
	Extremes: 550°F to 800°F
Moisture:	Dew Point: 85°F to 110°F, depending upon saturation
	Nominal Moisture Content: 600 pounds/hour at full load
Dust Content:	0.2 Grains/SCF
Dust Material:	Finely dispersed anthracite and fly ash
Pressure:	Normal: 8 inches water column
	Extremes: 2 inches to 10 inches water column

Source: Campbell, Hugh L., III, 1979. Process and Instrumentation of an Anthracite Coal Gasification Facility, Humboldt Industrial Park, Hazleton, Pennsylvania. Ebeco Associates, Hazleton, Pennsylvania.

TABLE J-3

GAS CHARACTERISTICS OF CLEAN  
COMPRESSED GAS LEAVING FACILITY

Temperature:	100°F
Pressure:	5 PSIG
Moisture:	Dewpoint 45°F or less
Output:	2500 SCFM per Gas Producer 5000 SCFM Total
Molecular Weight:	24.5
Specific Gravity:	0.863
Specific Heat:	1.4
Air for Stoichiometric Combustion:	1.09 Ft <sup>3</sup> Air/Ft <sup>3</sup> Gas
Flame Temperature:	3100°F
Heating Value of Producer Gas:	Gross: 151.1 Btu/Ft <sup>3</sup> Net: 142.2 Btu/Ft <sup>3</sup>

Source: Campbell, Hugh L., III, 1979. Process and Instrumentation of an Anthracite Coal Gasification Facility, Humboldt Industrial Park, Hazleton, Pennsylvania. Ebeco Associates, Hazleton, Pennsylvania.

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APPENDIX K  
APPLICATION FOR PLAN APPROVAL TO  
CONSTRUCT AND OPERATE AN AIR CONTAMINATION SOURCE

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COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL RESOURCES  
BUREAU OF AIR QUALITY & NOISE CONTROL  
Application for Plan Approval to Construct,  
Modify or Reactivate an Air Contamination Source  
and/or Air Cleaning Device or for a Permit to Operate

Page 1 of 8

*Read the instruction carefully before completing this form. Submit duplicate copies.*

**Section A Identity and Location of Air Contamination Source**

1A. Application is being made for:

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Construction of New Source<br><br><input type="checkbox"/> Reactivation of a Source<br><br><input type="checkbox"/> Modification of Existing Source<br><br><input type="checkbox"/> Installation of Air Cleaning Device | <input type="checkbox"/> Extension of Plan Approval<br><br><input type="checkbox"/> Amendment to a Previous Application<br><br><input checked="" type="checkbox"/> Operating Permit<br><br><input checked="" type="checkbox"/> Temporary Operating Permit<br><br><input type="checkbox"/> Extension of Operating Permit |
|---|---|

1B. Type of source

Anthracite Coal Gasification Facility

1C. Plant in which source is located

☒ NEW    ☐ EXISTING

1D. Expected date of completion

September, 1980

1E. If source is new, does it replace another source (describe source replaced)

☒ YES    ☐ NO

2A. Owner of source

CAN-DO, INC.

2B. Employer I.D. No. (Federal)

3A. Owners designation of source and/or plant if any

CAN-DO G.A.S. PROJECT #1

3B. Location of source (Street address or Route No.)

Humboldt Industrial Park

Political Subdivision  
(Township, etc.)

Hazle

County

Luzerne

3C. Mailing address (Street or P.O. Box, City, Zip Code)

Mezzanine, Northeastern Building, Hazleton, Pa. 18201

3D. Telephone No.

(717) 455-1508

4. Official signing application must be an agent of the Company having primary responsibilities for operation of the facility to which this application applies. Although he may not have participated in the design of the facility he should be responsible for approval of the design.

**AFFIDAVIT**

I Robert K. Gicking, being duly sworn according to law depose and say that I am the official having primary responsibility for the design and operation of the facilities to which this application applies and that the information included in the foregoing application is true to the best of my knowledge, information and belief.

THEODORE E. ZEMKE, Notary Public

HAZLETON, LUZERNE COUNTY

MY COMMISSION EXPIRES DEC. 6, 1979

Sworn to and subscribed before me this

14 day of May 1979

1976.

*Theodore E. Zemke*  
Notary Public

Signature

President, CAN-DO, INC.

Title

## Section B - Process Information

## 1. PROCESS EQUIPMENT

Wellman-Galusha Atmospheric Pressure Agitator type 10 foot dia. Gas Producer

A. Manufacturer of Source

McDowell-Wellman Corp.

B. Model No.

None

C. No. of units

2

D. Rated Capacity

1 ton per hour Anthracite Buckwheat coal/unit

E. Rate under normal operation (Describe variations)

0.2 to 1 ton per hour depending upon demand

F. Describe the process equipment (Give type, use, product, etc. on attached sheet)

Process equipment and flow diagrams are found in attached manual

G. Sketch flow diagram of process giving all (gaseous, liquid, and solid) flow rates (attach separate sheet). Also list all raw materials charged to process equipment and the amounts charged (tons/hour, etc.) at rated capacity (give maximum, minimum and average of both normal and occasional charges).

See F., above

## 2. OPERATING SCHEDULE (Proposed)

24

hours/day

7

days/week

52

weeks/year

## 3. SEASONAL PERIODS (MONTHS)

None

Operating  
toNon-Operating  
to

4. Describe fully the facilities provided to monitor and record all operating conditions that may affect the emission of air contaminants. Provide detailed information to show that the facilities provided are adequate.

An environmental test program is being developed in co-operation with the Economic Development Administration, Environmental Protection Agency, and Department of Energy : Funding agencies require that facility not operate until plan is complete.

5. Describe modifications to process equipment in detail

None

6. Type and method of disposal of all waste materials generated by this process

(Is a Solid Waste Disposal Permit Needed? ☐ Yes ☒ No )

Cinders to be collected by municipality for road maintenance

7. Briefly describe the method of handling the waste water from this process and its associated air pollution control equipment (Is a Water Quality Management Permit needed? ☐ Yes ☒ No )

Waste water is pre-treated prior to discharge into the Park sanitary sewage system.

8. Attach any and all additional information necessary to perform a thorough evaluation of the extent and nature of emissions from this process.

See attached manual

ER-AQ-161 3/73

## Section B - Process Information, Continued

9. FUEL AND POWER REQUIREMENTS					
TYPE	QUANTITY HOURLY	ANNUALLY	SULFUR	% ASH (WEIGHT)	BTU CONTENT
Oil No. _____	GPH @ 60° F	x 10 <sup>3</sup> gal.	% by wt.		BTU/gal. & lbs./gal. @ 60° F
Natural Gas.	SCFH	x 10 <sup>6</sup> SCF	gr/100 SCF		BTU/SCF
Gas (Other) _____	SCFH	x 10 <sup>6</sup> SCF	gr/100 SCF		BTU/SCF
Coal Anthracite Buckwheat size	1 TPH per unit, Max.	8,760 Tons/unit maximum	0.6 % by wt.	11.0% by specification	12,500 BTU/lb.
Coke	TPH	Tons	% by wt.		BTU/lb.
Other _____					
Electric Power	225 KWA per unit	1,971,000 KWH	---	---	---



### Section C - Control Equipment

#### 1. POTENTIAL PROCESS EMISSIONS (OUTLET FROM PROCESS, BEFORE ANY CONTROL EQUIPMENT)

Outlet from gasifier

##### A. Outlet particulate loading (lbs/hr or gr/SCF Dry)

0.45 Gr/SCF

##### B. Specific gravity of particulate

Approx. 1.9

##### C. Attach outlet particle size distribution information

3 Micron and over

##### D. Specify gaseous contaminants and concentration

Contaminant	Concentration
(1) Sulfur	0.2% ppm (Vol.) lbs/hr
(2) NH <sub>3</sub>	0.2% ppm (Vol.) lbs/hr
(3) CO	26% ppm (Vol.) lbs/hr

##### E. Outlet volume of exhaust gases

5,400 ACFM  
@ 600 °F

#### 2. GAS CONDITIONER (IF APPLICABLE)

##### A. Water quenching ☐ Yes ☐ No

Water injection rate \_\_\_\_\_ GPM

##### B. Radiation and convection cooling ☐ Yes ☐ No

##### C. Air dilution ☐ Yes ☐ No \_\_\_\_\_ CFM

##### D. Gas conditioner outlet

\_\_\_\_\_ ACFM @ \_\_\_\_\_ °F

#### 3. SETTLING CHAMBERS (IF APPLICABLE)

##### A. Manufacturer

##### B. Volume handled

\_\_\_\_\_ ACFM @ \_\_\_\_\_ °F

##### C. Gas velocity

##### D. Dimensions

##### E. Retention time

##### F. Describe baffling

##### G. Inlet concentration (lbs/hr or gr/SCF Dry)

##### H. Outlet concentration (lbs/hr or gr/SCF Dry)

##### I. Overall efficiency (%)

##### J. Water injection

☐ Yes ☐ No

##### K. Water injection Rate (GPM)

##### L. Attach particle size Efficiency curve

## Section C - Control Equipment, Continued

## 4. INERTIAL AND CYCLONE COLLECTORS (IF APPLICABLE)

One cyclone unit per gasifier

A. Manufacturer McDowell-Wellman	B. Type Refractory cyclone lined	C. Model Number None
D. Pressure Drop (water gage)  2" water column max	E. Inlet Gas Volume (ACFM)  5,400	F. Inlet Gas Temperature (°F)  600°F
G. Design inlet volume (ACFM) 6,000		
H. Inlet concentration (lbs/hr or gr/SCF Dry)  0.45 Gr/SCF	I. Outlet concentration (lbs/hr or gr/SCF Dry)  0.2 Gr/SCF	J. Overall efficiency (%)  45%
K. Attach particle size efficiency curve Not available	L. Number and diameter of cyclones 1 8' diameter per gasifier	
M. Describe inertial collector fully giving dimensions and method of operation		

## 5. CATALYTIC AND THERMAL AFTERBURNERS (IF APPLICABLE)

A. Manufacturer	B. Type	C. Model No.
D. Minimum temperature maintained (°F)	E. Retention time at this temperature (sec)	F. Volume of gases handled (ACFM @ °F)
G. Design inlet volume (ACFM)	H. No. and capacity (BTU/hr) of burners	
I. Catalyst used	J. Expected temperature rise across catalyst	
K. Are temperature sensing devices being provided to measure the temperature rise across the catalyst? <input type="checkbox"/> Yes <input type="checkbox"/> No		
L. Is a heat exchanger system used for heat recovery? <input type="checkbox"/> Yes <input type="checkbox"/> No		
M. Inlet concentration  ppm (Vol.)	N. Outlet concentration  ppm (Vol.)	O. Overall efficiency (%)

P. Show that this unit is capable of complying with § 123.31 of Chapter 123

## Section C - Control Equipment, Continued

7. SCRUBBERS (IF APPLICABLE)  
Two scrubbers per gasifier

A. Manufacturer W.W. Sly*		B. Type 1 wet scrubber 1 Venturi scrubber		C. Model No. No. 135 Impinjet No. 230 Impinjet w/#1 Venturi													
D. Pressure drop (water gage) across scrubber only. Do not include duct losses Unit 1 3.0" W.G. Unit 2 27.0" W.G.																	
E. Gas temperatures (°F) <table border="0"> <tr> <td></td> <td>1</td> <td>240°</td> <td></td> <td>1</td> <td>110°</td> </tr> <tr> <td>at inlet</td> <td>2</td> <td>185°</td> <td>outlet</td> <td>2</td> <td>90°</td> </tr> </table>							1	240°		1	110°	at inlet	2	185°	outlet	2	90°
	1	240°		1	110°												
at inlet	2	185°	outlet	2	90°												
F. Volume of gases handled at inlet temperature (ACFM) 1 3650ACFM @ 240° 2 2350ACFM @ 185°			G. Design inlet volume (ACFM) 1 6650 @ 800° Max 2 2350 @ 185°														
H. Water flow rate (GPM) 1 150 GPM 2 150 GPM			I. Scrubber medium Stainless impingement baffle plates														
J. Inlet concentration (lbs/hr or gr/SCF Dry) 1. 0.2 Gr/SCF 2. 0.006 Gr/SCF		K. Outlet concentration (lbs/hr or gr/SCF Dry) 1. 0.006 2. 0.00006 Gr/SCF		L. Overall efficiency (%) 97% 99%													
M. Attach particle size efficiency curve Not available																	
N. Describe equipment provided to measure pressure drop and water flow rate to scrubber  Central control panel with Honeywell Vutronic* pressure and temperature transmitters, transducers, indicators, and recorder/controller. Panel also contains a central annunciator system with flow switches.																	

\* Or approved equal.

---

*Section C - Control Equipment, Continued*

---

**11. COSTS**

---

**A. Cost of all control equipment including installation costs (List individual controls separately)**

---

Dust Cyclone 2 @ \$ 35,000 each  
Wet Scrubber #1 2 @ \$ 15,000 each  
Venturi Throat 2 @ \$ 3,500 each  
Wet Scrubber #2 2 @ \$ 15,000 each  
Instrumentation &  
Controls \$ 10,000

---

**B. Estimated annual operating costs**

\$ 16,500 per year power  
\$ 1,500 per year maintenance

---

**12. Describe modifications to control equipment in detail**

None

---

**13. Discuss briefly the noise potential of the process and related control equipment and describe any devices used to reduce noise. Give costs.**

Major noise producer are cooling towers. Silencers will be used on primary air blowers, Cost 4 @ \$ 600.00 each

---

**14. Attach manufacturer's performance guarantees and/or warranties for each of the major components of the control system (or complete system).**

Will provide as received

---

**15. Attach the maintenance schedule for the control equipment and any part of the process equipment that if in disrepair would increase the air contaminant emissions. Periodic maintenance reports are to be submitted to the Department.**

Will provide as soon as prepared.

---

**16. Attach any and all additional information necessary to thoroughly evaluate the control equipment.**

---

---

*Section E Miscellaneous Information*

---

1. Describe fully facilities to monitor and record the emission of air contaminants. Provide detailed information to show that the facilities provided are adequate. Include cost and maintenance information. Periodic maintenance reports are to be submitted to the Department.

Note: Except during start-up and shut down, there are no emissions from process, all gas produced is burned in user-owned equipment.

During the initial test period, the full output of the gasifier facility will be burned in a field flare (John Zink Model STF-U-14 Utility Flare). The monitoring process will be outlined in the environmental plan referred to on page 2

- 
2. Attach Air Pollution Episode Strategy (if applicable)
- 

- 
3. Briefly describe the general nature of the area in which the source is located.
- 

Facility will be located in an 1140 acre Industrial Park which is approximately 4 miles from the nearest major population center (West Hazleton Borough) and 4.5 miles from the City of Hazleton. See attached Dwg. # 2659-1.

- 
4. Attach calculations and any additional information necessary to thoroughly evaluate compliance with all the applicable requirements of Article III of the Rules and Regulations of the Department of Environmental Resources and those requirements promulgated by the Administrator of the United States Environmental Protection Agency pursuant to the provisions of the Clean Air Act.
- 

- 
5. List all attachments made to this Application.
- 

1. "Process & Instrumentation of an Anthracite Coal Gasification Facility." By Hugh L. Campbell, EBECO ASSOCIATES.
2. Location Plan (Dwg. # 2659-1)
3. Site Plan (Dwg. # ME-31)
4. Gasifier Equipment (Dwg. # M-6)
5. Gas clean-up equipment (Dwg. # M-13)

APPENDIX L

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM  
APPLICATION FOR PERMIT TO DISCHARGE - SHORT FORM A

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# IONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM APPLICATION FOR PERMIT TO DISCHARGE - SHORT FORM A

Form Approved  
OMB No. 158-R0096

To be filed only by municipal wastewater dischargers

CHECK ONE: ☒ NEW APPLICATION  
☐ EXISTING PERMIT RENEWAL

NPDES # \_\_\_\_\_

Do not attempt to complete this form before reading the accompanying instructions

Please print or type

FOR  
AGENCY  
USE

APPLICATION NUMBER									
DATE RECEIVED									
YEAR			MO.			DAY			

1. Name of organization responsible for facility CAN-DO, INC.

2. Address, location, and telephone number of facility producing discharge:

A. Name CAN-DO, INC.

B. Mailing address:

1. Street address NORTHEASTERN BUILDING - MEZZANINE

2. City HAZLETON 3. County LUZERNE

4. State PENNSYLVANIA 5. ZIP 18201

C. Location:

1. Street HUMBOLDT INDUSTRIAL PARK

2. City HUMBOLDT 3. County LUZERNE

4. State PENNSYLVANIA

D. Telephone No. 717 455 - 1508

Area  
Code

If all your waste is discharged into a publicly owned waste treatment facility and to the best of your knowledge you are not required to obtain a discharge permit, proceed to item 3. Otherwise proceed directly to item 4.

3. If you meet the condition stated above, check here ☐ and supply the information asked for below. After completing these items, please complete the date, title, and signature blocks below and return this form to the proper reviewing office without completing the remainder of the form.

A. Name of organization responsible for receiving waste N.A.

B. Facility receiving waste:

1. Name \_\_\_\_\_

2. Street address \_\_\_\_\_

3. City \_\_\_\_\_ 4. County \_\_\_\_\_

5. State \_\_\_\_\_ 6. ZIP \_\_\_\_\_

4. Type of treatment:

A. ☐ None B. ☐ Primary C. ☐ Intermediate D. ☐ Secondary E. ☒ Advanced

5. Design flow (average daily) of facility 093 mgd.

6. Percent BOD removal (actual):

A. ☐ 0-29.9 B. ☐ 30-64.9 C. ☐ 65-84.9 D. ☐ 85-94.9 E. ☒ 95 or more

7. Population served:

A. ☐ 1-199 B. ☐ 200-499 C. ☒ 500-999 D. ☐ 1,000-4,999

E. ☐ 5,000-9,999 F. ☐ 10,000 or more

8. Number of separate discharge points:

A. ☒ 1 B. ☐ 2 C. ☐ 3 D. ☐ 4 E. ☐ 5 F. ☐ 6 or more



Description of waste water discharged to surface waters only (check as applicable).

Discharge per operating day	Flow, MGD (million gallons per operating day)							Volume treated before discharging (percent)				
	0-0.0099 (1)	0.01-0.049 (2)	0.05-0.099 (3)	0.1-0.49 (4)	0.5-0.99 (5)	1.0-4.9 (6)	5 or more (7)	None (8)	0.1-34.9 (9)	35-64.9 (10)	65-94.9 (11)	95-100 (12)
A. Average		X										X
B. Maximum		X										X

10. If any waste water, treated or untreated, is discharged to places other than surface waters, check below as applicable.

Waste water is discharged to	Flow, MGD (million gallons per operating day)						
	0-0.0099 (1)	0.01-0.049 (2)	0.05-0.099 (3)	0.1-0.49 (4)	0.5-0.99 (5)	1.0-4.9 (6)	5 or more (7)
A. Deep well							
B. Evaporation lagoon							
C. Subsurface percolation system							
D. Other, specify:							

11. Is any sludge ultimately returned to a waterway?

A. ☐ yes B. ☒ no

12. a. Do you receive industrial waste?

1. ☐ yes 2. ☒ no

b. If yes, enter approximate number of industrial dischargers into system \_\_\_\_\_

13. Type of collection sewer system:

A. ☒ Separate sanitary

B. ☐ Combined sanitary and storm

C. ☐ Both separate and combined sewer systems

14. Name of receiving water or waters TOMHICKEN CREEK

15. Does your discharge contain or is it possible for your discharge to contain one or more of the following substances: ammonia, cyanide, aluminum, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc, phenols.

A. ☐ yes B. ☒ no

I certify that I am familiar with the information contained in the application and that to the best of my knowledge and belief such information is true, complete, and accurate.

Printed Name of Person Signing \_\_\_\_\_

Title \_\_\_\_\_

Date Application Signed \_\_\_\_\_

Signature of Applicant \_\_\_\_\_

18 U.S.C. Section 1001 provides that:

Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and wilfully falsifies, conceals, or covers up by any trick, scheme, or device a material fact, or makes any false, fictitious, or fraudulent statements or representations; or makes or uses any false writing or document knowing same to contain any false, fictitious, or fraudulent statement or entry, shall be fined not more than \$10,000 or imprisoned not more than 5 years, or both.

APPENDIX M

APPLICATION FOR AIR QUALITY PERMIT BY  
MANUFACTURING COMPANY IN PENNSYLVANIA

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## APPENDIX M

COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL RESOURCES  
BUREAU OF AIR QUALITY & NOISE CONTROL

Page \_\_\_\_ of \_\_\_\_

Application for Plan Approval to Construct,  
Modify or Reactivate an Air Contamination Source  
and/or Air Cleaning Device or for a Permit to Operate*Read the instruction carefully before completing this form. Submit duplicate copies.***Section A Identity and Location of Air Contamination Source**

1A. Application is being made for:

- ☐ Construction of New Source
- ☐ Reactivation of a Source
- ☐ Modification of Existing Source
- ☐ Installation of Air Cleaning Device

- ☐ Extension of Plan Approval
- ☐ Amendment to a Previous Application
- ☐ Operating Permit
- ☐ Temporary Operating Permit
- ☐ Extension of Operating Permit

1B. Type of source

1C. Plant in which source is located

☐ NEW ☐ EXISTING

1D. Expected date of completion

1E. If source is new, does it replace another source (describe source replaced)

☐ YES ☐ NO

2A. Owner of source

2B. Employer I.D. No. (Federal)

3A. Owners designation of source and/or plant if any

3B. Location of source (Street address or Route No.)

Political Subdivision  
(Township, etc.)

County

3C. Mailing address (Street or P.O. Box, City, Zip Code)

3D. Telephone No.

4. Official signing application must be an agent of the Company having primary responsibilities for operation of the facility to which this application applies. Although he may not have participated in the design of the facility he should be responsible for approval of the design.

**AFFIDAVIT**

I, \_\_\_\_\_, being duly sworn according to law depose and say that I am the official having primary responsibility for the design and operation of the facilities to which this application applies and that the information included in the foregoing application is true to the best of my knowledge, information and belief.

Sworn to and subscribed before me this  
\_\_\_\_\_ day of \_\_\_\_\_

1976.

Signature

Notary Public

Title

Section B.1 Incinerators and Flares			
<b>1. INCINERATOR AND WASTE</b>			
A. Manufacturer	B. Model	C. Class	D. <input type="checkbox"/> Multiple chambered <input type="checkbox"/> Controlled air
E. Rated capacity	F. Type of waste <i>Waste Water Cooling Plant</i>		G. BTU content as fired
H. If type 5,6 or special waste attach proximate and ultimate analysis	I. Density of waste (lbs/cu. yd.)	J. Daily amount <input type="checkbox"/> Estimated <input type="checkbox"/> Actual	
<b>2. PRIMARY COMBUSTION CHAMBER</b>			
A. Volume (cu. ft.)	B. Effective grate area (sq. ft.) <i>N.A.</i>	C. % Excess air <i>30</i>	
D. % Air applied as overfire air		E. % As underfire	
F. Ignition burner type and fuel	G. Number of burners	H. Capacity of each (BTU/hr.)	
<b>3. SECONDARY COMBUSTION CHAMBER AND/OR AFTERBURNERS</b>			
A. Volume (cu. ft.)	B. Max. gas velocity (ft./sec.)	C. Temperature (°F)	
D. Estimated hold time of gases (sec.) Show calculations			
E. Burner type and fuel	F. Number of burners	G. Capacity of each (BTU/hr.)	
<b>4. DRAFT CONTROLS</b>			
<input type="checkbox"/> A. Barometric damper      Windshielding <input type="checkbox"/> Yes <input type="checkbox"/> No			
<input type="checkbox"/> B. Guillotine or sliding damper			
<input type="checkbox"/> C. Induced draft fan Capacity (SCFM)			
5. Total Heat Release (if multiple chambered) Excluding Ash Pit in BTU/hr./cu. ft.			
<b>6. MISCELLANEOUS DEVICES AND CONTROLS</b>			
<input type="checkbox"/> A. Automatic loading device (Describe)			
<input type="checkbox"/> B. Self-closing doors			
<input type="checkbox"/> C. Spark arrestor			
<input type="checkbox"/> D. Flame failure protection equipment			
<input type="checkbox"/> E. Method of creating turbulence for combustion gases (Describe)			
<input type="checkbox"/> F. Method of cleaning secondary or settling chamber (Describe)			
<input type="checkbox"/> G. Other interlocking devices or controls (Describe)			
7. <input type="checkbox"/> Outdoor Installation <input type="checkbox"/> Indoor Installation (Describe method of supplying combustion air)			

8. FLARES	
A. Maximum and average SCFM burned	B. % Sulfur of waste gas
<input type="checkbox"/> C. Automatic ignition system	
<input type="checkbox"/> D. Controls to prevent smoking	
<input type="checkbox"/> E. Steam injection	
<input type="checkbox"/> F. Noise reducing device	
9. OPERATING SCHEDULE	
<i>describe both</i> <i>flares and incinerator</i> _____ hours/day _____ days/week _____ weeks/year	
10. SEASONAL PERIODS (MONTHS)	
Operating	Non-Operating
_____ to _____	_____ to _____
11. If incinerator is rated at 50 tons per day or more, describe fully the facilities provided to record the daily burning rate and hours of operation.	
<div style="text-align: center; font-size: 24px; font-weight: bold;">N.A.</div>	
12. Describe modifications to incinerator in detail.	
<div style="text-align: center; font-size: 24px; font-weight: bold;">N.A.</div>	
13. Has application been made for a Solid Wastes Disposal Permit?	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
14. Briefly describe the method of handling any waste water from this installation and associated air pollution control equipment (Is a Water Quality Management Permit needed? <input type="checkbox"/> Yes <input type="checkbox"/> No )	
<div style="text-align: center; font-size: 24px; font-weight: bold;">N.A.</div>	
15. Attach any and all additional information necessary to perform a thorough evaluation of the extent and nature of emissions from this incinerator.	
<div style="text-align: center; font-size: 24px; font-weight: bold;">N.A.</div>	

## Section D. Flue And Air Contaminant Emission Information

## 1. STACK AND EXHAUSTER

A. Exhauster (attach fan curves)

\_\_\_\_ HP (a) \_\_\_\_\_ RPM

B. Stack height (ft)

C. Stack diameter (ft)

D. Weather cap

☐ Yes ☐ No

E. Indicate on an attached sheet the location of sampling ports with respect to exhaust fans, breeching, etc. Give all necessary dimensions.

F. Can the control equipment be bypassed? (If Yes, explain)

☐ Yes ☐ No

N A

## 2. ATMOSPHERIC EMISSIONS

A. Particulate matter emissions (lbs/hr or gr/SCF Dry)

B. Gaseous contaminant emissions

Contaminants

Concentration

(1) \_\_\_\_\_ ppm (Vol.) \_\_\_\_\_ lbs/hr

(2) \_\_\_\_\_ ppm (Vol.) \_\_\_\_\_ lbs/hr

(3) \_\_\_\_\_ ppm (Vol.) \_\_\_\_\_ lbs/hr

C. Outlet volume of exhaust gases

\_\_\_\_\_ CFM

(a) \_\_\_\_\_ °F

\_\_\_\_\_ % Moisture

---

*Section E Miscellaneous Information*

---

1. Describe fully facilities to monitor and record the emission of air contaminants. Provide detailed information to show that the facilities provided are adequate. Include cost and maintenance information. Periodic maintenance reports are to be submitted to the Department.

- 
2. Attach Air Pollution Episode Strategy (if applicable)

- 
3. Briefly describe the general nature of the area in which the source is located.

- 
4. Attach calculations and any additional information necessary to thoroughly evaluate compliance with all the applicable requirements of Article III of the Rules and Regulations of the Department of Environmental Resources and those requirements promulgated by the Administrator of the United States Environmental Protection Agency pursuant to the provisions of the Clean Air Act.

- 
5. List all attachments made to this Application.



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APPENDIX N

APPLICABLE CODES AND STANDARDS DESIGN AND  
CONSTRUCTION OF COAL GASIFICATION FACILITY FOR COMPANY

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**memorandum****Gilbert/Commonwealth**

September 15, 1977

to: C. A. Bolez, Morgantown Road  
from: J. T. Stewart  
subject: Applicable Codes and Standards  
Design and Construction of Coal  
Gasification Facility for  
Company

The design work by Gilbert, and the construction work by all contractors, is being done in accordance with the following applicable codes and standards:

1. Industrial Board, Pennsylvania Department of Labor and Industry.
2. Buildings Division, Pennsylvania Department of Labor and Industry.
3. Pennsylvania Division of Elevators, Bureau of Occupational and Industrial Safety
4. Pennsylvania Fire and Panic Regulations
5. Pennsylvania Boiler Division (Steam Drum and Gasifier Jacket)
6. Pennsylvania Department of Environmental Resources
7. ASME - Section VIII and IX ( $H_2S$  Adsorption Tower)
8. API - (Tar and Oil Tanks)
9. Process Piping - ASTM and ANSI
10. National Fire Protection Association (NFPA)
11. National Electrical Code
12. American Society for Testing Materials (ASTM)
13. American Concrete Institute (ACI)
14. American Welding Society (AWS)
15. American Iron and Steel Institute (AISI)
16. Steel Structures Painting Council
17. Department of Labor Occupational Safety and Health Standards Part 1910 and 1926 (OSHA)

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## 8.0 THE INDIANA CASE STUDY

This section describes the case postulated for Indiana and reports on the results of interviews with officials of the Indiana State Board of Health, the Indiana Department of Natural Resources, and the Vigo County Air Pollution Control Board.

We would like to thank the following individuals who have generously provided assistance:

### INDIANA STATE BOARD OF HEALTH

Ralph C. Pickard, Assistant Commissioner for  
Environmental Health  
Keith Bauges, Modeling and Data Analysis Section,  
Air Pollution  
John L. Doss, Chief, Plan Review and Permit Section,  
Air Pollution  
Oral H. Hert, Director, Bureau of Engineering  
Daniel Magoun, Solid Waste Management  
Malven L. Olson, Special Projects,  
Air Pollution Control  
Susan A. Shadley, Attorney, Air Pollution

### INDIANA DEPARTMENT OF NATURAL RESOURCES

William J. Andrews, Deputy Director  
Robert F. Jackson, Chief, Division of Waters  
Victor H. Wenning, Assistant Chief, Division of Waters

### VIGO COUNTY AIR POLLUTION CONTROL BOARD

Walter Fox, Engineer

## 8.1 Hypothetical Case for Indiana

Indiana was selected by the Office of Resource Applications for a hypothetical case because of its large reserves of coal, and thus, the potential market for low-Btu coal gasification in Indiana.

MITRE selected Vigo County for the hypothetical case on the basis of coal reserves, coal mining activity, community business patterns, and air quality (the entire county is a nonattainment area for sulfur dioxide and the northern two-thirds of the county is a nonattainment area for particulates). Basic assumptions and alternatives are presented in Figure 8-1. The industry was postulated to be a container glass manufacturer that was converting to low-Btu coal gasification. Based on an output of 100 tons per day of glass, emissions were estimated. The  $\text{SO}_2$  emissions produced by the sulfur in the coal feed will be less than 4.4 tons per day at design plant capacity. It is assumed that stack gas sulfur content will be required since the hypothetical plant site is in a non-attainment area. Liquid effluents are expected to be negligible and discharged into an existing sewer system. Based on discussions with Indiana state agencies, the differences in conditions stated in the base and alternative assumptions would make little difference in the regulatory process.

## 8.2 Regulatory Requirements

A potential user of coal gasification who wishes to build a new plant or modify an existing plant to use low-Btu coal gasification in Indiana would be required to deal with several Federal and state agencies.

In areas other than environmental protection, the major requirements with which a low-Btu coal gasification project must comply are

BASE ASSUMPTIONS:

- Existing plant producing glass in Vigo County
- Existing National Pollutant Discharge Elimination System permit (for water discharge)
- Sanitary wastes to existing sewer
- Sulfur and particulate stack gas cleanup
- Existing sanitary landfill for ash
- Vigo County bituminous coal used

Moisture - 13.4%  
Volatiles - 35.5%  
Fixed carbon - 41.2%  
Ash - 9.9%  
Sulfur - 2.6%  
Heating Value - 11,050 Btu/lb

ALTERNATIVES:

- New plant
- No landfill

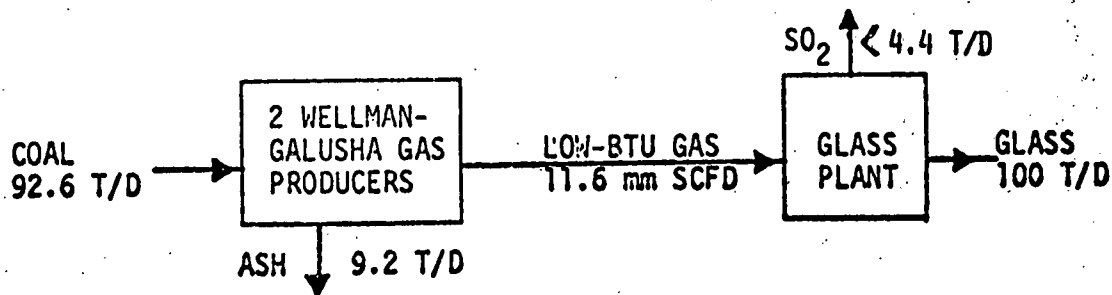


FIGURE 8-1  
HYPOTHETICAL CASE OF COAL GASIFICATION  
IN INDIANA



related to Occupational Safety and Health Administration (OSHA) standards. Because OSHA does not issue permits, interviews with State OSHA officials on the previous cases in this study indicate that these officials have little experience with low-Btu coal gasification projects, and thus, have few comments to offer. At the State and county level, a low-Btu coal gasification project must deal with building and construction permits. Project staff interviewed in the other cases have few concerns about these permits. For the above reasons, interviews in Indiana have focused on environmental permits, which cause the greatest concern to those interviewed in other States.

The following sections discuss the environmental regulatory requirements.

#### 8.2.1 Federal Agencies

The Environmental Protection Agency (EPA) is the major Federal agency that would be involved in an action in Indiana. EPA would issue the preconstruction permit covering actions under the program for the Prevention of Significant Deterioration (PSD) of air quality, as outlined in the 1977 Clean Air Act Amendments (PL 95-95) and subsequent regulations, for plants in clean air areas.

The proposed new regulations (44 Federal Register 51924-51959, 5 September 1979), change the definition of "potential to emit" to mean the capability at maximum design capacity to emit a pollutant after the application of air pollution control equipment rather than before

as had been previously interpreted. If carried through to the final regulations, this change would remove low-Btu industrial gasifiers with control equipment from the major stationary source category and would eliminate requirements for Federal PSD review.

Other potentially applicable programs are the New Source Performance Standards (NSPS) and National Emissions Standards for Hazardous Air Pollutants (NESHAP). Neither is likely to be of concern. NSPS are applicable to certain designated categories of new stationary sources of air pollution and have not been issued for low-Btu coal gasification. NESHAP are applicable to certain stationary sources, both existing and new, that handle those materials that have been designated as being hazardous (asbestos, beryllium, mercury, and vinyl chloride). Since none of these would be emitted by a low-Btu coal gasification facility, NESHAP would not apply.

The authority for issuing water discharge permits under the National Pollution Discharge Elimination System (NPDES) has been delegated to Indiana, although EPA retains overview authority.

#### 8.2.2 State Agencies

In Indiana, the Board of Health is the state agency responsible for compliance with air, water, and solid waste regulations. State regulatory requirements are shown in Tables 8-1 through 8-3.

#### Air Programs

Air quality control is the responsibility of the Air Pollution Control Board (APCB), which carries out New Source Reviews for new

TABLE 8-1

## AIR PERMITS REQUIRED IN INDIANA

Regulation	Permit	Granting Agency	Submittal
IN Permits Regulation (APC 19), 2	Construction	Air Pollution Control Board (APCB)	<p>Completed form giving:</p> <ul style="list-style-type: none"> <li>• site information</li> <li>• specifications and drawings of the source</li> <li>• the nature and amount of emissions</li> <li>• manner in which source will be operated and controlled</li> <li>• public notice in Indianapolis and local newspapers</li> </ul>
	Operation	APCB	<p>Applicant must show that:</p> <ul style="list-style-type: none"> <li>• source will operate without violating any state regulations</li> <li>• source will not prevent or interfere with attainment or maintenance of NAAQS</li> <li>• emissions will be controlled to meet standards</li> </ul>

TABLE 8-2

## WATER PERMITS REQUIRED IN INDIANA

Regulation	Permit	Granting Agency	Submittal
IN NPDES Permit Regulation (SPC 15) (IN is approved for issuance of NPDES Permits) Part II - State Permits	Construction	Stream Pollution Control Board (SPCB)	Completed application giving: <ul style="list-style-type: none"> <li>• plans and specifications</li> <li>• description of project</li> </ul>
Part III - National Pollutant Discharge Elimination System Permits	Discharge of pollutants	SPCB	Completed NPDES application. Terms and conditions stated in permit

TABLE 8-3

## SOLID WASTE PERMITS REQUIRED IN INDIANA

Regulation	Permit	Granting Agency	Submittal
Solid Waste Management Permit Regulations (SPC 18), Chapter III	Operating Permit for Solid Waste Management Facilities	Stream Pollution Control Board (SPCB)	Completed form (State Form 34579) and plans, specifications, and description of the project
Chapter V of above	Disposal of Hazardous Waste	SPCB	Written request for approval giving: <ul style="list-style-type: none"> <li>• chemical analysis</li> <li>• physical characteristics</li> <li>• process description</li> <li>• proposed disposal site</li> <li>• name and address of waste hauler</li> <li>• amount and frequency of removal</li> </ul>
Industrial Waste Hauler Permit Regulation (SPC 17)	Industrial Waste Hauler	SPCB	Completed form.

sources that have emissions above certain limits. The extent of the analysis is determined by the nature and size of the sources and their locations, as well as the applicable guidelines concerning the particular category of sources. Prior to any detailed analysis, a preliminary screening study is conducted to assess the source impact and whether a more detailed analysis is required. Detailed air impact reviews follow five successive phases--1) air quality level estimates, 2) premodeling review, 3) data assembly, 4) modeling studies, and 5) final conclusions.

Construction and operation permits are necessary regardless of whether a facility is subject to new source review. The application form for the construction permit is shown in Appendix O and the application form for the operation permit is shown in Appendix P. The APCB prefers that an applicant not apply for both permits at the same time. Conditions can be transferred from the construction permit into the operation permit, or a temporary permit may be issued, if time is a critical factor. A public notice of the application for a permit must be published in an Indianapolis newspaper and in a local newspaper. Public hearings seldom have resulted from the notice.

#### Water Programs

The application for a NPDES permit (shown in Appendix Q) is sent to the Permit Section of the Division of Water Pollution Control. Under the NPDES program, permits are issued for water discharges to surface waters from all new and existing facilities. New facilities

are defined as wholly new sources, total reconstruction of sources, or major alterations of sources, the construction of which began after the publication of New Source Performance Standards (NSPS) promulgated by EPA applicable to those sources. EPA also sets forth effluent guidelines, which the state carries out, for permitting of existing sources. A NPDES permit for an existing source is a discharge or operating permit. A permit is not necessary for discharges into a municipal sewer. The stipulations in the permit itself give the allowed levels of pollutants that can be discharged into surface waters by a facility.

In addition to the NPDES permit, an application for a construction permit must also be filed with the Stream Pollution Control Board (see Appendix R).

If a low-Btu coal gasification facility were added to a plant with existing NPDES and state discharge permits, modification of these permits would be necessary. If there were no previous onsite storage of coal, a new discharge permit for the coal pile will be necessary if it is located outdoors. If the plant were discharging to a municipal sewer system, that system would be responsible for any necessary changes in its operating permit.

For construction in a floodplain, approval is necessary from the Department of Natural Resources, Division of Water. Appendix S contains a copy of the application and accompanying instructions for

this permit. The Department of Natural Resources would have no contact with any facility not in a floodplain.

#### Solid Waste Programs

Solid waste management programs are administered by the Stream Pollution Control Board. An application form for the solid waste management facility construction/operating permit is given in Appendix T. Instructions for obtaining approval to dispose of hazardous waste are given in Appendix U. An analysis of the waste is necessary for either onsite or commercial offsite waste disposal. Ash is treated on a case-by-case basis to determine whether it will be classified as hazardous.

#### 8.2.3 County Agencies

Vigo is one of three counties in Indiana (the others being St. Joseph and Marion) that have been delegated authority for enforcing the State Implementation Plan for the attainment of air quality standards. The Vigo County Air Pollution Control Board is waiting on the establishment of baseline data for modeling to develop a standardized procedure for the enforcement. They expect to have a three-step review procedure that will include engineering analysis, modeling analysis, and public comment. Currently, the State Air Pollution Control Board sends construction and operation permit applications to the county, which then makes recommendations.

Some Indiana counties have their own solid waste requirements, but Vigo County does not.



#### 8.2.4 Time Constraints

Indiana permit regulations specify definite time requirements on the part of applicants, as shown in Table 8-4. There are no requirements on the state agencies, although the APCB usually takes four months to a year to act on applications.

#### 8.3 Comments and Recommendations from Indiana Agencies

All agencies interviewed were cooperative and support low-Btu coal gasification in the State. However, the agencies lack familiarity with the detailed operational features of the technology. The responsibilities for permit processing and review are dispersed, no general information on the permitting process has been prepared for the public, and there are no plans to change this situation. The Office of the Lieutenant Governor is the usual contact point for new industry coming into the State. Based on the conversations with state authorities, this contact may not have been effective, however, because there was still much confusion among industry about which agencies are responsible and which permits are required.

Each of the agencies interviewed had comments and recommendations on how potential users of low-Btu coal gasification could best work with the regulatory system. These are summarized below.

- A potential applicant should determine first the feeling toward the planned facility of the community in which this facility will be located. This will prevent delays due to unexpected adverse community reactions.

TABLE 8-4

## TIME LIMITS FOR ENVIRONMENTAL REGULATORY COMPLIANCE

Action	Agency Involved	Time Limits
<b>AIR</b> <ul style="list-style-type: none"> <li>• Construction Permit</li> <li>• Operating Permit</li> </ul>	Air Pollution Control Board (APCB) APCB	Decision time for APCB is usually 4-12 months. Submit application 60 days before startup date Permits effective up to 4 years Submit renewal application 120 days before permit expires
<b>WATER</b> <ul style="list-style-type: none"> <li>• NPDES Construction permit</li> <li>• NPDES Pollutant Discharge Permit</li> </ul>	Stream Pollution Control Board (SPCB) SPCB	Submit application 60 days before start of construction (unless Agency approves shorter time period) Submit application 180 days before beginning discharge
<b>SOLID WASTE</b> <ul style="list-style-type: none"> <li>• Construction and Operating Permit for Solid Waste Management</li> <li>• Disposal of Hazardous Waste</li> <li>• Industrial Waste Hauler Permit</li> </ul>	SPCB SPCB SPCB	Submit application 60 days before construction startup Submit application at least 60 days before start of operation, may submit with construction permit Permit is valid for 2 years from effective date Submit application 90 days before start of operation

- After application forms have been sent in, the applicant should arrange informal meetings with the individual engineers in the regulatory agency who will be considering the application.
- The applicant should submit the forms to the state regulatory agency, which will determine whether any local or county agencies may be involved. The state regulatory agency will then inform the applicant of the necessary contacts to be made.
- In selecting environmental control alternatives, the applicant should know the technologies and present to the Board of Health the technology which he has selected. The applicant should not expect the Board of Health to dictate the environmental control procedures or technology to be used. The role of this Board is to give approval rather than advice.

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APPENDIX O  
APPLICATION FOR CONSTRUCTION PERMIT  
FROM AIR POLLUTION CONTROL BOARD

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APPENDIX O

STATE OF INDIANA  
AIR POLLUTION CONTROL BOARD

CONSTRUCTION PERMIT APPLICATION

Instructions

PLEASE READ THIS BEFORE FILLING OUT THE REST OF THIS FORM

1. Fill out Page 1 (General Information) as complete as possible.
2. Fill out only those information sheets that apply to the type of equipment being installed.
3. Plans and specifications should accompany this application. If the cost of the air pollution equipment is over \$10,000, a Professional Engineer registered in Indiana must certify these plans. The information to be certified is:
  - a. the control efficiency of the equipment
  - b. the design and capacity will meet requirements
  - c. the equipment will be installed and connected in such a manner to meet design efficiency and capacity
4. Sixty (60) days before start-up of this new equipment or as designated on the construction permit, an application for an operating permit must be submitted. A letter may be submitted in lieu of submitting a formal operating permit application where a construction permit has been issued with no changes made during construction. Please include the expected date of start-up.

If the construction permit has been issued for a new piece of equipment and an operating permit application for the rest of the plant has been submitted, the same procedure can be used.
5. If a new boiler is being installed and there are existing boilers, all information for all boilers must be submitted. Also, please indicate if the new boiler being installed is to replace an existing boiler or is to serve as additional capacity for your operation.



STATE OF INDIANA  
Air Pollution Control Board  
CONSTRUCTION PERMIT APPLICATION

General Information

Company Name \_\_\_\_\_ Phone \_\_\_\_\_

Mailing Address \_\_\_\_\_  
Street, P.O. Box \_\_\_\_\_ City \_\_\_\_\_ Zip Code \_\_\_\_\_

Company Location \_\_\_\_\_  
(If Different) No., St., Rd., or Hwy. \_\_\_\_\_ City \_\_\_\_\_ County \_\_\_\_\_

\_\_\_\_\_  
Give Directions to City if No Street Number

Person to Contact on Matters of Air Pollution Control: \_\_\_\_\_  
Name \_\_\_\_\_

\_\_\_\_\_  
Title

\_\_\_\_\_  
Phone

If you have changed company name or location in the past two (2) years please list  
the old name(s) below:

Name \_\_\_\_\_

Location \_\_\_\_\_

Standard Industrial Classification \_\_\_\_\_  
(If you don't know this number give a short description of your business)

Estimated cost of air pollution equipment \$ \_\_\_\_\_

Is this construction of an entire new plant? \_\_\_\_\_

If not, what is being installed? \_\_\_\_\_

Date construction will start \_\_\_\_\_

Date construction will be completed \_\_\_\_\_

I hereby certify that the information submitted this \_\_\_\_\_ day of \_\_\_\_\_

19 \_\_\_\_\_ is true and accurate to the best of my knowledge.

Signature \_\_\_\_\_

Title \_\_\_\_\_

JAP/pmb  
01/05/77

STATE OF INDIANA  
Air Pollution Control Board

Location and Plot Plan

Company Name \_\_\_\_\_

Identify your business in relation to nearby streets, roads or buildings.  
Show stacks and other sources of emissions. A company plot plan showing this  
information may be submitted in lieu of this page.

A large grid for a location and plot plan. The grid is 16 squares wide and 16 squares high. In the top right corner, there is a north arrow pointing upwards, with the letter 'N' below it. In the bottom right corner, there is a label 'Scale' followed by a line for a scale bar.

STATE OF INDIANA  
Air Pollution Control Board

Refuse Disposal and Incinerator Information

Company Name \_\_\_\_\_

Refuse Disposal

\_\_\_\_\_ Off site

\_\_\_\_\_ On site \_\_\_\_\_ Tons (Estimated)  
yr

If on site check method

\_\_\_\_\_ Used for fuel \_\_\_\_\_ Conical Metal Burner

\_\_\_\_\_ Incinerator \_\_\_\_\_ Open Burning

\_\_\_\_\_ Landfill \_\_\_\_\_ Other (specify) \_\_\_\_\_

If disposal is by incinerator, fill out the following information:

Manufacturer \_\_\_\_\_ Model \_\_\_\_\_

Design Capacity \_\_\_\_\_ lb/hr Effluent Gas Volume \_\_\_\_\_ cfm

\_\_\_\_\_ Single chamber \_\_\_\_\_ Multiple chamber \_\_\_\_\_ Afterburner

\_\_\_\_\_ Primary chamber burner \_\_\_\_\_ Secondary chamber burner

Burner Fuel Used \_\_\_\_\_ Exit Gas Temperature \_\_\_\_\_ °F

Stack data (for incinerator)

Code \_\_\_\_\_ Height \_\_\_\_\_ Diameter \_\_\_\_\_

Operating time for incinerator

\_\_\_\_\_ hrs/day \_\_\_\_\_ a.m. to \_\_\_\_\_ p.m. \_\_\_\_\_ days/wk \_\_\_\_\_ wks/yr

Type of waste disposed (use IIA code listed on back \_\_\_\_\_)

05/05/77

Refuse Disposal and Incinerator Information  
(Continued)

Classification of Wastes

Type 0 - Trash, a mixture of highly combustible waste such as paper, cardboard, cartons, wood boxes, and combustible floor sweepings, from commercial and industrial activities. The mixtures contain up to 10% by weight of plastic bags, coated paper, laminate paper, treated corrugated cardboard, oily rags and plastic or rubber scraps.

Type 1 - Rubbish, a mixture of combustible waste such as paper, cardboard cartons, wood scrap, foilage and combustible floor sweepings, from domestic, commercial and industrial activities. The mixture contains up to 20% by weight of restaurant or cafeteria waste, but contains little or no treated papers, plastic or rubber wastes.

Type 2 - Refuse, consisting of an approximately even mixture of rubbish and garbage by weight.

Type 3 - Garbage, consisting of animal and vegetable wastes from restaurants, cafeterias, hotels, hospitals, markets and like installations.

Type 4 - Human and animal remains, consisting of carcasses, organs and solid organic wastes from hospitals, laboratories, abattoirs, animal pounds, and similar sources, consisting of up to 85% moisture, 5% incombustible solids and having a heating value of 1,000 BTU per pound as fired.

Type 5 - By-product waste, gaseous, liquid or semi-liquid, such as tar, paints, solvents, sludge, fumes, etc. from industrial operations. BTU values must be determined by the individual materials to be destroyed.

Type 6 - Solid by-product waste, such as rubber, plastics, wood waste, etc. from industrial operations. BTU values must be determined by the individual materials to be destroyed.

STATE OF INDIANA  
Air Pollution Control Board

Fuel Combustion Information

D

Company Name \_\_\_\_\_

If you have no fuel combustion equipment check here \_\_\_\_\_

**BOILER DATA**

Boiler Identification

Capacity (10<sup>6</sup> BTU/hr.

input or hp) (specify units)

Boiler efficiency %

Method of feed

**EMISSION CONTROL EQUIPMENT**

Type of Particulate control  
and % efficiency

**FUEL**

Type Used

% Ash see instructions

% Sulfur see instructions

Heating value (specify units)

Amt. burned/ yr (specify units)

Use MM for 10<sup>6</sup> cu ft of gas)

% Dec. - Feb.

% Mar. - May

% June - Aug.

% Sept. - Nov.

**NORMAL OPERATING SCHEDULE**

Hours per day

\_\_\_\_ a.m. to \_\_\_\_ p.m.

Days per week

Weeks per year

% used for space heating

**STACK DATA**

Plant Site Plot Plan Code

Height (above grade) ft.

Diameter (inside) ft.

Gas discharge temperature °F

Gas flow rate SCF/min

STATE OF INDIANA  
Air Pollution Control Board

Process Information

Company Name \_\_\_\_\_

Products produced \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Raw Materials (list each type) lbs/hr under normal operation

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Operating schedule

\_\_\_\_\_ hours/day      \_\_\_\_\_ days/week      \_\_\_\_\_ weeks/year

Control Equipment

Type of control		
Efficiency %		
Stack height (feet above ground)		
Stack Diameter (inches)		
Exit temperature °F		
Gas flow rate (cfm)		

Process Weight Rate \_\_\_\_\_ lb/hr \_\_\_\_\_ tons/yr

05/05/77

STATE OF INDIANA  
Air Pollution Control Board

Company Name \_\_\_\_\_

Flow Diagram

Show a simple sketch of your operation from raw materials coming in to finished products. Show points of emissions including stacks. If there is any air pollution control equipment, show its locations, what process it is controlling, control equipment code, and removal efficiency. Include an hourly rate of material flow throughout the process.

05/05/77

## STATE OF INDIANA

## Air Pollution Control Board

Outdoor Material Storage and Handling

Company Name \_\_\_\_\_

Type of Material Stored \_\_\_\_\_

Amount Stored \_\_\_\_\_ tons/year

Any Protection from Wind? \_\_\_\_\_ If yes, explain \_\_\_\_\_

Any Spray System? \_\_\_\_\_ If yes, explain \_\_\_\_\_

Handling Method

_____ Manual	Rate _____ lb/hr
_____ Conveyor	Rate _____ lb/hr
_____ Pneumatic	Rate _____ lb/hr
_____ Other	Rate _____ lb/hr

Storage Silos or Bins

<u>Material Stored</u>	<u>Capacity (Tons)</u>	<u>How Loaded?</u>	<u>How Often Loaded?</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Control Equipment

Type of Control		
Efficiency %		
Process Controlled		
Stack Height (ft. above ground)		
Stack Diameter (inches)		
Exit Temperature °F		
Gas Flow Rate (cfm)		



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APPENDIX P

APPLICATION FOR OPERATION PERMIT  
FROM AIR POLLUTION CONTROL BOARD

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STATE OF INDIANA  
AIR POLLUTION CONTROL BOARD  
OPERATION PERMIT APPLICATION

INSTRUCTIONS

PLEASE READ THIS BEFORE FILLING OUT THE FORM, PROVIDE PERMIT APPLICATION FOR EACH PLANT IN INDIANA AND MAKE SURE COMPANY NAME IS ENTERED ON ALL SHEETS.

General Information Sheet

- 1) Company Name - Enter complete name of company
- 2) Plant Location - If unable to supply street address give road intersections, distance and direction from nearest town or similar description to locate physical site. Do not use box numbers or other such non-descriptive designations.
- 3) Name change - Any changes in company name or ownership since last application filing, even if over four (4) years ago, should be entered.

Plot Plan Codes

- 1) Points of emissions (stacks, fans, exhausts from control equipment, etc.) should be labeled by a code (A,B,C, etc.) so that the information submitted can be more easily understood. These codes should be entered on other pages as indicated. If a fan is used for employee comfort only, no information on this fan is required. If a control device exhausts through a stack, both should be given the same code.
- 2) For permit renewals where Plant Site Plot Plan (page B-2) was filed with original application, no new plot plan will be needed for minor or no changes.
- 3) A company plot plan drawing showing necessary information can be used in lieu of furnished Plant Site Plot Plan (page B-2).
- 4) Please note new Area Site Plot Plan page (B-3 and B-4). Read instructions on front of Area Site Plot Plan page to determine if it is necessary for you to fill out the front and back of this page.

Fuel Combustion

- 1) Complete for boilers or other indirect heat sources only.
- 2) Boiler Identification - If more than one fuel is used in a boiler, use separate columns for each fuel. Enter the same code in each column. Example: one boiler burns coal and wood, a second boiler burns only coal. The first should be labeled as A-1, a coal-fired boiler and A-2, a wood-fired boiler. A separate column should be filled out for each fuel. The second boiler should be labeled as B.

- 3) Boiler capacity - Use millions of BTU/hr or hp.
- 4) Method of feed - For solid fuels state type of boiler feed; spreader stoker, pulverized general, pulverized wet or dry bottom, cyclone, hand-fired, etc.
- 5) Fuel Analysis
  - a) Coal, give the % ash, % sulfur, heating value in BTUs/lb.
  - b) Fuel oil, give U.S. Grade number, % sulfur for residual oil, heating value in BTUs/gallon.
  - c) Gaseous fuels - give the type of fuel and the heating value in BTUs/ft<sup>3</sup> - use "MM" for million.
  - d) Wood - give the % ash and heating value if you know them - specify type and amount of wood, i.e., 10% bark, 40% "high moisture" wood, 50% "dry" wood.
- 6) Amount burned per year - specify amount for each boiler.

#### Process Information

1) Use general process information sheet only when a specific form for your industry is not available. See bottom of page for specific forms available.

2) Products produced - List all major products.

3) Raw materials - Include all major raw materials and those which may contribute to the emission of one or more of the following: Particulates, sulfur dioxide, carbon monoxide, hydrocarbons, nitrogen oxides, mercury, beryllium, asbestos or vinyl chloride.

#### Outdoor Material Storage

List only those products stored that can become airborne. Materials received in containers not opened outside should not be included.

---

Check forms required and mail to Air Pollution Control Division, 1330 West Michigan Street, Indianapolis, IN 46206.

<input type="checkbox"/> Asphalt	<input type="checkbox"/> Foundry	<input type="checkbox"/> Printing
<input type="checkbox"/> Brick & Clay Products	<input type="checkbox"/> Grain Elevator	<input type="checkbox"/> Sand & Gravel
<input type="checkbox"/> Compressor Stations	<input type="checkbox"/> Lime Mfg.	<input type="checkbox"/> Stone Quarries
<input type="checkbox"/> Concrete Batching	<input type="checkbox"/> Paint & Varish Mfg.	<input type="checkbox"/> Surface Coating
<input type="checkbox"/> Degreasing	<input type="checkbox"/> Petroleum Storage	<input type="checkbox"/> Woodworking
<input type="checkbox"/> Dry Cleaning	<input type="checkbox"/> Portland Cement Mfg.	

Enter company name and address on the other side before returning form request.

OFFICIAL USE ONLY

B-1

Return By \_\_\_\_\_

Inspector \_\_\_\_\_

STATE OF INDIANA  
AIR POLLUTION CONTROL BOARD  
OPERATION PERMIT APPLICATION

General Information

Company Name \_\_\_\_\_

Plant Location \_\_\_\_\_  
Street Address City County Zip Code

If Rural Plant: Give junction of two closest roads \_\_\_\_\_

Mailing Address for Plant if Different than Above:

Street Address City State Zip Code

Person to Contact on Matters of Air Pollution Control:

Name \_\_\_\_\_ Title \_\_\_\_\_ Phone \_\_\_\_\_

If you have changed company name of location in the past 4 years, please list the old name (s) below:

Name \_\_\_\_\_

Location \_\_\_\_\_

Standard Industrial Classification \_\_\_\_\_  
(If unknown, give a short description of business.)

Type of Permit Requested:

\_\_\_\_\_ Renewal \_\_\_\_\_ Operation \_\_\_\_\_ Change of Ownership \_\_\_\_\_ Relocation

If Renewal, list all equipment and production changes.

\_\_\_\_\_ Private \_\_\_\_\_ Utility Government (Local \_\_\_\_\_ State \_\_\_\_\_ Federal \_\_\_\_\_)

Year for which data is enclosed 19 \_\_\_\_\_.

I hereby certify that the information submitted this \_\_\_\_\_ day of \_\_\_\_\_ 19 \_\_\_\_\_  
is true and accurate to the best of my knowledge.

Signature \_\_\_\_\_

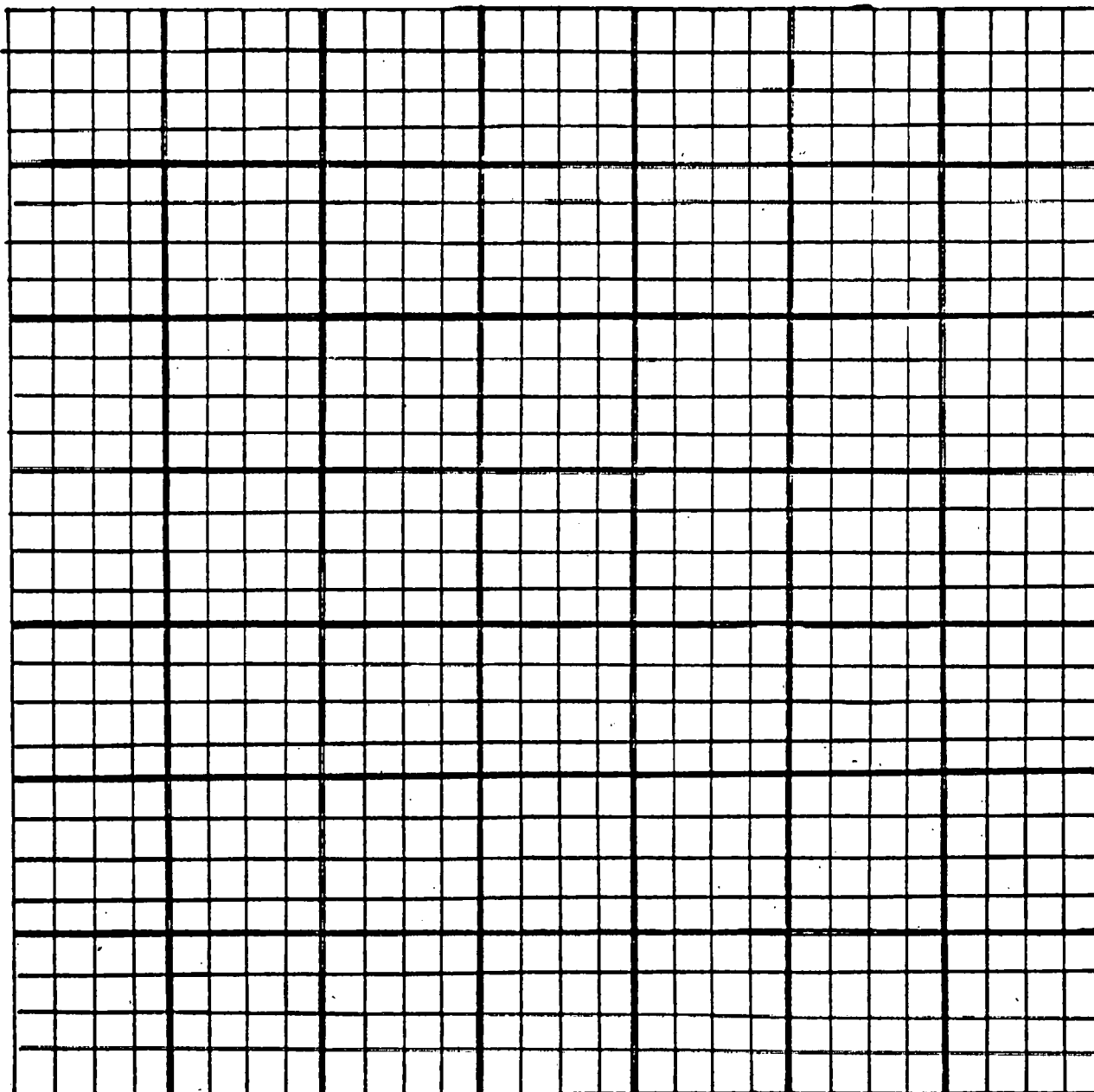
Title \_\_\_\_\_

STATE OF INDIANA  
AIR POLLUTION CONTROL BOARD

## Plant Site Plot Plan

Company Name \_\_\_\_\_

Locate your business in relation to nearby geographic features, roads, or buildings. Show stacks and other sources of emissions. A company plant site plot plan showing this information may be substituted for this page.



rev 9/78

Scale: 1 inch = \_\_\_\_\_ feet

STATE OF INDIANA  
AIR POLLUTION CONTROL BOARD

## Area Site Plot Plan

Company Name \_\_\_\_\_

Instructions

1. The grid sheet does not have to be completed if natural gas and/or liquid petroleum gas (LPG) are the only fuels used.
2. For all other fuels, list:
  - A. Fuel type \_\_\_\_\_
  - B. Ash Content (%) \_\_\_\_\_
  - C. Sulphur Content (%) \_\_\_\_\_
  - D. Heating value, on an "as received" basis (list units) \_\_\_\_\_  
\_\_\_\_\_
  - E. Amount burned/year (list units) \_\_\_\_\_  
\_\_\_\_\_
3. If stack height is 50 feet or greater above grade, then indicate on the grid sheet:
  - A. Stack (s), emission source (s) and height.
  - B. The location and height of the tallest buildings or structures (not more than five required) which are within a distance equal to twenty times the stack height and which exceed 40% of the stack height.
4. Locate the stack (s), buildings and structures in reference to roads, major structures and geographic - natural features.
5. See back of this sheet for Area Site Plot Plan grid sheet.

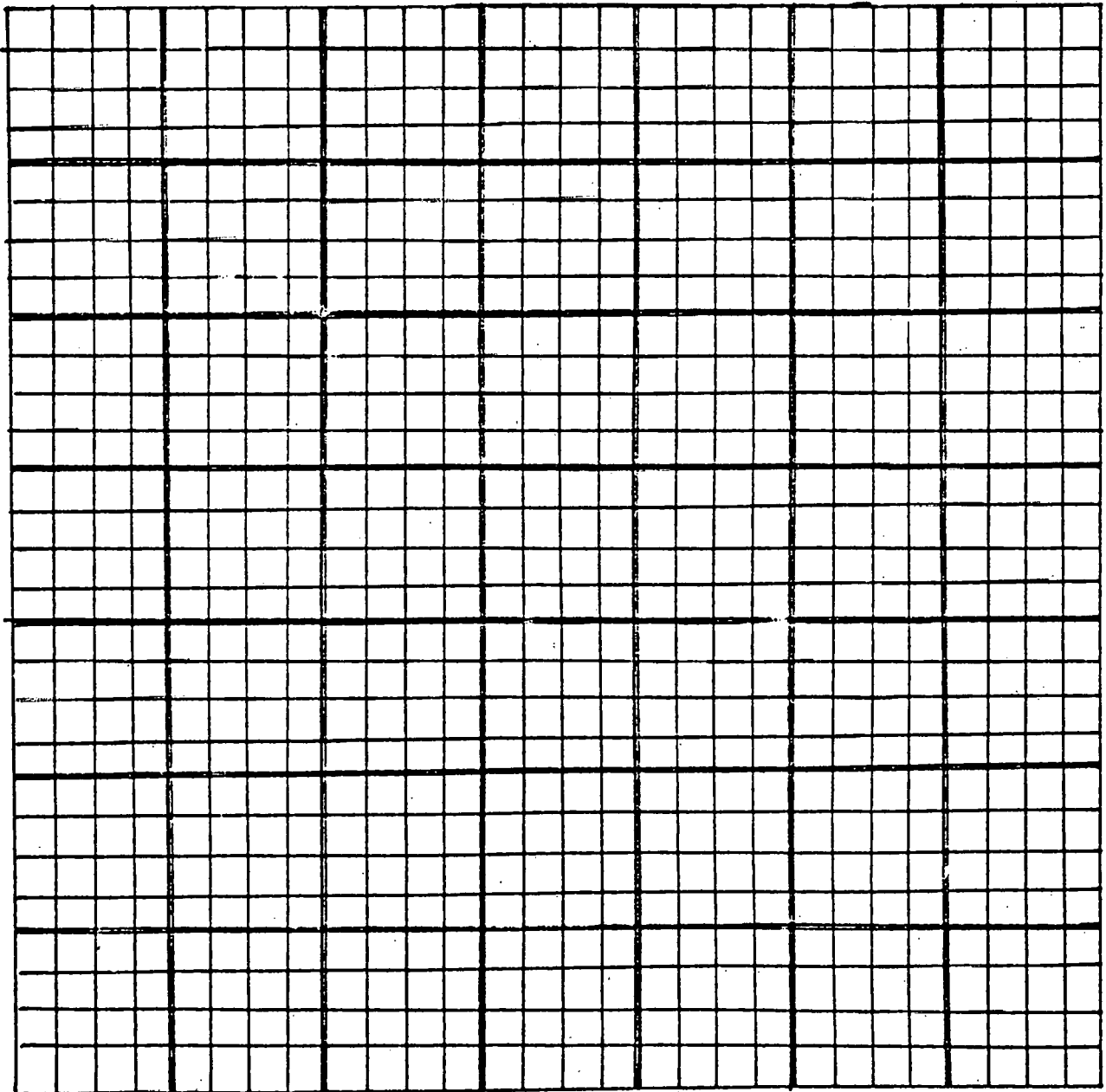


STATE OF INDIANA  
AIR POLLUTION CONTROL BOARD

B-4

Area Site Plot Plan

Locate stack(s) and other emission source(s) on the grid in reference to nearby geographic features, roads, and buildings. Indicate height of stack(s) and other required structures.



340

rev 9/78

Scale: 1 inch = \_\_\_\_\_ feet

STATE OF INDIANA  
Air Pollution Control Board

## Refuse Disposal and Incinerator Information

Company Name \_\_\_\_\_

Refuse Disposal

\_\_\_\_\_ Off site

\_\_\_\_\_ On site \_\_\_\_\_ Tons (Estimated)  
yr

If on site check method

\_\_\_\_\_ Used for fuel

\_\_\_\_\_ Conical Metal Burner

\_\_\_\_\_ Incinerator

\_\_\_\_\_ Open Burning

\_\_\_\_\_ Landfill

\_\_\_\_\_ Other (specify) \_\_\_\_\_

If disposal is by incinerator give Construction Permit No. \_\_\_\_\_

If no record of a Construction Permit, fill out the following information:

Year installed \_\_\_\_\_

Operating time for incinerator

\_\_\_\_\_ hrs/day \_\_\_\_\_ a.m. to \_\_\_\_\_ p.m. \_\_\_\_\_ days/wk \_\_\_\_\_ wks/yr

Type of waste disposed (use the code listed on back) \_\_\_\_\_

If seasonal use, indicate months of greatest use \_\_\_\_\_

If disposal is by incinerator, fill out the following information:

Manufacturer \_\_\_\_\_ Model \_\_\_\_\_

Design Capacity \_\_\_\_\_ lb/hr Effluent Gas Volume \_\_\_\_\_ scfm

\_\_\_\_\_ Single chamber \_\_\_\_\_ Multiple chamber \_\_\_\_\_ Afterburner

\_\_\_\_\_ Primary chamber burner \_\_\_\_\_ Secondary chamber burner

Burner Fuel Used \_\_\_\_\_ Exit Gas Temperature \_\_\_\_\_ °F

Stack data (for incinerator)

Plant Site Plot Plan Code \_\_\_\_\_ Height \_\_\_\_\_ Diameter \_\_\_\_\_

## Refuse Disposal and Incinerator Information (Continued)

### Classification of Wastes

**Type 0 - Trash**, a mixture of highly combustible waste such as paper, cardboard, cartons, wood boxes, and combustible floor sweepings, from commercial and industrial activities. The mixtures contain up to 10% by weight of plastic bags, coated paper, laminate paper, treated corrugated cardboard, oily rags and plastic or rubber scraps.

**Type 1 - Rubbish**, a mixture of combustible waste such as paper, cardboard cartons, wood scrap, foilage and combustible floor sweepings, from domestic, commercial and industrial activities. The mixture contains up to 20% by weight of restaurant or cafeteria waste, but contains little or no treated papers, plastic or rubber wastes.

**Type 2 - Refuse**, consisting of an approximately even mixture of rubbish and garbage by weight.

**Type 3 - Garbage**, consisting of animal and vegetable wastes from restaurants, cafeterias, hotels, hospitals, markets and like installations.

**Type 4 - Human and animal remains**, consisting of carcasses, organs and solid organic wastes from hospitals, laboratories, abattoirs, animal pounds, and similar sources, consisting of up to 85% moisture, 5% incombustible solids and having a heating value of 1,000 BTU per pound as fired.

**Type 5 - By-product waste**, gaseous, liquid or semi-liquid, such as tar, paints, solvents, sludge, fumes, etc., from industrial operations. BTU values must be determined by the individual materials to be destroyed.

**Type 6 - Solid by-product waste**, such as rubber, plastics, wood waste, etc., from industrial operations. BTU values must be determined by the individual materials to be destroyed.

STATE OF INDIANA  
AIR POLLUTION CONTROL BOARD

G

Outdoor Storage and Handling of Bulk Material

Company Name \_\_\_\_\_

Type of Material Stored \_\_\_\_\_

Amount Stored \_\_\_\_\_ tons/year Through put \_\_\_\_\_ tons/year

Any Protection from Wind? \_\_\_\_\_ if yes, explain \_\_\_\_\_

Any Dust-Control Spray System? yes \_\_\_\_\_ no \_\_\_\_\_ if yes, explain \_\_\_\_\_

Handling Method

_____	Manual	Rate _____	lb/hr
_____	Conveyor	Rate _____	lb/hr
_____	Pneumatic	Rate _____	lb/hr
_____	Other	Rate _____	lb/hr

Storage Silos or Bins

<u>Material Stored</u>	<u>Capacity (Tons)</u>	<u>How Loaded?</u>	<u>How Often Loaded?</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Control Equipment

Type of Control		
Efficiency %		
Process Controlled		
Stack Height (ft. above ground)		
Stack Diameter (inches)		
Exit Temperature °F		
Gas Flow Rate (scfm)		
Plant Site Plan Plot Code		

STATE OF INDIANA  
Air Pollution Control Board

Company Name \_\_\_\_\_

Flow Diagram

Draw a simple block diagram sketch of your operation from raw materials input to the finished products. Show points of emissions including stacks. Show location of any air pollution control equipment, the process it controls, control equipment code, and removal efficiency. Include an hourly rate of material flow throughout the process.

STATE OF INDIANA  
Air Pollution Control Board

Process Information

Company Name \_\_\_\_\_

Products produced \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Raw Materials: Give generic and trade name for each plus lbs/hr and tons/year  
processed under normal operation \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Operating schedule

\_\_\_\_\_ hours/day \_\_\_\_\_ days/week \_\_\_\_\_ weeks/year

Control Equipment

Type of control		
Efficiency %		
Stack height (feet above ground)		
Stack Diameter (inches)		
Exit temperature °F		
Gas flow rate (scfm)		

Finished Product Rate \_\_\_\_\_ lb/hr \_\_\_\_\_ tons/yr

STATE OF INDIANA  
Air Pollution Control Board  
Fuel Combustion Information

D

Company Name \_\_\_\_\_

If you have no fuel combustion equipment check here \_\_\_\_\_

BOILER DATA

Boiler Identification

Capacity (10<sup>6</sup> BTU/hr.  
input or hp) (specify units)

Boiler efficiency %

Method of feed

EMISSION CONTROL EQUIPMENT

Type of Particulate control  
and % efficiency

FUEL

Type Used

% Ash see instructions

% Sulfur see instructions

Heating value (specify units)

Amt. burned/ yr (specify units)  
Use MM for 10<sup>6</sup> cu ft of gas

% Dec. - Feb.

% Mar. - May

% June - Aug.

% Sept. - Nov.

NORMAL OPERATING SCHEDULE

Hours per day

\_\_\_\_ a.m. to \_\_\_\_ p.m.

Days per week

Weeks per year

% used for space heating

STACK DATA

Plant Site Plot Plan Code

Height (above grade) ft.

Diameter (inside) ft.

Gas discharge temperature °F

Gas flow rate SCF/min.

Refuse Disposal and Incinerator Information  
(Continued)

Classification of Wastes

Type 0 - Trash, a mixture of highly combustible waste such as paper, cardboard, cartons, wood boxes, and combustible floor sweepings, from commercial and industrial activities. The mixtures contain up to 10% by weight of plastic bags, coated paper, laminate paper, treated corrugated cardboard, oily rags and plastic or rubber scraps.

Type 1 - Rubbish, a mixture of combustible waste such as paper, cardboard cartons, wood scrap, foliage and combustible floor sweepings, from domestic, commercial and industrial activities. The mixture contains up to 20% by weight of restaurant or cafeteria waste, but contains little or no treated papers, plastic or rubber wastes.

Type 2 - Refuse, consisting of an approximately even mixture of rubbish and garbage by weight.

Type 3 - Garbage, consisting of animal and vegetable wastes from restaurants, cafeterias, hotels, hospitals, markets and like installations.

Type 4 - Human and animal remains, consisting of carcasses, organs and solid organic wastes from hospitals, laboratories, abattoirs, animal pounds, and similar sources, consisting of up to 85% moisture, 5% incombustible solids and having a heating value of 1,000 BTU per pound as fired.

Type 5 - By-product waste, gaseous, liquid or semi-liquid, such as tar, paints, solvents, sludge, fumes, etc., from industrial operations. BTU values must be determined by the individual materials to be destroyed.

Type 6 - Solid by-product waste, such as rubber, plastics, wood waste, etc., from industrial operations. BTU values must be determined by the individual materials to be destroyed.



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APPENDIX Q

APPLICATION FOR NATIONAL POLLUTANT DISCHARGE  
ELIMINATION SYSTEM (NPDES) PERMIT FROM DIVISION  
OF WATER POLLUTION CONTROL

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## APPENDIX Q

### GENERAL INSTRUCTIONS

#### NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM APPLICATION FOR PERMIT TO DISCHARGE (SHORT FORM)

The Federal Water Pollution Control Act, as amended by Public Law 92-500 enacted October 18, 1972, prohibits any person from discharging pollutants into a waterway from a point source (see definitions below), unless his discharge is authorized by a permit issued either by the U.S. Environmental Protection Agency or by an approved State Agency. (See "Procedures for Filing".)

#### REQUIREMENTS

If you have a discharge or discharges, such as that described in the first paragraph of these instructions, you must complete one of the following forms to apply for a discharge permit. The forms differ by types of discharges as indicated below:

Short Form A - Municipal Wastewater Dischargers  
Short Form B - Agriculture  
Short Form C - Manufacturing Establishments and Mining  
Short Form D - Services, Wholesale and Retail Trade, and All Other Commercial Establishments, Including Vessels, Not Engaged in Manufacturing or Agriculture

If your business or activity involves production of both raw products and ready-for-market products you may be required to complete two of the above forms. For example, if you produce a raw product such as milk and, on the same site, process the raw milk into cheese, you must complete Form B - Agriculture, and Form C - Manufacturing and Mining.

If the discharge is from a Federal Facility's treatment plant receiving more than 50% domestic waste (based on the dry weather flow rate) complete Form A.

If the discharge is from a sewage treatment process which is not from a municipal, agricultural, or industrial facility (e.g., housing subdivision, school) complete and submit Form D.

#### EXCLUSIONS

You are not required to obtain a permit for the following types of waste discharges:

(1) Sewage discharged from vessels (e.g., ships); or  
(2) Water, gas, and other materials injected into a well to facilitate production of oil or gas, or water derived in association with oil or gas production and disposed of in a well where authorized by the State in which the well is located; or

(3) Dredged or fill material; or  
(4) Discharges from properly functioning marine engines; or  
(5) Those discharges conveyed directly to a publicly or privately owned waste treatment facility (however, discharges originating from publicly or privately owned waste treatment facilities are not excluded); or

Note: Municipal and manufacturing dischargers that believe they are exempt due to Item 5, are requested to complete certain items and return the form (see "Procedures for Filing").

(6) Most discharges from separate storm sewers. Discharges from storm sewers which receive industrial, municipal, and/or agricultural wastes or which are considered by EPA or a State to be significant contributors to pollution are not excluded.

#### PROCEDURES FOR FILING

Copies of all forms are available at State water pollution control agencies.

Data submitted on these forms are to be used as a basis for issuing discharge permits. Depending on the adequacy and nature of the data submitted, you may be called upon for additional information before a permit is granted.

If you have any questions as to whether or not you need a permit under this program contact your State water pollution control agency or the nearest Regional Office of the U.S. Environmental Protection Agency. A list of EPA Regional Offices is in the attached table.

Complete the appropriate form(s) for your operation, being sure that each item is considered and the required data submitted. Check the items which most nearly apply to you and your operation. If an item does not apply, please enter in the appropriate place "Not Applicable" or "NA" to show that the item was given consideration. Most of the items on the form require the checking of one or more of several possible answers.

If the application is to be sent to the Environmental Protection Agency, there is an application fee of \$10. This fee, in the form of a check or money order made payable to the Environmental Protection Agency, should be mailed with the original of the application form to the EPA Regional Office having jurisdiction over the State in which the discharge is located.

If the State in which the discharge is located has a federally-approved permit program, the application should instead be sent to the State agency administering the program; you will be informed as to the amount of the application fee, if any, and the address to which the application and fee should be sent.

Agencies and instrumentalities of Federal, State or local governments will not be required to pay an application fee.

Applications pertaining to "existing" discharges, i.e., those which were in operation on or before October 18, 1972, must be filed with the EPA Regional Office or approved State agency by April 16, 1973. The exception is that anyone who applied to the Corps of Engineers for a discharge permit under the Refuse Act of 1899 need not reapply for a permit for the same discharge, unless it is substantially changed in nature, volume or frequency; application must also be made for any other discharges not covered by the Refuse Act.

Applications for "new" discharges beginning between October 18, 1972, and on or before July 15, 1973, must apply at least 60 days before the date the discharge is due to begin, unless a delay is granted by the approved State agency or by EPA.

Applications for "new" discharges beginning on or after July 16, 1973, must apply at least 180 days before the date the discharge is due to begin, unless a delay is granted by the approved State agency or by EPA.

#### SIGNATURE ON APPLICATION

The person who signs the application form will often be the applicant himself; when another person signs on behalf of the applicant, his title or relationship to the applicant should be shown in the space provided. In all cases, the person signing the form should be authorized to do so by the applicant. An application submitted by a corporation must be signed 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 from which the discharge(s) described in the form originate. In the case of a partnership or a sole proprietorship, the application must be signed by a general partner or the proprietor, respectively. In the case of a municipal, State, Federal or other public facility, the application must be signed by either a principal executive officer, ranking elected official or other duly authorized employee.

#### USE OF INFORMATION

All information contained in this application will, upon request, be made available to the public for inspection and copying. A separate sheet entitled "Confidential Answers" must be used to set out information which is considered by the applicant to constitute trade secrets. The information must clearly indicate the item number to which it applies. Confidential treatment can be considered only for that information for which a specific written request of confidentiality has been made on the attached sheet. However, in no event will identification of the contents, volume, and frequency of a discharge be recognized as confidential or privileged information, except in certain cases involving the national security.

#### DEFINITIONS

1. A "person" is an individual, partnership, corporation, association, State, municipality, commission, other political subdivision of a State, and any interstate body.

2. A "pollutant" includes solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal and agricultural waste discharged into water.

3. A "point source" is any discernible, confined and discrete conveyance including but not limited to a pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft from which pollutants are or may be discharged.

4. A "discharge of pollutant" or a "discharge of pollutants" means any addition of any pollutant to the waters of the United States from any point source; any addition of any pollutant to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft.

5. A "discharge" when used without qualification includes a "discharge of pollutant" and a "discharge of pollutants." (See above.)

6. The term "municipality" means a city, town, borough, county, parish, district, association, or other public body created by or pursuant to State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved areawide waste management management agency.

SHORT FORM C - SPECIFIC INSTRUCTIONS

MANUFACTURING AND MINING

Item 1. Provide the official, legal name of the facility and the address where the facility is located. If the mailing address is different from the location, supply this information in remarks.

Item 2. Leave this line blank. The SIC code will be supplied by the reviewing office.

Item 3. Specify the average number of employees working in the facility.

Item 4. Complete this item and mail this form without filing fee only if all of your waste is discharged to a publicly owned treatment facility.

Item 5. List the principal products produced at this location or the raw material consumed, whichever one will give a better measure of the over-all volume of production in conjunction with the number and units provided in item 7. Where several similar articles are produced, use a broader term which will include all or most of the specific ones (e.g., "costume jewelry" to designate the production of bracelets, earrings, and pins).

Item 6. Name the process using the raw materials or used for producing the principal product specified in item 5.

Item 7. The maximum amount of principal product produced or raw material consumed may be calculated on a daily, monthly, or yearly basis, whichever is more convenient. Check appropriate boxes to indicate basis used (lines A-C), and amount produced or consumed (box 1-8).

Item 8. Check one box to indicate the units in which the measure of production was reported (item 6). If box H is checked, enter units in the space provided.

Item 9. If you discharge wastes all year, check the box provided in (a). Otherwise, check the box beside the month(s) listed and (b) to show when wastes are usually discharged. Also, check one box under (c) to show how many days out of the week the wastes are discharged.

Item 10. This item applies to wastes ultimately discharged to surface waters only (e.g., a lake, stream, creek, ocean, etc.). Types of discharged waste water are classified in the table as follows:

A. "Sanitary" - Consisting only of used water from restrooms, toilets, showers, and similar sanitary or comfort facilities.

B. "Noncontact Cooling Water, Condensed Steam, etc." - Water used for cooling steam generation, etc., which does not come in contact with the product, intermediates, and/or raw materials.

C. "Process Water" - Water used directly in the manufacturing process, which comes in contact with the product, intermediates, or raw materials.

For each type of waste discharged, check one box (1-5) to show the average (annual) flow per operating day (lines A-C). This average should be based only on the number of actual days during the past year the discharge is occurring and not the entire calendar year. For example, 300,000 gallons of cooling water is discharged in the course of a year. This discharge occurs for 100 days of that year. The average daily flow is 300,000/100=3,000 gallons (box B-2 should be checked) and not 300,000/365=820 gallons.

If pretreatment (such as lagooning, ponding, chemical addition, aeration, etc.) before discharging the wastes is practiced check the appropriate box (6-10) under the heading "Amount Treated Before Discharging, Percent" (lines A-C). If no treatment is used, check the box labeled "None".

On line D, check the box (1-5) to indicate the maximum combined flow (of all types of discharges together) observed for any one day in the last full year of operation. For new facilities, this should reflect the best engineering estimates.

Item 11. Check the appropriate box(es) to indicate daily average flow of waste, if these wastes are discharged ultimately to places other than surface waters. If a box on line E is checked write in the place of discharge in the space provided.

Item 12. Check the box beside the number(s) to show the number of separate discharge points. A separate discharge point is defined as an easily identifiable completely or partly enclosed container or channel through which the waste is discharged into a body of water; for example, a pipe, ditch, culvert, refuse container, barge, boat, etc.

Item 13. Give the name of the waterway into which all or a major portion of the waste water is discharged. Whenever possible, use the name of the waterway as shown on published maps. If the discharge is into an unnamed tributary, give the name of the water body fed by the tributary and identify as tributary to (name of water body).

Item 14. If any of the listed substances are used in your processes or are likely to enter your discharge as a result of your activities or operations, you should check the box marked yes. If any of the listed substances are present in your discharge only because such substances are present in your intake waters (including drinking waters), you should check the box marked no.

Please return your completed application to:

Permit Section  
Division of Water Pollution Control  
Indiana State Board of Health  
1330 West Michigan Street  
Indianapolis, Indiana 46206

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM  
APPLICATION FOR PERMIT TO DISCHARGE - SHORT FORM C

FOR  
AGENCY  
USE

APPLICATION NUMBER									
DATE RECEIVED									
YEAR			MO.			DAY			

To be filed only by persons engaged in manufacturing and mining

Do not attempt to complete this form before reading accompanying instructions

Please print or type

1. Name, address, location, and telephone number of facility producing discharge

A. Name \_\_\_\_\_

B. Mailing address

1. Street address \_\_\_\_\_

2. City \_\_\_\_\_ 3. State \_\_\_\_\_

4. County \_\_\_\_\_ 5. ZIP \_\_\_\_\_

C. Location:

1. Street \_\_\_\_\_

2. City \_\_\_\_\_ 3. County \_\_\_\_\_

4. State \_\_\_\_\_

D. Telephone No. \_\_\_\_\_

Area  
Code

2. SIC 

--	--	--	--

  
(Leave blank)

3. Number of employees \_\_\_\_\_

If all your waste is discharged into a publicly owned waste treatment facility and to the best of your knowledge you are not required to obtain a discharge permit, proceed to item 4. Otherwise proceed directly to item 5.

4. If you meet the condition stated above, check here ☐ and supply the information asked for below. After completing these items, please complete the date, title, and signature blocks below and return this form to the proper reviewing office without completing the remainder of the form.

A. Name of organization responsible for receiving waste \_\_\_\_\_

B. Facility receiving waste:

1. Name \_\_\_\_\_

2. Street address \_\_\_\_\_

3. City \_\_\_\_\_ 4. County \_\_\_\_\_

5. State \_\_\_\_\_ 6. ZIP \_\_\_\_\_

5. ☐ Principal product, ☐ raw material (Check one) \_\_\_\_\_

6. Principal process \_\_\_\_\_

7. Maximum amount of principal product produced or raw material consumed per (Check one)

Basis	Amount							
	1-99	100-199	200-499	500-999	1000-4999	5000-9999	10,000-49,999	50,000 or more
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. Day								
B. Month								
C. Year								

8. Maximum amount of principal product produced or raw material consumed, reported in item 7, above, is measured in (Check one):

A. ☐ pounds    B. ☐ tons    C. ☐ barrels    D. ☐ bushels    E. ☐ square feet  
F. ☐ gallons    G. ☐ pieces or units    H. ☐ other, specify \_\_\_\_\_

9. (a) Check here if discharge occurs all year ☐ , or

(b) Check the month(s) discharge occurs:

1. ☐ January    2. ☐ February    3. ☐ March    4. ☐ April    5. ☐ May    6. ☐ June  
7. ☐ July    8. ☐ August    9. ☐ September    10. ☐ October    11. ☐ November    12. ☐ December

(c) Check how many days per week: 1. ☐ 1    2. ☐ 2-3    3. ☐ 4-5    4. ☐ 6-7

10. Types of waste water discharged to surface waters only (check as applicable)

Discharge per operating day	Flow, operating gallons per day					Volume treated before discharging (percent)				
	0.1-999 (1)	1000-4999 (2)	5000-9999 (3)	10,000-49,999 (4)	50,000-or more (5)	None (6)	0.1-29.9 (7)	30-64.9 (8)	65-94.9 (9)	95-100 (10)
A. Sanitary, daily average										
B. Cooling water, etc. daily average										
C. Process water, daily average										
D. Maximum per operating day for total discharge (all types)										

11. If any of the three types of waste identified in item 9, either treated or untreated, are discharged to places other than surface waters, check below as applicable.

Waste water is discharged to:	Average flow, gallons per operating day				
	0.1-999 (1)	1000-4999 (2)	5000-9999 (3)	10,000-49,999 (4)	50,000 or more (5)
A. Municipal sewer system					
B. Underground well					
C. Septic tank					
D. Evaporation lagoon or pond					
E. Other, specify _____					

12. Number of separate discharge points: A. ☐ 1    B. ☐ 2-3    C. ☐ 4-5    D. ☐ 6 or more

13. Name of receiving water or waters \_\_\_\_\_

14. Does your discharge contain or is it possible for your discharge to contain one or more of the following substances added as a result of your operations, activities, or processes: ammonia, cyanide, aluminum, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc, phenols, oil and grease, and chlorine (residual). A. ☐ yes    B. ☐ no

I certify that I am familiar with the information contained in the application and that to the best of my knowledge and belief such information is true, complete, and accurate.

Printed Name of Person Signing \_\_\_\_\_

Title \_\_\_\_\_

Date Application Signed \_\_\_\_\_

Signature of Applicant \_\_\_\_\_

18 U.S.C. Section 1001 provides that:

Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up by any trick, scheme, or device a material fact, or makes any false, fictitious, or fraudulent statements or representations; or makes or uses any false writing or document knowing same to contain any false, fictitious, or fraudulent statement or entry, shall be fined not more than \$10,000 or imprisoned not more than 5 years, or both.

APPENDIX R

APPLICATION FOR WATER POLLUTION CONTROL  
FACILITY CONSTRUCTION PERMIT FROM STREAM  
POLLUTION CONTROL BOARD



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APPENDIX R  
APPLICATION  
WATER POLLUTION CONTROL FACILITY CONSTRUCTION PERMIT  
REQUIRED BY INDIANA REGULATION SPC-15

PLEASE READ INSTRUCTIONS BEFORE COMPLETING APPLICATION

1. This application is for the construction or expansion of:
- A. ☐ cyanide isolation facilities
  - B. ☐ municipal sewerage facilities
  - C. ☐ commercial or manufacturing treatment facilities
  - D. ☐ agricultural or silvicultural treatment facilities
  - E. ☐ semi-public treatment facilities

2. Legal name of applicant

\_\_\_\_\_  
\_\_\_\_\_

3. Mailing address of applicant

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. Applicant's authorized agent

NAME \_\_\_\_\_

TITLE \_\_\_\_\_

ADDRESS \_\_\_\_\_

PHONE NO. (include area code) \_\_\_\_\_

5. Name, address and location of facility where construction will occur.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

LOCATION \_\_\_\_\_

\_\_\_\_\_

6. Receiving Water(s)

A. ☐ new discharge      B. ☐ Existing discharge

7. Is this construction for (a)

A. ☐ new system      B. ☐ expansion of existing system

8. Required Information.

- A. Attached to this application upon submittal must be detailed plans and specifications and other information required in the instructions.
- B. The applicant shall furnish upon request such supplementary information as is required by the Director in order to evaluate fully the application.

9. Fees

-An application fee of \$10 must be submitted with this application. The check or money order should be made payable to the Indiana Stream Pollution Control Board. (Do Not Send Cash)

10. Signature

Application is hereby made for a permit to authorize the activities described herein. I certify that I am familiar with information contained in this application, and to the best of my knowledge and belief such information is true, complete, and accurate.

\_\_\_\_\_  
Printed name of person signing

\_\_\_\_\_  
Title

\_\_\_\_\_  
Signature of applicant

\_\_\_\_\_  
Date application signed

APPENDIX S

APPLICATION TO DEPARTMENT OF NATURAL RESOURCES  
FOR APPROVAL OF CONSTRUCTION IN A FLOODWAY

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State of Indiana  
DEPARTMENT OF NATURAL RESOURCES  
Indianapolis, Indiana

## INSTRUCTIONS FOR MAKING APPLICATION FOR APPROVAL OF CONSTRUCTION IN A FLOODWAY

Chapter 318 of the Acts of 1945, as amended, Sections 17 and 19, requires Commission approval of any construction in a floodway, and of any works for flood control. This includes bridges, dams, levees, dikes, floodwalls, wharves, piers, dolphins, booms, weirs, bulkheads, jetties, groins, excavations, fills or deposits of any kind, utility lines, or any other building, structure, or obstruction.

The approval of the Natural Resources Commission, in writing, must be obtained before beginning construction.

Applications for approval should be submitted to:

Department of Natural Resources  
Division of Water  
605 State Office Building  
Indianapolis, Indiana 46204

All applications should be made on the standard application form provided by the Commission and should be accompanied by plans, profiles, specifications, and other data necessary for the Commission to determine the effect of the proposed construction upon the floodway and on flood control in the state.

Application made to and approval granted by the Natural Resources Commission does not in any way relieve the owner of the necessity of securing easements or other property rights, and permits and/or approvals from affected property owners and local, state, and federal agencies.

The engineering staff of the Division of Water is available to discuss and offer suggestions regarding requirements in the design of structures in floodways. High water marks have been set on many of the streams in the state, and information is available from the Division of Water on actual and/or potential flooding. Information regarding bench marks set to Mean Sea Level Datum, General Adjustment of 1929, is available from the Division of Water, Surveying and Mapping Section.

Applications are considered by the Commission at regular meetings usually held each month. After the application and plans have been approved by the Commission, a certificate of approval is forwarded to the applicant.

No fees are charged by the Commission for approvals under the Flood Control Act. Unless stated otherwise in the approval, construction must start within three years of the date of approval. Once built, the construction is considered to be a permanent development, and no renewals of the approval are necessary, except in the cases where temporary approvals are granted for temporary construction.

The general and specific instructions presented below are considered to set forth minimum requirements. The right is reserved to require additional data where necessary.

### PLANS, SPECIFICATIONS, AND OTHER DATA REQUIRED WITH APPLICATION GENERAL

1. *One copy* of the Commission's standard application form and *one set* of the plans and specifications necessary to give the required information should be submitted for each project.
2. The application form should be made out in the name of the owner of the project, but may be submitted by an authorized agent of the owner. Each application form must be verified before a notary public or other official authorized to administer oaths.
3. For ease of handling and storage, it is suggested that submitted plan sheets be of a size between 8x10 inches and 30x42 inches.
4. Titles should be attached to each sheet of plans, giving clearly the name of the project, date, scale, name of stream, and location. North arrow should be provided where applicable. When revised plans are submitted, they should be so marked and dated.
5. All elevations shown on plans must be given to Mean Sea Level Datum, General Adjustment of 1929.
6. Attention is directed to the Acts of 1935, Chap. 148, Sec. 19, as amended (especially as amended by the Acts of 1965, Chap. 284, Sec. 9), concerning plans for certain classes of projects which must be prepared and certified by a registered professional engineer.

### Bridges

Plans for bridges across streams in rural areas having drainage areas above the site of less than fifty square miles need not be submitted for approval, unless located on a stream where it may affect any actual or proposed flood control projects. In urban or other highly developed areas, plans for bridges across streams having drainage areas above the site of more than one square mile must be submitted for Commission approval before construction.

Applications submitted concerning proposed bridges should be accompanied by plans showing at least the following features and information:

1. A location map showing the exact position of the proposed construction on the stream and the location of the channel far enough upstream and downstream to determine the approach and discharge flow conditions above and below the site.

2. A profile of the present and proposed roadways across the valley, including a cross section of the proposed bridge, carried to a point above high water. Included on the profile should be overflow openings or other places along the road where overflow may occur. Also included on the profile should be high water marks with date of occurrence.
3. An elevation view of the former or existing bridge, if any, showing elevations of low structure and high water marks.
4. A plan view of the proposed bridge, showing the exact position and shape of piers and abutments, and the angle of skew, if any.
5. An elevation view of the proposed bridge, showing the present channel cross section and proposed changes, if any, elevations of the low point of the superstructure and of high water marks, and any other details or elevations necessary to determine the waterway opening under the proposed bridge. Waterway areas beneath pertinent elevations should be computed and shown on the plans.
6. If a channel relocation is proposed, a plan view of the relocation and typical cross sections of the new channel should be shown.
7. The size of the drainage area of the stream above the proposed bridge site should be shown on the plans.
8. With designs which involve the use of overflow areas in conjunction with bridges, additional data must be furnished concerning (a) classification of road, (b) surfacing, (c) current and projected traffic, and (d) major use.

### **Dams**

Prior approval by the Natural Resources Commission must be obtained by anyone desiring to construct a dam before construction is started, unless all of the following conditions apply:

- (a) The drainage area above the dam site is less than one square mile.
- (b) The height of the dam above the natural stream bed or the lowest point on the valley floor will be less than 20 feet.
- (c) The volume of water impounded by the dam to the emergency spillway level will be less than 100 acre-feet.
- (d) The rights of other property owners will not be affected.

Applications submitted concerning proposed dams should be accompanied by plans and specifications which incorporate the following features:

1. A location plan, including tributary drainage area, showing the location of the dam and sufficient additional information so that the site can be located on county and topographic maps.
2. A general plan, showing the dam site, reservoir area, spillway areas, and borrow areas.
3. Surface topography of the dam site, spillway areas, and borrow areas, showing also the locations of borings and soils exploration sites.
4. A longitudinal section of the dam on which is plotted the boring logs of foundation explorations.
5. Typical cross sections of the dam, including proposed cutoff walls or keyway trenches, foundation treatment, and any type of outlet works to be constructed under or through the embankment.
6. Detailed plans of spillways, waste-ways, overflows, or connecting or diversion channels.
7. Detailed plans of outlet or control works.
8. Detailed plans clearly showing proposed facilities and methods for dissipating or protecting against high discharge velocities at outlets for spillway, conduit, or other outlets works.
9. Detailed plans of embankment and foundation drainage facilities, noting gradation and types of materials in filter beds or blankets.
10. Plans showing miscellaneous adjuncts or appurtenances.
11. For reinforced concrete dams, detailed reinforcement layout, including bending diagrams if necessary for clarity.
12. For all gravity-type dams of materials other than an earth or rock embankment, diagrams of forces showing the results of analyses.
13. Results of foundation explorations. With respect to the extent of explorations and tests performed on samples, submitted results of explorations and borings in the dam and spillway areas should be sufficient to reasonably assure the structural adequacy of the foundations and the abilities of the foundation materials to resist seepage and leaks which could endanger the structure.
14. Boring logs and results of soils explorations and tests in borrow areas, at least to the extent given below. *In every case, further information may be required if deemed necessary.*
  - (a) For any earth embankment less than 20 feet in height, applicant should furnish boring logs and results of soils explorations, showing the types of soils to be used in the embankment, using a standard system of soils classification.
  - (b) For any earth embankment between 20 and 33 feet in height, applicant should furnish boring logs and results of tests on samples of soils obtained from borrow area explorations. Tests should include: (i) natural moisture contents, (ii) liquid limits, (iii) size analyses, (iv) plasticity indices, and (v) Standard Proctor dry densities. Classifications should be made using the Unified Soils Classification System.
  - (c) For any earth embankment between 33 and 50 feet in height, applicant should furnish boring logs and results of tests as described under 14-(b), above, plus additional strength tests indicating the structural suitability of each major class of soil to be used in the embankment.
  - (d) For any earth embankment greater than 50 feet in height, the applicant should furnish results of explorations and tests as described under 14-(b) and 14-(c), above, plus stability analyses for end-of-construction and steady-seepage conditions for the proposed slopes of the embankment, taking into account any soft or unstable materials present in the foundations of the proposed dam.

15. Specifications describing in detail all phases of the construction work, such as: the preparation of the dam site, materials to be used, inspection and construction control, and results to be obtained. Protection against weathering and erosion should be specified.
16. Design data for spillways. These should include outflow rating curves, reservoir area and capacity curves up to the top of the dam or to the maximum flood pool, whichever is higher, computations for at least one flood routing, of which one must be the maximum design flood, and other bases for design.
17. In some cases, a statement of financial capability may be required from the applicant.

### **Levees, Floodwalls, Fills, Excavations, and Channel Changes**

Plans and specifications accompanying applications concerning proposed levees, floodwalls, fills, excavations, or channel changes should show at least the following features:

1. A location map showing sufficient information for locating the project site on county and topographic maps.
2. A general plan, showing existing and proposed topography for distances of at least several hundred feet upstream and downstream from the limits of the proposed work, and to points well beyond the limits of maximum high water on each bank, where applicable. The proposed work should be referenced to existing railroads, highways, buildings, or other fixed points.
3. A profile showing existing and proposed bank lines, high and low water elevations of normal pool elevations, as applicable, and the bottom of the stream channel.
4. Cross sections, as needed, which should be taken entirely across and at right angles to the flow of the stream and to above maximum flood water elevations. The cross sections should show the proposed project superimposed on the existing ground line, and should indicate widths and slopes applicable to the project. Cross sections of existing and proposed bridges or culverts should be furnished.
5. Appropriate hydraulic computations should be furnished which will show the effects of the proposed construction in the floodway.
6. Specifications should describe materials to be used and methods of construction.

### **Pipelines**

Pipelines carrying any substance across streams and floodways are subject to approval by the Commission prior to construction. Application should be made and plans furnished for pipelines which will cross streams shown as solid blue lines or as solid blue bands on the 7½-minute series (topographic) map quadrangles (1:24,000 scale), published by the U. S. Geological Survey. If the pipeline will cross only the dashed blue lines of intermittent streams or cross watercourses for which no defined channel is shown, approval by the Commission is not required. If a pipeline is to cross a stream on an existing bridge, and if no portion of the pipeline or its hangers will project below the superstructure of the bridge, approval by the Commission is not required.

One application form should be submitted for each project, providing there are one or more stream crossings in the project which will require approval by the Commission. Plans must be furnished for each crossing subject to approval.

1. Sufficient information should be shown on the plans for the individual crossing to determine the location of the pipe at the site and on the U. S. Geological Survey topographic quadrangles described above.
2. Sufficient information should be shown on the plans for the individual crossing to show the manner of the crossing and the configuration of the pipe with respect to stream and banks.
3. In general, pipelines under the beds of streams should be laid so that there is at least three feet of cover over a pipe laid in earth, and at least one foot of cover over a pipe laid in rock. Pipelines should also have a minimum of three feet of cover in the banks of the stream. These are considered to be minimum values, and local conditions may dictate much greater amounts of cover.
4. Aerial crossings should provide a minimum clearance of two feet above maximum known or anticipated high water elevation. Much greater clearance may be required in the individual case.
5. Negative buoyancy should be provided at all crossings under the beds of streams. Assurance of negative buoyancy should be furnished for gas and oil-products pipelines having nominal diameters of eight inches or more.

### **Miscellaneous Structures**

Plans, profiles, cross sections, and specifications should be submitted as outlined above, modified in accordance with the nature and the purpose of the proposed structure. In any case, the data submitted should provide sufficient information to determine the effect of the structure on the floodway and the stream.



# NOTICE

In the event that the construction of the proposed project in a floodway will require the use of explosives in or under the water, submit a letter application to the Director, Division of Fish and Wildlife, Department of Natural Resources, 607 State Office Building, Indianapolis, Indiana, 46204, for a permit for the use of explosives pursuant to the provisions of the Fish and Wildlife Act, IC 71, 14-2-7-26.

For convenience, such applications may be submitted together with the application for permit for construction in a floodway.

# APPLICATION FOR APPROVAL OF CONSTRUCTION IN A FLOODWAY

City: \_\_\_\_\_ State: \_\_\_\_\_

Date: \_\_\_\_\_

TO:

Department of Natural Resources  
Division of Water  
605 State Office Building  
Indianapolis, Indiana 46204

In compliance with the provisions of the Flood Control Act, Chapter 318 of the Acts of 1945 as amended (Burns, 1960 Repl., Section 27-1101 et seq.), and Chapter 441 of the Acts of 1965 (Burns 1965 Supp, Section 60-7012 et seq.), which requires prior approval by the Natural Resources Commission, Statutory successor to the Indiana Flood Control and Water Resources Commission of the construction of any structure, obstruction, deposit or excavation in a floodway, and of any works for flood control.

\_\_\_\_\_  
(Here state name of owner, person or persons, partnership, association, corporation, county, city, town, or township)

by its duly authorized agent \_\_\_\_\_  
(Name of person, company, or corporation submitting application for owner)

hereby makes application for approval by the Natural Resources Commission to establish, construct, or maintain \_\_\_\_\_  
(Here describe type of construction—bridge, dam, levee, excavation, etc.)

in or on \_\_\_\_\_  
(Here state name of stream)

at a point \_\_\_\_\_  
(Here give location, by distance from mouth of stream or from county, township, or municipal boundary; also give section, township, range, city or town, and county in which located)

for the purpose of \_\_\_\_\_  
(Here state fully the purpose, necessity, and description of the proposed construction)

in accordance with the maps, plans, profiles, and specifications filed with this application and made a part hereof.  
Enclosures (List plans, profiles, specifications and other data submitted with application and made a part thereof.)

Name of Owner.....

Name of Agent.....

Signature.....  
(Owner or agent)

Address.....

STATE OF..... }  
COUNTY OF..... } ss:

On this..... day of....., 19....., before me, a Notary Public

in and for said county and state, personally appeared.....  
who being by me duly sworn does acknowledge that the facts set out in this "Application For Approval of Construction in a Floodway" are true.

Notary Public

APPENDIX T  
SOLID WASTE MANAGEMENT FACILITY CONSTRUCTION/  
OPERATING PERMIT APPLICATION

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APPENDIX T

INSTRUCTIONS FOR COMPLETING APPLICATION

1. **Applicant**  
Name of person, and/or corporation, municipality, authority, firm, etc., which will conduct the operation and be responsible for its operation.
2. **Property Owner(s)**  
The owner(s) of the land upon whose property the operation will be located and conducted. Information provided must be the same as the information provided on the deed, recorded with the County Recorder of Deeds.
3. **Name of Facility**  
Example: "Tri-County Sanitary Landfill," "Smith County Incinerator Plant No. 2," "Lower Authority Transfer Station," etc. Location must include street, road or rural route number; city; county; and zip code.
4. **Legal Description**  
Detailed legal description of the property proposed for the permitted facility. Indicate the location of the permitted facility on 7½ minute topographic map.
5. **Documents Attached**  
Check the appropriate block to indicate which documents are being submitted with the application. The information must be submitted in accordance with Chapters III and VI, Regulation SPC 18, in duplicate to the Stream Pollution Control Board, Indiana State Board of Health, 1330 West Michigan Street, Indianapolis, Indiana, 46206.
6. **Type of Operation**  
Incinerator, sanitary landfill, transfer station, resource recovery, composting, conversion system, etc.
7. **Permit Application**  
This form may be utilized as a Construction Permit Application, a Construction Permit Amendment and/or an Operating Permit Application. Indicate the application you are seeking. Insure that the information in No. 5 above is on file or is included.
8. **General Information**  
Indicate the number of acres to be considered for permit and the total acres owned by the property owner. Project the life of the facility in years. Indicate the expected daily volume of waste received at the facility.
9. **Waste Types Received**  
Check the types of wastes planned for disposal at the facility.  
\*NOTE: Hazardous and toxic wastes require additional engineering information.
10. **Signature**  
The applicant and property owner must sign and date the application.

All information must be provided on this form or attachments, or the application will be returned.

**INDIANA STATE BOARD OF HEALTH**  
**APPLICATION FOR CONSTRUCTION/OPERATING PERMIT**  
**FOR SOLID WASTE MANAGEMENT FACILITIES**

DEPT. USE ONLY:

CPP \_\_\_\_\_

OPP \_\_\_\_\_

Date Approved \_\_\_\_\_

See INSTRUCTIONS on Reverse Side

<p><b>1. APPLICANT (Name and Address)</b></p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p><b>2. PROPERTY OWNER(S) (Name and Address)</b></p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p><b>3. NAME OF FACILITY</b> _____</p> <p>_____</p> <p><b>LOCATION OF FACILITY</b> _____</p> <p>_____</p> <p><b>CITY</b> _____</p> <p><b>COUNTY</b> _____ <b>ZIP</b> _____</p>	<p><b>4. LEGAL DESCRIPTION:</b></p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p><b>5. THE FOLLOWING DOCUMENTS ARE ATTACHED WHERE APPLICABLE:</b></p> <p>Evidence of proper zoning <input type="checkbox"/></p> <p>Department of Natural Resources approval letter <input type="checkbox"/></p> <p>U.S.G.S. Topo Map (7½ minute) <input type="checkbox"/></p> <p>U.S.D.A. Soils Map <input type="checkbox"/></p> <p>Topographic plot plan <input type="checkbox"/></p> <p>Geological information:</p> <p>Soils <input type="checkbox"/> Geology <input type="checkbox"/></p> <p>Monitoring wells <input type="checkbox"/> Groundwater <input type="checkbox"/></p> <p>Operational Narrative <input type="checkbox"/></p>	<p><b>6. TYPE OF OPERATION:</b></p> <p>_____</p> <p><b>7. PERMIT APPLICATION</b></p> <p>Construction Permit <input type="checkbox"/></p> <p>Operating Permit <input type="checkbox"/></p> <p>Construction Permit Amendment <input type="checkbox"/></p> <p><b>8. GENERAL INFORMATION</b></p> <p>Number of acres proposed for permit _____</p> <p>Total acres of property _____</p> <p>Planned life of facility _____ years</p> <p>Expected volume of waste _____ cu.yds/day</p> <p style="text-align: center;">and/or _____ tons/day</p>
<p><b>9. WASTE TYPES RECEIVED AT SITE:</b></p> <p>Refuse <input type="checkbox"/></p> <p>Animal carcasses <input type="checkbox"/></p> <p>Demolition &amp; construction debris <input type="checkbox"/></p> <p>Wood matter and brush <input type="checkbox"/></p> <p>Toxic &amp; hazardous wastes:</p> <p>With refuse <input type="checkbox"/></p> <p>Separate area <input type="checkbox"/></p> <p>Other (specify) _____</p> <p>_____</p>	<p><b>10. I hereby certify that to the best of my knowledge the above information and attached details are accurate and complete. Furthermore, the facility will be operated as heretofore described and in accordance with all rules and regulations under IC 13-7.</b></p> <p>_____</p> <p style="text-align: right;"><i>Applicant's Signature</i></p> <p>_____</p> <p style="text-align: right;"><i>Date</i></p> <p>_____</p> <p style="text-align: right;"><i>Owner's Signature</i></p> <p>_____</p> <p style="text-align: right;"><i>Date</i></p>

SBH64-039  
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APPENDIX U

INSTRUCTIONS FOR OBTAINING STATE APPROVAL FROM STREAM POLLUTION

CONTROL BOARD FOR DISPOSAL OF HAZARDOUS WASTE



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## APPENDIX U

### HOW TO OBTAIN STATE APPROVAL TO DISPOSE OF HAZARDOUS WASTE

All liquid and/or potentially hazardous waste must have written approval from the Indiana Stream Pollution Control Board prior to disposal at a sanitary landfill as required by Regulation SPC-18, Chapter V, Section 14(a). Each liquid or potentially hazardous waste is handled on a case-by-case basis by the Solid Waste Management Section in conjunction with the Water Pollution Control and Air Pollution Control Divisions of the Indiana State Board of Health.

A written request for approval must be submitted to the Solid Waste Management Section for consideration. The request must include the following:

1. An analysis of the chemical constituents from a representative sample of the waste, both qualitative and quantitative. Sludges are to be reported in milligrams per kilogram dry weight, liquid to be reported in milligrams per liter.
2. Physical characteristics of the material, including percent solids, pH and flash point where applicable.
3. Description of the process involved in the generation of the waste.
4. Proposed disposal site.
5. Waste hauler's name and address.
6. Amount of waste and frequency of removal (e.g., gallons/week, cubic yard every two months, 55-gallon drums per year).

The staff of the Solid Waste Management Section will review the information submitted and determine, first of all, whether the waste is suited for land disposal and what disposal method should be used. If the hazardous waste is approved for land disposal, an approval letter will be sent to the landfill permit holder, generator and hauler. Until such a letter is received, the waste cannot legally be disposed of at a landfill.

Copies of the approval letter will be sent to the health department of the county in which the disposal site is located. Approval should be obtained from that health department prior to disposal.

If any questions should arise, contact the Solid Waste Management Section staff representative responsible for your area of the State or one of the following:

Guinn Doyle, Supervisor of Hazardous Waste Program  
Bruce Palin  
Marv Eggleston  
Tim Kelley  
Jim Hunt, SPC-17, Industrial Waste Hauler Program

The Solid Waste Management Section's telephone number is 317/633-0176. Address correspondence to the State Board of Health, 1330 West Michigan Street, Indianapolis, IN 46206.

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## 9.0 THE TEXAS CASE STUDY

This section describes the Texas case and reports on the results of interviews with the U.S. Environmental Protection Agency Region VI Office in Dallas, Texas, and with officials of the Texas Air Quality Board and the Texas Department of Water Resources. Officials of the Occupational Safety and Health Administration (OSHA) were not interviewed because MITRE's experience with OSHA on the above projects indicates that this agency does not get involved until a project has actually been constructed. Consequently, OSHA representatives have few comments to offer when no operating project exists. Similarly, project staff interviewed in previous cases in this study showed few concerns for other permits (e.g., building and construction) to be obtained from county or city agencies. For these reasons, interviews conducted in Texas focus on environmental regulatory requirements, which cause the greatest concern to current users.

We would like to thank the following individuals for the time and information that they generously gave us during the interviews:

### U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VI

Oscar Cabra, Chief, New Source Review Section  
Robert Hanneschlager, Chief, Compliance Section

### TEXAS AIR CONTROL BOARD

J. C. Caraway, Permit Engineer  
Sam Growther, Permit Engineer

TEXAS DEPARTMENT OF WATER RESOURCES

William G. Crolley, Engineer  
Joseph C. Newell, Wastewater Section  
Rayburn A. Newton, Wastewater Permits  
Gregory L. Tipple, Solid Waste Unit

9.1 Hypothetical Coal Gasification Project

The basic assumptions for the hypothetical project are presented in Table 9-1. These assumptions were developed based on the experience gained from interviews concerning four\* of the five actual projects. Alternatives to this base case were similarly defined. Based on the experience of the four projects examined, MITRE assumed that the alternatives, also shown in Table 9-1, would require more interaction among the company and Federal and state regulatory agencies. However, the state agency representatives indicated that there would be no difference in the regulatory process between the base case and the alternatives.

It should be noted that the hypothetical project brought coal into Texas from Utah. The decision to deviate from using lignite was based on conversations with architect-engineering firms experienced in coal gasification, and with state officials. At the present time, no interest exists in gasifying lignite because of: (1) the abundant supply of natural gas in the state, and (2) the lack of experience and uncertainty of gasifying lignite in small gas producers.

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\*These were: University of Minnesota, Duluth, Minnesota; Pike County, Kentucky; CAN DO, Inc., Hazleton, Pennsylvania; and Glen-Gery Corporation, York, Pennsylvania.

TABLE 9-1

BASES FOR HYPOTHETICAL LOW-BTU COAL GASIFICATION PROJECT IN TEXAS

BASIC ASSUMPTIONS:

- Existing plant producing glass in Houston
- Existing National Pollution Discharge Elimination System permit to plant
- Sanitary wastes to existing sewer
- Sulfur cleanup (depending on coal, would probably be required for non-attainment area)
- Existing sanitary landfill
- Coal brought into Texas by train from Utah

ALTERNATIVES:

- New plant
- No landfill
- Coal by barge from Illinois
- Texas lignite used

COAL ANALYSES, AS RECEIVED:

	<u>UTAH</u>	<u>ILLINOIS</u>	<u>TEXAS (Lignite)</u>
Moisture	5.0%	10.5%	26.6%
Ash	6.9	10.6	9.9
Sulfur	0.5	2.9	1.0
Heating Value	12,660 Btu	11,260 Btu	8,070 Btu

The inclusion of Texas in the study still proves useful because of the relationship between state agencies and the Environmental Protection Agency.

## 9.2 Environmental Regulatory Requirements

In Texas, a company wishing to build a new plant that uses low-Btu coal gasification or to modify an existing plant to introduce this technology is required to deal with several environmental Federal and state agencies, as discussed below.

### 9.2.1 Federal Agencies

The Environmental Protection Agency (EPA) is the major Federal agency that would be involved in an action in Texas. EPA would issue the preconstruction permit covering actions under the program for the Prevention of Significant Deterioration (PSD) of air quality, as outlined in the 1977 Clean Air Act Amendments (PL 95-95), for plants in clean air areas. All permits for the point source discharge of pollutants into water under the National Pollutant Discharge Elimination System (NPDES) would be issued by EPA, since Texas is not yet approved for issuance.

### Air Programs

The PSD program is designed to prevent the degradation of air quality in areas where ambient air quality is relatively clean, as attested by the meeting of national ambient air quality standards. New plants are subject to PSD review if they are located in any area where air quality standards are being met, if potential emissions of

any regulated pollutant exceed 100 tons per year for plants within 28 specified industrial categories, or if potential emissions exceed 250 tons per year for any other plant. If a new plant fits these criteria, the following is required:

- Monitoring and submission of air quality and other pertinent data
- Demonstration that the plant will not violate applicable increment or any air quality standard, based on ambient air quality analysis
- Installation of Best Available Control Technology (BACT)
- Commitment to conduct postconstruction monitoring
- Public hearing
- Issuance of construction permit.

Industrial low-Btu coal gasification facilities consuming up to 6,000 lbs/hr of coal\* would probably fall below the limits of the PSD program.

Other potentially applicable programs are the New Source Performance Standards (NSPS) and National Emissions Standards for Hazardous Air Pollutants (NESHAP). Although these are Federal programs, they are administered by Texas. Neither is likely to be of concern. NSPS are applicable to certain categories of new stationary sources of air pollution. Facilities affected by NSPS are required to notify the EPA Regional Office as to the dates they began construction of each subject unit, the anticipated startup date of each unit, and the actual startup date of each unit. Most subject sources will be

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\*Largest size of operation among case studies.



required to demonstrate compliance with applicable standards within 180 days after initial startup. NSPS have not been issued for coal gasification.

NESHAP are applicable to certain stationary sources, both existing and new, that handle those materials that have been designated as being hazardous (asbestos, beryllium, mercury, and vinyl chloride). Since none of these would be emitted by a coal gasification facility, NESHAP would not apply.

#### Water Programs

Under the NPDES program, permits are issued for water discharges to surface waters from all new and existing facilities. New facilities are defined as wholly new sources, total reconstruction of sources, or major alterations of sources, the construction of which began after the publication of New Source Performance Standards (NSPS) promulgated by EPA applicable to those sources. EPA also sets forth effluent guidelines for permitting of existing sources. A NPDES permit for an existing source is a discharge or operating permit. A permit is not necessary for discharges into a municipal sewer.

The provisions of the National Environmental Policy Act (NEPA) apply to the issuance of a NPDES permit by EPA. This may require that the applicant submit an environmental assessment. If the construction or operation of the facility might result in significant environmental impacts, an environmental impact statement (EIS) may

be required. Texas has applied for delegation of the NPDES program from EPA. If this application is approved, the issuance of NPDES permits will no longer be a Federal action and therefore will not be subject to NEPA and to the EIS process.

#### Federal Permitting Procedures

A packet containing information on both air and water programs is available from the EPA Region VI Office in Dallas. This packet contains a New Source Environmental Questionnaire (NS/EQ) (see Appendix V) and information on the PSD review program, air quality review requirements, NPDES, and applicable Federal regulations. From the responses by an applicant on the NS/EQ, a determination is made as to the new source requirements for the proposed facility. The NS/EQ is reviewed by both air and water personnel, who are essentially interchangeable. A table of the approximate time requirements for the review is given in the NS/EQ.

#### 9.2.2 State Agencies

Two major state agencies are responsible for environmental permitting in Texas--the Texas Air Control Board (TACB) for air quality and the Department of Water Resources (DWR) for water quality and solid waste. These two agencies consider applications separately as compared to EPA, where application reviewers are interchangeable. State regulatory requirements are shown in Tables 9-2 through 9-4.

TABLE 9-2

## AIR PERMITS REQUIRED IN TEXAS

Regulation	Permit	Granting Agency	Submittal
Texas Clean Air Act, Regulation 6	Construction	Texas Air Control Board (TACB)	<ul style="list-style-type: none"> <li>• General Form PI-1</li> <li>• Engineering data (plans &amp; specifications)</li> </ul>
Regulation 6	Operating	TACB	<ul style="list-style-type: none"> <li>o Application</li> </ul>
Texas Permit Exemption Procedures	N/A	TACB	<ul style="list-style-type: none"> <li>• Request for exemption from permit requirements</li> </ul>

TABLE 9-3

## WATER PERMITS REQUIRED IN TEXAS

Regulation	Permit	Granting Agency	Submittal
Water Quality Act, Section 26.027	For the discharge of waste or pollutants into or adjacent to water in the state	Department of Water Resources (DWR)	Application. Conditions of issue given in each permit: <ul style="list-style-type: none"> <li>• location of point of discharge</li> <li>• maximum quantity of waste discharge under the permit</li> <li>• character and quality of discharged waste</li> <li>• any monitoring and reporting requirements prescribed for the permittee</li> </ul>
Water Quality Act, Section 26.034	Approval of disposal system plans	DWR	Completed plans and specifications
Water Quality Rules, Rule 300.2	Waste Control Order authorizing: <ul style="list-style-type: none"> <li>• disposal of a defined waste into or adjacent to water in the state</li> <li>• disposal of a defined waste by disposal well</li> <li>• disposal of any industrial waste other than non-commercial on property disposal</li> </ul>	DWR	Design plans and specifications, maps. Supplementary technical report (when requested) giving: <ul style="list-style-type: none"> <li>• description of facilities</li> <li>• volume and rate of disposal of the waste</li> <li>• chemical and physical properties of the waste</li> </ul>
Water Quality Rules, Section 645	Certification Notice for NPDES Permits "that discharge will comply with applicable provisions of section 301, 302, 306, and 307 of FWPCA"	DWR	Certification notice is part of EPA notice of intent to issue NPDES when: <ul style="list-style-type: none"> <li>• discharge is authorized by existing state permit</li> <li>• applicant seeks no significant increase in volume of effluent or quantity of pollutants</li> <li>• effluent requirements of state permit agree with FWPCA</li> </ul>

TABLE 9-4

## SOLID WASTE PERMITS REQUIRED IN TEXAS

Regulation	Permit	Granting Agency	Submittal
Solid Waste Disposal Act, Section 4(e)	Off-site disposal of industrial solid waste, other than hazardous	Department of Water Resources (DWR)	Industrial Solid Waste Management Inventory
Solid Waste Disposal Act, Section 4(f) (1); Rules of the Texas Water Development Board Pertaining to Industrial Solid Waste Management, 156.22.01.008	On-site disposal review; no permit required for on-site disposal, defined as within 50 miles of source and under same ownership as source	DWR	<ul style="list-style-type: none"> <li>• Notification before operation</li> <li>• On-site review of facilities</li> </ul>

### Air Programs

The TACB is responsible for air programs other than PSD. The TACB issues a Construction Permit for any facility that may emit contaminants into the air. This state permit is required in addition to the preconstruction review for clean air areas under the PSD program of the EPA. Application forms for the construction permit are available from the TACB (see Appendix W). The completed forms are used in the evaluation of the proposed facility for compliance with the applicable laws and regulations. Quantification of emissions, clear presentation of alternatives, and level of detail of control technology are of major importance in judging completeness of the forms. Following submission of the first form, PI-1, additional information may be required. This additional information will be requested from the proposer on form PI-2, Supplemental Application. Attachments to PI-2 are in the form of tables, each requesting specific information about an aspect of the project.

The owner of a facility must apply for an operating permit within 60 days after operation begins. Upon assurance that all conditions of the construction permit have been complied with, the operating permit is issued.

NSPS approval from the TACB is necessary before EPA will approve the application under PSD, although the applications may be submitted to the state and Federal agencies at the same time. The PSD application to EPA and the state forms together provide the TACB with all the information it requires.

A permit from the TACB is required before any construction could begin for any type of project, including coal gasification.

#### Water Programs

The Texas Department of Water Resources (DWR) issues permits for the discharge of wastes into waters of the state. An application form is available from the DWR (see Appendix X). If a NPDES permit is necessary also, this should be filed along with the state permit application. As stated in the application instructions, a notice of public hearing is a necessary part of the application procedure.

If a low-Btu coal gasification facility were added to a plant with existing NPDES and state discharge permits, modification of these permits would be necessary. If there were no previous onsite storage of coal, a new discharge permit for the coal pile might be necessary. If the plant were discharging to a municipal sewer system, that system would be responsible for any necessary changes in its operating permit.

#### Solid Waste Programs

The DWR also issues permits for industrial solid waste disposal, with the Department of Health having authority for municipal solid wastes. If industrial solid wastes are disposed of on property owned or controlled by the generator of the wastes and within 50 miles of the point of generation, no permit is necessary. If wastes are determined to be hazardous by the EPA, a state hazardous waste permit would be required, regardless of place of disposal. An Industrial

Solid Waste Management Inventory form is available from the Solid Waste Branch of the DWR (see Appendix Y).

Since a low-Btu coal gasification facility would generate solid wastes in the form of ashes, a solid waste permit would be required if the ashes were disposed of offsite or if they were determined to be hazardous.

#### 9.2.3 Time Constraints on Regulatory Actions

Table 9-5 shows the time constraints for regulatory actions in Texas. Since no interview was conducted with an operating low-Btu coal gasification project, no comparison can be made based on experience. This table shows, however, that no strict time limits are defined in Texas, contrary to the case in the other states examined by this study. This does not mean, however, that regulatory delays will be greater in Texas, since there is no time enforcement or appeal recourse for violation of statutory limits in the other states.

#### 9.3 Recommendations from Regulatory Agencies

The regulatory agencies involved in this case are cooperative, but they make no exceptions in their enforcement practices for any specific technologies, including low-Btu coal gasification.

Each agency interviewed had recommendations on how potential users of low-Btu coal gasification could best work with the regulatory system. These can be summarized as recommending full disclosure as early as possible and keeping track of the application.



TABLE 9-5

## TIME CONSTRAINTS FOR REGULATORY ACTION

Action	Agency Involved	Time Requirement
<b>AIR</b>		
Construction permit	Texas Air Control Board (IACB)	"A Reasonable time"; Public Notice of application required
Operating permit	TACB	Apply within 60 days after beginning operation
Texas permit exemption procedures	TACB	Not specified
<b>WATER</b>		
Waste discharge permit	Department of Water Resources (DWR)	Not specified; Public Notice of application required
Approval of disposal system plans	DWR	Not specified
Waste Control Order	DWR	Not specified
Certification Notice for NPDES Permits	DWR	Not specified
<b>SOLID WASTE</b>		
Permit for off-site disposal of non-hazardous industrial solid waste	DWR	Not specified

#### Recommendations from EPA

- Give complete details and alternatives for control techniques.
- Submit the New Source Environmental Questionnaire at least 18 months before construction is planned to start.
- Know what monitoring data are available, if monitoring will be required under PSD.

#### Recommendations from Texas Air Control Board

- Disclose the quantity of all sources of air emissions and all control options.
- Plan predesign meetings with permitting agencies.
- Consider process alternatives in preference to "end-of-pipe" controls.
- Follow up on permit application through discussions with individual engineers working on application.

#### Recommendations from Texas Department of Water Resources (DWR)

- Contact the DWR as early as possible in the planning process.
- Follow procedure of complete disclosure.
- Follow the permit through the system; know who is handling it.

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## TABLE OF APPENDICES

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APPENDIX V

NEW SOURCE ENVIRONMENTAL QUESTIONNAIRE

FROM U.S. ENVIRONMENTAL PROTECTION AGENCY

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## NEW SOURCE QUESTIONNAIRE

INSTRUCTIONS

The purpose of the New Source Environmental Questionnaire (NS/EQ) is to solicit information concerning new sources of air and water pollution which may require EPA approval under one or more of the following new source programs.

1. National Pollutant Discharge Elimination System (NPDES)
2. Prevention of Significant Deterioration (PSD)
3. New Source Performance Standards (NSPS)
4. National Emission Standards for Hazardous Air Pollutants (NESHAPS)

Please complete and return 3 copies of the questionnaire to:

Environmental Protection Agency  
Permits & Support Branch (6AEP)  
1201 Elm Street  
Dallas, Texas 75270

Attach separate sheets of paper if necessary, making sure all answers are correctly numbered. Sufficient information must be provided to determine the applicability of the programs listed above. Any confidential information should be included as an attachment to the questionnaire.

After receipt of the completed questionnaire, you will be advised of the new source requirements applicable to your proposed facility.

Regulations applicable to New Source NPDES permits require that new source applicants submit the questionnaire prior to the initiation of on-site construction. However, some new source requirements entail a pre-construction review. It is, therefore, to your advantage to submit the questionnaire as early in your planning process as possible, so that construction need not be unnecessarily delayed pending completion of new source procedures.



## NEW SOURCE ENVIRONMENTAL QUESTIONNAIRE

I. GENERAL Name, address, location, and telephone number of proposed facility.

A. Name \_\_\_\_\_

B. Mailing address

1. Street address or P. O. No. \_\_\_\_\_  
\_\_\_\_\_

2. City \_\_\_\_\_ 3. State \_\_\_\_\_

4. County \_\_\_\_\_ 5. ZIP \_\_\_\_\_

C. Location

1. Street or other description \_\_\_\_\_  
\_\_\_\_\_2. City \_\_\_\_\_ 3. County \_\_\_\_\_  
(if applicable)

4. State \_\_\_\_\_

D. Telephone No. \_\_\_\_\_

Area  
CodeII. FACILITY DESCRIPTION

A. GENERAL

1. Type of facility (e.g. petroleum refining, paper mill, etc.). Include specific products and amounts produced. If this is an expansion or modification of an existing facility, please describe the present facility and indicate the extent of the expansion or modification.

2. Process. . Please describe the specific process to be used at the facility and provide block diagram of manufacturing operations.

3. Applicable SIC Code (if known).

4. Date on-site construction will begin.

5. Date of startup of the facility.

B. Water

1. Will the proposed source discharge any wastewater, including stormwater, through a discrete conveyance (pipe, ditch, etc.)? Stormwater includes any runoff from lands or facilities used for industrial or commercial activities that is contaminated by contact with aggregations of wastes, raw materials, or pollutant contaminated soil.
2. Specific source(s) of wastewater. (Construction, process, cooling, sanitary, stormwater runoff, etc.)
3. The proposed facility will discharge to:
4. Date discharge is to begin:

5. If the proposed facility is an expansion or modification of an existing facility, give present NPDES number and describe the functional interrelationships of the proposed source and the existing source.

C. Air

1. To the best of your knowledge, has an applicable new source performance standard been published under Section 111 of the Clean Air Act. (Give category, subpart number, and date if known.)
2. Briefly provide information on the proposed facility's production or operating capabilities as related to air emissions (e.g., boilers--MM BTU/hr. heat input; incinerators--T/day charging rate; petroleum liquid storage vessels--product stored, gallons; etc.) Hours of operation should be included.

3. List sources of air emissions, including fugitive (uncontrolled) and controlled emission rates (tons/year, pounds/day, pounds/hour). Include calculations, assumptions, emission factors, etc. Uncontrolled emission rates should be calculated as the emissions that would occur in the absence of any abatement device. Uncontrolled storage tank emissions should be based on old tank conditions. (See Compilation of Air Pollutant Emission Factors, AP-42.)

4. Will the proposed facility result in the handling or emission (to the ambient air) of asbestos, beryllium, mercury, or vinyl chloride?

5. What is the date of application for and issuance of the State New Source Construction Permit under 40 CFR 51.18 (1976)?

### III. PROJECT CONSTRUCTION

If you wish to establish that construction has commenced, please complete this section. Answers must be descriptive with dates and monetary values included. The values given must be related to the total value of the proposed new or expanded source. Documentary evidence may be required to substantiate answers submitted on this form.

#### A. Has there been any:

1. Site preparation work, such as major clearing or excavation?

2. Placement, assembly, or installation of facilities or equipment at the premises where such equipment will be used?

B. Have you entered into or executed any contractual obligations for:

1. Site preparation? If yes, give date of agreement and brief description of work to be done.

2. Facilities or equipment to be used at the premises where the project is to be constructed? If yes, give date of each agreement and brief description of each item.

3. Other obligations which you feel are significant in showing your commitment to this project at this site?

- C. 1. Which of the above mentioned obligations are conditioned upon the occurrence or non-occurrence of other events or circumstances? Upon what events or circumstances are they contingent?

- 401

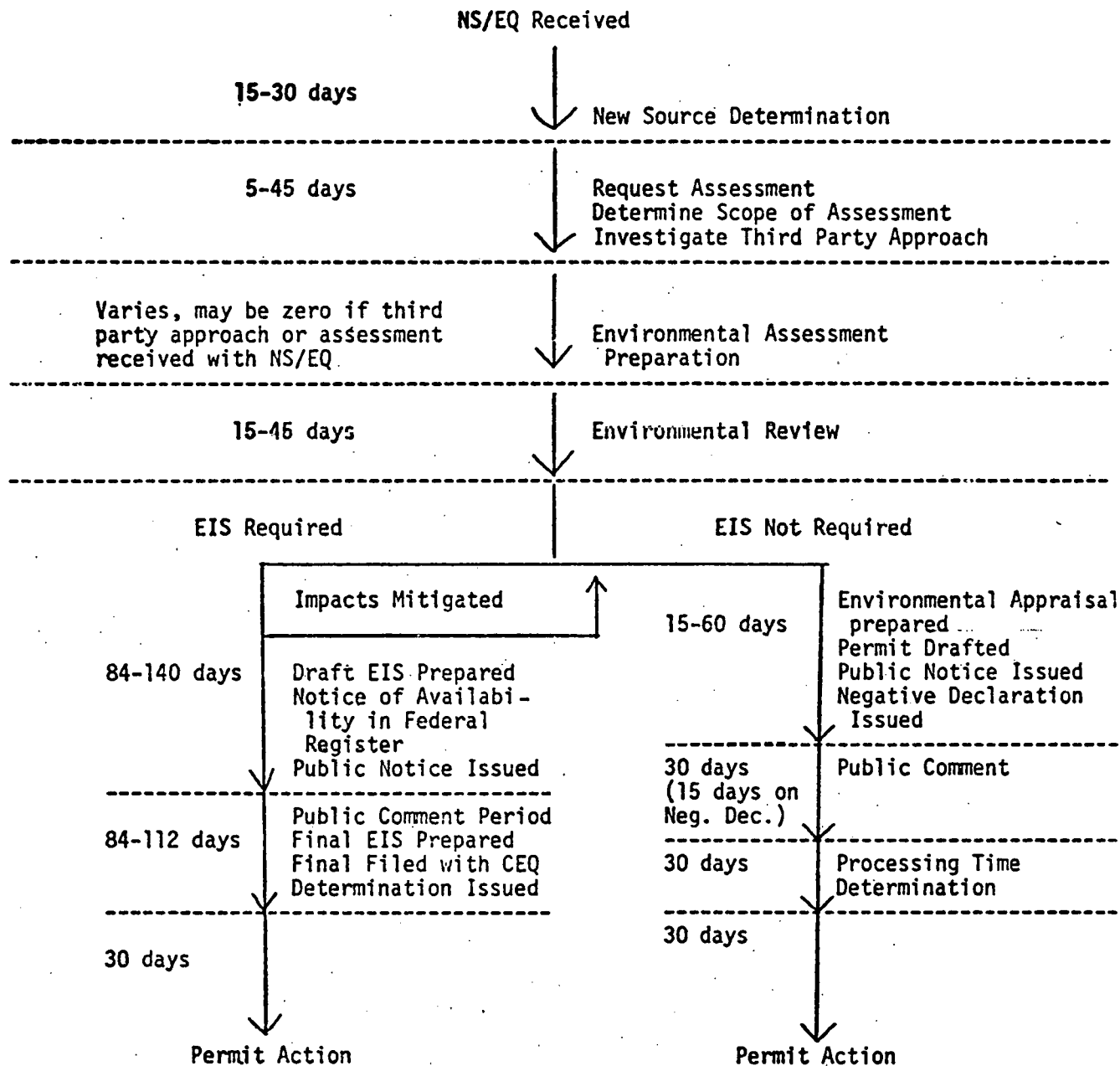
\_\_\_\_\_ being duly  
sworn, deposes and says: I am \_\_\_\_\_  
Title (Owner, Principal Officer, etc.)  
of \_\_\_\_\_  
(Organization Name)

The information contained in this questionnaire and  
attachments is true and correct.

\_\_\_\_\_  
Signature

Subscribed and Sworn to before me this  
\_\_\_\_\_ day of \_\_\_\_\_,

\_\_\_\_\_  
Notary Public in and for  
\_\_\_\_\_ County, \_\_\_\_\_  
My commission expires \_\_\_\_\_



**Totals**

EIS Required 233-402 days

EIS Not Required 140-185 days

These times are estimates and do not include the time needed for environmental assessment preparation by the applicant. The lower values represent minimum times needed to complete the new source procedures. Longer times will be required in cases involving complex issues.

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APPENDIX W  
PERMIT APPLICATIONS  
FROM TEXAS AIR CONTROL BOARD

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## TEXAS AIR CONTROL BOARD INSTRUCTIONS FOR PERMIT APPLICATIONS

Sections 3.27 and 3.28 of the Texas Clean Air Act provide that any person who plans to construct or to modify a facility which may emit contaminants into the atmosphere shall obtain construction and operating permits. Procedures for obtaining these permits have been delineated by the Texas Air Control Board.

Guidelines for determining if a facility will comply with the intent of the Clean Air Act are the General Rules and Regulations adopted by the Texas Air Control Board. However, for some operations, the Federal Environmental Protection Agency performance standards and available proven technology are applicable. Performance standards for new and substantially modified sources may be more restrictive than the standards for existing sources.

The principal objective of the Permits Section is to evaluate the expected performance of the proposed construction for compliance with all applicable Air Pollution Control Rules and Regulations, with performance standards based on available proven technology, and with ambient air standards for all air contaminants. Particular attention must be directed to quantifying the emission(s) from the proposed facility via material balances and/or other methods. This is of primary importance in the evaluation of the proposed facility.

Various forms are used to provide pertinent data about the type of operation, contaminants emitted and material balances applicable to the contaminants. Special attention should be directed to providing adequate information for the evaluations; otherwise, time may be lost due to repeated correspondence.

### Definitions:

1. "Permit Unit" means an equipment item or grouping of items functioning as a whole, which the Texas Air Control Board will allow to be included in a single application. A permit unit will include all equipment which are united physically, e.g. by conveyor, chute, pipe or hose, for the movement of product material provided that no portion or item of the group will operate separately with product material not common to the group operation.
2. "Source" means a point of origin of air contaminants, whether privately or publicly owned or operated.

## FORM PI-1 GENERAL APPLICATION GENERAL INSTRUCTIONS

1. Complete four copies of the application. Retain one copy for your own records and forward the other three copies per method A. or B. below.

**Method A.** Your application will be processed earlier if you follow method A.

1. Send one copy along with necessary maps and drawings to: TEXAS AIR CONTROL BOARD, Permits Section, 8520 Shoal Creek Blvd., Austin, Texas 78758.
2. Send one copy to the appropriate Regional office of the Texas Air Control Board including necessary maps and drawings.
3. Send one copy to the local city or county air pollution control program (if any) where the proposed facility is to be located.

### **Method B.**

All three copies of the application data may be sent directly to Austin. However, issuance of your permit may take longer than using method A. above.

2. Separate application must be made for each permit unit that is a potential source of air contamination, such as an incinerator, kiln, or sulfuric acid plant. Applicant may be required to submit additional information on forms which will be provided as necessary; these forms become a part of the application.
3. **Confidential Information** Information relating to secret processes or methods of manufacture or production must be identified as confidential when submitted. Such information should not appear on the same page with information that cannot be held confidential such as on "Table 1", which shows emissions data. Confidential information will be kept in a locked file separate from that part of application data that is considered to be "public records" per Section 2.13 of the Texas Clean Air Act.
4. Incomplete applications will not be processed. Review of applications and issuance of permits will be expedited by supplying all necessary information with initial application forms.

## SPECIFIC ITEM INSTRUCTIONS FOR FORM PI-1

- |           |   |
|-----------|---|
| Item I    | List the legal name which will appear on the permit.  |
| Item II   | List the name of the plant or facility where the permit unit is located. List the street address and city of the plant, if available, or give the nearest city or town. <u>Give the latitude and longitude of the permit unit to the nearest second.</u>  |
| Item IIIA | Give the name of the general type of operation, or manufacturing process, or equipment of the permit units, such as sulfuric acid plant, incinerator, cupola, electric furnace, boiler, etc.  |
| Item VIII | Application for authority to construct must be made by the owner or operator of the facility. If the applicant is a partnership or group other than a corporation, the application must be made by an individual who is a member of the group. If the applicant is a corporation, the application must be made by an agent authorized to act for the corporation. |

TEXAS AIR CONTROL BOARD  
FORM PI-1, GENERAL APPLICATION  
(Read Instructions Before Completing.)

I. PERMIT TO BE ISSUED TO: \_\_\_\_\_  
(Corporation, Company, Government Agency, Firm, etc.)

Mailing address: \_\_\_\_\_

Individual authorized to act for applicant: Name: \_\_\_\_\_ Title: \_\_\_\_\_

Address: \_\_\_\_\_ Telephone: \_\_\_\_\_

II. LOCATION OF PERMIT UNITS (Latitude and Longitude must be to nearest second):

Name of plant or site: \_\_\_\_\_ Street address (if available): \_\_\_\_\_

Nearest city: \_\_\_\_\_ County: \_\_\_\_\_ Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_  
(Plant bench mark)

III. TYPE OF OPERATION OR PROCESS OF PERMIT UNIT:

A. Name of operation or process of permit unit: \_\_\_\_\_

B. Permit unit identification number: \_\_\_\_\_

C. Type (check one): ☐ Permanent ☐ Portable

D. Operating schedule: Hours/day \_\_\_\_\_ Days/week \_\_\_\_\_ Weeks/year \_\_\_\_\_

IV. PERMIT UNIT CLASSIFICATION (Check applicable blocks):

A. ☐ New Permit Unit: Proposed start of construction \_\_\_\_\_ Start of operation \_\_\_\_\_  
(Date) (Date)

B. ☐ Modification of Permit Unit

C. ☐ Change in Location

D. ☐ Change in Ownership

E. ☐ Permit Unit Now Operating Under Permit Number R- \_\_\_\_\_

V. If Items IV.A, B, or C were checked, submit the following information under either A or B:

A. Data requested in B1, B2 and B3 has been previously submitted under Permit No. \_\_\_\_\_

B.1. Submit three copies of an area map to approximate scale showing the location of the property, the land use designations for adjacent and nearby lands which may be affected by the emission, geographical features such as highways, roads, streams and significant landmarks, distance to the center of nearest city or town if located outside an incorporated municipality. If the property is located within a town or city, a city map may be used to present this information, and if outside a town or city, a county highway map may be used. County highway maps may be ordered either through the Texas Highway Department, Austin, Texas or through the State District Highway Engineer for the county.

B.2. Give a legal description of the tract of land upon which the plant or facility is located. The term "legal description" means either a metes and bounds description, or the block and lot number of a platted subdivision which would be suitable to effectuate the transfer of title to real property.

B.3. Submit a plot plan of the property, to scale, showing the boundaries, plant bench mark (latitude-longitude), the location of all emission points of any air contaminants on the property, the distance from each emission point to the nearest boundary line, prevailing wind direction, true north direction, a scale and any other information deemed relevant by the applicant. Identify the emission points by numbers; use the same numbers for those emission points in this permit that will be assigned in the flow diagram and which will be used in present or future emissions inventory questionnaires.

VI. If Item IV.E is not checked, submit the following information:

A. Process Flow Diagram. Prepare and attach a flow diagram identifying significant individual processes and/or operations. Identify (by number) points where raw materials, chemicals, and fuels are introduced, where gaseous emissions and/or airborne particulates may be discharged including intermediate releases where finished products are obtained, and location of pollution control devices.

B. Description of Process. Prepare and attach a written description of each process and of the function of the equipment in the process. (Identify items of equipment by numbers corresponding to flow diagram numbers.) The description must be in sufficient detail to determine the general operation of the process. Particular attention must be given to explaining all stages in the process where there is or may be a discharge of any solid, liquid, or gaseous material(s) into the atmosphere. Estimate number and type of air pollution abatement devices to be used such as 1 electrostatic precipitator, 2 cyclones, 1 incinerator, 2 baghouses, etc.

VII. A copy of the application is being sent to the Regional office of TACB? ☐ Yes ☐ No

A copy of the application is being sent to local city or county Air Pollution Control Program? ☐ Yes ☐ No

VIII. I. \_\_\_\_\_  
(Name) (Title)

state that I have knowledge of the facts herein set forth and that the same are true and correct to the best of my knowledge and belief. I further state that to the best of my knowledge and belief, the project for which application is made will not in any way violate any provision of the Texas Clean Air Act, Article 4477-5, Vernon's Texas Civil Statutes, as amended, or any of the rules and regulations of the Texas Air Control Board or any local governmental ordinance or resolution enacted pursuant to the Texas Clean Air Act.

DATE \_\_\_\_\_ SIGNATURE \_\_\_\_\_



# TEXAS AIR CONTROL BOARD

PHONE 512/451-5711  
8520 SHOAL CREEK BOULEVARD

CHARLES R. BARDEN, P. E.  
EXECUTIVE DIRECTOR

AUSTIN, TEXAS - 78758

Dear Sir:

This will acknowledge receipt of your general application for permit to construct or modify a facility, Form PI-1. After evaluation of your initial application, we have determined that additional information is necessary before a Construction Permit may be issued. Please supply all information as requested on the attached Supplemental Application, Form PI-2. (Since all parts of Supplemental Application, Form PI-2, are not required for every situation, only those sheets believed applicable to your application are enclosed. Additional sheets are available upon request.) Complete and return in accordance with general instructions, Form PI-1.

Yours very truly,

Permits Section  
Texas Air Control Board

## ATTACHMENT INDEX

NO. OF SETS	INDEX
	Form PI-2 Supplemental Application
	Table 1 Emission Sources
	Table 2 Material Balance
	Table 3 Air Pollution Abatement Equipment Data
	Table 4 Combustion Units
	Table 5 Solid Waste Incineration
	Table 6 Boilers and Heaters
	Table 7 Storage Tank Summary
	Table 8 Flare Systems
	Table 9 Particle Size Distribution
	Table 10 Cyclone Separators
	Table 11 Fabric Filters
	Table 12 Electrostatic Precipitators
	Table 13 Scrubbers or Wet Washers
	Table 14 Absorbers
	Table 15 Adsorbers
	Table 16 Simplified Data Sheet for Particulate Dust Collector
	Table 17 Rock Crushing
	Table 18 Spray Booth
	Table 19 In-line Lint Filter
	Table 20 Concrete Batching Plant
	Table 21 Furnace Data Sheet
	Table 22 Asphaltic Concrete Plant
	Table 23 Petroleum Production Facility
	Other Information

**TEXAS AIR CONTROL BOARD**  
**FORM PI-2, SUPPLEMENTAL APPLICATION**

This application and all attachments to be submitted in triplicate. Incomplete applications will not be processed. Review of applications and issuance of permits will be accomplished sooner if all necessary information is supplied with the initial application forms.

**A. PERMIT TO BE ISSUED TO:** \_\_\_\_\_  
 (Corporation, Company, Government Agency, Firm, etc.)

Mailing address: \_\_\_\_\_

Individual authorized to act for applicant: Name: \_\_\_\_\_ Title: \_\_\_\_\_

Address: \_\_\_\_\_ Telephone: \_\_\_\_\_

**B. LOCATION OF PERMIT UNIT:**

Nearest city: \_\_\_\_\_ County: \_\_\_\_\_

**C. TYPE OF OPERATION OR PROCESS OF PERMIT UNIT:**

Name of operation or process of permit unit: \_\_\_\_\_

Permit unit identification number: \_\_\_\_\_

**D. PERMIT UNIT SCHEDULE:**

Construction expected to begin: \_\_\_\_\_  
 (Date)

Operation expected to begin: \_\_\_\_\_  
 (Date)

**E. PROVIDE THE REQUESTED INFORMATION LISTED ON THE ATTACHED TABLE(S).**

**F. I,** \_\_\_\_\_ **(Name)** \_\_\_\_\_ **(Title)** \_\_\_\_\_

state that I have knowledge of the facts herein set forth and that the same are true and correct to the best of my knowledge and belief. I further state that to the best of my knowledge and belief, the project for which application is made will not in any way violate any provision of the Texas Clean Air Act, Article 4477-5, Vernon's Texas Civil Statutes, as amended, or any of the rules and regulations of the Texas Air Control Board or any local governmental ordinance or resolution enacted pursuant to the Texas Clean Air Act.

**DATE** \_\_\_\_\_ **SIGNATURE** \_\_\_\_\_

APPENDIX X  
PERMIT APPLICATIONS  
FROM TEXAS DEPARTMENT OF WATER RESOURCES



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APPENDIX X

TEXAS DEPARTMENT OF WATER RESOURCES  
INSTRUCTIONS AND PROCEDURAL INFORMATION

For Filing Application for a Permit to  
Discharge, Deposit or Dispose of Wastes

PART ONE  
GENERAL INSTRUCTIONS

1. A person who discharges wastes into or adjacent to the waters in the State, or who stores, processes or disposes of industrial solid waste must obtain a permit pursuant to the Texas Water Code or the Texas Solid Waste Disposal Act. In applying to the Texas Department of Water Resources, hereafter referred to as the Department, the applicant shall follow the procedures outlined below, on the application form and in the Rules of the Department
2. The application shall be mailed to:

Executive Director  
TEXAS DEPARTMENT OF WATER RESOURCES  
1700 North Congress Avenue  
P. O. Box 13087, Capitol Station  
Austin, Texas 78711

An application will not be processed until all information required to properly consider the application has been received.

3. Plans and specifications for all public sewage treatment plants must be approved by the appropriate State agency. Submit plans and specifications to the Department if financial aid is requested from the State Program of Financial Assistance for Construction of Treatment Works or the Federal Construction Grant Program.

Plans and specifications for all other public sewage treatment plants should be submitted to:

TEXAS DEPARTMENT OF HEALTH  
Division of Wastewater Technology  
1100 West 49th Street  
Austin, Texas 78756

4. If an application for a State permit is for the discharge of wastewater to a watercourse, the person, entity or firm seeking a State permit must also file an application for an NPDES (National Pollutant Discharge Elimination System) Permit with the U.S. Environmental Protection Agency. It will help expedite processing of the State application if a copy of the NPDES application is submitted to the Department.

PART TWO  
PROCEDURAL INFORMATION

The Executive Director will review the application for completeness of information submitted. During the review, the applicant may be contacted for clarification or additional information. When the application has been reviewed and all pertinent information is present, the application will be forwarded for review by other State agencies and local governmental entities interested in water quality control and a draft permit will be prepared. Except for certain amendment applications as provided in the following paragraph, the application will then be placed on a public hearing docket to be scheduled for a public hearing before the Texas Water Commission. The applicant may normally expect a pre-hearing visit from the Department's field representative in its area.

An application to amend a permit to improve the quality of the defined waste authorized to be discharged or disposed of may be set for consideration before the Texas Water Commission and acted on without the necessity of holding a public hearing, if the applicant does not seek to increase significantly the quality of defined waste authorized to be discharged or disposed of, or to change materially the pattern or place of discharge or disposal. The determination of whether the application may be considered in this manner shall be made by the Texas Water Commission, upon the recommendation of the Executive Director.

When the application has been scheduled for public hearing, the applicant will receive a letter of instruction and a public hearing notice from the Texas Water Commission to be published by the applicant. The applicant will receive these instructions and notice for publication approximately thirty days prior to the hearing. (Be sure to notify the Chief Clerk of the Texas Water Commission immediately if you note an error or omission in the notice.)

**Requirements for Giving Notice:**

**1. By the Applicant:**

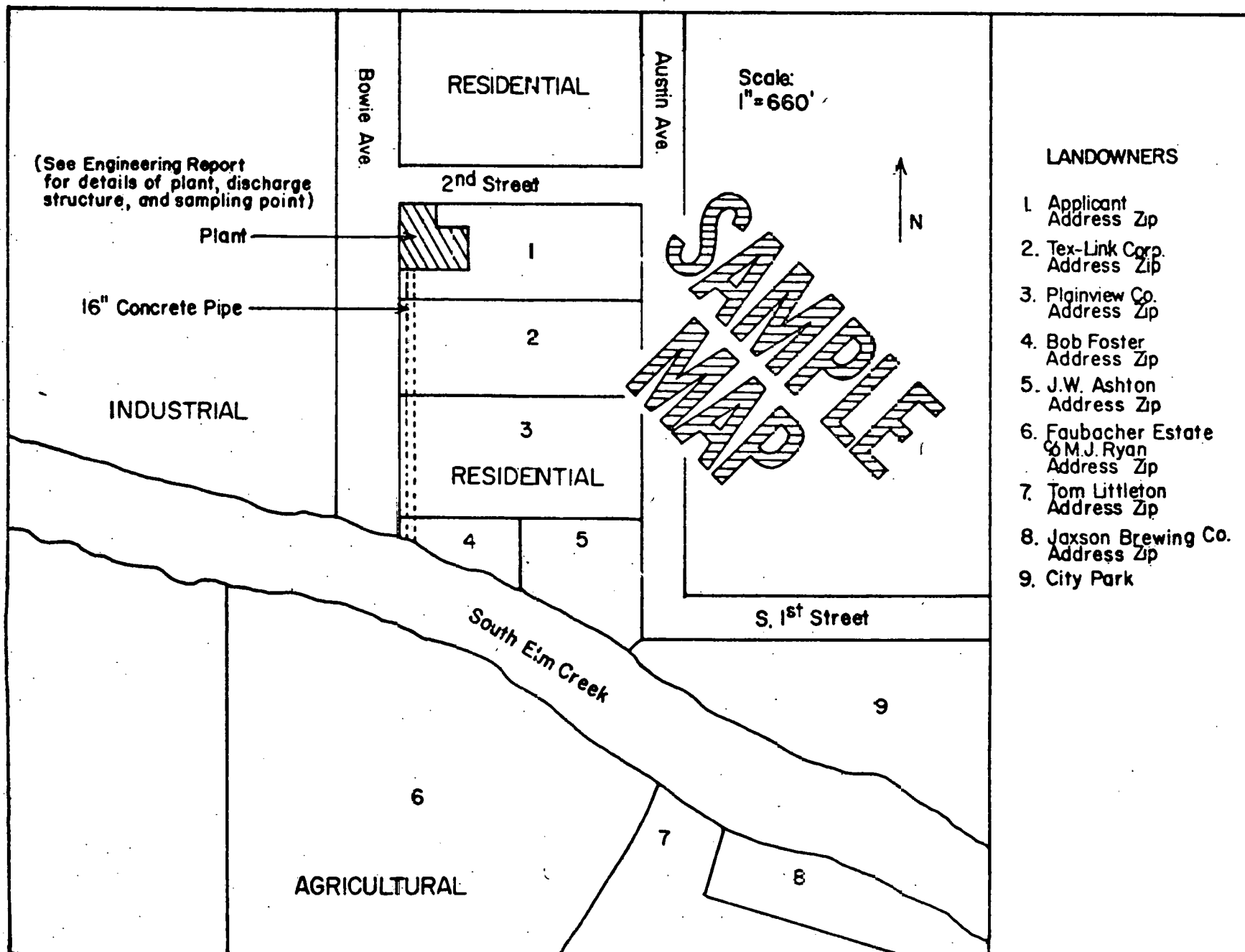
Every applicant for a regular permit or an amendment to a permit shall publish notice of any public hearing on the application at least once in a newspaper regularly published or circulated in the county or counties containing persons who may be affected by the discharge or disposal of such waste. The Texas Water Commission will mail the notice to the applicant in ample time for the publication, which shall be not less than twenty (20) days prior to the date set for the hearing. Notify the Chief Clerk of the Texas Water Commission prior to publishing if a correction or an addition is needed on the notice.

**2. By the Texas Water Commission:**

The Commission will notify the applicant of any hearing on the application. The Commission will mail notice of the hearing at which the application is to be considered to landowners, certain governmental entities and other parties who may be affected by the proposed waste discharge or disposal. This notice will be mailed not less than twenty (20) days prior to the date set for the hearing.

(Part Two--Procedural Information--Continued)

After the hearing, if all necessary information has been available for discussion, a report, which will contain the recommendations concerning the applications, will be prepared. The report will be sent to the applicant and other interested parties prior to the decision of the Texas Water Commission. The permit will be mailed to the applicant if granted by the Commission.



TEXAS DEPARTMENT OF WATER RESOURCES

1700 North Congress  
Stephen F. Austin Building  
P.O. Box 13087, Capitol Station  
Austin, Texas 78711

FOR DEPARTMENT USE ONLY	
Application No.	
County-District	
Receipt Acknowledged	
By Card Dated	
Adm. Review By	
Administratively Complete	
Copies Sent: P&WD, TDH, Dist	

APPLICATION FOR PERMIT TO DISCHARGE, DEPOSIT OR DISPOSE OF WASTES

1. Applicant \_\_\_\_\_  
 Plant Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ Zip Code \_\_\_\_\_  
 Telephone No. \_\_\_\_\_
2. List those persons or firms authorized to act for the applicant during the processing of the permit application.
3. Type Of Permit For Which Application Is Submitted:  
 A. Original \_\_\_\_\_ B. Amendment \_\_\_\_\_ Of Permit No. \_\_\_\_\_ Pg. No. \_\_\_\_\_  
 (i.e. outfall number)
4. List any other permits, existing or pending, which pertain to pollution control activities conducted by this plant or at this location.
5. Disposal Method:  
 A. Discharge Into A Watercourse: Trace the flow of effluent from the plant to the nearest major watercourse with a word description: (For example: "From the plant site through a six-inch pipe to an unnamed tributary of Doe Creek, then to Doe Creek, then to the Brazos River".)
- B. No Discharge Into A Watercourse: Irrigation \_\_\_\_\_, Evaporation Pond \_\_\_\_\_, Industrial Usage \_\_\_\_\_, Disposal Well \_\_\_\_\_, Other \_\_\_\_\_. Include complete description in technical report.
6. County in which disposal activities will be conducted: \_\_\_\_\_
7. List the street address of the facilities, if available: \_\_\_\_\_
8. Attach either a USGS Topographic or State Department of Highways and Public Transportation County Map identifying the location of the wastewater treatment facilities.

Application Form

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9. Are your waste disposal operations within the extraterritorial jurisdiction of a municipality? \_\_\_\_\_  
If so, what municipality? \_\_\_\_\_
10. Submit an application map or drawing of the site which includes the following information (Refer To Instructions For Sample Map):
- A. The approximate boundaries of the tract of land on which the waste disposal activity is or will be conducted.
  - B. The location of the point or points of discharge or disposal.
  - C. The general character of the areas adjacent to the place or places of disposal; for example, residential, commercial, recreational, agricultural, undeveloped, etc.
  - D. The boundaries of all tracts of land within a reasonable distance from the point or points of discharge, deposit or disposal and in the case of disposal to a water course, the map must show the boundaries of the tracts of land for a reasonable distance along the water course.
11. Show on the application map or include on a separate list properly cross-referenced to the map, the names and mailing addresses of the owners of all tracts of land within a reasonable distance of the point or points of discharge, deposit or disposal. You must include all landowners who might reasonably consider themselves affected.
- In case of discharge to a water course, the owners of all tracts of land for a reasonable distance along the water course must be included. In case of no discharge to a water course, the owners of all tracts of land adjacent to treatment facilities and disposal areas must be included.
12. Type of establishment, operation or process: (For example: sewerage facilities, oil refinery, steam electric generating plant, etc.) \_\_\_\_\_
13. What estimated date will waste disposal operations begin; or if operations have begun, what date did waste disposal operations begin at the site described by this application? If facilities are to be completed in stages, include schedule of dates of each increment. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
14. Attach one of the following technical reports, as applicable to the proposed wastewater facilities: (A) Technical Report for Municipal & Private Domestic Wastewater Facilities, (B) Technical Report for Industrial Wastewater Facilities, (C) Technical Report for Agricultural Wastewater Facilities and (D) Technical Report for Industrial Solid Waste Management Facilities
15. List and index all attachments to this application below.

I, (Name) \_\_\_\_\_, (Title) \_\_\_\_\_

state that I have knowledge of the facts herein set forth and that the same are true and correct to the best of my knowledge and belief. I further state that to the best of my knowledge and belief, the project for which application is made will not in any way violate any law, rule, ordinance or decree of any duly authorized governmental entity having jurisdiction.

Date \_\_\_\_\_ Signature \_\_\_\_\_

TECHNICAL REPORT  
FOR  
INDUSTRIAL WASTEWATER TREATMENT FACILITIES

Technical information shall be furnished covering the items indicated below in appropriate detail to understand the project. (Attach separate reports as necessary)

1. Source of raw water supply: \_\_\_\_\_

2. Proposed effluent volume:

Monthly average flow (gallons per day) \_\_\_\_\_

Daily maximum flow (gallons per day) \_\_\_\_\_

Treatment plant design flow (gallons per day) \_\_\_\_\_

3. Sources and characteristics of wastewater:

A. Submit plot plans and flow diagrams to identify the sources of the various classes of wastewater (for example: cooling water, wash water, condensate, sanitary, product-contaminated storm water, etc.) and include estimates of total plant area, process area, and material storage areas.

B. Describe predicted wastewater characteristics for which application is made.

Proposed Quality (as applicable):

Item	NOT TO EXCEED		
	Monthly Average	Daily Maximum	Grab Sample
Total Suspended Solids, mg/l	_____	_____	_____
Biochemical Oxygen Demand, mg/l	_____	_____	_____
Chemical Oxygen Demand, mg/l	_____	_____	_____
Total Organic Carbon, mg/l	_____	_____	_____
Oil and Grease, mg/l	_____	_____	_____
Ammonia-Nitrogen, mg/l	_____	_____	_____
Phenols, mg/l	_____	_____	_____
Chlorinated Hydrocarbons as _____, mg/l	_____	_____	_____
pH (max. and min.)	_____	_____	_____
Total Residue, mg/l	_____	_____	_____
Chlorides, mg/l	_____	_____	_____
Sulphates, mg/l	_____	_____	_____
Chromium, mg/l	_____	_____	_____
Zinc, mg/l	_____	_____	_____
Other Hazardous Metals (arsenic, barium boron cadmium, copper, lead, etc.)	_____	_____	_____
Temperature, °F	_____	_____	_____
Others (Specify)	_____	_____	_____



4. Industrial Technical Report:

A. Describe the products manufactured at this facility: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

B. Describe the treatment methods investigated or to be employed and include considerations of segregation of certain wastes, in-plant waste reduction, etc. Submit the results of treatability studies to define the treatment system to be employed.

C. Define treatment process design. This may be in a preliminary form, but should be comprehensive enough to:

- (1) Establish treatment objectives.
- (2) Provide flexibility for continuous treatment under conditions of various production cycles and under all expected climatic conditions.
- (3) Describe disposal methods for solid wastes including wastewater and water treatment plant sludges, process solid wastes and byproducts.
- (4) Describe hydraulic features of the wastewater collection and treatment system, including capacity limitations, control and operating procedures during emergencies, flood protection analysis, flow measurement devices, whether discharge is continuous or intermittent, length and frequency of discharge, whether effluent is pumped or gravity fed, etc.
- (5) Describe the method of final disposal, if other than discharge to watercourse. In case of land irrigation, describe the operational procedure for both normal and wet weather conditions, type of crop, acreage available, etc.
- (6) Describe storm water handling system, including extent of segregation from process wastewaters, diversion or retention structures and discharge points.
- (7) Earthen Structures:
  - (a) If wastes are held or treated in earthen structure(s), describe the type, dimensions, capacity, and type of lining, if any, of the structure(s) and the type of waste contained by the structure(s).
  - (b) If any unlined earthen structure(s) contain strong wastes, submit information concerning the possibility of groundwater contamination, including permeability data of soil from which structure is constructed, geology and permeability of underlying layers, and location of known groundwater sources and wells in the vicinity.

5. Could the project be served by a regional system or any other facilities (including other works owned by the applicant)? Explain.

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6. Are the proposed facilities to be located above the 100-year frequency flood level? Yes \_\_\_\_\_ No \_\_\_\_\_ If not, what protective measures are to be used?

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APPENDIX Y

INDUSTRIAL SOLID WASTE MANAGEMENT INVENTORY

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# APPENDIX Y



## TEXAS DEPARTMENT OF WATER RESOURCES INDUSTRIAL SOLID WASTE MANAGEMENT INVENTORY

RETURN TO :  
TEXAS DEPARTMENT OF WATER RESOURCES  
SOLID WASTE BRANCH  
P.O. BOX 13087, CAPITOL STATION  
AUSTIN, TEXAS 78711

PLEASE RETURN WITHIN 30 DAYS

### INSTRUCTIONS

**PART I:** PART I is to be completed by everyone and begins on Page 2. An explanation for each item follows:

- If your firm generates industrial solid waste, check the box marked "yes" and complete both PART I and PART II of the inventory. If your firm generates no waste, check "no" and complete only PART I.
- Give the name of your company and the complete address of your plant (street number, city, state and zip code).
- Give the address, city, county and zip code of any waste disposal site owned and controlled by your company which is not the same as, but is within 50 miles from the location of your plant.
- Give the total number of persons employed at your plant.
- Give the name, title, area code and telephone number of the person TDWR should contact in regard to your company's solid waste disposal activities.
- Give the numbers of any permits previously issued to your company by TDWR or by the former TWQB (Industrial Wastewater Discharge or No Discharge Permits; Injection Well Permits).
- Describe the goods produced or services provided by your company at the plant site.
- Sign and date the Inventory certifying that the information you have supplied is both accurate and complete.

**PART II:** PART II begins on page 3 and continues through page 4. If your company is an industrial solid waste generator, you need to complete items A-J for each waste you produce. Space is provided for listing up to 6 wastes. If you should need more space, you may duplicate the blank form and/or attach any additional information as needed. An explanation for each item follows:

- In the first blank, give the sequence of the waste; in the second blank, give the total number of wastes to be listed. For example: if you generate 2 wastes, the first waste listed will be waste no. 1 of 2; the second waste listed will be waste no. 2 of 2, etc.
- If it is available to you, give the S.I.C. Code for the manufacturing processes as is given by the *Standard Industrial Classification Manual*.
- Check the box indicating the form the waste takes. If the waste is a sludge (part liquid, part solid), give the percentage of solids contained in the sludge.
- Give an estimate of the average amount of the waste produced each month, and check one box to indicate the unit of measurement employed.
- Check one box to indicate whether the waste is primarily organic or inorganic material—if you don't know, check the box marked "unknown".
- Check one box to indicate whether the waste is acidic or alkaline—if you don't know, check the box marked "unknown".
- Describe the waste in terms of the process from which it is produced, its chemical composition, its toxicity, its flammability and other distinguishing characteristics (Please be as detailed as possible). For example:  
  
Chromate plating process—spent chrome acid plating waste containing  $\text{Cr}^{6+}$ ,  $\text{Fe}^{3+}$ , and  $\text{H}_2\text{SO}_4$ . Acidic, toxic and corrosive. Waste is treated and disposed on-site as per item J.
- If you or a contracted shipper transports the waste to a receiver for disposal, check this box and give your estimate of the number of times the waste is shipped each month.
- If the waste is disposed, treated or stored over 30 days on-site, or if the waste is recovered for use or sale, check the "on-site" box and one or more of the other boxes indicating whether it is treated, stored, recovered or disposed. Note: "On-site" means within the property boundaries of a tract of land owned or effectively controlled by the waste generator and which tract is within 50 miles of the facility where the waste was produced. A disposal operation shall not be considered "on-site" if the waste is collected, handled, stored, or disposed with wastes from generating points under different ownership.
- Describe the methods and facilities used for on-site storage, treatment, recovery, or disposal of the waste (Please be as detailed as possible). For example:  
  
Chromate reduction to  $\text{Cr}^{3+}$ —spent plating waste is neutralized with caustic material (NaOH) to a pH 8 to 10. The effluent is discharged to the sanitary sewer by authorization of a city issued waste discharge permit. The remaining sludge is chemically fixed and landfilled on company owned property.

**PART I : GENERAL INFORMATION**

A. Does your firm generate an Industrial Solid Waste? ☐ Yes ☐ No

B. Division or Plant address : \_\_\_\_\_  
( Company Name )  
\_\_\_\_\_  
( Address ) ( City ) ( State ) ( Zip )

C. Onsite disposal locations. ( if different from above ) : \_\_\_\_\_

(1) \_\_\_\_\_  
( Address ) ( City ) ( County ) ( Zip )

(2) \_\_\_\_\_  
( Address ) ( City ) ( County ) ( Zip )

D. Number of persons employed : \_\_\_\_\_

E. Person-in-charge of solid waste : \_\_\_\_\_  
( Name ) ( Title )  
\_\_\_\_\_  
( Area Code ) ( Telephone Number )

F. TDWR Permit Number ( If any ) : \_\_\_\_\_  
\_\_\_\_\_

G. Description of products manufactured : \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

H. I certify the information herein is complete and accurate to the best of my knowledge :

\_\_\_\_\_  
( Signature ) ( Date )

# **PART II : WASTE INVENTORY**

WASTE DESCRIPTION		DISPOSITION
A. WASTE NO. ____ OF ____	B. SIC CODE ____ (IF KNOWN)	H. <input type="checkbox"/> OFF-SITE ESTIMATE SHIPMENTS PER MONTH : ____
C. FORM: <input type="checkbox"/> liquid water base <input type="checkbox"/> liquid other base <input type="checkbox"/> solid <input type="checkbox"/> sludge/slurry ____% solid	D. ESTIMATED MONTHLY AVERAGE AMOUNT: ____  <input type="checkbox"/> gallons <input type="checkbox"/> tons <input type="checkbox"/> cubic yds. <input type="checkbox"/> drums (55 gal.)	I. <input type="checkbox"/> ONSITE : <input type="checkbox"/> disposal <input type="checkbox"/> treatment <input type="checkbox"/> storage <input type="checkbox"/> recovery
		J. DESCRIPTION OF ON - SITE METHODS & FACILITIES :
E. <input type="checkbox"/> ORGANIC <input type="checkbox"/> INORGANIC <input type="checkbox"/> UNKNOWN		
F. <input type="checkbox"/> ACIDIC <input type="checkbox"/> ALKALINE <input type="checkbox"/> UNKNOWN		
G. DESCRIPTION :		
A. WASTE NO. ____ OF ____	B. SIC CODE ____ (IF KNOWN)	H. <input type="checkbox"/> OFF-SITE ESTIMATE SHIPMENTS PER MONTH : ____
C. FORM: <input type="checkbox"/> liquid water base <input type="checkbox"/> liquid other base <input type="checkbox"/> solid <input type="checkbox"/> sludge/slurry ____% solid	D. ESTIMATED MONTHLY AVERAGE AMOUNT: ____  <input type="checkbox"/> gallons <input type="checkbox"/> tons <input type="checkbox"/> cubic yds. <input type="checkbox"/> drums (55 gal.)	I. <input type="checkbox"/> ONSITE : <input type="checkbox"/> disposal <input type="checkbox"/> treatment <input type="checkbox"/> storage <input type="checkbox"/> recovery
		J. DESCRIPTION OF ON - SITE METHODS & FACILITIES :
E. <input type="checkbox"/> ORGANIC <input type="checkbox"/> INORGANIC <input type="checkbox"/> UNKNOWN		
F. <input type="checkbox"/> ACIDIC <input type="checkbox"/> ALKALINE <input type="checkbox"/> UNKNOWN		
G. DESCRIPTION :		
A. WASTE NO. ____ OF ____	B. SIC CODE ____ (IF KNOWN)	H. <input type="checkbox"/> OFF-SITE ESTIMATE SHIPMENTS PER MONTH : ____
C. FORM: <input type="checkbox"/> liquid water base <input type="checkbox"/> liquid other base <input type="checkbox"/> solid <input type="checkbox"/> sludge/slurry ____% solid	D. ESTIMATED MONTHLY AVERAGE AMOUNT: ____  <input type="checkbox"/> gallons <input type="checkbox"/> tons <input type="checkbox"/> cubic yds. <input type="checkbox"/> drums (55 gal.)	I. <input type="checkbox"/> ONSITE : <input type="checkbox"/> disposal <input type="checkbox"/> treatment <input type="checkbox"/> storage <input type="checkbox"/> recovery
		J. DESCRIPTION OF ON - SITE METHODS & FACILITIES :
E. <input type="checkbox"/> ORGANIC <input type="checkbox"/> INORGANIC <input type="checkbox"/> UNKNOWN		
F. <input type="checkbox"/> ACIDIC <input type="checkbox"/> ALKALINE <input type="checkbox"/> UNKNOWN		
G. DESCRIPTION :		



PART II CONT.		
WASTE DESCRIPTION		DISPOSITION
A. WASTE NO. _____ OF _____	B. SIC CODE _____ (IF KNOWN)	H. <input type="checkbox"/> OFF-SITE ESTIMATE SHIPMENTS PER MONTH : _____
C. FORM: <input type="checkbox"/> liquid water base <input type="checkbox"/> liquid other base <input type="checkbox"/> solid <input type="checkbox"/> sludge/slurry _____ % solid	D. ESTIMATED MONTHLY AVERAGE AMOUNT: _____  <input type="checkbox"/> gallons <input type="checkbox"/> tons <input type="checkbox"/> cubic yds. <input type="checkbox"/> drums (55 gal.)	I. <input type="checkbox"/> ONSITE : <input type="checkbox"/> disposal <input type="checkbox"/> treatment <input type="checkbox"/> storage <input type="checkbox"/> recovery
		J. DESCRIPTION OF ON - SITE METHODS & FACILITIES : _____
E. <input type="checkbox"/> ORGANIC <input type="checkbox"/> INORGANIC <input type="checkbox"/> UNKNOWN		
F. <input type="checkbox"/> ACIDIC <input type="checkbox"/> ALKALINE <input type="checkbox"/> UNKNOWN		
G. DESCRIPTION :		
A. WASTE NO. _____ OF _____	B. SIC CODE _____ (IF KNOWN)	H. <input type="checkbox"/> OFF-SITE ESTIMATE SHIPMENTS PER MONTH : _____
C. FORM: <input type="checkbox"/> liquid water base <input type="checkbox"/> liquid other base <input type="checkbox"/> solid <input type="checkbox"/> sludge/slurry _____ % solid	D. ESTIMATED MONTHLY AVERAGE AMOUNT: _____  <input type="checkbox"/> gallons <input type="checkbox"/> tons <input type="checkbox"/> cubic yds. <input type="checkbox"/> drums (55 gal.)	I. <input type="checkbox"/> ONSITE : <input type="checkbox"/> disposal <input type="checkbox"/> treatment <input type="checkbox"/> storage <input type="checkbox"/> recovery
		J. DESCRIPTION OF ON - SITE METHODS & FACILITIES : _____
E. <input type="checkbox"/> ORGANIC <input type="checkbox"/> INORGANIC <input type="checkbox"/> UNKNOWN		
F. <input type="checkbox"/> ACIDIC <input type="checkbox"/> ALKALINE <input type="checkbox"/> UNKNOWN		
G. DESCRIPTION :		
A. WASTE NO. _____ OF _____	B. SIC CODE _____ (IF KNOWN)	H. <input type="checkbox"/> OFF-SITE ESTIMATE SHIPMENTS PER MONTH : _____
C. FORM: <input type="checkbox"/> liquid water base <input type="checkbox"/> liquid other base <input type="checkbox"/> solid <input type="checkbox"/> sludge/slurry _____ % solid	D. ESTIMATED MONTHLY AVERAGE AMOUNT: _____  <input type="checkbox"/> gallons <input type="checkbox"/> tons <input type="checkbox"/> cubic yds. <input type="checkbox"/> drums (55 gal.)	I. <input type="checkbox"/> ONSITE : <input type="checkbox"/> disposal <input type="checkbox"/> treatment <input type="checkbox"/> storage <input type="checkbox"/> recovery
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E. <input type="checkbox"/> ORGANIC <input type="checkbox"/> INORGANIC <input type="checkbox"/> UNKNOWN		
F. <input type="checkbox"/> ACIDIC <input type="checkbox"/> ALKALINE <input type="checkbox"/> UNKNOWN		
G. DESCRIPTION :		