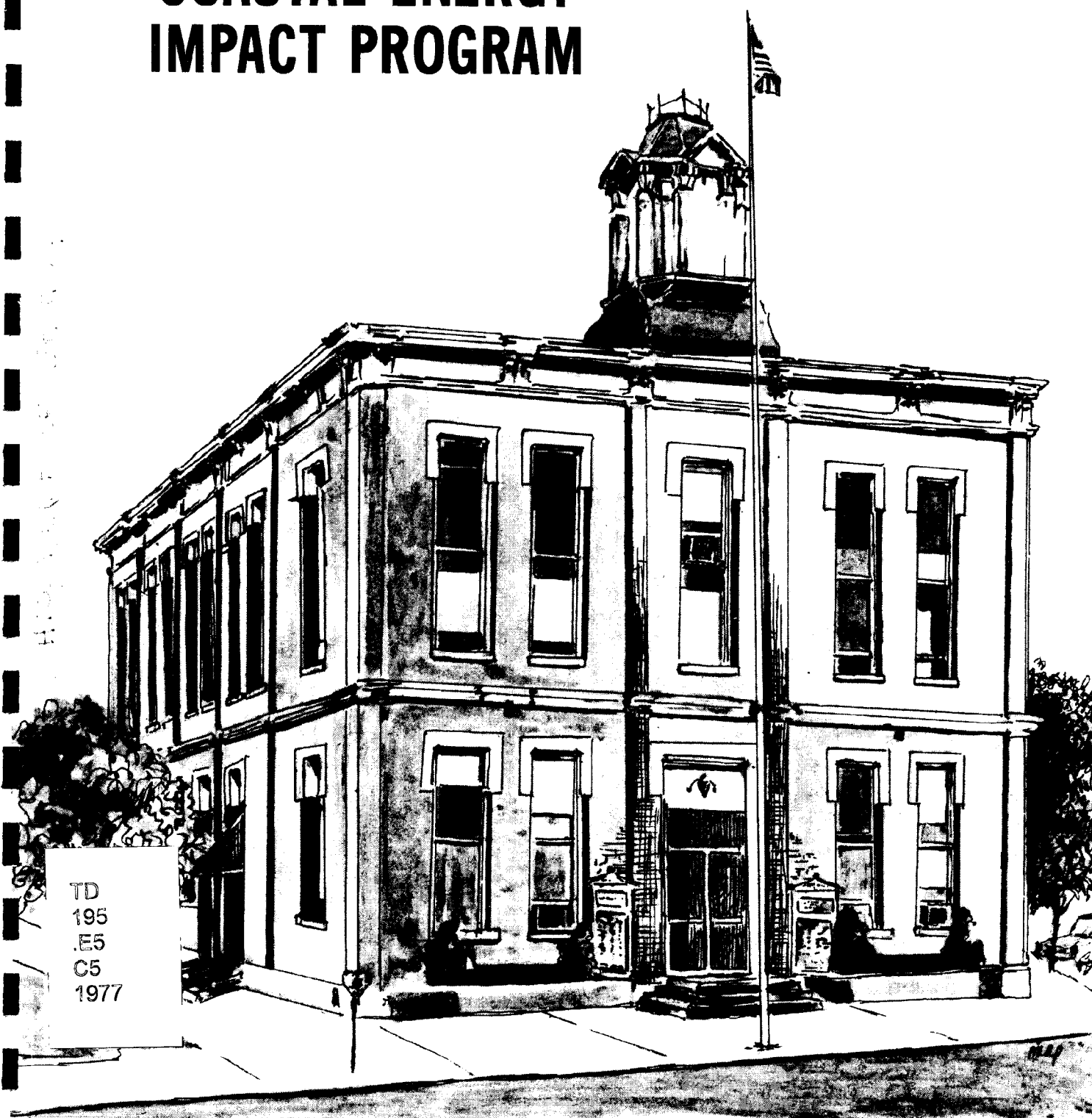


# The City of Conneaut

Coastal Zone  
Information  
Center

## COASTAL ENERGY IMPACT PROGRAM

COASTAL ZONE  
INFORMATION CENTER



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CITY OF CONNEAUT  
COASTAL ENERGY  
IMPACT PROGRAM

U. S. DEPARTMENT OF COMMERCE NOAA  
COASTAL SERVICES CENTER  
2234 SOUTH HOBSON AVENUE  
GREENISTON, SC 29405-2413

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ABSTRACT

TITLE: Coastal Energy Impact Program

AUTHOR: The Department of Housing, Planning,  
and Community Development

SUBJECT: Coastal Energy Impact Analysis of the  
Coal Expansion Project of the Bessemer  
and Lake Erie Railroad at Conneaut.

DATE: December, 1979

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and Community Development

PROJECT NUMBER: 78-41

ABSTRACT: The purpose of this study is to provide a  
basis for identifying and analyzing  
potential impacts from the recently  
completed coal expansion project at  
Conneaut. The study attempts to identify  
mitigative measures to offset created  
impacts and source of funding to provide  
the needed financial assistance.

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## I. INTRODUCTION

### Purpose

The Coastal Energy Impact Program (CEIP), for the City of Conneaut, was prepared as part of the National Oceanic and Atmospheric Administration's CEIP. The CEIP was created by the 1976 amendments to the Coastal Zone Management Act of 1972 and is a federally funded program designed to assist in the mitigation of impacts related to coastal energy activity. The Ohio Department of Energy (ODOE) has assumed responsibility for development, implementation and administration of the CEIP within the State of Ohio. On December 27, 1978 the ODOE awarded a federal grant to the City of Conneaut to analyze impacts and develop mitigative measures to offset impacts caused by the coal storage expansion project of the Bessemer and Lake Erie railroad. The purpose of the program is to ease the economic, social, and environmental impacts caused by the expansion of this energy facility.

### Study Design Summary

The CEIP Program is presented in four sections. Section I, Introduction, presents the purpose of the program and its relationship to state and federal programs, including a general overview of the development of the port facility at Conneaut. Section II, Identification and Analysis of Impacts, identifies the scope of the expansion project and provides an identification and analysis of impacts created by the project. Section III,

Mitigative Measures for Impacts, develops techniques and actions available to offset the negative impacts of this project.

Section IV, Relationship to Overall Growth, examines policies for development along the Lake Erie coast and the relationship of the project to the City's development policies and plans.

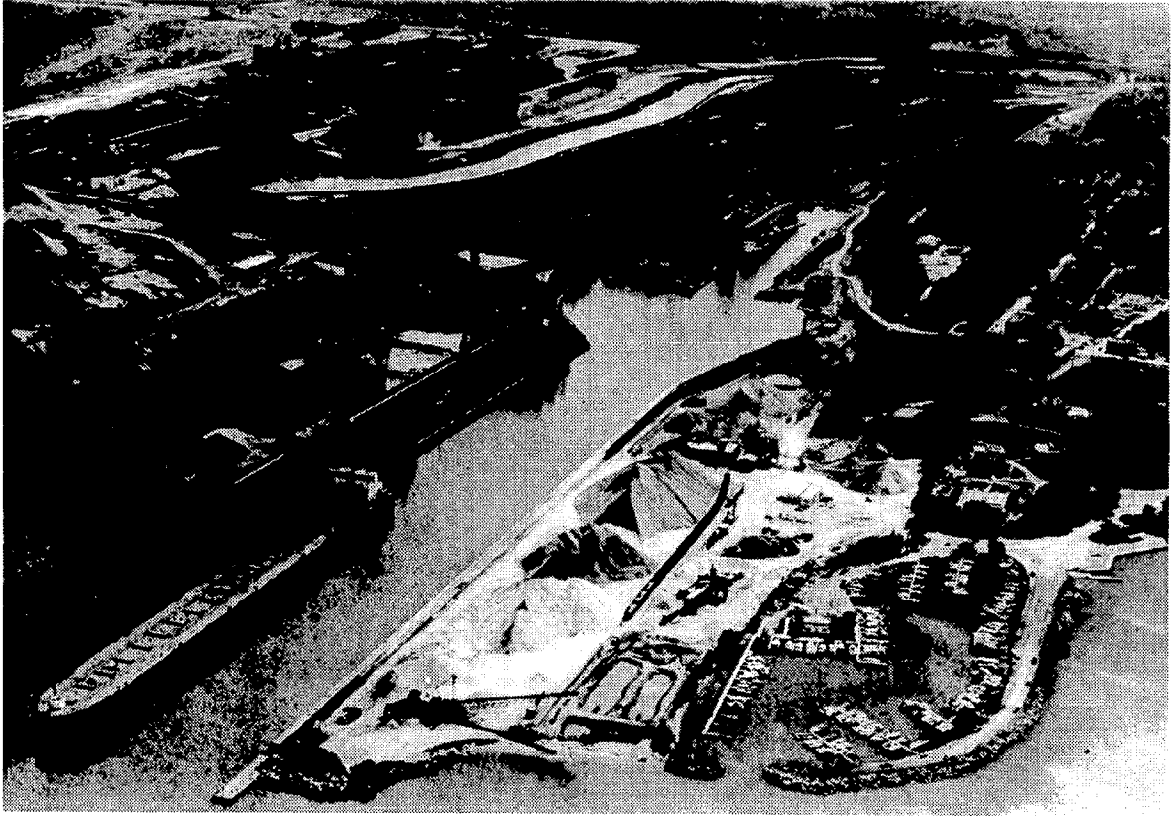
#### General Overview

The first ore dock at Conneaut was completed in 1892. The Pittsburgh and Conneaut Dock Company was incorporated on March 8, 1893. The early ore dock was served by a branchline of the Pittsburgh, Shenango and Lake Erie Railroad (later to become the Bessemer and Lake Erie Railroad). Completion of this southerly railroad made it possible for steelmakers to ship iron ore from the Mesabi Range in Minnesota directly to the steel mills in the Mononaghela River Valley.

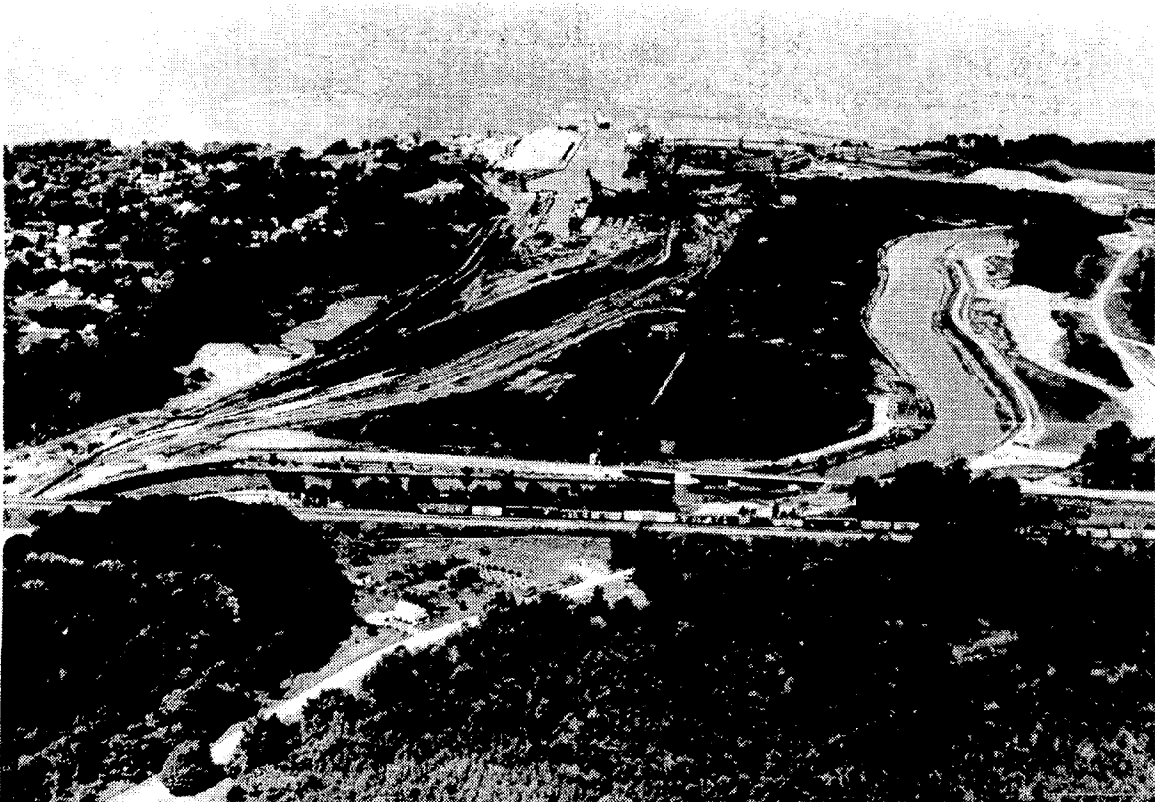
Today, Conneaut has become one of the leading raw materials handling ports in the world. Huge lake freighters making trips to Conneaut are now capable of delivering more than 60,000 tons of ore in a single load. Iron ore shipments are brought in not only from Minnesota and Michigan but also from Labrador and Quebec, by way of the St. Lawrence Seaway. The iron ore and limestone shipments are transported directly to storage, making this operation one of the worlds most modern storage and materials handling systems.

The other major commodity handled by the Dock Company is bituminous coal moving to Conneaut from mines primarily in Pennsylvania and West Virginia. The coal arrives in Bessemer and





These aerial photographs show the overall operations of the Pittsburgh and Conneaut Dock Company and its spatial relationship to Conneaut Creek and Lake Erie.



(4)

Lake Erie trains to be placed in temporary ground storage with the coal ultimately being loaded into lake vessels for shipment to Great Lakes ports in the United States and Canada. Coal is delivered in bottom dump hopper cars, which are pulled over an unloading pit by locomotives remotely controlled from a nearby tower. The coal is moved to various storage areas over a conveyor belt system, being weighed and sampled enroute to storage. The modern coal handling and storage system permits coal to be shipped for storage on a year around basis. This concept alleviates many problems previously encountered in attempting to match vessel availability with coal train arrivals. A small percent of the coal is loaded directly from the trains to the vessels without going into storage.

The Port of Conneaut is located about 120 miles southwest of Buffalo, New York, and about 75 miles northeast of Cleveland, Ohio. The Welland Canal at Port Colborne, Ontario, is 90 miles across Lake Erie in a northeasterly direction from Conneaut. The Conneaut Harbor area consists of an outer harbor sheltered by breakwaters and an inner harbor formed by two converging breakwaters and covers about 185 acres of protected water area. The east breakwater is 3,675 feet long with a light at its outer end. The west breakwater is angular in shape and has a total length of 5,938 feet. The 600 foot wide entrance to the harbor is at the northern convergence of the east and west breakwaters. Features providing for smooth operation into the port include easy entrance to the harbor, deep water, a small tidal range, and a climate offering operation for the majority of the year.

Scope of the Expansion Project

Owned by the Bessemer and Lake Erie Railroad, and operated for it under contract by the Pittsburgh and Conneaut Dock Company, the coal facility was successful from the outset and has since been expanded several times. The most recent expansion project was started in the fall of 1975 and was completed in the spring of 1979. The project was aided by the State of Ohio's Development Financing Commission, which authorized the issuance of \$23 million in tax-exempt bonds for financing. The coal expansion project was undertaken when it became apparent that additional capacity would be required at Conneaut, based upon traffic projections for lake vessel coal movements. The project will aid in eliminating surges, delays, and shut-downs in the coal and railroad industries.

No further land was available at dock-level for coal storage, thus it was necessary to locate the new storage area on a bluff to the east of the original coal facility. The area is served by the railroad's relocated Conneaut Spur, which crosses Conneaut Creek by way of a new bridge. Modern facilities have been provided for car dumping, including a thaw shed, a high-capacity rotary dumper, track scale, extensive railroad yards, and a personnel building. A second bridge constructed across Conneaut Creek permits the movement of coal handling and maintenance equipment, such as bulldozers, cranes and trucks, between the dock-level coal storage area and the new bluff storage area.

(6)

The Dock Company does not buy and sell the coal but acts as the agent of the Bessemer and Lake Erie Railroad. The Dock Company supplies the service for the transshipment of these materials to occur.

## II. IDENTIFICATION AND ANALYSIS OF IMPACTS

### General Nature of Impacts

While a great deal of work has been done to evaluate the costs and benefits of environmental and social impacts, the problem remains in the difficulty of attaching a price or value to certain costs and benefits. Most environmental damage results from the use of resources in the production or consumption of goods and services. The private market costs do not always reflect the indirect and social costs of environmental damage. These externalities include pollution that damages health, vegetation, and materials; the costs of repairing such damages; the destruction of ecosystems; and the loss of aesthetic, recreational, and other environmental amenities.

The impacts associated with the expansion project were identified and evaluated by the impact matrix procedure and more specifically by an identification of potentially adverse effects. The factors investigated by each method are presented below:

#### Matrix Procedure -

##### ECOLOGICAL ENVIRONMENT

- \* Aquatic Flora
- \* Terrestrial Flora
- \* Aquatic Fauna
- \* Terrestrial Fauna

##### PHYSICAL ENVIRONMENT QUALITY

- \* Water Quality
- \* Land Quality
- \* Air Quality

SOCIOECONOMIC FACTORS

- \* Land Use
- \* Economic Development
- \* Recreation
- \* Transportation
- \* Cultural Features

AESTHETICS

- \* Physical Factors
- \* Spatial Composition
- \* Man-made Objects
- \* Uniqueness

Special Adverse Effects Procedure -

- \* Archeological Sites
- \* Sensitive Geologic Areas
- \* Recreational Areas
- \* Wooded Areas
- \* Ecological Environment
- \* Groundwater Recharge Areas
- \* Wetlands
- \* Floodplains
- \* Surface Water Resources
- \* Prime Agricultural Lands

The impact assessment serves as a vehicle for understanding why impacts may occur as well as for anticipating what they will be. The first problem encountered when approaching an assessment of such a project is understanding what impacts might occur, how

they might be interrelated, and what their relative importance might be.

Impact on Population

Changes in a community's population, historic trends in growth, and the predominate characteristics of a community's residents play a major role in the planning process. The size and the characteristics of the population are important determinants in decisions establishing community facility requirements, land use allocations, locational considerations for transportation, and in establishing other public and private facilities.

Conneaut's past population growth has been directly related to local economic and employment trends. Harbor related employment was dominant up to the 1840's, but the railroads became the principal employer through the 1870's. During the 1800's the population of Conneaut showed rapid population growth from 1,163 in 1870 to 8,310 in 1910, a 615 percent increase over the forty year period, as shown in Table 1. Conneaut also contributed heavily to the growth of Ashtabula County in the period, growing from 3.36 percent of the total county population in 1870 to 13.94 percent in 1910.

Since 1960, the population of Conneaut has remained virtually unchanged. Modest population growth has occurred since 1970, with a present 1978 population estimate of 15,230, a 4.66 percent increase since 1970.

Population changes in a community occur as a result of two

TABLE 1  
 POPULATION GROWTH OF CONNEAUT  
 IN COMPARISON WITH ASHTABULA COUNTY

<u>YEAR</u>	<u>CONNEAUT</u>		<u>ASHTABULA COUNTY</u>	
	<u>POPULATION</u>	<u>% OF CHANGE</u>	<u>% OF ASHTABULA COUNTY</u>	<u>POPULATION</u>
1860	1,952	-	6.15	31,814
1870	1,163	-40.4	3.57	32,517
1880	1,256	8.0	3.36	37,139
1890	3,241	158.0	7.43	43,655
1900	7,133	120.1	13.85	51,448
1910	8,319	16.6	13.94	59,547

(10)

<u>YEAR</u>	<u>CONNEAUT &amp; LAKEVILLE COMBINED</u>		<u>ASHTABULA COUNTY</u>	
	<u>POPULATION</u>	<u>% OF CHANGE</u>	<u>% OF ASHTABULA COUNTY</u>	<u>POPULATION</u>
1920	12,539	12.31	19.12	65,545
1930	13,579	8.32	19.82	68,361
1940	12,328	-9.25	17.97	68,674
1950	13,662	10.82	17.38	78,695
1960	14,738	7.87	15.80	93,067
1970	14,552	-1.26	14.81	98,237
1978	15,230	4.66	14.05	108,391

SOURCE: U.S. DEPARTMENT OF COMMERCE, BUREAU OF CENSUS, CONNEAUT COMMUNITY DEVELOPMENT,  
 AND ASHTABULA COUNTY PLANNING COMMISSION



factors, natural increase and migration.

The impact of the coal storage expansion project on the total population of the City is insignificant. Virtually all of the new employees have come from Conneaut with only a few employees migrating into the City.

Impact on Employment

The economic sector of a community assist its residents in obtaining the standard of living they deem desirable or necessary. In addition, the local economy generates the tax base that is vital in producing the revenues necessary to provide various community services.

Conneaut has had a history of sporadic economic growth with much of the activity revolving around the transportation facilities available in the City. Conneaut's traditional role as a key transportation link for east-west rail traffic and the importance of Lake Erie shipping provided the principal employment opportunities for Conneaut residents. From the time Conneaut was founded in 1796 until 1840, harbor related industry dominated the local economy. After 1840, railroad service began to compete with Lake Erie shipping, and by 1870 railroads became the dominant employer in Conneaut. Railroad activity peaked in the 1880's when the old Nickle Plate Railroad employed over 2,000 in their Conneaut switching yards and repair shops. Transportation related activities were in fact to remain the principal employer in Conneaut until the middle of this century.

Information concerning the number and type of jobs available is a useful indicator in evaluating the economic trends of a community. As shown in Table 2, since 1960 the employment base of Conneaut has undergone transition with less emphasis on transportation related employment. While Conneaut is still a key transportation link for both rail and harbor related activities, employment in these areas has steadily declined. Much of the decline in transportation employment has been to technological advances. While the number employed in the transportation sector has declined, industrial expansion has kept the economy of Conneaut from stagnating.

The total number of persons employed at the Dock Company prior to the expansion project was 398. Presently 423 persons are employed indicating an increase of 25 persons due to the expansion project. This small increase in employment will cause only a slight impact on the City. The major benefit of the project is the creation of higher income levels in the community. The income gains for individuals obtaining employment may be substantial. These opportunities are very important to low income areas with moderate job opportunities. Whenever new jobs are created, as due to the expansion project, there is a multiplier effect within the community. The additional income generated by new jobs may go to local merchants, new employers in retail or wholesale trade, or any other groups affected by the expansion project. The benefits from the expansion project will not be as great as expected on the retail and wholesale market since much of the additional income revenues will be

TABLE 2

## MAJOR AREAS OF EMPLOYMENT, CITY OF CONNEAUT

	<u>1960</u>	<u>1970</u>	<u>1974</u>	<u>1975</u>	<u>% OF CHANGE 1960-1975</u>
TOTAL	3,695	4,710	5,145	5,330	44.2%
<u>MANUFACTURING</u>	1,255	1,840	2,105	2,315	84.5%
FABRICATED METALS/MACHINERY	700	1,050	1,155	1,265	80.7%
CHEMICALS/RUBBER	350	580	480	490	40.0%
OTHER MANUFACTURING	205	210	470	560	173.2%
<u>NON-MANUFACTURING</u>	2,440	2,870	3,040	3,015	23.6%
TRANSPORTATION SERVICES	1,000	725	600	575	-42.5%
COMMERCIAL <sup>1</sup>	1,050	1,225	1,275	1,270	21.0%
OTHER <sup>2</sup>	390	920	1,165	1,170	200.0%

(13)

<sup>1</sup>COMMERCIAL INCLUDES WHOLESALE/RETAIL TRADE, F.I.R.E., AND SERVICES.

<sup>2</sup>OTHER INCLUDES GOVERNMENT, COMMUNICATION, UTILITIES, MEDICAL SERVICES, PRIVATE EDUCATION, AGRICULTURE, AND CONSTRUCTION.

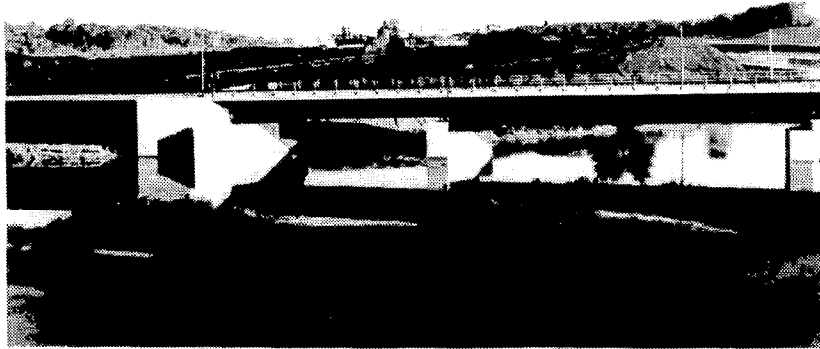
SOURCE: CENSUS OF POPULATION, GENERAL SOCIAL AND ECONOMIC CHARACTERISTICS, U.S. DEPARTMENT OF COMMERCE, BUREAU OF THE CENSUS, OHIO DIRECTORY OF INDUSTRIES, ARTHUR, D. LITTLE, INC. ESTIMATES, AS FOUND IN THE DRAE1 ENVIRONMENTAL IMPACT STATEMENT, ON THE PROPOSED U.S. STEEL CORPORATION LAKEFRONT STEEL MILL, CONNEAUT, OHIO, PREPARED BY U.S. ARMY ENGINEER DISTRICT, BUFFALO, NEW YORK, 1978.

spent outside the City of Conneaut, mainly Ashtabula, and Erie, Pennsylvania.

Impact on Landuse

The development and use of land is obviously important to the residents of the City as well to the individual property owner. The amount and arrangement of land uses are primarily determinants of whether the community is a desirable or undesirable place in which to live. Improper land use arrangements act against the best interest of the community, result in traffic congestion, physical and visual pollution, depreciation of property values, and a lack of community facilities. The existing arrangement of land uses in Conneaut is the result of daily actions taken by countless individuals, corporations, institutions, and public agencies.

Impacts on the landuse due to the expansion project included the construction of two new bridges, a thaw shed, and the grubbing of the land. One purpose of the primary bridge is to connect the existing Bessemer and Lake Erie Railroad line with the new storage area. As no further land was available at dock-level, it was necessary to locate the new storage area on a bluff to the east of the original coal storage facility. The area is served by the railroad's relocated Conneaut Spur, which crosses Conneaut Creek by way of the new bridge. The low point clearance of the bridge over Conneaut Creek is 11.7 feet while the high point clearance is 13.8 feet. The clearance was calculated using ordinary high water levels of Conneaut Creek of

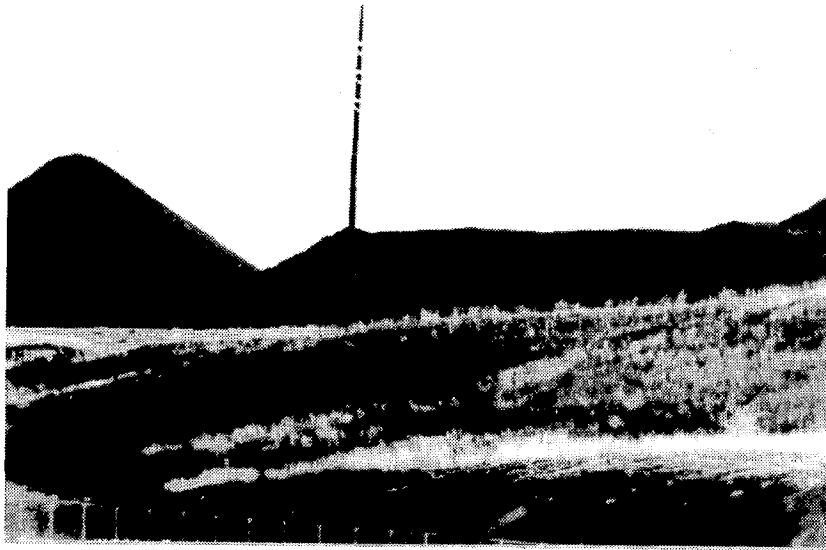


This newly-constructed railroad bridge crossing Conneaut Creek provides access for coal trains to the railroad's expanded coal handling and storage facility.



An additional 12 miles of railroad tracks were laid to increase the capability for traffic and storage of coal.

(16)



As no further land was available at dock-level, it was necessary to locate the new storage area on a bluff to the east of the original coal facility



Woodworth Road was one of two City roads vacated to limit public access through the coal storage facility.

572.8 feet as found in the inter great lakes datum. The bridge connects the coal expansion railroad yard with the main line of the Bessemer and Lake Erie railroad. The purpose of the new equipment bridge is to permit the movement of coal handling and maintenance equipment, such as bulldozers, cranes and trucks between the lower coal dock, the coal expansion area and the ore storage area. The low point of clearance over Conneaut Creek for this equipment bridge is 4 feet while the high point is 10.2 feet. The purpose of the thaw shed is to heat frozen car loads of coal until there is a complete separation of the coal. The thaw shed operates at an approximate capacity of 1,268 tons per hour. The thawing process is done by infrared radiant heating of the car body and the top crust of coal. The infrared radiant heating has a capacity of 12,000 kilowatts.

Construction activities for the expansion project opened and disturbed approximately 275 acres of land. The potential for fastlands erosion existed during the construction phase of the expansion project. Most of the site is covered by soils derived from glacial and lacustrine deposits. The potential for erosion during these activities was relatively high since the removal of vegetation exposes the land directly to the erosive action of rainwater and surface runoff. The relatively flat terrain significantly reduced the overall erosion potential on the site. The land on the site was grubbed by cutting and burning the trees and vegetation and removal and burying of stumps. A ditch was constructed to channel surface runoff into an existing stormwater open ditch system during grubbing operations. This

ditch system aided significantly in reducing erosion and sedimentation loss on the construction site.

The site is surrounded by adjacent Dock Company land which is also being used for raw material storage. Abundant vacant land acts as a buffer between this area and other developed areas in the City.

#### Impact on Water Quality

The thought of water pollution has traditionally developed in the public's mind the image of discharges of noxious waste effluents from specific industrial or municipal sources into a local stream. Although this is a frequent cause of poorer water quality, it is not the only way in which a stream can be downgraded. Precipitation will wash an area and thereby carry into a stream chemicals including pesticides, oils, grease, metallic ions, and others.

The impact of the coal expansion project on the water of Conneaut Creek and Lake Erie is of major concern. The primary impact on stream-water quality is due to surface runoff from the coal storage piles being directed into Conneaut Creek and eventually into Lake Erie. Contact of coal with air and moisture results in oxidation of metal sulfides present in coal, to sulfuric acid. Surface runoff from the coal piles is characterized as high in dissolved solids, pH, a high concentration of metals, acidity, sulfates and suspended solids. The element in coal that has the greatest effect on the quality of leachate or runoff is the sulfur content. Runoff and leachate will be



produced as a result of natural precipitation and planned watering of the coal piles to suppress dusts. The suspended solids carried in these effluents tend to settle in pools of the receiving stream, forming sludge deposits on the bottom. These deposits are known as benthic deposits and have at least two major detrimental effects. If the benthic deposits remain on the bottom, they are subject to decomposition. If this decomposition takes place in the absence of oxygen, malodorous conditions result. Even if suspended solids do not settle to the bottom, they represent an undesirable condition by causing increased turbidity, which decreases the aesthetic appeal of the receiving water. In addition, if present in large quantities, suspended solids have an adverse effect upon aquatic life, especially the more desirable fish species such as salmon and trout.

The State of Ohio considers Conneaut Creek to be a high quality stream. Prior to the coal expansion project the Ohio Environmental Protection Agency indicated State standards have been violated for pH, fecal coliforms, methylene blue active substances, phenols, and lead as shown in Table 3.

The U.S. Environmental Protection Agency is charged with the primary responsibility of implementing the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500). The primary goal of the Act is "to achieve whenever possible, by July 1, 1983, water that is clean enough for swimming and other recreational uses, and clean enough for the protection and

**Table 3**  
**Water Quality in Conneaut Creek at Conneaut, Ohio**  
**(October 1975 to September 1976)**

Parameter	Unit	WQS (1)	n (2)	Maximum	Minimum	Average	v (3)
Flow	cfs	-	6	1,092.0	14.0	239.0	
Temperature	°C	*	9	17.0	0.2	7.4	
pH	S.U.	6.0-9.0	8	9.1	7.4	7.8	1
NH-1-N	mg/l	-	9	0.32	0.05	0.18	
TKN-N	mg/l	-	8	1.1	0.3	0.4	
Nitrate	mg/l	-	9	0.79	0.04	0.15	
Total Phosphorous	mg/l	-	9	0.10	0.05	0.09	
BOD <sub>5</sub>	mg/l	-	8	4.0	1.0	1.7	
DO	% Saturation	-	9	98.0	69.1	80.8	
DO	mg/l	5.0	9	11.2	6.7	9.9	
Dissolved Solids	mg/l	1,500.0	10	1,340.0	89.0	262.0	
Suspended Solids	mg/l	-	8	89.0	10.0	16.0	
DOC	mg/l	-	9	15.0	1.0	5.6	
Oil-Grease	mg/l	5.0	3	5.0	1.0	--	
Fecal Coliform (4)	#/100 ml	200.0	9	900.0	18.0	75.0	1
Fecal Strep. (4)	#/100 ml	-	9	2,900.0	9.0	70.0	
MBAS	mg/l	0.5	8	0.59	0.50	0.13	1
Conductivity	Micromhos	-	8	1,400.0	100.0	345.0	
Turbidity	J.U.	-	6	32.00	2.00	13.33	
Total Hardness	mg/l	-	6	270.0	86.0	139.0	
Phenols	ug/l	10.0	7	17.0	2.0	--	1
Cyanide	mg/l	0.2	7	0.03	0.01	--	
Chloride	mg/l	250.0	8	19.0	11.0	15.4	
Fluoride	mg/l	1.3	5	0.73	0.09	0.13	
Arsenic	ug/l	50.0	3	10.0	10.0	--	
Barium	ug/l	800.0	3	300.0	200.0	--	
Cadmium	ug/l	5.0	3	10.0	5.0	--	
Total Chromium	ug/l	300.0	4	30.0	30.0	--	
Copper	ug/l	*	4	40.0	30.0	--	
Total Iron	ug/l	-	3	3,600.0	810.0	2,570.0	
Lead	ug/l	60.0	4	100.0	16.0	44.0	1
Manganese	ug/l	-	4	1,120.0	40.0	328.0	
Mercury	ug/l	0.5	2	0.5	0.5	--	
Selenium	ug/l	5.0	4	10.0	5.0	--	
Silver	ug/l	1.0	2	30.0	30.0	--	
Zinc	ug/l	*	4	120.0	30.0	--	
Aluminum	ug/l	-	2	1,900.0	200.0	--	
Sulfate	mg/l	-	8	153.0	32.0	61.7	
Hex. Chromium	ug/l	50.0	4	30.0	30.0	--	

(1) Water Quality Standards.

(2) Number of samples taken.

(3) Number of samples in violation.

(4) Fecal coliform and strep are geometric means. All others are arithmetic.

\* Variable - refer to Water Quality Standard.

Source: Ohio Environmental Protection Agency.

propagation of fish, shellfish and wildlife." The law requires industries to use the "best practicable" technology to control water pollution by July 1, 1977, and the "best available" technology by July 1, 1983. In addition, any industry that discharges its wastes into a municipal treatment plant must pretreat its effluent so that the industrial pollutants do not interfere with the operation of the plant or pass through the plant without adequate treatment.

The impacts on the water quality due to the expansion project are presently being monitored by the Ohio Environmental Protection Agency. The Dock Company has given special attention to the effects of the expansion project on the water quality in Conneaut Creek and Lake Erie and have implemented significant mitigative measures.

#### Impact on Air Quality

The impact on the air quality from the coal expansion project is considered to be minimal. During construction and grubbing operations considerable dust generating activity occurred. Uncommonly high levels of total suspended solids were recorded at an air quality monitoring station on Route 20 adjacent to the site. The construction phase of the expansion project was a temporary source and consequently, particulate levels soon decreased. Particulate emissions from the coal handling process involve dumping coal from cars to dump hopper, storage, and coal conveyance. The emissions will be controlled by dumping into an enclosure equipped with a wet spary dust supression system. In

freezing temperatures, railroad cars will be held in thaw sheds and heated by radiant electric heaters to eliminate ice blockage that interfere with rapid dumping of coal from the cars. No significant emissions are expected to occur during this process. The emissions from the coal stockpiling will be controlled by wet spray in conformance with Best Available Control Technology (BACT).

The coal is recovered from the storage piles by the stacker/reclaimer and transferred through a conveyor system. The transfer point between the conveyor and the stacker/reclaimer is enclosed to reduce particulate emissions.

#### Impact on Public Facilities

Public facilities are physical elements of governmental services provided on behalf of the public. The demand for more and varied public facilities increases as the City expands in size and population. Some of the more common public facilities available in Conneaut include, a City Hall, a library, fire station, police station, municipal garage, water lines, sanitary and storm sewers. The expansion project will not create a demand for additional public facilities with the exception of increased capacity for stormwater drainage and treatment facilities. Since the need for additional public facilities is based on increased population, no major public facility requirements are warranted at this point in time. The effectiveness of the existing stormwater treatment facilities at the Dock Company are being monitored. If improved treatment or increased

capacity is needed the Dock Company may treat their effluent through the City's facilities or on site.

Impact on Transportation

The coal expansion project will affect three specific transportation areas; railroad traffic, lake vessel traffic, and street traffic.

The Bessemer and Lake Erie Railroad, a subsidiary of United States Steel Corporation, transports coal and iron ore between Conneaut and the Pittsburgh district. This transportation linkage is a major trunk line for the transshipment of coal from mines in Pennsylvania and West Virginia to Conneaut, and eventually to ports all around the Great Lakes. This linkage also transports limestone and iron ore pellets from lake vessels to the steel mills in the Pittsburgh and Youngstown district. Due to the expansion project an additional 12.5 miles of new railroad tracks were constructed around the raw materials storage area. The Bessemer and Lake Erie Railroad, is a Class I common carrier which operates primarily on a north-south route through western Pennsylvania. The railroad extends approximately 140 miles from the southern terminus at North Bessemer, Pennsylvania, to the northern terminus at the Port of Conneaut. The southern terminus connects with the Union Railroad, also a common carrier, and provides access to the Monongahela River Valley. Along its line, the B & LE also interchanges with Conrail, the B & O Railroad, Pittsburgh and Lake Erie Railroad, and the N & W railway. The majority of traffic along these routes consists

primarily of transporting bulk commodities such as iron ore, coal, and limestone. Of the roughly 205 miles of main line right-of-way owned by the B & LE, only a few miles are in Ashtabula County. Table 4 indicates the level of B & LE railroad activity in Conneaut during 1977. Table 5 indicates the projected rail traffic through Conneaut in 1990.

The impacts of the increased B & LE railroad has four at-grade crossings, located at Dorman Road, Middle Road, Furnace Road, and Old Main Road. These railroad grade crossings and others in the vicinity are an undesirable feature from the viewpoint of highway and pedestrian flow within the City as well as from a public safety standpoint when police and other emergency vehicles are delayed. Both bridge and tunnel costs are very expensive and neither the B & LE railroad nor the City of Conneaut has allocated funds to correct the situation. A rail receiving and shipment forecast, as shown in Table 6, indicates the degree of increased B & LE rail traffic.

Impacts on water transportation will be caused by the increased number of lake vessels entering the port. Past and projected commodity traffic at the Port of Conneaut is shown in Table 7. This shows that 90 percent or more of the shipments will be inbound ore and pellets, and outbound coal. Limestone is the only other important commodity passing through the port. Projections show that iron ore traffic will continue to increase but will become a smaller percentage of the total commodity traffic, while coal shipments will become a larger percentage of

TABLE 4

Bessemer and Lake Erie Rail Traffic Through Conneaut in 1977.

<u>Trains/Day Both Directions</u>	<u>Millions of Tonnes/Year</u>	<u>Average Tonnes Per Train</u>
10	15	4,109

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Source: Ohio Department of Transportation; and Bessemer & Lake Erie Railroad

TABLE 5

Bessemer and Lake Erie Rail Traffic Through Conneaut in 1990.

<u>Trains/Day Both Directions</u>	<u>Millions of Tonnes/Year</u>	<u>Average Tonnes Per Train</u>
13	20	4,109

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Source: Transportation Projections, 1990, Jack Fawcett, Inc., 1971, for Bessemer & Lake Erie Railroad

TABLE 6

## Forecasts of Rail Receiving and Shipments of Coal

	<u>Metallurgical Coal</u>	<u>Steam Coal</u>
Shipment Size (Tonnes) <sup>(1)</sup>	8,000 - 9,000	8,000 - 9,000
Origin	Pa. - W. Va.	Pa. - W. Va.
<u>Annual Shipments</u>		
1977 - Frequency	120	900
Quantities <sup>(2)</sup>	0.9	6.9
1983 - Frequency	700	1,400
Quantities <sup>(2)</sup>	5.7	11.7
Lakefront Plant Only		
Frequency	550	90
Quantities <sup>(2)</sup>	4.8	0.7

(1) 1 tonne = 1.1 short tons

(2) Quantities in million tonnes

Source: United States Steel Corporation



TABLE 7

Annual Port Commodity Traffic

Commodities	1970 (Actual) (1)		1977 (2)		1980(2)	
	Million Tonnes	%	Million Tonnes	%	Million Tonnes	%
Iron Ore and Pellets (Inbound)	5.373	40%	6.553	43%	10.23	43%
Limestone (Inbound)	0.876	6%	1.43	9%	1.70	7%
Coal (Outbound)	7.291	54%	7.356	48%	11.82	50%
		100%		100%		100%

(27)

Source: (1) Pittsburgh & Conneaut Dock Company

(2) Pittsburgh & Conneaut Dock Company estimates without proposed U.S. Steel Mill Project

the total commodity traffic. Table 8 depicts the raw material receiving and shipping forecast of the Pittsburgh and Conneaut Dock Company. A substantial increase in the number of outbound ships carrying metallurgical and steam coal is due to the coal expansion project.

The harbor can normally tie up five large vessels at any one time. The ore dock can unload two vessels at one time provided, a) one is a self-unloader and one is a bulker; b) proper combination of commodities are on the two vessels; c) proper combination of sizes of the two vessels is available. The coal dock can load one vessel at a time. The Port of Conneaut is operating below capacity and is not expected to reach capacity limit until the end of the 1980 decade. Figure 1 shows the coal handling and storage system for the Bessemer and Lake Erie railroad.

Impacts from the increased vessel traffic could cause interference with small pleasure craft in the harbor. If 1,100 foot vessels are planned, there may be secondary impacts caused by dredging and port modifications necessary to accommodate increased draft and length unless they are operated at less than maximum capacity. The increase in deep water traffic in the harbor would also represent an additional threat of oil spill, increase in vessel ballast discharge, and washing of excess cargo material from the decks of ships. Dredging activities in the harbor are routinely carried out to keep channel ways clear for shipping activities.

TABLE 8

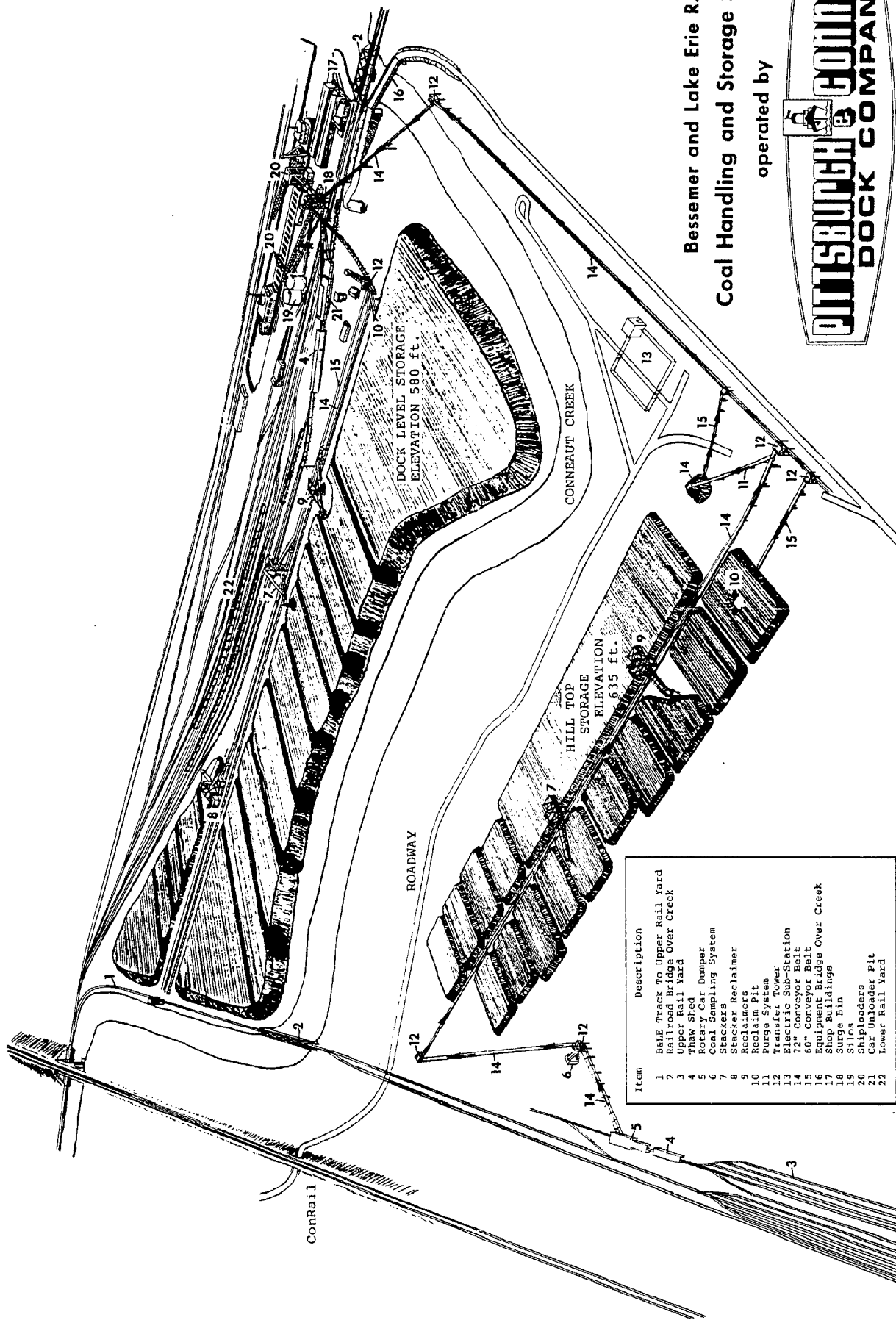
Detail of Raw Material Receiving and Shipment Forecast of

Raw Materials	Vessel(a) Deadweight Min./Max. Tonnes	Vessel(a) Cargo DWT Min./Max. Tonnes	1977		1980	
			Total No. Vessels	Total Net Tonnes (000)	Total No. Vessels	Total Net Tonnes (000)
<u>Inbound Ships</u>						
Iron Ore/Pellets (b)	14,150 45,900	13,800 45,350	279	7,130	250	7,076 (29)
All Other Ores	14,150 28,500	13,800 27,850	67	1,452	110	2,540
Limestone	14,150 32,850	13,800 32,200	52	771	82	1,225
<u>Outbound Ships</u>						
Metallurgical Coal	8,450 28,500	8,250 27,850	39	785	70	1,420
Steam Coal	8,450 28,500	8,250 27,850	338	6,884	532	10,836

Source: Pittsburgh and Conneaut Dock Company

(a) Revised 4 May 1977

(b) Maximum ship size for pellets may increase to 60,000 DWT and 59,250 tonnes cargo capacity by 1980.



Bessemer and Lake Erie R.R.  
 Coal Handling and Storage System

operated by

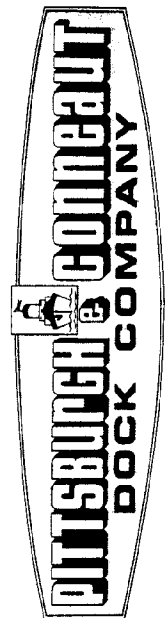


Figure 1

Item	Description
1	B&E Track To Upper Rail Yard
2	Railroad Bridge Over Creek
3	Upper Rail Yard
4	Upper Rail Yard
5	Rotary Car Dumper
6	Coal Sampling System
7	Stackers
8	Stacker Reclaimer
9	Reclaimers
10	Reclaim Pit
11	Purge System
12	Transfer Tower
13	Transfer Station
14	72" Conveyer Belt
15	66" Conveyer Belt
16	Equipment Bridge Over Creek
17	Shop Buildings
18	Surge Bin
19	Silos
20	Shiploaders
21	Car Unloader Pit
22	Lower Rail Yard

Due to the expansion project three City roads were affected. Woodworth Road was shortened approximately 485 feet. Thompson Road was shortened 6,962 feet and separated from Lake Road. State Line Road was vacated from a point 10 feet north of the Conrail crossing to the intersection of Childs Road, a distance of approximately 3,600 feet. No new public roadways were created due to the expansion project. The impacts associated with the actions on these roadways is prohibiting public access north through Dock Company property to the Lake Erie coast. City traffic congestion is not a problem due to the closing of these roads. The Dock Company allows its employees to use the vacated section of Woodworth Road to obtain access to the Dock Company premises.

Impact on Public Safety

The impact of the expansion project on public safety is considered to be minor. The increased Bessemer and Lake Erie railroad traffic will create a more dangerous situation at the railroad crossings. This potential danger is expected to be minimal due to the care passenger vehicles take when crossing the tracks. Due to the geographic isolation of the expansion site public access is limited. Due to this isolation impacts on public safety are considered minor.

### III. MITIGATIVE MEASURES FOR IMPACTS

#### Intent

Increased national attention is presently being focused on programs that assist in the effective utilization of the nation's coastal resources. One of the objectives of this study is to investigate measures to alleviate the various impacts that have been created due to the coal expansion project. The following mitigative measures will attempt to alleviate impacts caused by the expansion project.

#### Population

Population increase due to the coal expansion project has been of only minor significance. Virtually no in-migration occurred into the City as a result of the coal expansion project. Mitigative measures to ease the impact of such a small increase in population is considered to be impractical.

#### Employment

Employment has increased by 25 persons as a result of the expansion project. This increase in employment can only be considered to have positive impacts on the City.

#### Land Use

The major impact on the landuse is the grubbing of 275 acres of land on the site. Proposed mitigative measures will provide for the buffering of the surrounding area by a green-belt to ensure such activity is not developed further to the

south, adjacent to a large residential area. The zoning ordinance for the City is presently being revised and this greenbelt will be zoned as such to ensure proper utilization of this protective measure.

#### Water Quality

The Pittsburgh and Conneaut Dock Company and the Bessemer and Lake Erie railroad have realized the potential danger of polluted waters entering Conneaut Creek and Lake Erie, and due to this fact have instituted an improved stormwater collection and treatment system. The size of the expansion project made it feasible to incorporate an elaborate stormwater collection and treatment system. As shown in Figure 2 stormwater is collected from the entire 438 acre Conneaut complex. This system involves pumping stations equipped with backup pumping devices in the event of primary pump failure. The capacity of the system is 7,432,000 gallons per hour. The treatment method combines the various types of runoff into a 30 million gallon equalization basin. All runoff waters will receive primary destilting of sediments prior to entering the equalization basin where a second period of detention will take place and then the final effluent is discharged into Conneaut Creek. This system was developed at a cost of \$3.2 million. A study will be compiled by the Ohio EPA to determine the system efficiency.

If this pollution control system is deemed inadequate different mitigative techniques will be needed. Physical-chemical treatment methods would provide a more advanced stage





of treatment. Physical-chemical treatment methods include a number of techniques that do not rely on biological processes and offer flexibility in waste treatment. In a physical-chemical system, these techniques can be used in series to provide any desired level of waste treatment. Such combinations of biological, physical, and chemical treatment methods offer an economic method of adapting to specific changes in water quality requirements and qualitative shifts in waste load. The pollutant most associated with the coal expansion project is dissolved solids. If the retention and disilting basins do not adequately remove the solids, the process of neutralization may be used. This process removes essentially all suspended solids by using neutralizing agents to precipitate solids and control PH. This mitigative measure would help to ensure the purity of water entering Conneaut Creek and Lake Erie from the Dock Company property.

Another impact on the water quality of Conneaut Creek is the problem of ground seepage from the coal piles. The simplest way to mitigate the leachate is to store the coal on impervious clay liners.

#### Air Quality

The major impact on air quality associated with the expansion project is deflation, the picking up of small coal particles by the wind. Due to the large amount of land owned by the Dock Company surrounding the expansion site this impact is not considered extreme. However, there is physical evidence of coal particulate matter settling on residential units to the

south of the site. This light coal dust can be found on the window sills and other horizontal areas of homes in areas of the City. Mitigative measures for this problem include the wetting and spraying of the coal piles and the shaping of these piles to deter deflation.

The coal is recovered from the storage piles and transferred through a conveyor system. Particulate emissions are controlled between the conveyor and the stacker/reclaimer by enclosing the transfer point.

#### Public Facilities

The only impact on public facilities generated by the expansion project is the possible need for increased capacity of stormwater drainage and treatment facilities. The Dock Company has developed their own drainage and treatment system for stormwater which is presently being monitored for its effectiveness. If the system is not effective in treating the effluent it may be processed through the City's facilities. No other public facilities will need to be expanded due to the coal expansion project.

#### Transportation

Due to the expansion project the closing of portions of Woodworth and Thompson Roads to the public has resulted in the impacts of limiting access to the lakefront. There are two approaches available to assist in mitigating this impact including the improvement of existing access and facilities, and

the public acquisition of additional area. The Conneaut Port Authority has developed a Master Plan for the improvement and full utilization of the facilities and resources of the Conneaut Harbor. This Master Plan calls for upgrading the existing boat harbor and for providing additional dock space in an enclosed marina. Through the development of this marina greater accessibility along with needed facilities will be provided to the public wishing to enjoy the recreational attributes Lake Erie can offer.

A second mitigative measure for the reduction of access to the coastal area would be acquisition of additional sites for public use. There is limited undeveloped land available for purchase along the shoreline. The public acquisition of land has proven to be the most expensive means of acquiring lands for recreation or access to Lake Erie. There are, however, various methods that exist for developing additional public access facilities including the following:

(1) Fee Simple - The acquisition of land in fee simple is the technique most commonly used to preserve open space. By acquiring the title to the land either through purchase or donation a public or private agency is able to preserve the natural environment and make the land available to the public for recreational uses. The major problems with this technique are the very high initial costs of buying land in today's land market and the on-going costs of maintaining the land once it has been acquired.

(2) Lease Back - There are several approaches by which the public can retain firm control over the use of the land without retaining all the responsibilities of full ownership and management. It may acquire land in fee simple, place a restriction on the deed stating what uses would not be permitted, and then sell the land to a user who would keep the land in an open use. A public agency might purchase the land and then lease it with restrictions on the uses which would be allowed.

(3) Development Rights - The purchase of development rights is a somewhat less familiar concept. It is based on the recognition that ownership of land consists of a number of rights. The acquisition of development rights consists of severing from the fee the right to develop the land, leaving the owner in possession of the remainder of the fee, which would include the right to use the land for other purposes and the right to sell it. Unless a right-of-way easement is purchased in addition to the development rights themselves, the owner retains the right to exclude members of the public from his land. The advantage of the purchase of development rights over buying land in fee simple is that it reduces the initial costs of acquisition while the on-going maintenance costs and responsibilities are borne by the individual land-owners, who also continue to pay property taxes based on the remaining value of the land. The cost of development rights will depend on the number of restrictions placed on the land.

Public Safety

The major impacts on public safety from the expansion project stem from the increased deep draft vessel traffic and increased railroad traffic.

Mitigating the increased vessel traffic can be done by improving the awareness on both pleasure craft and deep draft vessels. An improved traffic control system and additional navigational aides will aid in mitigating the increased harbor traffic. Such systems could be maintained by either the Conneaut Port Authority or the U.S. Coast Guard. A separate traffic system could also be maintained for deep draft vessel traffic.

The increased railroad traffic from the Bessemer and Lake Erie Railroad will create the impact of greater risk at the crossings. The development of bridges and tunnels is not considered to be a feasible mitigative measure due to the prohibitive costs involved, but the feasibility of signals and gates might be studied as part of the current State of Ohio program for grade crossing improvements utilizing available federal and state funds.

#### IV. RELATIONSHIP TO FUTURE DEVELOPMENT

##### City Development Goals

In order for the City of Conneaut to plan for a better future, all proposed plans and programs must be evaluated by a set of ideas which comprise the desired type of community. The City has a Comprehensive Plan and an Alternative Futures Plan which it is using as tools to properly manage future growth. Although the desired type of community includes all facets of development (social, economic, physical), the realization of the goals will be expressed in terms of physical development, such as the arrangement of land uses, transportation arteries, community appearance, and the enhancement of the local environment. The goals themselves are viewed as the cornerstone of the planning process, for in theory, they form the framework for both public and private decision making.

The following goals for industrial land use are used to interpret conformity of future industrial development in Conneaut. All industrial uses or expanded uses should be encouraged to employ modern industrial site planning techniques, especially in areas exposed to the public. Such techniques include efficient design of property access points, parking and loading facilities, and landscaping and fencing of border areas. Goals of the following nature aid the City in analyzing potential industrial development.

- (1) To encourage industrial and other economic pursuits which will expand economic opportunities for

the future population at wages sufficient to provide the necessities of life and the enjoyable use of leisure time.

(2) To provide industrial growth in planned industrial districts where sufficient land use or buffer zones are available to separate industrial districts from other land uses.

(3) To minimize noise, odor, and discharge of industrial wastes on surrounding areas.

#### Coastal Zone Management Program

In 1972 the federal government created a Coastal Zone Management Program, which provides incentives necessary for the proper protection and management of the coastal areas. In light of this, a set of program objectives have been formulated which reflects positive attitudes concerning the more efficient utilization of coastal resources available within the City of Conneaut.

(1) Hazard Areas - Minimize dangers and impacts of flooding and erosion upon the health, safety, and welfare of the coastal residents.

(2) Air and Water Quality - Improve the quality and management of the air and water of the Coastal Zone enhancing their ability to support the numerous uses dependent upon them.

(3) Areas of Cultural Significance - Protect for the benefit of coastal area residents and all Ohioans, the

historic, archaeologic, and unique cultural features existing within the Coastal Zone.

(4) Economic Development - Stimulate coastal-related development in the Coastal Zone which will enhance the region's economy and will minimize adverse impacts on coastal resources. To further provide for the siting of energy generating facilities and the mitigation of associated environmental impacts.

(5) Environmentally Sensitive Areas - Protect and conserve environmental sensitive areas, wildlife habitat, and other significant terrestrial and aquatic environments.

(7) General Development and Public Investments - Assist in and encourage wise use of coastal resources, requiring that public investments be consistent with coastal policies.

(8) Public Involvement - Provide meaningful opportunities for involvement of the public and affected user groups in coastal planning and policy implementation.

(9) Governmental Coordination - Facilitate increased cooperation and coordination among federal, state, and local governments and agencies to ensure a consistent and efficient implementation of coastal policies.

The aforementioned program objectives were taken from the Ohio Coastal Zone Management Section, Division of Water, Ohio Department of Natural Resources. The City of Conneaut is in



support of these objectives for future development within the coastal area.

Relationship of Expansion Project to Development Policies

The policies found in the City's planning documents for industrial development and the program objectives of the Coastal Zone Management Program are in support of this coal expansion project. The project conforms to the City policies for industrial development in this area. The land is presently zoned for industrial use, sufficient land is available to act as a buffer from other land uses, and mitigative measures were developed to offset potential environmental problems. The Coastal Zone Management Program also supports coastal related development which provides for the siting of energy facilities. The Coastal Energy Impact Program deals with the social, economic, and environmental conflicts which may have developed due to the coal expansion project. This expansion project is not in opposition to the general development plan and policies adopted by the City.

Implementation

The implementation of any program is essential for the success of the program. The Coastal Energy Impact Program has attempted to identify potential impacts from the coal expansion project as well as developing mitigative measures. The mitigative measures identified will be implemented on a priority basis through available funding mechanisms. The City of

Conneaut is attempting to receive implementation funds from the Ohio Department of Energy, Ohio Department of Natural Resources, and other sources where matching funds may be available for this program.

