NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/300 ERIE BOULEVARD WEST, SYRACUSE, N.Y. 13202/TELEPHONE (315) 474-1511

January 13, 1993

Mr. James VanHoesen, P.E.
Bureau of Construction Services
Division of Hazardous Waste Remediation
New York State Department of
Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010

Dear Mr. VanHoesen:

SUBJECT: Initial Submittals for NMPC's Oneida and Glens Falls MGP Sites; Order On Consent Index #D0-0001-9210

As required by Section I of the above-referenced Order on Consent, I am transmitting six (6) copies of the Oneida and Glens Falls MGP site Initial Submittals. Included with the Initial Submittal Reports are six (6) copies of the following reports as required in Section I.C. of the Order on Consent:

Oneida

NUS Corporation, 1989; Final Draft Site Inspection Report, Niagara Mohawk Oneida Operations, Technical Directive Document No. 02-8810-03 prepared for the EPA.

Niagara Mohawk Power Corporation (NMPC), 1992; Preliminary Historical Profile of the Oneida (Sconondoa Street) MGP Site, Oneida, New York.

Glens Falls

NUS Corporation, 1990; Final Draft Site Inspection Report Niagara Mohawk/Operation HQ Glens Falls, Warren County, New York, Technical Directive Document No. 02-9007-02 for the EPA. NOT FOUND

Niagara Mohawk Power Corporation (NMPC), 1992; Preliminary Historic Profile of the Glens Falls (Mohican Street) MGP Site, Glens Falls, Warren County, New York.

If you have any questions regarding the reports provided, please feel free to contact me at (315) 428-6624 or Mr. William Jones at (315) 428-5690.

Very truly yours,

Michael W. Sherman
Supervisor, Environmental Programs

CW/mgc
Attachment
xc: Distribution List (attached)

DRAFT INITIAL SUBMITTAL

Glens Falls (Mohican Street) MGP Site
Glens Falls, New York

January 15, 1993

Prepared by:

Niagara Mohawk Power Corporation

NYSDEC Order on Consent,
Index #D0-0001-9210

This report has been prepared in accordance with the NYSDEC Order On Consent, Index #D0-0001-9210 to satisfy the initial submittal requirement for the Glens Falls (Mohican Street) MGP site as presented in Section I of that order. This Initial Submittal contains a summary of pertinent information presented in the Preliminary Historical Investigation Report prepared for this site. Citations for all information presented in this submittal are provided in said report. Reference information for said report is provided in ITEM C of this submittal.

NYSDEC Order On Consent - ITEM A

"A brief history and description of the Site, including the types, quantities, physical state, location, and (if applicable) dates of disposal of MGP wastes, including methods of disposal and spillage of such wastes;"

Site Description

The Glens Falls (Mohican Street) MGP site is located in Warren County, New York. The site covers approximately 2.5 acres of a triangular-shaped property. The site is bordered by Mohican Street and a residence to the north, by Basin Street to the west, and by a Feeder Canal to the southeast. The site is currently used as a Niagra Mohawk Power Corporation (NMPC) service center.

The land use nearby the site is urban/industrial. The Glens Falls Hospital is located north of the site; to the west is a small industry and a park; to the south is the Hudson River; and to the east is the Glens Falls Civic Center and Finch Pruyn Paper Company.

Most of the site is paved. Three major service buildings and a switchyard are located onsite. The main service building is the largest site structure (80' x 260'), constructed around 1931. The second largest building (60' x 225'), the vehicle storage building, and the parking lot west of Basin Street were added in 1977. The newest building onsite is a crew facility (41' x 163') which was added in 1987. The Henry Street substation was added in 1959.

Site History

Prior to construction of the coal gas plant in 1854, the site property was owned by the Morgan Lumber Company. Throughout most of the life of the gas plant, the site was bordered by the Morgan Lumber Company and residential properties.

The coal gas plant operated from 1854 to 1920. In 1921, the plant was converted to carburetted water gas which operated until 1929. After 1929, manufactured gas was provided by a pipeline from Albany. The Glens Falls gas plant was operated on a seasonal (winter) basis until the 1940's (Cunningham, 1992). All of the gas plant structures were demolished in the 1950's.

Waste Types

A number of by-product and waste types are produced during the manufacture of coal and carburetted gas. Site-specific gas production records are not presently available for years preceding 1890. The following is a description of common by-products and wastes typically associated with manufactured gas production:

Retort Gas Production

Clinkers and Ash - These wastes consisted mainly of oxides of silica, calcium, aluminum, and trace metals. Trace metals typically associated with gas production are as follows: Sb, Bo, Cd, Cr, Co, Cu, Pb, Mn, and Ni.

Coke - Coke was sold as domestic and industrial heating fuel. Coke was also typically used onsite for carrier gas production.

Coal Tar - Coal tar contains primarily PAHs, including heterocyclic compounds. Roughly four percent of the coal tar was comprised of tar acids. Coal tars were valuable by-products of the MGP era. Coal tar was refined by local markets into pitches, creosote oil, road tar, crude tar acids or bases, and naphthalene. Coal tars were also recycled as fuel.

Oil Sludge, Ammonia Liquors and Gas Condensates - Oil sludges and gas condensates consisted of aromatic-rich oils. Ammonia was often recycled for use in secondary coolers. At a large number of MGP sites, light oils were distilled for automobile fuel.

Tar Decanter Sludges - Tar sludge is a black, heavy resinous material. Tar sludge contains high concentrations of PAHs, heterocyclic PAHs.

Ammonia, Cyanide and Sulfur Salts - Ammonium thiocyanate is an example of these types of wastes. Ammonia salts were often recovered. Ammonia salt was used by local markets as a fertilizer.

Carburetted Gas Production

Tar - The chemical characteristics of the tar produced by carburetted gas production is similar to that produced by the coal gas process; however, it did not contain significant amounts of tar acids.

Tar Sludges - Carburetted tar sludges are similar to retort tar sludges; however, they do not contain significant amounts of phenolics or oxygenated and nitrogenated organic compounds such as cresol and pyridine.

Ash, Clinkers and Coke Fines - The characteristics associated with ash, clinker, and coke fine wastes were similar to coal gas production.

Emulsions and Liquors - Emulsions and liquors formed during condensation when the blue gas was cooled.

Gas Purification

Lime Sludge - Lime sludge was utilized for the recovery of H_2S. The gas was passed through the lime sludge which precipitated a calcium sulfate.

Oxide Box Wastes - Oxide boxes replaced the lime sludge purification process. Wood chips impregnated with iron oxide were placed in purifier boxes to remove sulfur. The iron oxide reacted with the H_2S to produce ferric sulfide. Eventually, the oxide chips were fouled by an accumulation of sulfur, tar, and the reaction of iron with cyanide to produce ferrocyanides. Typical oxide box waste contains 45 percent free sulfur, 7.5 percent ferrocyanide, 1.3 percent thiocyanate, and 0.7 percent naphthalene. Bog ore was commonly used as a source of iron oxide for oxide chip production. Bog ore contains the following trace metals: Cr, Cu, Pb, Mn, Ni, and Zn.

Waste Quantities

A summary of the available information on production of gas and by-product quantities are presented on Table 1. Prior to 1898, the maximum annual gas production was 8,000,000 cubic feet. Due to plant modification after 1898, gas production increased to 77,000,000 cubic feet by 1920. In 1921, the plant was converted to carburetted water gas and gas production increased to 118,500,000 cubic feet by 1926. After 1929, gas was only produced on seasonal (winter) basis until the 1940's.

Waste production records are not available for most years. In 1917, the first year reported, 54,932 gallons of tar were produced and 49,150 gallons were sold. The disposition of the remaining 5,782 gallons was not provided. In 1918, 1919, and 1920, gas production increased; however, the records indicate the tar production rates remained the same. This indicates the tar production figures were not updated. In 1921, the tar production increased to 73,675 gallons with 56,589 gallons sold and 17,086 gallons unaccounted for. Approximately half of the coke produced between 1917 and 1921 was sold.

The volume of the fouled oxide chips and ash produced was dependent upon the volume of gas produced in conjunction with the sulfur and ash content of the coal. Production rates of decanter sludge averaged from 0.1 to 1 percent of the total tar production. Coal tar production averaged 10 gallons of dry tar per one ton of carbonized coal.

In the 1960's, site excavations encountered tar in former holder foundations. Approximately 4,000 gallons of tar were removed from the holder foundations and hauled to the Bluebird Road site in South Glens Falls. In 1991, the tar was removed from the Bluebird Road site during source remediation.

TABLE 1

ANNUAL PRODUCTION
GLENS FALLS MGP

Date	Annual Gas Production (Million Cubic Feet)	Process	Tar Produced (Gallons)	Tar Sold (Gallons)	Coke Produced (Tons)	Coke Sold (Tons)
1890	6	Coal	N/A	N/A	N/A	N/A
1900	16	Coal	N/A	N/A	N/A	N/A
1907	30	Coal	N/A	N/A	N/A	N/A
1908	30	Coal	N/A	N/A	N/A	N/A
1911	50	Coal	N/A	N/A	N/A	N/A
1912	50	Coal	N/A	N/A	N/A	N/A
1913	60.6	Coal	N/A	N/A	N/A	N/A
1914	60.6	Coal	N/A	N/A	N/A	N/A
1915	59.5	Coal	N/A	N/A	N/A	N/A
1916	70	Coal	N/A	N/A	N/A	N/A
1917	70	Coal	54,932	49,150	5,191	2,602
1918	75	Coal	54,932	49,150	5,191	2,602
1919	77	Coal	54,932	49,150	5,191	2,602
1920	77	Coal	54,932	49,150	5,191	2,602
1921	94	Coal&Lowe	73,675	56,589	6,188	3,180
1923	94	Carburetted Water (Tenney)	8,988	N/A	732	N/A
1924	110	Tenney	148	N/A	N/A	N/A
1925	114	Tenney	68,883	N/A	N/A	N/A
1926	118.5	Tenney	47,025	27,702	N/A	N/A

1890 - 1900 - From Radian - Survey of Town Gas and By-product Production and Locations in the U.S. (1880-1950); Feb. 1985 (PB85-173813)

1907 - 1926 - Brown's Directories of American Gas Companies

N/A - Not Presently Available

Physical State

A summary of the physical states of the potential residual onsite by-products and wastes identified in the Waste Types Section are as follows:

Waste	Physical State
Clinkers, Ash, and Coal Fines	Solid
Coke	Solid
Coal Tar	Liquid (Viscous)
Oil Sludge, Ammonia Liquors, and Gas Condensates	Liquid
Tar Decanter Sludges	Semi-Solid
Ammonia, Cyanide and Sulfur Salts	Solid or Dissolved
Emulsions and Liquors	Liquid
Lime Sludge	Solid or Dissolved
Oxide Box Wastes	Solid (Cyanide attaches to other solids)

Location and Methods of Waste Disposal

A complete record of by-product reuse is not available. Disposal information is not available for waste or excess by-product produced. The following evidence of waste disposal has been observed during previous site investigations:

(1) The tar separator contained an overflow pipe which discharged directly into the feeder canal (Drawing H-1687). The feeder canal sediments have evidence of tar contamination (NMPC, 1992).

(2) During demolition of the site gas holders, residual tar in the holder bottoms was left in place. During the 1960's, the residual tar was excavated and removed from one or two of the holder foundations and hauled to the Bluebird Road site in South Glens Falls (AES, 1992). The tar source at Bluebird Road site was removed in 1991.

(3) Traces of purifier waste and a saturated zone of tar were encountered during a subsurface investigation, indicating onsite waste disposal or past spills. The site contains a three-foot layer of fill below the surface consisting sand, gravel, bricks, cinder, with traces of coal tar and purifier waste.

Dates of Waste Disposal

Records of waste disposal practices are limited to the 1960's removal activities. It is not likely that waste disposal occurred at set dates, but as operations required the removal of wastes from the system. Unrecovered by-products may have been released to the environment through breaks in the plant containment structures or piping. The following is a summary of important operational dates:

1854 - 1898	Coal gas production
1898 - 1921	Coal gas production expanded
1921 - 1929	Carburetted gas production
1929 - 1940	Standby operations only
1950's	Gas plant facilities demolished
1960's	Tar removed from former holder foundation(s) and hauled to the Bluebird Road site
1991	Bluebird Road site remediated

NYSDEC Order on Consent - ITEM B

"A concise summary of information held by Respondent and Respondent's attorneys and consultants with respect to all persons responsible for such disposal of MGP wastes, including but not limited to names, addresses, dates of disposal, and any proof linking each such person responsible for MGP wastes identified pursuant to Subparagraph I.A of this Order:"

Persons responsible for the disposal of MGP wastes at the Glens Falls MGP were employed by the predecessor gas manufacturing companies that operated this gas plant. The identity of such persons is not known. The following is a list of the former predecessor companies and respective operational periods:

Glens Falls Gas Light Company	1854 - 1899
Glens Falls Electric Light and Power Company Limited	1899 - 1908
Utica Gas & Electric Company	1908 - 1921
Adirondack Power and Light Corporation	1921 - 1927
New York Power and Light Corporation	1927 - 1950
Niagara Mohawk Power Corporation	1950 - Present

NMPC operations personnel participated in the excavation and off-site disposal of coal tars in the 1960's at the Bluebird Road site. These personnel are either retired or deceased. The Bluebird Road site was remediated in 1991.

NYSDEC Order on Consent - ITEM C

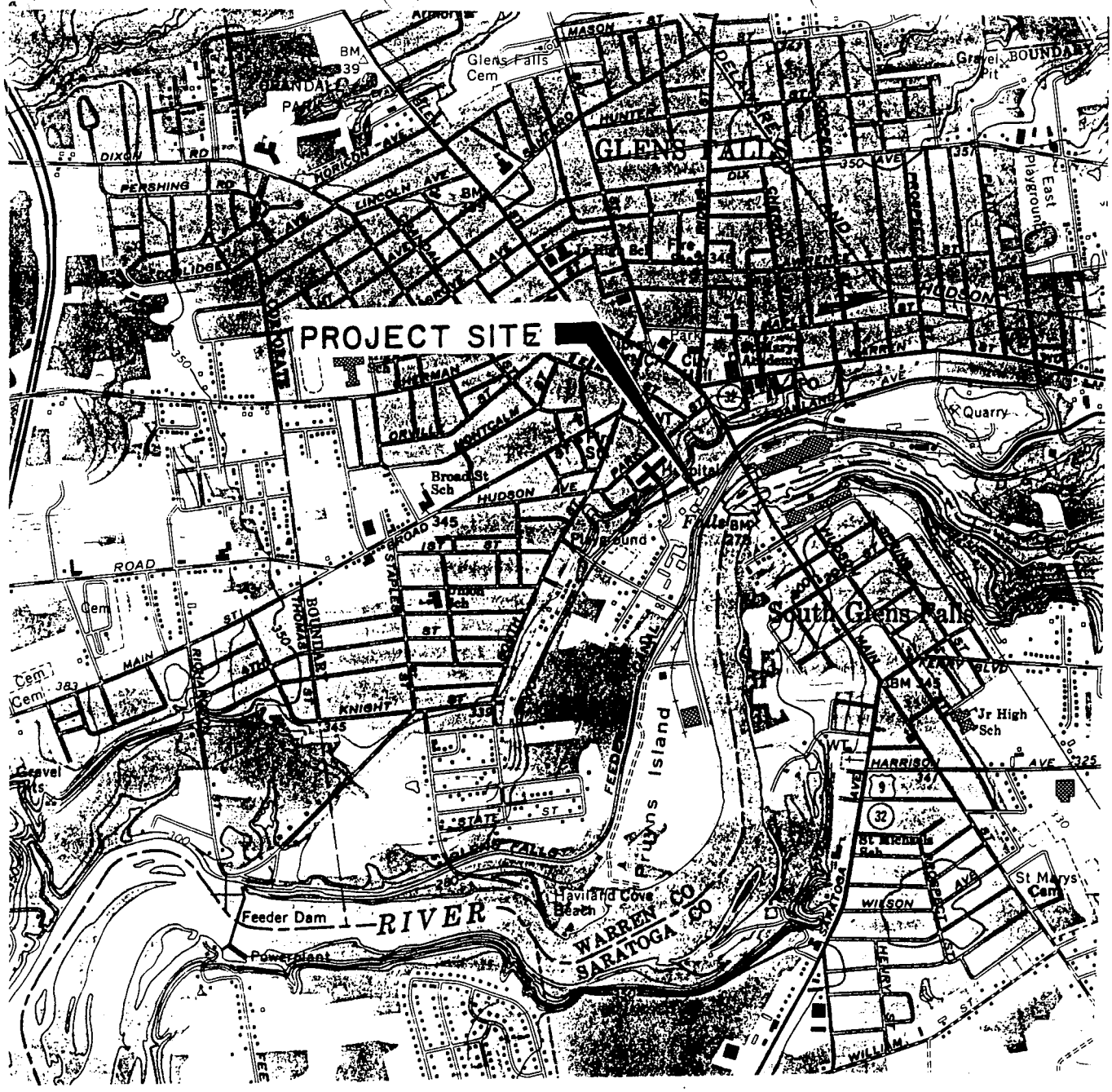
"A comprehensive list and copies of all existing relevant reports with titles, authors, and subject matter as well as a description of the results of all previous investigations of each site and areas in the vicinity of each site, including copies of all available topographic and property surveys, engineering studies and aerial photographs"

NUS Corporation, 1990; Final Draft Site Inspection Report Niagara Mohawk/Operation HQ Glens Falls, Warren County, New York, Technical Directive Document No. 02-9007-02 for the U.S. Environmental Protection Agency, June 28, 1991.

Niagara Mohawk Power Corporation (NMPC), 1992; Preliminary Historic Profile of the Mohican Street Manufactured Gas Plant Site, Glens Falls, Warren County, New York, Niagara Mohawk Power Corporation, Syracuse, New York, November 1992. Includes property surveys, engineering studies, aerial and site photographs.

NYSDEC Order on Consent - ITEM D

"An 8.5-inch by 11-inch portion of a United States Geological Survey topographic map of the Site which contains the name of the quadrangle and an arrow indicating the orientation of a northern compass point."



QUADRANGLE LOCATION

N

SCALE

0 2000 4000 FT.

2000 FT.

ENGINEERING-SCIENCE

FIGURE 1

HISTORICAL INVESTIGATION
NIAGARA MOHAWK POWER CORPORATION
SYRACUSE, NEW YORK

GLENS FALLS QUADRANGLE
NEW YORK
7.5 MINUTE SERIES (TOPOGRAPHIC)
SW/4 GLENS FALLS 15' QUADRANGLE