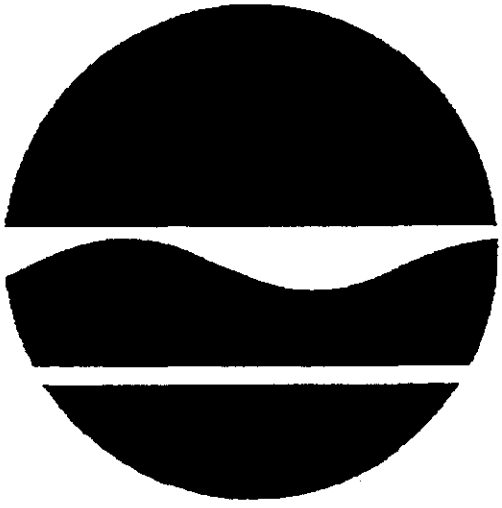
OWEGO COAL GASIFICATION PLANT
Inactive Hazardous Waste Site

Owego (V), Tioga County, New York
Site No. 7-54-008

RECORD OF DECISION

March 1994



Prepared by:

New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation

DECLARATION STATEMENT - RECORD OF DECISION

Owego Coal Gasification Plant Site
Village of Owego,Tioga County, New York
Site No. 7-54-008

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedial action for the Owego Coal Gasification Plant Site inactive hazardous waste disposal site which was chosen in accordance with the New York State Environmental Conservation Law (ECL). The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300).

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Owego Coal Gasification Plant Site Inactive Hazardous Waste Site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC.

Assessment of the Site

Actual or threatened release of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential threat to public health and the environment.

Description of Selected Remedy

Based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Owego Coal Gasification Plant Site and the criteria identified for evaluation of alternatives the NYSDEC has selected thermal destruction for site soils and wastes, with no action for groundwater . The components of the remedy are as follows:

- Excavation of the surface soil from the majority of the site as shown in figure 3. The top two (2) feet of soil will be removed and clean soil will be placed to original grade. The excavated soil will be transported to a facility capable of receiving soils contaminated with coal-tar-related compounds for treatment by thermal destruction.

- Excavation of the contents of the abandoned underground relief holder. The former relief holder is forty foot diameter open top container that is filled with coal tar wastes.

- The no action alternative has been selected for the groundwater at this site due to the limited extent of the groundwater contamination. A contingency will incorporate groundwater treatment, if in the future, it is determined that there is a sustained off-site exceedance of groundwater standards due to a site source which warrants remediation.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

March 31, 1994
Date

Ann Hill DeBarbieri
Deputy Commissioner

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SECTION 1: SITE LOCATION AND DESCRIPTION

The Owego Coal Gasification Site, Site No. 754008, is a Class 2 site listed in the NYSDEC Registry of Inactive Hazardous Waste Disposal sites in New York State. The former Owego manufactured gas plant site is a 1 acre triangular parcel of land in the eastern portion of the village of Owego (see figure 1). The site is bordered by East Main Street to the north, the Conrail railroad tracks to the southwest, and Cygnovich and Andrew, a dimensional lumber mill, to the east. The site is divided into three parcels (figure 2). The western parcel has always been owned by NYSEG or NYSEG predecessors since plant operations began in 1856. The eastern parcel was recently transferred to NYSEG from Phyllis Inscho on November 6, 1993. The central parcel was transferred to the village of Owego by NYSEG, and had been used as a village playground until 1987. This parcel was re-purchased by NYSEG on August 11, 1992. The entire site is now owned by NYSEG. This site is located over the Clinton Street-Ballpark Valley Aquifer System which is a federally designated sole source aquifer.

SECTION 2: SITE HISTORY

2.1 Operational/ Disposal History

The site was used to manufacture coal gas for 79 years, from 1856 to 1935. Figure 1-3 shows the general layout of the former plant based on historical information. The main structure of the facility was a brick building located in the western portion of the site. This building housed the retorts, boilers, condensers, exhausters, tar extractors, and scrubbers. Approximately 40 feet east of the production building, a second brick building housed the purifier boxes and gas regulator area. A wood-framed structure enclosed the area between the brick buildings. This building was used to ship and receive materials delivered to the plant and also housed the coal tar storage vessel.

Three separate gas holders were used at various times during the years of gas production. The original gas relief holder was a 40 foot diameter brick structure located directly east of the purifier building, constructed with a foundation approximately 18 feet below ground surface (bgs), in the north central portion of the site. This relief holder was primarily used to cool gas, and was the most likely of the three holders to contain tar residues. A second, above ground steel gas distribution holder was located directly south of the brick gas holder. This gas holder was used until 1923, when a larger above ground 100,000 cubic foot steel distribution holder was constructed directly east of this holder. The above ground holders were constructed above grade on concrete slabs, and contained cooled and purified gas. Following the years of gas production, all of the structures associated with the plant were torn down except for part of the main production building, which is presently used as a natural gas regulator station. The foundations of the two above ground holders remain buried on-site, as well as the ~~entire brick relief~~ holder. The Task 1 report prepared by E. C. Jordan Co. for NYSEG, and available in the document repositories, details historical use of the site.

2.2 Remedial History

The Owego gas plant site is being investigated due to its former use as a coal gasification facility and the presence of coal gas plant residues remaining on site. The gas plant waste consists of: ash, cinders,

purifier wastes (e.g. lime and wood chips), and coal tar residues. This resulted in its listing as a Class 2 site on the registry. The initial site investigation results were presented in the Task 2 and Task 3 reports (Jordan, 1988, ABB-ES, 1991) and are summarized in the Remedial Investigation Summary and Feasibility Study report (ABB-ES, 1993). The Task 2, Task 3 and portions of the Remedial Investigation and Feasibility Study have been accepted by the DEC as meeting the requirements of a Remedial Investigation (RI) for the site proper. The Susquehanna River will be investigated independently as a separate operable unit.

An Interim Remedial Measure (IRM) was completed at this site during the Fall of 1992. The IRM work will be described later in this section.

SECTION 3: CURRENT STATUS

3.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site.

The RI was conducted in three (3) phases (tasks). Tasks 2, 3 and 4 were performed in 1988, 1991 and 1988, respectively. A summary of the RI follows:

- Geophysical survey to determine depth to bedrock.
- Installation of soil borings and monitoring wells for analysis of soils and groundwater as well as physical properties of soil and hydrogeologic conditions.
- Excavation of test pits to locate subsurface structures.
- A background survey was performed to determine an acceptable level of polycyclic aromatic hydrocarbons (PAHs) for site soils.

The analytical data obtained from the RI was compared to environmental Standards, Criteria, and Guidance (SCGs) in determining remedial alternatives. Groundwater, drinking water and surface water SCGs identified for the Owego Coal Gasification Plant Site were based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of the NYS Sanitary Code. Soil and sediment analytical results were evaluated against NYSDEC soil cleanup guidelines for the protection of groundwater, background conditions, and health risk-based criteria to develop remediation goals for soil.

Based upon the results of the remedial investigation, a comparison to the SCGs, and potential public health risks and environmental exposure risks; certain areas and media of the site require remediation.

SOILS: PAHs and cyanide were detected in surface soil samples inside the property boundaries of the former site at varying concentrations. The levels of PAHs ranged from N.D. to 30,000 ppm and cyanides ranged from 2 to 360 ppm. Low levels of PAHs and cyanide were detected in surface soil

samples from surrounding residential properties to the north of Main Street and across the railroad tracks to the south of the site. The low levels found are comparable to background concentrations and may be due to past disposal of ash from residential furnaces and the railroad tracks located on the southern boundary of the site.The cyanide could represent residue from the application of road salt.

Samples from deep soil borings extending to the groundwater table contain no levels of cyanide or PAHs above background. Based on the investigation it has been determined that no migration of site related wastes has occurred to soils deeper than 20 feet.

A background soil sampling survey conducted by NYSEG and NYSDEC consisted of the analysis of surface soil samples from 11 sample locations throughout the Village of Owego. The results of this survey indicated average total and carcinogenic PAH (cPAH) concentrations ranging from 4.4 to 6.5 ppm, and 2.6 to 4.0 ppm, respectively. Individual cPAH sample results ranged from non-detect to 18.2 ppm with a sample mean and standard deviation of 4.0 ppm and 7.0 ppm.

COAL TAR WASTE:

A sample of tar from the bottom of the gas relief holder contained high levels of volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs). PAHs were found at 45,000 ppm. Benzene was detected at 13 ppm.

The tar sample is classified as a RCRA (Resource Conservation and Recovery Act) characteristic hazardous waste because of the presence of benzene in the TCLP extract above the regulatory threshold concentration of 0.5 ppm. The regulatory guideline of 500 ppm for reactive sulfides was also exceeded by the coal tar sample, making this waste a RCRA characteristic hazardous waste.

GROUNDWATER: VOCs were detected in samples from one on-site well (MW-2) and one off-site well (MW-7). In MW-2: benzene was found at 0.47 ppm; ethylbenzene at 0.46 ppm; toluene at 0.23 ppm. In MW-7, benzene was found at 0.12 ppm; total xylene at 0.38 ppm; and toluene at 0.2 ppm.

Naphthalene, the only semi-volatile organic compound found in groundwater samples, was detected in one onsite well (MW-2) during two of the three sampling rounds, at a level of 0.11ppm, which is in excess of NYS drinking water standards criteria.

The inorganic compound cyanide was detected in several monitoring wells. Groundwater standards are currently exceeded in on-site wells MW-2 and MW-4. Cyanide was detected below regulatory criteria in various off-site, downgradient wells.

SURFACE WATER:

Two significant surface water bodies exist in the vicinity of the site:

Brick Pond - Based on groundwater flow direction and surface water flow direction, it has been concluded that Brick Pond would not be impacted by this site.

Susquehanna River - The Susquehanna River was included in the Remedial Investigation due to its proximity to the site.

Groundwater modeling was performed specifically to determine what possible impact this site may have had or is presently having on the river. The model estimated that concentrations of benzene at 33 ug/l and cyanide at 6 ug/l may be impacting the River. Subsequent to modeling, sediment samples were obtained from the River in the vicinity of the modeled impact area. Cyanide, benzene and other VOCs were detected in the sediments.

The results of an evaluation of the potential of an impact to the river from this site is currently inconclusive; however, based on the information presented above, there is an indication that this site may have been one possible source of the river sediment contamination.

The possible impact to the Susquehanna River will be investigated as a separate operable unit, designated as operable unit # 2 (OU-2). If it is confirmed that this site is impacting the River with unacceptable levels of contaminants, a feasibility study will be performed to determine if remedial measures will be required to protect the River.

3.2 Interim Remedial Measures:

An Interim Remedial Measure (IRM) was conducted at the site based on findings as the RI progressed. An IRM is implemented when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS.

The buried brick gas holder on the northern side of the site is the likely source of the groundwater plume containing VOCs, PAHs and cyanides. In order to minimize the potential release of coal tar and contaminated water contained in this holder, an interim remedial measure (IRM) was conducted. This IRM consisted of the installation of an extraction well in the gas holder and dewatering of the holder foundation followed by temporarily capping the ground surface overlying the gas holder with an impermeable material. The IRM was completed in November 1992.

3.3 Summary of Human Exposure Pathways:

Carcinogenic PAHs (cPAHs) were identified as contaminants of concern in the on-site soils, and cyanide was identified as the contaminant of concern in the on-site groundwater.

Cyanide in on-site groundwater from MW-4 exceeded New York State drinking water criteria for Class GA groundwater in all three Task 2 sampling rounds and during one sampling round at MW-2 and could potentially present a noncarcinogenic human health risk. The groundwater standard for cyanide is 100 ug/ liter. The new proposed groundwater standard for cyanide is 200 ug/ liter. However, all residences in the area are serviced by a remotely located public water supply and therefore the risk of exposure to on-site groundwater was considered significant only as a future hypothetical risk. It is important to note that the site is located over an important sole-source aquifer that is considered a valuable groundwater water supply resource. Carcinogenic risk, based on direct contact with carcinogenic PAHs in surface soils, was found to exceed the USEPA recommended range of risk. The exposure scenario for this risk assessment included substantial dermal exposure to and ingestion of surficial soils. This exposure scenario

has been limited by site security fencing and the closure of the playground area of the site in 1987 and by the cover of grass on the site.

Based on the comparative study of the carcinogenic PAH concentrations of off-site soils in the Village of Owego, the NYSDOH has derived a recommended remedial action clean - up goal of 12 ppm or less of total carcinogenic PAHs for site surficial soils. The deeper site soils will be remediated to the extent required to protect groundwater. NYSEG will continue to maintain ownership of the property and will control the use of the site. Restrictions will be placed in the property deed(s) to convey full knowledge of the status of this site in the event of a change of ownership.

3.4 Summary of Environmental Exposure Pathways:

Carcinogenic PAHs (cPAHs) were identified as contaminants of concern in the on-site soils, and cyanides were identified as the contaminant of concern in the groundwater.

The possible impact to the Susquehanna River will be investigated as operable unit # 2 (OU-2).

Based on ground water flow direction and surface water direction, it was concluded that Brick Pond has not been impacted by this site.

SECTION 4: ENFORCEMENT STATUS

NYSEG and the NYSDEC entered into an Order on Consent in December 1990. To date, NYSEG has satisfied all of its obligations as specified in the order. With regard to the possible impact to the Susquehanna River, additional agreements may have to be negotiated pending confirmation of the need for further remedial action.

Orders on Consent

The NYSDEC and the New York State Electric And Gas Corporation (NYSEG) entered into an Order on Consent on December 10, 1990. The Order obligates the responsible parties to implement a RI/FS remedial program only. An Order on Consent for the remedial design and the remedial action is currently under negotiation.

The following is the chronological enforcement history of this site.

Date	Index No.	Subject of Order
12/10/90	#A7-0150-88-09	RI/FS

SECTION 5: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. These goals are established under the guideline of meeting all standard, criteria, and guidance (SCGs) and protecting human health and the environment.

At a minimum, the remedy selected should eliminate or mitigate all significant threats to the public health and to the environment presented by hazardous waste disposal at the site, through the proper application of scientific and engineering principles.

The goals selected for this site are:

- Reduce, control, or eliminate the contamination present within the soils/waste on site (generation of leachate within the fill mass).
- Remove the threat to surface waters by eliminating any future leaching from the contaminated soils to groundwater which could result in a possible impact to the Susquehanna River.
- Eliminate the potential for direct human or animal contact with the contaminated soils on site.
- Mitigate the impacts of contaminated site soils to the groundwater.
- Prevent, to the extent feasible, migration of contaminants to groundwater.
- Provide for the attainment of SCGs for groundwater quality at the limits of the area of concern (AOC).

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

Potential remedial alternatives for the Owego Coal Gasification site were identified, screened and evaluated in a Feasibility Study. This evaluation is presented in the report entitled **Remedial Investigation Summary And Feasibility Study Report January 1993.** A summary of the detailed analysis follows.

6.1: Description of Alternatives

The potential remedies are intended to address the waste, contaminated soil and groundwater at the site.

Alternatives for Soil and Waste:

Alternative 1: No Further Action

The no further action alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative recognizes the partial remediation of the site carried out during the previously completed IRM. It requires continued monitoring only, to evaluate the effectiveness of the remediation completed under the IRM.

For this alternative, the site would remain in its present condition, and human health and the environment would not be provided any additional protection.

Alternative 2: Off-site High
Temperature Destruction of Contaminated Waste and Soil

Present Worth:$ 1,460,000-$ 6,030,000
Capital Cost: $ 1,460,000-$ 6,030,000
Annual O&M: $ 0

Time to Implement 6 months - 12 months

This alternative would consist of excavating contaminated soil (4500 cubic yards) to the depth shown on Figure 3, and transporting it to an off-site hazardous waste incinerator ($ 6,030,000), cement kiln ($ 2,774,000), or utility boiler ($ 1,460,000), capable of receiving soils with coal-tar-related compounds for thermal destruction treatment. Confirmatory sampling will be performed at the direction of the DEC.

NYSEG has applied for permits for the thermal destruction of coal tar wastes at two of its utility boilers, one is located in East Corning and the other is in Bainbridge.

Contaminated debris that is not suitable for thermal destruction, such as metal piping, will be decontaminated at the site or disposed of at a permitted landfill in compliance with all applicable Federal and State laws, rules and regulations.

Alternative 3: Off-site Disposal in Landfill

Present Worth:$ 1,464,000-$ 2,656,000
Capital Cost: $ 1,464,000-$ 2,656,000
Annual O&M: $ 0

Time to Implement: 6 - 12 months

This alternative would consist of excavating the contaminated soil to the depth as shown on Figure 3 and transporting the material to a landfill facility permitted to receive soils contaminated with coal-tar-related compounds.

Alternative for Groundwater:

Alternative 1a: No Action

This alternative recognizes the remediation of the site soils and wastes as described in Alternative 2 & 3 (i.e. Source Removal). It would require continued monitoring of groundwater.

Present Worth: $ 50,000
Capital Cost: $ 0
Annual 0&M: $ 50,000

Time to Implement: None

Alternative 2a: Pump, Pretreat & Discharge to Publicly Owned Treatment Works (POTW)

This alternative would consist of the pumping of groundwater which would require onsite pretreatment prior to discharge to the publicly owned treatment works (POTW).

Present Worth:	$ 877,000
Capital Cost :	$ 220,000
Annual O&M:	$ 657,000

Time to Implement: 3 - 5 years

All alternatives are based on a 30 year operational period for purposes of comparison.

6.2: Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that governs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each of the criteria, a brief description is provided followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is contained in the Feasibility Study.

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance documents.

Site Soil and Waste:

Alternative 2: The components of Alternative 2 can be designed and executed to comply with SCGs. It is presumed that an off-site permitted and/ or licensed high-temperature destruction facility would comply with all SCGs.

The No Action alternative (Alternative 1) would not comply with all SGCs.

Alternative 3: The components of Alternative 3 would be designed and executed to comply with SCGs.

Groundwater:

Alternative 1a: By removing the source of contamination on the site utilizing either Alternative 2 or Alternative 3, the levels of contamination in the groundwater would be expected to attenuate to applicable SCGs.

Alternative 2a: If levels of contamination in the groundwater do not decline within an acceptable time frame after source removal, the application of this alternative would be reevaluated to facilitate meeting SCGs.

2. Protection of Human Health and the Environment. This criterion is an overall evaluation of the health and environmental impacts to assess whether each alternative is protective.

Site Soil and Waste:

Implementation of Alternative 2 & 3 would allow unrestricted use of the surface of the site after remediation. Future activities involving excavation to depths greater than those affected by the soil removal may require soil analysis to confirm the presence or absence of contamination. Continued ownership of the property will control future use of the property and prevent development. Implementation of this alternative would be protective of public health and the environment.

Implementation of Alternative 1 would allow a possible continued exposure potential for the public and the environment.

Groundwater:

Alternative 1a: Since groundwater standards are no longer exceeded beyond NYSEG's site property boundaries, the current concern would be the quality of groundwater within the confines of the property boundaries of the site.

Groundwater is not used as a potable water supply at this site. However, the goal is to maintain groundwater standards within the property boundaries of the site. Implementation of this Alternative in conjunction with Alternatives 2 & 3 should decrease public health risks and environmental risks to acceptable levels.

Alternative 2a: Treatment of groundwater would actively reduce the levels of contamination in the groundwater. Implementation of this Alternative would decrease the public health risks and environmental risks to below acceptable levels.

3. Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and implementation are evaluated... The length of time needed to achieve the remedial objectives is also estimated and compared with the other alternatives.

Site Soil and Waste:

The short-term risks to the community and environment presented by Alternatives 2 & 3 would not be significant and could be effectively mitigated. Potential impacts would be related primarily to the noise and presence of earthmoving equipment and dust or air emissions, which would be mitigated by the use of site fencing, periodic watering of excavation areas, and off-site truck staging. It is anticipated that remedial construction would be complete in less than 60 days. Workers would be prepared to wear adequate dermal and breathing protection, primarily in the event of dusty conditions. Air monitoring for contaminants would be performed at the site perimeter to insure that there would be no impact to the community. Alternative 1 presents no short term risk because no site disturbance would be involved.

Groundwater:

Alternative 1a: The no action alternative would present no short term risk to the community because the groundwater is not contaminated beyond the boundary of the site. There is no short term risk to the environment, provided that either Alternative 2 or 3 is implemented.

Alternative 2a: The short term risk to the community and environment would not be significant, and could be effectively mitigated. The potential impacts would be related primarily to air emission and to treatment of effluents. Both air emission and effluent of on-site treatment would have to comply with air and water discharge regulations.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of alternatives after implementation of the response actions. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

Site soil and Waste:

Alternative 2 would be a permanent remedy, because high-temperature destruction would irreversibly destroy all of the organic components to acceptable clean-up levels. No treated residual would remain on-site.

Alternative 3 would be a permanent remedy. Disposal of contaminated at an approved landfill would be permanent with regard to the source of site contaminants. No treated residual would remain on-site.

Groundwater:
Alternative 1a: This alternative would have no long term effect or permanence.

Alternative 2a: This alternative would be a permanent remedy because groundwater would be treated to acceptable levels.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Site Soil and Waste:

Alternative 2 would irreversibly destroy the organic components achieving a near total reduction in toxicity, mobility, and volume of the waste.

Alternative 3 would not irreversibly destroy or treat the contaminants. The mobility of the waste would be controlled by placing the contaminated soil in an approved landfill.

Groundwater:

Alternative 1a would not reduce the toxicity, mobility and volume of the waste.

Alternative 2a would reduce toxicity, mobility and volume by providing a recovery system which over a period of time would effectively capture all contaminated groundwater and provide treatment.

6. Implementability. The technical and administrative feasibility of implementing each alternative is evaluated. Technically, this includes the difficulties associated with the construction, the reliability of the technology, and the ability to monitor the effectiveness of the remedy. Administratively, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc. The alternatives selected are proven technologies. The waste material can be removed with readily available excavation equipment and can be thermally destroyed in a utility boiler, based on successful test burns. Soil and groundwater analysis will be performed to monitor the effectiveness of the remedy.

These alternatives are readily implementable because NYSEG owns the site. It has already been demonstrated that coal tar wastes can be thermally destroyed at various permitted and/or licensed facilities. Therefore NYSEG has administrative control over all aspects of the remedial work required.

Site Soil and Waste:

Alternative 2: It has been demonstrated that coal-tar-waste and soils can undergo thermal destruction effectively. Undertaking of this alternative would require on-site control of emissions during the excavation process.

Alternative 3: This material is acceptable for landfilling. Undertaking of this alternative would require on-site control of emissions during the excavation process.

Groundwater:

Alternative 1a: There is no implementation required with this alternative.

Alternative 2a: A groundwater recovery well would be installed with a treatment facility. Groundwater extraction and treatment is a proven technology. The equipment is readily available, effectiveness is easily evaluated, and implementation does not present any substantial administrative obstacles.

7. Cost. Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision. The costs for each alternative are presented in Table 1.

8. Community Acceptance - Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan have been evaluated. The "Responsiveness Summary" included as Appendix A presents the public comments received and the Department's response to any concerns raised.
In general the public is in agreement with the selected remedy, however many residents are concerned with possible past exposures that may have occurred while the site was used as a playground.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 7, the NYSDEC has selected Alternatives 2, Off-site High Temperature Destruction of Contaminated Waste and Soil and Alternative 1a, No Action for Groundwater as the remedy for this site. A contingency will incorporate groundwater treatment, if in the future, it is determined that there is a sustained offside exceedance of groundwater standards which warrants remediation.

This selection is based upon the permanent destruction of the compounds present in the soil and wastes which landfilling does not achieve. NYSDEC prefers destructive technologies to disposal technologies when all other considerations are equal.

Groundwater will be monitored on a quarterly basis. Since groundwater is contaminated only within the boundary of the site, the DEC would waive the applicable groundwater standards. If it is determined that the groundwater treatment is needed, it will be implemented and the waiver option will no longer be considered.

The estimated present worth cost to implement the remedy is $ 1,510,000 if thermal destruction is employed at the NYSEG facilities, to $ 6,080,000 if a commercial hazardous waste treatment facility is utilized. The cost to construct the remedy is estimated to be $ 1,460,000 to $ 6,030,000 and the estimated average annual operation and maintenance cost for 30 years is $ 50,000. This represents the combined cost of Alternatives 2 & 1a.

The elements of the selected remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program.

2. Onsite soils and waste will be excavated. Additional test pits will be placed in the southeast portion of site, this is the unshaded portion of the site as shown on Figure 3. If contaminated soils or wastes are found they will be removed. Waste will be removed from the below ground holder area. An odor control/health and safety plan will be prepared and implemented.

3. Groundwater will be monitored to determine the effectiveness of the source removal, which will determine the need to implement groundwater treatment. This treatment scenario will be implemented if it is determined that there is a sustained offside exceedance of groundwater standards which warrants remediation.

4. Confirmatory sampling of excavated area.

5. Placement of a soil cover cap after remediation.

6. Continued ownership and control of the site by current owner and/or deed restrictions to be conveyed to future owners.

7. An active odor/emission control program acceptable to the State will be developed prior to the start of excavations at the site and will be implemented until remedial efforts are complete. Excavated material will be handled only to the extent necessary. Monitoring protocols for vapors and dusts will be developed and implemented and will include criteria governing maximum allowable releases of dust, odors, or vapors.

SECTION 8: SUMMARY OF CITIZEN PARTICIPATION ACTIVITIES

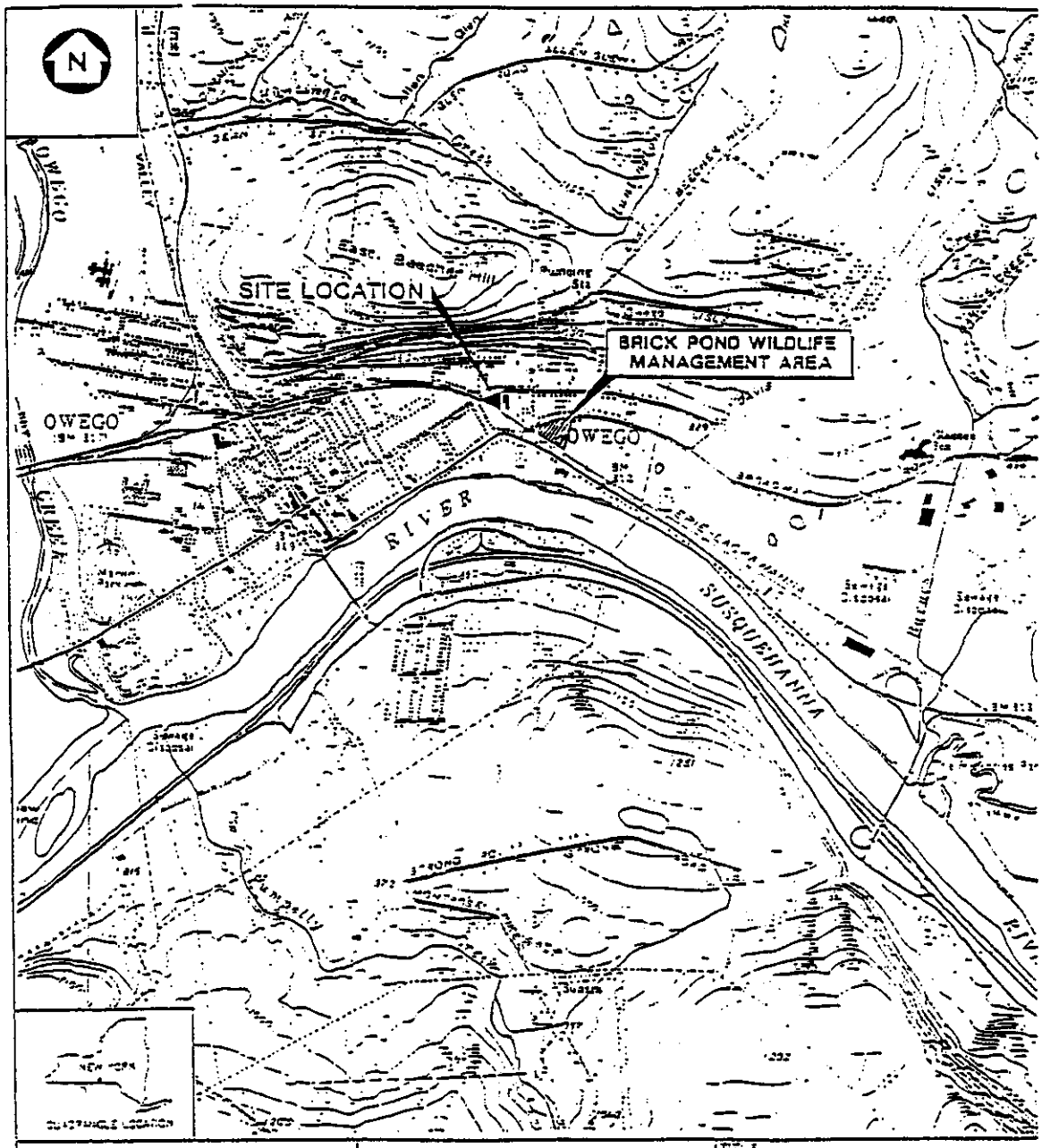
As part of the remedial investigation/feasibility study process, citizen participation activities were included. The principal objectives of the citizen participation activities were: inform the public about conditions at the site; educate the public about the PRAP; obtain public comment on the PRAP; obtain support (community acceptance) of the remedial action; and ensure that all comments obtained from the public are evaluated and answered in a Responsiveness Summary.

The following public participation activities were conducted for the site:

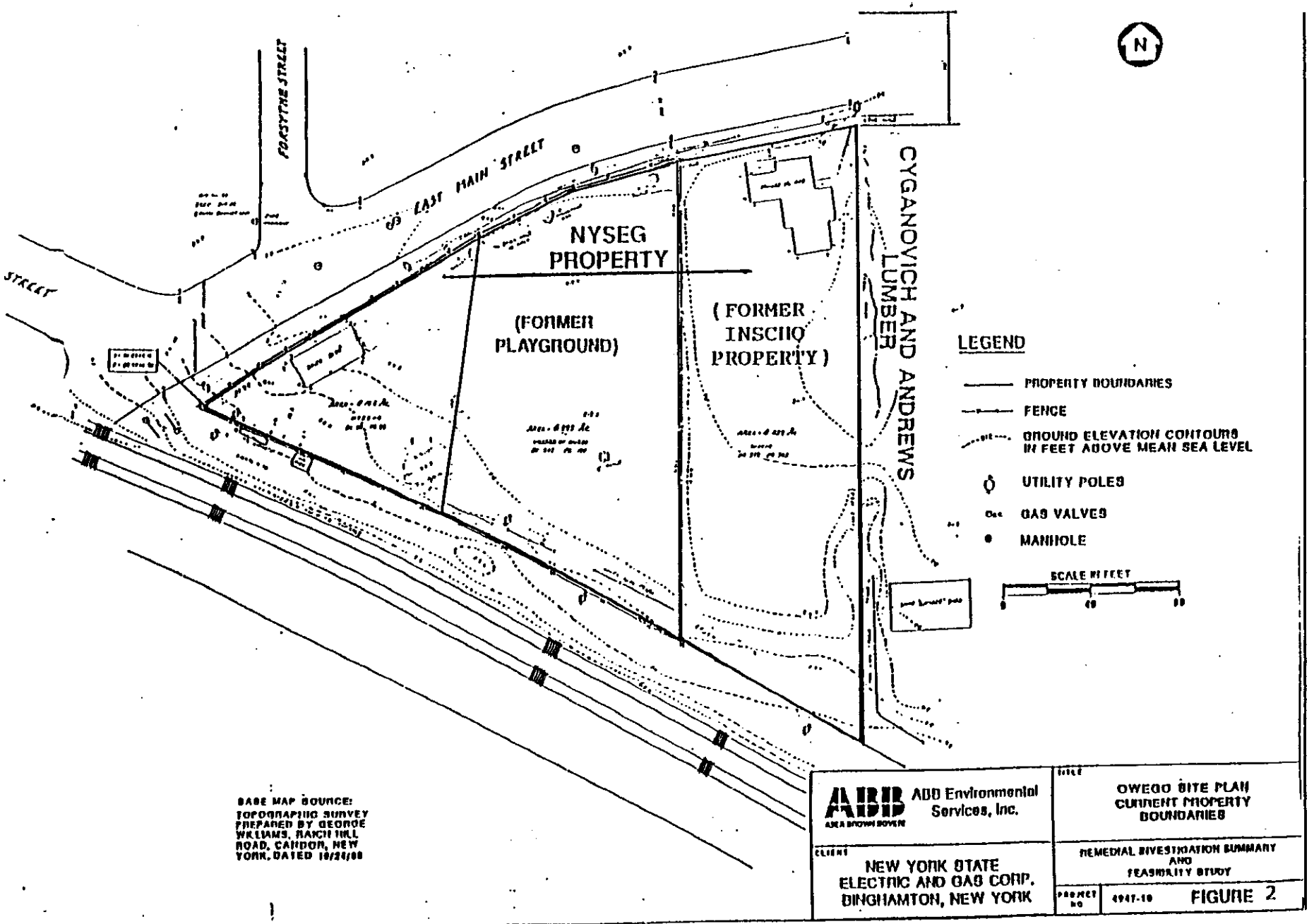
January 28,1994 Start of the Public Comment Period for the Proposed Remedial Action Plan

February 9, 1994 Public meeting to present the results of the Remedial Investigation / Feasibility Study, and receive public comment

March 2, 1994 Close of the Public Comment Period for the PRAP



BASE MAP SOURCE: USGS QUADRANGLE OWEGO(1968) AND APALACHIN(1968)	ABB Environmental Services, Inc.	TITLE: OWEGO GAS PLANT SITE LOCATION MAP
SCALE IN FEET 0 2000 4000	CLIENT: NEW YORK STATE ELECTRIC AND GAS CORP. BINGHAMTON, NEW YORK	REMEDIAL INVESTIGATION SUMMARY AND FEASIBILITY STUDY
		PROJECT NO. 4947-10 | FIGURE 1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PROPERTY BOUNDARIES
FENCE
GROUND ELEVATION CONTOURS IN FEET ABOVE MEAN SEA LEVEL
UTILITY POLES
GAS VALVES
MANHOLE
SCALE IN FEET
0
40
80
BASE MAP SOURCE:
TOPOGRAPHIC SURVEY PREPARED BY GEORGE WILLIAMS, RACH HILL ROAD, CANDOR, NEW YORK, DATED 10/26/88
ABB Environmental Services, Inc.
TITLE
OWEGO SITE PLAN
CURRENT PROPERTY BOUNDARIES
CLIENT
NEW YORK STATE ELECTRIC AND GAS CORP.
BINGHAMTON, NEW YORK
REMEDIAL INVESTIGATION SUMMARY AND FEASIBILITY STUDY
PROJECT NO
4947-10
FIGURE 2

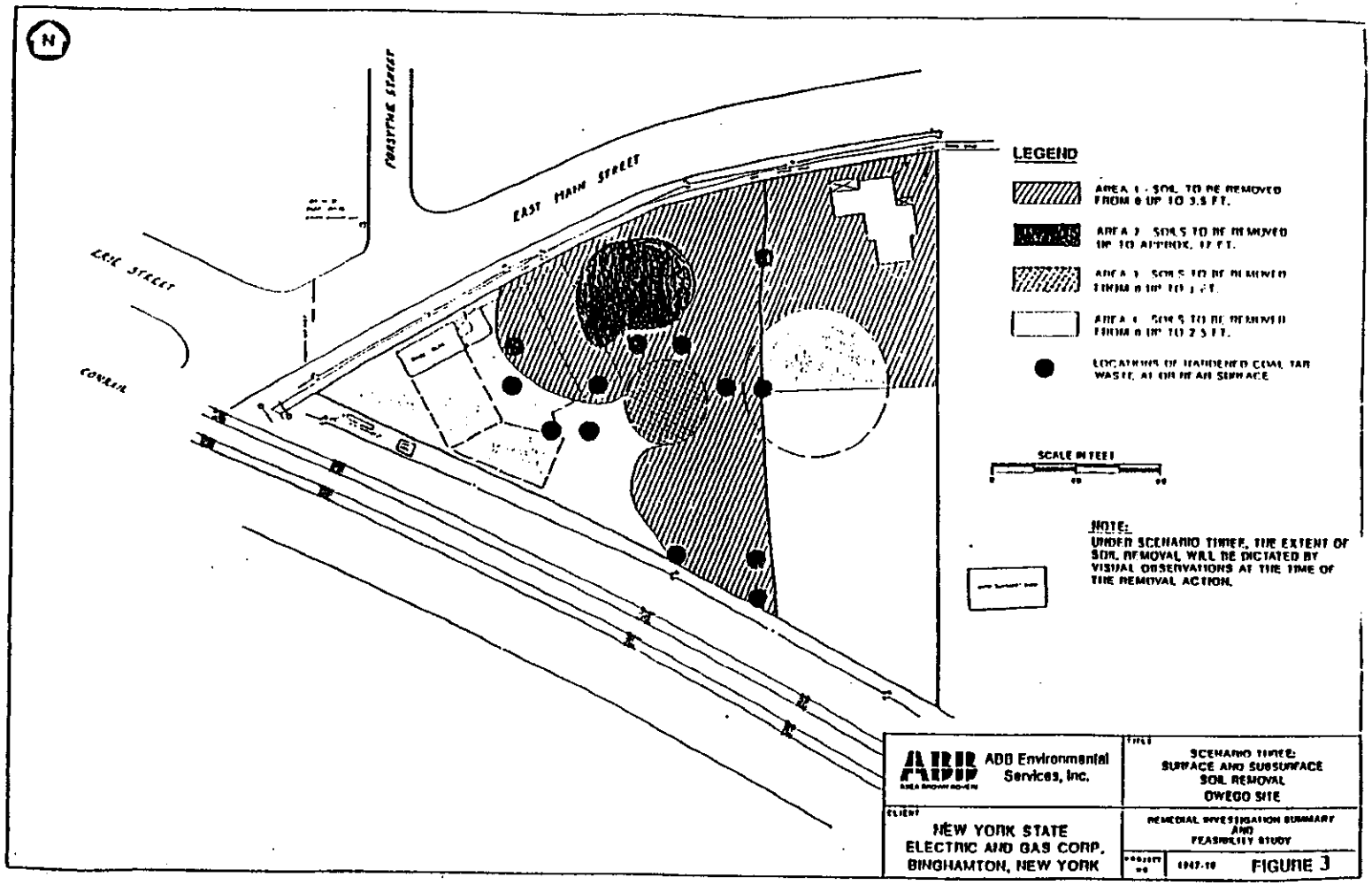
N
PARSYTHE STREET
EAST MAIN STREET
COVERT
LEGEND
AREA 1 - SOIL TO BE REMOVED FROM 0 UP TO 3.5 FT.
AREA 2 - SOILS TO BE REMOVED UP TO APPROX. 12 FT.
AREA 3 - SOILS TO BE REMOVED FROM 0 UP TO 1 FT.
AREA 4 - SOILS TO BE REMOVED FROM 0 UP TO 2.5 FT.
LOCATIONS OF HARDENED COAL TAR WASTE AT OR NEAR SURFACE
SCALE IN FEET
NOTE:
UNDER SCENARIO TIMER, THE EXTENT OF SOIL REMOVAL WILL BE DICTATED BY VISUAL OBSERVATIONS AT THE TIME OF THE REMOVAL ACTION.
ABB Environmental Services, Inc.
SCENARIO TIMER: SURFACE AND SUBSURFACE SOIL REMOVAL OWEGO SITE
NEW YORK STATE ELECTRIC AND GAS CORP. BINGHAMTON, NEW YORK
REMEDIAL INVESTIGATION SUMMARY AND FEASIBILITY STUDY
1947-10
FIGURE 3

TABLE 1
COST ESTIMATES FOR REMEDIAL ALTERNATIVES
OWEGO COAL GASIFICATION PLANT SITE
SITE # 7-54-008

SOIL AND WASTE ALTERNATIVES

ALTERNATIVE #1 - NO ACTION

CAPITAL (constuction) COST	-	$ 0
EST. O&M COST	-	$ 0
TOTAL PRESENT WORTH	-	$ 0

ALTERNATIVE #2 - OFF-SITE HIGH TEMPERATURE DESTRUCTION OF CONTAMINATED WASTE AND SOIL

CAPITAL (construction) COST	-	$ 1,460,000 - $ 6,030,000
EST. O&M COST	-	$ 0
TOTAL PRESENT WORTH	-	$ 1,460,000 - $ 6,030,000

ALTERNATIVE #3 - OFF-SITE DISPOSAL IN LANDFILL

CAPITAL (construction) COST	-	$ 1,464,000 - $ 2,656,000
EST. O&M COST	-	$ 0
TOTAL PRESENT WORTH	-	$ 1,464,000 - $ 2,656,000

GROUNDWATER ALTERNATIVES

ALTERNATIVE #1A - NO ACTION

CAPITAL (construction) COST	-	$ 0
EST. O&M COST	-	$ 50,000/yr.
TOTAL PRESENT WORTH	-	$ 50,000

ALTERNATIVE #2A - PUMP, PRETREAT & DISCHARGE TO PUBLICLY OWNED TREATMENT WORKS (POTW)

CAPITAL (construction) COST	-	$ 220,000
EST. O&M COST	-	$ 657,000/yr.
TOTAL PRESENT WORTH	-	$ 877,500

APPENDIX A

Owego Coal Gasification Plant Site

Owego (V), Tioga County, New York
Site No. 7-54-008

RESPONSIVENESS SUMMARY
for
PROPOSED REMEDIAL ACTION PLAN

Public Hearing
February 9, 1994

Issue Date
March 1994

Prepared by:

New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation

Owego Coal Gasification Plant
Owego (V), Tioga County, New York
Site No. 7-54-008

RESPONSIVENESS SUMMARY
FOR
PROPOSED REMEDIAL ACTION PLAN
Public Hearing - February 9, 1994
Owego Village Hall

A Public Hearing was held on February 9, 1994 at Owego Village Hall to gather public comment on the Proposed Remedial Action Plan (PRAP) for the Owego Coal Gasification Plant, an inactive hazardous waste disposal site being addressed by the State Superfund program. At this hearing the New York Department of Environmental Conservation (NYSDEC) made a brief presentation of the results of the Remedial Investigation/Feasibility Study and the PRAP. The PRAP summaries the nature and extent of contamination at the site, the alternatives evaluated to address the problems identified, and proposes a remedy based on the alternatives evaluated. The proposed remedy for this site is No Further Action, which entails the following: Offside high temperature thermal destruction of the two (2) feet of contaminated surface soils and the coal tar wastes existing at depths greater than two (2) feet. The No Action alternative has been selected for the groundwater with a contingency to incorporate groundwater treatment, if in the future, it is determined that there is a sustained offside exceedance of a groundwater standard(s).

As requested by the citizens at the public meeting, another public meeting will be held prior to the start of the site's clean-up. The purpose of the meeting is to talk with the citizens about the remediation, measure that will be taken during the remediation to safeguard the community and the time frame for completion.

The following are the comments received at the Hearing, with NYSDEC's and the New York State Department of Health (NYSDOH) response:

COMMENT #1:
Were the two steel relief holder structures buried?

RESPONSE: No. The foundations were at grade with the remaining portion of the structure above-ground. When the steel relief holders were dismantled, the foundations were left in place and covered with fill.

COMMENT #2:
If there is contamination upstream in the river, why wouldn't it be upstream in the Brick Pond?

RESPONSE: There are many potential sources of contamination to the Susquehanna River, including but not limited to the Owego MGP site. NYSEG's groundwater studies indicate that groundwater leaving the MGP site does not flow toward Brick Pond, and therefore could not impact water quality there. Upstream contamination in the river may be impacting Brick Pond, but it is extremely unlikely that the MGP site is the source of any upstream contamination.

COMMENT #3: Why wasn't Brick Pond sampled as part of the investigation?

RESPONSE: Groundwater studies indicate that groundwater leaving the MGP site does not flow toward Brick Pond and therefore could not impact water quality there. Sampling as part of the MGP site investigation is not warranted based on the groundwater flow direction.

COMMENT #4:
How long did somebody know about the site?
How did it come about that NYSEG or the DEC got involved in investigating this site?

RESPONSE: This site was initially investigated in November 1981 due to concerns of past disposal of wastes. The initial investigation was performed independent of the NYSDEC. In 1986, this site was listed on the NYS Registry of Inactive Hazardous Waste Disposal Sites. At this time, the NYSDEC became fully involved with this site.

COMMENT #8:
Are residence down gradient of the site impacted by contaminated groundwater getting into homes from high water conditions during the springtime or through sewer pipes? Have any nearby homes been tested?

RESPONSE: The residences that are located down gradient from the site with respect to groundwater are not being impacted. The surface elevation of the groundwater in the area of ~~this~~ **this site is** below the elevation of the basement floors and utilities at most times of the year. Water that may be infiltating basements is most likely due to perched water and/or surface runoff.

Since no offside groundwater contamination exists at this time and only very low levels have been detected in the past, testing of the homes has not been necessary.

Additionally, this was the case regarding homes in a neighborhood adjacent to another manufactured gas plant site where coal tar waste was found in shallow groundwater adjacent to the homes. The groundwater is considerable more shallow than it is in the Owego location and therefore much closer to the basement floors elevations. The basements of those homes are mostly comprised of foundation walls and earthen floors that are porous and are subject to the infiltration of water. Investigations have not found evidence of contamination in these residences.

COMMENT #10:
If the entire site is contaminated, why isn't the entire site being removed?

RESPONSE: The entire site is not contaminated. The Proposed Remedial Action Plan (PRAP) outlines an excavation plan that will address areas of the site where contamination is known or expected to exist. As excavation progresses, testing will be done to ensure that soil left in place will meet the clean-up levels established for the site, and then the excavated areas will be covered with two feet of clean soil.

COMMENT #11:
What does the shaded area in the groundwater model overhead represent?

RESPONSE: The shaded area is the groundwater model approximation of what the groundwater "plume" leaving the MGP site might look like. It is important to understand that a model produces only an approximation of what might be happening based on many assumptions, and actual conditions amy vary from the model's prediction. In this case, the model is a very conservative one, meaning it is intended to predict the worst case that might arise.

COMMENT #12:
Assuming that groundwater contamination over a period of time dilutes to a very safe level, if we go back 40 years to when the site was a park, does that tell me that it was 40 times more dangerous 40 years ago than it is now?

RESPONSE: Levels of groundwater contaminants may have been higher in the past. Since the start of the investigation in 1986, the levels of contaminants in the groundwater has not changed significantly.

COMMENT #13:
Does the fact that groundwater from monitoring wells is cleaner than the model predicts mean that the groundwater was flowing in another direction than the model predicts and does this account for the upstream contamination?

RESPONSE: No. The groundwater flow direction can be and has been verified by measurements of groundwater levels taken in the field. The fact that the groundwater samples are cleaner than the model predicts are probably due to the conservative assumptions made in the model. In other words, the model is designed to err on the side of predicting worse contamination. The lower than predicted contaminant levels may also be due to biodegradation, meaning that bacteria in the ground are using the organic compounds for food.

COMMENT #14:
Will more testing be done in the Susquehanna River to prove whether the sediment contamination is from the site or from another source?

RESPONSE: Yes. As stated in the Proposed Remedial Action Plan (PRAP), the Susquehanna River will be investigated as a separate operable unit. It has been designated Operable Unit #2 (OU 2).

COMMENT #15:
The Task 1 Report, Figure 5, identifies unknown anomalies from the ground penetrating radar survey and possible by-product disposal waste, which may include iron oxide and cyanide wastes, south of the big tank. What has been done to investigate and identify waste in these areas?

RESPONSE: Installation of borings/wells and test pits during the Task 2 investigation in some cases coincided with the locations of the anomalies identified in the Task 1. No tanks or other man-made structures were located in those borings or test pits. NYSEG will make additional test pits in areas of anomalies during the remedial excavation to ensure that wastes, if present, are identified and removed.

COMMENT #17:
Figure 5 in the Task 1 report shows two anomalies near the gas regulator station which are labeled as possible tanks. What did they turn out to be?

RESPONSE: No tanks were found during borings and tests pits completed during the investigation. During the excavation the areas of anomalies will be observed closely to ensure that wastes, if present in these areas, are identified and removed.

COMMENT #18:
Figure 5 in the Task 1 Report shows several pipes or possible pipes on the site. How do you view the pipes as possible preferential routes for groundwater contamination?

RESPONSE: We do not view the pipes as preferential pathways, additionally based on the investigation we have determined that there are few underground pipes remaining.

COMMENT #19:
Is groundwater depth normally 18 to 20 feet?

RESPONSE: The elevation of the groundwater table fluctuates with the seasons, but generally 18 to 20 feet below the surface is within the normal range of that fluctuation.

COMMENT #21:
What is the timetable for cleaning up the site?

RESPONSE: The estimated time for the remediation of the contaminated soils and coal tar wastes is 6 months to one year. The groundwater may take a longer period of time to naturally attenuate after the coal tar source area is removed.

COMMENT #22:
Who will NYSEG hire to do the cleanup and will the contractor be qualified? What qualifications are mandated?

RESPONSE: NYSEG will hire only reputable firms with experience cleaning up hazardous waste at manufactured gas plant sites to work on this project. All employees working on the site will be certified as mandated by OSHA. The project will be designed and certified by licensed Professional Engineers.

COMMENT #23:
What will be done to keep soil from getting into homes during the excavation?

RESPONSE: Dust control will be addressed in detail in the work plans which will be prepared prior to the start of the excavation. Control measures will include fencing the site to reduce surface level wind, covering soil stockpiles with plastic sheeting, dampening dry soil surfaces with water to prevent dust from blowing, and cleaning truck tires to prevent tracking from the site.

COMMENT #24:
When the excavation is completed, will someone tell the media that this is a clean site?

RESPONSE: When the remediation at this site is complete, the New York State Registry of Inactive Hazardous Waste Sites will be updated and the media are notified when this occurs.

COMMENT #28:
How many of these sites have been used as playgrounds?

RESPONSE: Other sites have been identified as being under playgrounds or other public use areas. A comprehensive list has been requested from NYSEG. This list will be compared to current

information on file with the State and any new sites will be investigated.

COMMENT #29:
What has been done at other sites which were used as playgrounds or ball fields?

RESPONSE: The NYS DOH evaluates the potential for human exposure to contaminats at each of the sites listed on the State's Registry of Inactive Hazardous Waste Sites. Unfortunalty, a number of these sites do include playgrounds and ballfields. The evaluation process involves the review of sample data, inspection of the site, and if necessary protective measures to eliminate exposures. Protective measures could include the removal of wastes, covering the site, or closing the park until a remedial plan is developed and implemented. The measures necessary to protect the public may vary from site to site but the basic approach remains the same.

COMMENT #31:
Is DOH action at other hazardous waste sites, particularly those where children have played, consistent with their actions at the Owego site?

RESPONSE: The actions carried out at the Owego site is consistent with actions carried out at other sites. After reviewing sample data and conditions at the site, it was apparent that there was a real potential for exposure for those using the site. Based on this concer, the Village of Owego, working with the Tioga County Dept. of Health closed the park. The NYS DOH agreed with this measure and further recommended that the site should be fenced and agreed that playground equipement should be removed to avoid a continuing attraction for children.

COMMENT #32:
Would this site be rated a Class 2 based on just the surface soil contamination?

RESPONSE: No. The classification is based on the reactive sulfide waste located at the bottom of the holder area which is by definition a hazardous waste. Hazardous waste must be present for a site to receive a Class 2 desigination. Since hazardous waste has not been detected in the surface soil the site can be listed as a Calss 2 based on contamination in the surface soil.

COMMENT #33:
Do you plan to do more soil borings off the immediate site to determine if adjacent properties have contamination?

RESPONSE: No. We feel that we have adequately investigated the possibility of an offsite impact due to this site.

COMMENT #34:
What are adjacent property owners required to disclose or note in the property deed regarding possible contamination from the site when they sell adjacent properties?

RESPONSE: Generally, the Environmental Conservation Law (ECL) does not contain a statue or regulation which requires adjacent property owners to disclose, or note in their property deed, information with regard to possible contamination from a hazardous site. However, laws other than ECL may require disclosure. An individual living adjacent to a hazardous site should consult his or her attorney about this issue when involved with a real estate transaction.

COMMENT #35:
Are nearby residents at risk from eating vegetables from gardens near the site?

RESPONSE: Soil sampling results for locations near the site showed no evidence of migration off-site of site-related contaminants. Based on this information, it may be concluded that PAHs at the site will not significantly impact the level of exposure to PAHs through home-grown fruits and vegetables.

COMMENT #36:
Is the site causing groundwater to exceed New York State Standards for chromium?

RESPONSE: Groundwater samples have exceeded New York State Standards for chromium. However, the highest concentrations have been detected in the upgradient well and there is not a pattern of the concentrations being higher downgradient of the site. This has been interpreted to mean that the chromium is either a background level or is from an upgradient source and is not from the manufactured gas plant site.

COMMENT #37:
Are groundwater standards for benzene being exceeded in both on-site and offsite wells?

RESPONSE: No. They are being exceeded occationally in the on-site wells and there are no longer any exceedences in the off-site wells. On-site and off-site wells will continue to be monitored for a variety of compounds including benzene.

COMMENT #38:
Will there be public notice prior to the start of excavation?

RESPONSE: Yes. The State will hold a public meeting prior to the start of the remedial work. The purpose of the meeting is to discuss the remediation, safeguard measures and timeframes for completion. This provides citizens with concerns and/or question

an opportunity to discuss them with the DEC Project Engineer and the NYS DOH. In additon, NYSEG will issue a press release and will deliver a fact sheet to adjacent residents prior to the start of site work. The fact sheet will include a telephone number for the public to call if they have questions or concerns about any part of the project. The detailed work plans will be available in the document repositories.

The mailing list for this project will be expanded to include those residents living in the shaded area of potential groundwater plume.

COMMENT #39:
Are any of the VOCs considered to be the dense nonaqueous phase liquid?

RESPONSE: The volatile organic compounds detected are typically benzene, toluene, ethylbenzene and xylene which are not dense non-aqueous phase liquids.

COMMENT #40:
When monitoring wells are sampled, how is the well evacuation water handled?

RESPONSE: Groundwater evacuated from monitoring wells prior to sampling is put back into the ground via a groundwater recharge pit. This is consistent with the New York State Department of Environmental Conservation Technical and Administrative Guidance Memorandum - Disposal of Contaminated Ground Water Generated During Remedial Investigations.

COMMENT #41:
Are there bedrock monitoring wells?

RESPONSE: No. All the monitoring wells are located above bedrock.

COMMENT #42:
Was NYSEG involved in the operation or closure of the plant, or did NYSEG buy the property after the plant was closed?

RESPONSE: NYSEG acquired the property after the plant was closed.

COMMENT #43:
What is Phil Murphy association with NYSEG?

RESPONSE: Phil Murphy is manager of Alternative Methods and is responsible for NYSEG's investigation and remediation of manufactured gas plant sites.

COMMENT # 44:
Residents expressed concern about the potential human health impacts due to past exposures to site contaminants while the site was being used as a playground.

RESPONSE: The center parcel of the site was transferred to the Village of Owego in 1949, and was used as a playground until it closed in 1987. Analysis of surface soil samples from the site showed that some areas contained levels of polynuclear aromatic hydrocarbons (PAHs) that are significantly higher than typical background levels for PAHs in soil. PAHs are a group of chemicals which are known to be present in coal tar residues. They formed during the incomplete burning of coal, oil, gas, garbage, and other organic substances, such as tobacco and charbroiled meats. People are exposed to PAHs in air, soil, water and food. Food is the primary source of exposure to PAHs for humans. Long-term exposure to high levels of certain PAHs (either by breathing them in the air, eating them or by skin-contact) has been shown to cause cancer in laboratory animals. Whether these PAHs cause cancer in humans is unknown. Long-term exposures to chemical mixtures that contain PAHs, such as coal tar, coal tar pitch and bitumens in the workplace, and to cigarette smoke, have been associated with increased incidences of lung and/or skin cancer.

The soil sampling results indicate that contamination at the site is quite variable depending on location. The elevated levels of PAHs in soil at some locations could have resulted in an increase potential for exposure during typical playground activities, and may have posed an increase health risk. The exposures could have occurred through incidental ingestion of contaminated soils, and by absorption of soil contaminants through the skin. The level of increased health risk is dependent on the extent of exposure to PAHs at the site.

COMMENT #45:
What criteria do the NYS DOH use to evaluate the relative public health concern for hazardous waste sites?

RESPONSE: The NYS DOH uses several criteria to evaluate the level of public health concern for hazardous waste sites, including the potential for human exposure, the extent of contamination, the toxicity of the contaminants, comparison of contaminant levels in various media (e.g. soil, air and water) to typical background levels and the adequacy of the analytical data. The Owego Coal Tar Site was closed to reduce the public health risks resulting from increased potential for exposure to PAHs in surface soils at the site.

NYSDOH representatives will be present at the meeting to answer any additional health-related questions regarding the site. Additionally, citizens with questions may contact the NYSDOH's

Health Liaison Program at the toll-free number 1-800-458-1158, extension 402.

Appendix B

ADMINISTRATIVE RECORD

The following documents constitute the Administrative Record for the Owego Coal Gasification Plant Site Remedial Investigation/Feasibility Study (RI/FS).

1. TASK 1 Report - Preliminary Site Evaluation
2. TASK 2 Report - Initial Field Investigation
3. TASK 3 Report - Supplemental Field Investigation
4. TASK 4 Report - Risk Assessment and Evaluation of Remedial Alternatives
5. Remedial Investigation Summary and Feasibility Study Report
6. Ambient Surface Soil Survey and Data Package
7. Responsiveness Summary for the PRAP
8. Listing in the New York State Registry of Inactive Hazardous Waste Sites
9. Public Notice and Fact Sheets
10. Proposed Remedial Action Plan (PRAP)
11. Transcript of the PRAP public meeting