EPA/ROD/R02-95/244
1995

EPA Superfund
Record of Decision:

GCL TIE AND TREATING INC.
EPA ID: NYD981566417
OU 02
VILLAGE OF SIDNEY, NY
03/31/1995

RECORD OF DECISION
DECISION SUMMARY
Operable Unit 2

GCL Tie & Treating

Sidney, Delaware County, New York

<IMG SRC 0295244>

United States Environmental Protection Agency
Region II
New York, New York
March 1995

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

GCL Tie & Treating
Sidney, Delaware County, New York

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) documents the U.S. Environmental Protection Agency's (EPA's) selection of the remedial action for the GCL Tie & Treating site (the Site) in accordance with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. §§9601-9675 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. An administrative record for the Site, established pursuant to the NCP, 40 CFR 300.800, contains the documents that form the basis for EPA's selection of the remedial action (see Appendix III).

The New York State Department of Environmental Conservation (NYSDEC) has been consulted on the planned remedial action in accordance with section 121(f) of CERCLA, 42 U.S.C. §9621(f); and concurs with the selected remedy (see Appendix IV) contingent upon further concurrence based on any changes made to the selected remedy during the remedial design.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The selected remedy pertains to the last of two operable units for the Site and addresses the non-GCL property soils, contaminated groundwater, and surface-water sediments located at the GCL Site. The first operable unit addressed the contamination in the GCL-property soils.

The major components of the selected remedy include:

- Extraction, collection, and on-site treatment of groundwater contaminated with organic compounds; discharge of treated groundwater to the surface water. The selected remedy provides two options for primary treatment of organics: carbon adsorption or biological treatment. Information will be obtained during the remedial design to reassess the time frame and technical practicability of achieving State and Federal drinking water standards in the aquifer. Should the remedial design data indicate that groundwater restoration through extraction and treatment is feasible and practical, additional work will be conducted to determine which groundwater treatment option (carbon adsorption or biological treatment) is more appropriate and cost-effective. If groundwater restoration is not feasible or practical, the remedy will focus on containing the groundwater contamination within the GCL-property boundaries in which case chemical-specific ARARs may be waived for all or some portions of the aquifer based on the technical impacticability of achieving further contamination reduction within a reasonable time frame. Under such a scenario, it may be determined that natural attenuation or enhanced biodegradation (e.g., introduction of air to increase the rate of biodegradation) would be able to reduce the concentration of contaminants in the aquifer groundwater to levels which are similar to those achievable under extraction and treatment, but at a lower cost. Such information would be utilized during the remedial design to maximize the effectiveness and efficiency of the system; and,

- Excavating and treating contaminated sediments on-site through a thermal desorption process along with the GCL-property soils. The selected remedy will also provide for the mitigation of damages to the aquatic environment which may occur during implementation (i.e., revegetation).

In addition, EPA will recommend to local agencies that institutional control measures be undertaken to ensure that future land use of the property continues to be industrial/commercial, and precludes the use of Site groundwater for human consumption until drinking water quality is restored in the aquifer.

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy meets the requirements for remedial actions set forth in Section 121 of CERCLA, 42 U.S.C. §9621 as: (1) it is protective of human health and the environment; (2) it attains a level or standard of control of the hazardous substances, pollutants and contaminants, which at least attains the legally applicable or relevant and appropriate requirements (ARARs) under State and Federal laws; (3) it is cost-effective; (4) it utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable; and (5) it satisfies the statutory preference for remedies that employ treatment to reduce the toxicity, mobility, or volume of the hazardous substances, pollutants or contaminants at a site.

A review of the remedial action pursuant to CERCLA §121(c), 42 U.S.C. §9621(c), will be conducted five years after the commencement of the remedial action to ensure that the remedy continues to provide adequate protection to human health and the environment, because this remedy will result in hazardous substances remaining on-site above health-based levels.

Jeanne M. Fox
Regional Administrator

Date

RECORD OF DECISION
DECISION SUMMARY
Operable Unit 2

GCL Tie & Treating

Sidney, Delaware County, New York

<IMG SRC 0295244A>

United States Environmental Protection Agency
Region II
New York, New York
March 1995

LIST OF TABLES

SITE NAME, LOCATION AND DESCRIPTION

The GCL Tie and Treating site (the Site) occupies approximately 60 acres in an industrial/commercial area of Delaware County, New York (see Figure 1). According to an analysis of historical photographs conducted by the U.S. Environmental Protection Agency (EPA) and accounts by local residents, wood-preserving activities at the Site date as far back as the 1940's.

The Site is bordered on the north by a railroad line. A warehouse and a municipal airport are located to the north of the railroad line. Route 8 and Delaware Avenue delineate the eastern and southern borders of the Site, respectively. A drainage ditch (Unalam Tributary) and woodland area lie between Delaware Avenue and the Site. The western portion of the property abuts a small impoundment and wetlands area. The Site eventually drains via overland flow to the Susquehanna River, which is located within one mile of the Site.

The Site includes two major areas, generally referred to as the "GCL property" and "non-GCL property" (see Figure 2). The 26-acre GCL property housed a wood-treating facility called GCL Tie & Treating, and includes four structures. The primary building housed the wood pressure treatment operations including two treatment vessels (50 feet in length by 7 feet in diameter), an office, and a small laboratory. Wood (mostly railroad ties) and creosote were introduced into the vessels which were subsequently pressurized in order to treat the wood. The remaining three structures housed a sawmill and storage space. The non-GCL portion of the Site includes two active light manufacturing companies (which did not conduct wood treatment operations) located on a parcel of land adjacent to the GCL property.

Approximately 1,100 people are employed in a nearby industrial area. About 5,000 people live within 2 miles of the Site and depend on groundwater as their potable water supply. The nearest residential well is within 0.5 mile of the Site. Two municipal wells, supplying the Village of Sidney, are located within 1.25 miles of the Site. A shopping plaza consisting of fast-food restaurants and several stores is located approximately 300 feet south of the Site. Other facilities (i.e., a hospital, public schools, senior citizen housing, and child care centers) are located within 2 miles of the Site.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

The Site first came to the attention of the New York State Department of Environmental Conservation (NYSDEC) in 1986, after one of the pressure vessels used at the GCL facility malfunctioned, causing a release of an estimated 30,000 gallons of creosote. GCL personnel excavated the contaminated surface soil and placed it in a mound: no further action was undertaken at the time.

In September 1990, NYSDEC requested EPA to conduct a removal assessment at the Site. Consequently, EPA conducted sampling of the GCL Tie and Treating facility in October 1990. As a result of the data and information that were obtained as part of the assessment, a Removal Action was initiated by EPA in March 1991.

Activities conducted as part of the removal effort included: site stabilization (e.g., run-off and dust control), delineation of surface contamination, installation of a chain-link fence, identification and disposal of containerized (e.g., tanks, drums) and uncontainerized hazardous wastes (e.g., wastes in sumps); preparation of approximately 6,000 cubic yards (cy) of contaminated soil and wood debris for disposal; and a pilot study to determine the effectiveness of composting for bioremediation of creosote-contaminated soils.

The Site was proposed for inclusion on the National Priorities List (NPL) in February 1994 and was added to the NPL in May 1994. In September 1994, EPA signed a Record of Decision (ROD) for the first operable unit which called for the excavation and on-site treatment of approximately 36,100 cubic yards of contaminated soil and debris by a thermal desorption process.

EPA has been conducting a search for potentially responsible parties (PRPs). To date, only one PRP has been identified and notified of his potential liability under CERCLA: however, this PRP was not considered to be a viable candidate to undertake the necessary response actions. If EPA determines that there are one or more viable PRPs, EPA will take appropriate enforcement actions to recover its response costs pursuant to CERCLA, 42 U.S.C. § 9601 - 9675.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The Remedial Investigation (RI) report and the Proposed Plan for the Site were released to the public for comment on March 1, 1995. These documents were made available to the public in the administrative record file at the EPA Docket Room in Region II, in New York City and the information repository at the Sidney Memorial Library in Sidney, NY. The notice of availability of the above-referenced documents was published in the Oneonta Daily Star on March 1, 1995. The public comment period on these documents was held from March 1, 1995 to March 30, 1995.

On March 8, 1995, EPA and NYSDEC conducted a public meeting at the Civic Center in Sidney, NY to inform local officials and interested citizens about the Superfund process, to review current and planned remedial activities at the Site, and to respond to any questions from area residents and other attendees.

Responses to the comments received at the public meeting and in writing during the public comment period are included in the Responsiveness Summary (see Appendix V).

SCOPE AND ROLE OF OPERABLE UNIT

The GCL Tie & Treating site was selected as a pilot project for the Superfund Accelerated Cleanup Model (SACM) initiative. The purpose of SACM is to make Superfund cleanups more timely and efficient. Under this pilot, activities which would normally have been performed sequentially (e.g., site assessment, NPL placement, removal assessment) were performed concurrently. In June 1993, while attempting to determine if the Site would score high enough for inclusion on the NPL, EPA initiated RI/FS activities to delineate further the nature and extent of contamination at the Site. These activities would not typically have been initiated until after the Site had been proposed for the NPL.

Site remediation activities are sometimes segregated into different phases, or operable units, so that remediation of different environmental media or areas of a site can proceed separately, resulting in an expeditious remediation of the entire site. EPA has designated two operable units for the GCL Tie & Treating site as described below.

- Operable unit 1 addresses the remediation of contaminated soils found on the GCL-property portion of the Site via thermal desorption. This operable unit is currently in the remedial design phase.

- Operable unit 2 addresses the contamination in the soils on the remainder of the Site (non-GCL property), and in the groundwater, surface water, and surface-water sediments. This is the final operable unit planned for this Site and the subject of this ROD.

SUMMARY OF SITE CHARACTERISTICS

The nature and extent of contamination found at the Site were assessed through a comprehensive sampling of soil, groundwater, surface water, and surface-water sediment. Sampling was conducted during the Fall/Winter of 1993. The investigation focused on contaminants typically associated with the creosote wood-preserving process. Creosote contaminants typically found included numerous polyaromatic hydrocarbons (PAHs) such as benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo [k]fluoranthene, benzo[a]pyrene, indeno[1,2,3-c,d] pyrene and dibenzo[a,h]anthracene.

The following paragraphs discuss the characterization of contamination in the operable unit 2 study area, namely, in the groundwater, surface water, surface-water sediments, and non-GCL property soils.

Soils

Approximately 130 soil samples were collected from monitoring-well and soil borings drilled on the GCL property and on the non-GCL property. Samples also were collected at off-site locations to provide information on background conditions. Table 1 summarizes the analytical results for the soil samples collected on the non-GCL property. In general, relatively low levels of contaminants were detected with total PAHs ranging up to 24 parts per million (ppm). Generally, the concentrations of metals detected on-site were not significantly above background concentration ranges with the exception of beryllium (up to 3.2 ppm), copper (up to 176 ppm) and lead (up to 46 ppm), which were above their representative background concentrations of 0.6 ppm, 26.2 ppm and 11.2 ppm, respectively.

Surface Water

Surface water samples and sediments were collected at 7 locations along the drainage ditch and the impoundment. Table 3 summarizes the analytical results. Of the 14 inorganics detected in the surface water samples, only arsenic (up to 11.4 parts per billion [ppb]), copper (up to 35.2 ppb) and nickel (up to 19.6 ppb) significantly exceeded State or Federal ambient water quality standards. The only organic contaminant detected was chloroethane at a level of 12 ppb.

Surface-Water Sediments

Elevated PAH concentrations were detected at 3 of the 7 sediment sampling locations along the drainage ditch and the impoundment along the western side of the Site. Table 2 summarizes the analytical results. The extent of contamination (see Figure 3) is approximately 2,850 feet in length, 1.5 feet in width and 0.5 feet in depth in the tributary, as well as a 5-foot wide strip along the edge of the impoundment. PAHs were detected in these areas with total concentrations ranging up to 23,850 ppb. The PAH contamination detected in the unconsolidated sediments is most likely attributed to runoff from the Site soils. Arsenic (up to 16,400 ppb), copper (up to 51,900 ppb), lead (up to 70,200 ppb), manganese (up to 547,000 ppb), mercury (up to 690 ppb), nickel (up to 43,600 ppb), and zinc (up to 173,000) were detected in concentrations which exceeded their respective sediment criteria values. However, arsenic, copper, manganese, nickel, and zinc were detected at concentrations relatively equivalent to their respective background levels. The relatively elevated concentrations of these metals could be attributed to regional background variations or from off-site sources, as these contaminants are not typically associated with the wood-preserving operations conducted at the Site.

Groundwater

Site-specific geology within the GCL property is characterized by a layer of fill approximately 5 feet thick on the western portion of the Site which gradually decreases to approximately 2 to 3 feet on the eastern section of the GCL property. The fill consists predominantly of silt and clay with significant amounts of wood and assorted debris. The fill is underlain by silt and clay type soils.

There are two hydrogeologic systems consisting of the overburden and bedrock units. The overburden unit can be further divided into shallow (approximately 5 to 16 feet in depth) and intermediate (approx. 11 to 25 feet in depth) groundwater zones. Groundwater is first encountered at depths ranging from 5 to 8 feet below grade around the Site. As a general rule, groundwater flow in the overburden aquifer appears to be in a north-northwesterly direction; groundwater movement in the bedrock appears to be in a northerly direction. Permeability of the overburden and bedrock soils is relatively low; groundwater flow through the bedrock aquifer occurs primarily through fractures.

Six previously existing groundwater monitoring wells and 14 new wells were sampled during the RI. Two rounds of samples were collected and analyzed for a full range of organic and inorganic constituents. Table 4 summarizes the analytical results. The data in Table 4 indicate the contaminants associated with the GCL site wells influenced by the Route 8 Landfill contamination (column 3 of the table) and the GCL Site wells not influenced by the Route 8 Landfill contamination (column 4 of the table). Two main groups of organic compounds were found in the groundwater above drinking water standards, namely, PAHs and volatile organic compounds (VOCs). Referring to column 4, PAHs, including benzo[b]fluoranthene (up to 3 ppb - drinking water standard of 0.2 ppb), benzo[a]pyrene (up to 2 ppb - drinking water standard of 0.2 ppb), chrysene (up to 4 ppb - drinking water standard of 0.2 ppb) and benzene (220 ppb - drinking water standard of 5 ppb) significantly exceeded drinking water standards, and are the same type of contaminants as those found in high concentrations in the Site soils. Referring to column 3, chlorinated VOCs such as vinyl chloride (up to 4,700 ppb - drinking water standard of 2 ppb), 1,1-dichloroethane (up to 1,200 ppb - drinking water standard of 5 ppb), cis-1,2-dichloroethene (up to 4,300 ppb - drinking water standard of 70 ppb), and trichloroethene (up to 1,000 ppb - drinking water standard of 5 ppb) were also found at concentrations exceeding the drinking water standards, however, they are most likely not related to the activities that took place at the GCL site. It is likely that these chlorinated VOCs originated from the Route 8 Landfill, located across from Delaware Avenue and hydraulically upgradient from the GCL Site.

The data obtained during the RI suggest that the contaminant plume originating at the Route 8 Landfill extends beneath much of the GCL Site. Currently, the Route 8 site is being remediated under the New York State hazardous waste remediation program; a groundwater collection and treatment system designed to address the groundwater contamination was constructed and recently started operation.

Aluminum (up to 6,210 ppb), iron (up to 37,600 ppb), manganese (up to 17,300), antimony (up to 44.3 ppb), chromium (up to 166 ppb), and nickel (up to 131 ppb) were detected in groundwater samples in concentrations significantly above drinking water standards. However, the presence of most of these metals at elevated concentrations in background and off-site wells is potentially indicative of background levels and/or off-site sources.

It is estimated that the GCL contaminant plume extends over an area of approximately 173,500 square feet (see Figure 4) with a thickness of approximately 45 feet. The volume of contaminated water which exceeds drinking water standards is estimated at 10 million gallons.

During the RI, a creosote product layer (referred as dense nonaqueous phase liquid [DNAPL]) was discovered in the shallow groundwater, in a localized area near the wood treatment/process buildings. DNAPLs are heavier than water, and have a tendency to sink. PAH compounds, which are the principal components of creosote, are extremely immobile and tend to attach to the aquifer soil particles rather than move with the groundwater. The DNAPL appears to be perched on many thin soil layers rather than in a single well-defined pool. It is estimated that the DNAPL layer ranged from 1 to 2 feet in thickness, and contained concentrations of PAHs in excess of 8,000 ppm. The volume of the DNAPL layer is estimated at 10,000 to 30,000 gallons. The data suggest that the DNAPL layer is contained within the property boundaries. DNAPLs constitute a highly significant source of soil and groundwater contamination at the Site.

SUMMARY OF SITE RISKS

Based upon the results of the RI, a baseline risk assessment was conducted to estimate the risks associated with current and future Site conditions. The baseline risk assessment estimates the human health and ecological risk which could result from the contamination at the Site, if no remedial action were taken.

Human Health Risk Assessment

A four-step process is utilized for assessing site-related human health risks for a reasonable maximum exposure scenario: Hazard Identification--identifies the contaminants of concern at the site based on several factors such as toxicity, frequency of occurrence, and concentration. Exposure Assessment-–estimates - the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g., ingesting contaminated soil) by which humans are potentially exposed. Toxicity Assessment--determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response). Risk Characterization-- summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks.

EPA conducted a baseline risk assessment to evaluate the potential risks to human health and the environment associated with the GCL property in its current state. The Risk Assessment focused on contaminants in the soil, surface water, surface-water sediments, and groundwater which are likely to pose significant risks to human health and the environment. A summary of the contaminants of potential concern in sampled matrices is listed in Table 5.

An exposure assessment was conducted for reasonable maximum exposures to estimate the magnitude, frequency, and duration of actual and/or potential exposures to the contaminants of potential concern present in the sampled media. Reasonable maximum exposure is defined as the highest exposure that is reasonably expected to occur at the Site for individual and combined pathways. The baseline risk assessment evaluated the current health effects which could potentially result from ingestion, inhalation, and dermal contact of soils, and ingestion and dermal contact of surface water and surface-water sediments by Site trespassers; ingestion, inhalation and dermal contact of groundwater by off-site residents; the ingestion and inhalation of soils by off-site residents; and ingestion, dermal contact, and inhalation of soils by workers (see Table 6). These exposure pathways were evaluated separately for adults and children. The future-use scenario evaluated the same scenarios and also evaluated the potential health impacts resulting from ingestion, inhalation and direct contact to soil by future on-site workers. Site-related and nonsite related (e.g., Route 8 Landfill) potential health threats were evaluated. The property is currently zoned for industrial/commercial use only. Input from the community and local officials, indicated that industrial/commercial use of the property would be the preferred use of the property in the future. Therefore, it was assumed that future land uses of the property would continue to be industrial/commercial.

Under current EPA guidelines, the likelihood of carcinogenic (cancer-causing) and noncarcinogenic effects due to exposure to site chemicals are considered separately. It was assumed that the toxic effects of the site-related chemicals would be additive. Thus, carcinogenic and noncarcinogenic risks associated with exposures to individual compounds of concern were summed to indicate the potential risks associated with mixtures of potential carcinogens and noncarcinogens, respectively.

Potential carcinogenic risks were evaluated using the cancer slope factors developed by EPA for the contaminants of concern. Cancer slope factors (SFs) have been developed by EPA's Carcinogenic Risk Assessment Verification Endeavor for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. SFs, which are expressed in units of (mg/kg-day)-1, are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to generate an upper-bound estimate of the excess lifetime cancer risk associated with exposure to the compound at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the SF. Use of this approach makes the underestimation of the risk highly unlikely. The SFs for the compounds of concern are presented in Table 7.

For known or suspected carcinogens, EPA considers excess upper-bound individual lifetime cancer risks of between 10-4 to 10-6 to be acceptable. This level indicates that an individual has not greater than a one in ten thousand to one in a million chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year lifetime under the specific exposure conditions at the Site. The total potential current and future carcinogenic health risks for all pathways are summarized in Table 8. The total potential current and future carcinogenic health risks from exposure to non-GCL property soil are: 9.2 x 10-6 for off-site children residents, 3.9 x 10-6 for off-site adult residents, 1.4 x 10-5 for on-site workers, 4 x 10-6 for children trespassers, and 4.2 x 10-6 for adult trespassers. The potential carcinogenic health risks from exposure to surface water is 3.5 x 10-6 and 1.7 x 10-5 for children and adult trespassers, respectively. For surface-water sediments, the risk is 1 x 10-5 for both children and adult trespassers. The site groundwater is not currently being used for human consumption, however, under a hypothetical future use scenario the potential carcinogenic health risk due to exposure to contaminated groundwater was calculated. For future children and adult residents the total potential risk (from site-related and upgradient contaminant sources) is 1.1 x 10-1 and 1.4 x 10-1, respectively. For site related groundwater contamination only, the potential risks for future children and adult residents are 2.8 x 10-4 and 2.4 x 10-3. These risk numbers mean that approximately three persons out of ten thousand and two persons out of one thousand respectively, would potentially be at risk of developing cancer if exposed to site-related contaminated groundwater over a lifetime.

Noncarcinogenic risks were assessed using a hazard index (HI) approach, based on a comparison of expected contaminant intakes and safe levels of intake (Reference Doses). Reference doses (RfDs) have been developed by EPA for indicating the potential for adverse health effects. RfDs, which are expressed in units of milligrams/kilogram-day (mg/kg-day), are estimates of daily exposure levels for humans which are thought to be safe over a lifetime (including sensitive individuals). The reference doses for the compounds of concern at the Site are presented in Table 7. Estimated intakes of chemicals from environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) are compared to the RfD to derive the hazard quotient for the contaminant in the particular medium. The HI is obtained by adding the hazard quotients for all compounds across all media that impact a particular receptor population. An HI greater than 1.0 indicates that the potential exists for noncarcinogenic health effects to occur as a result of site-related exposures. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media.

It can be seen from Table 8 that the HIs for noncarcinogenic effects from ingestion, inhalation, and dermal contact to all media (reasonable maximum exposure) are less than 1.0 for all receptors, except for exposure to groundwater (up to HI=497) and exposure to surface water under current and future uses (up to HI=6).

Ecological Risk Assessment

A four-step process is utilized for assessing site-related ecological risks for a reasonable maximum exposure scenario: Problem Formulation - a qualitative evaluation of contaminant release, migration, and fate; identification of contaminants of concern, receptors, exposure pathways, and known ecological effects of the contaminants; and selection of endpoints for further study. Exposure Assessment--a quantitative evaluation of contaminant release, migration, and fate; characterization of exposure pathways and receptors; and measurement or estimation of exposure point concentrations. Ecological Effects Assessment-literature reviews, field studies, and toxicity tests, linking contaminant concentrations to effects on ecological receptors. Risk Characterization--measurement or estimation of both current and future adverse effects.

The ecological risk assessment began with evaluating the contaminants associated with the Site in conjunction with the site-specific biological species/habitat information. Principal ecological communities at the Site consist of a deciduous wetland area within the southern portion of the Site (Unalam tributary), and an emergent wetland/open water complex (impoundment) to the west of the Site (see Figure 2). The wetland areas support a wide array of animal species, including 5 mammal species, 3 frog species, and 17 bird species.

This risk assessment evaluated the Site ecological communities and their responses to toxicological exposures. The threat of lethal accumulations of contaminants in plant and animal populations was evaluated. The results of the ecological risk assessment indicate the potential for ecological impacts due to the presence of PAH contamination in the surface water and sediments of the Unalam Tributary, drainage ditches, wetlands and pond. Since both aquatic plants and invertebrates form a portion of the diets of wading birds and waterfowl, their diet poses a potential exposure route. Although adult mallard ducks subjected to dietary exposure of levels similar to those found on Site displayed no toxic effects, studies have shown significant mortality and deformities in mallard embryos and ducklings following exposure to similar levels of PAHs. Therefore, ingestion by breeding adult waterfowl may affect nesting success in the wetland habitats present on and adjacent to the Site.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental chemistry sampling and analysis
- environmental parameter measurement
- fate and transport modeling
- exposure parameter estimation
- toxicological data

Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the media sampled. Consequently, there is significant uncertainty as to the actual levels present. Environmental chemistry-analysis error can stem from several sources including the errors inherent in the analytical methods and characteristics of the matrix being sampled.

Uncertainties in the exposure assessment are related to estimates of how often an individual would actually come in contact with the chemicals of concern, the period of time over which such exposure would occur, and in the models used to estimate the concentrations of the chemicals of concern at the point of exposure.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of chemicals. These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the Risk Assessment provides upper-bound estimates of the risks to populations near the Site, and is highly unlikely to underestimate actual risks related to the Site.

More specific information concerning public health risks, including a quantitative evaluation of the degree of risk associated with various exposure pathways, is presented in the Risk Assessment Report.

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in the ROD, may present an imminent and substantial endangerment to the public health, welfare, or the environment.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives are specific goals to protect human health and the environment. These objectives are based on available information and standards such as applicable or relevant and appropriate requirements (ARARs) and risk-based levels established in the risk assessment.

The following remedial action objectives were established:

- Prevent public and biotic exposure to contaminant sources that present a significant threat (contaminated groundwater and surface-water sediments); and,

- Reduce the concentrations of contaminants in the groundwater to levels which are protective of human health and the environment (e.g., wildlife).

- Prevent further migration of groundwater contamination.

DESCRIPTION OF REMEDIAL ALTERNATIVES

Section 121(b)(1) of CERCLA, 42 U.S.C. §9621(b)(1), mandates that a remedial action must be protective of human health and the environment, be cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ, as a principal element, treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, and contaminants at a site. Section 121(d) of CERCLA 42, U.S.C. §9621(d), further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants, which at least attains ARARs under State and Federal laws, unless a waiver can be justified pursuant to Section 121(d)(4) of CERCLA, 42 U.S.C. §9621(d)(4).

In the spirit of the SACM initiative and relying on the Agency's technology selection guidance for wood-treating sites, EPA considered technologies which have been consistently selected at wood-preserving sites with similar characteristics (e.g., types of contaminants present, types of disposal practices, environmental media affected) during the development of remedial alternatives. As referenced below, the time to implement a remedial alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy, negotiate with responsible parties, procure contracts for design and construction, or conduct operation and maintenance at the Site.

The alternatives developed for groundwater (GW) are discussed below.

Alternative 1: No Action

Capital Cost:	Not Applicable
O & M Cost:	$27,200 for biannual monitoring $20,000 each five-year review
Present Worth Cost:	$380,700 (over 30 years)
Implementation Time:	Not Applicable

The Superfund program requires that the No Action alternative be considered as a baseline for comparison with other alternatives. The No Action alternative for the contaminated groundwater would only include a long-term monitoring program. The contaminated groundwater and DNAPL present in the subsurface would be left to naturally attenuate without any treatment. The long-term monitoring program would consist of semiannual sampling for PAHs at existing wells on-site and around the Site. A 30-year monitoring period was assumed for estimating the cost of this alternative. A total of six existing monitoring wells would be utilized to sample the groundwater to determine whether the concentrations of the contaminants of concern have been lowered to cleanup levels through natural attenuation and to monitor the migration of contaminants and free-phase DNAPL in areas surrounding the Site.

Because this alternative would result in contaminants being left on-site above health based levels, the Site would have to be reviewed every five years for a period of 30 years per the requirements of CERCLA. These five-year reviews would include the reassessment of human health and environmental risks due to the contaminated material left on-site, using data obtained from the monitoring program.

Alternative GW-2, Option A: Extraction, on-site treatment via activated carbon adsorption, and discharge to surface water

Capital Cost:	$1,883,100
O & M Cost:	$603,300 per year
Present Worth Cost:	$9,369,400
Implementation Time:	24 months

The major features of this alternative are groundwater extraction, collection, treatment, and discharge of treated groundwater. The treatment system would consist of an oil/water separator, followed by pretreatment for manganese removal (necessary to eliminate its potential interferences with subsequent treatment processes) and removal of organic contaminants by activated carbon adsorption. The treated groundwater would be discharged to the small unnamed stream adjacent to the Site. Although it is likely to take considerably longer than 30 years to achieve remediation goals, the treatment plant design and cost estimate is based on an operating period of 30 years.

The extraction/collection system would include a combination of a collection trench for shallow groundwater and an extraction well for the intermediate groundwater. The trench would be approximately 700 feet long and would be located at the northwestern (downgradient) boundary of the Site. It is estimated that approximately 0.4 gallons per minute (gpm) of groundwater would be pumped from the collection trench, and approximately 26.4 gpm would be pumped from the extraction well to the on-site treatment system.

In addition to groundwater extraction, if the DNAPL were found to be pumpable, DNAPL extraction wellpoints would be installed in areas of suspected DNAPL. It is envisioned that four wellpoints would be installed in the shallow overburden and would have low sustainable pumping rates (less than 1 gpm in total). Total flow to the on-site treatment system would be approximately 30 gpm. All pumping rates and numbers of wells would be refined during the design phase based on pumping tests. Extracted groundwater would be delivered to a collection tank before treatment.

Because of the nature of the creosote contaminants and the observation of DNAPL during field activities, oily product is likely to be present with the extracted groundwater. Heavy or light product would be separated using an oil/water separator. Solids and/or heavy product would settle by gravity into the separator's sludge hopper and would be removed periodically for disposal to a permitted treatment facility. Lighter product would float to the surface and be removed by a skimmer for disposal/reuse at a licensed off-site treatment/recycling facility.

The pretreatment system would consist of an individual treatment train designed for the removal of manganese. Manganese would be removed through pH adjustment, oxidation, precipitation, coagulation, clarification, neutralization, and filtration steps with the addition of caustic, acid, and polymer. Sludges produced during this step would be stored in drums or rolloffs, and sent out to an approved disposal facility. Filtration may be required to further pretreat the effluent.

After pretreatment, groundwater would be pumped to a carbon adsorption system consisting of two carbon beds connected in series. Organic contaminants (PAHs) would be removed by the carbon adsorption units to target groundwater cleanup levels. The spent carbon would be collected and shipped for off-site disposal or regeneration and reuse.

Treated groundwater would be discharged via a culvert to the small unnamed stream located on the southern border of the Site. This stream in turn discharges to an unnamed tributary to Unalam Creek, which eventually discharges to the Susquehanna River. The discharge structure would include appropriate erosion control devices such as rip rap and energy dissipation features. The discharge would comply with the New York State Pollutant Discharge Elimination System (NYSPDES) requirements. All waste residuals generated from the treatment process would be transported off-site to a permitted treatment and disposal facility or (in the case of carbon) to a recycling facility.

The goal of this alternative is to restore groundwater to drinking water quality. However, due to the characteristics of creosote (e.g., it is extremely viscous and difficult to pump) and the complex hydrogeological setting, it is unlikely that this goal would be achieved within a reasonable time frame for areas containing the creosote layer (e.g., shallow groundwater). Current estimates of shallow groundwater remediation are on the order of several hundred years. As such, it is likely that chemical-specific ARARs would be waived for those portions of the aquifer based on the technical impracticability of achieving further contamination reduction within a reasonable time frame. If groundwater restoration were not feasible or practical, the alternative may then focus on containing the extent of groundwater contamination within the Site boundaries. Restoration of the groundwater outside the DNAPL source areas (e.g., intermediate groundwater) is likely to be feasible, since it is mostly contaminated with mobile organic contaminants (e.g., benzene).

During design or operation of the system, it may also be determined that natural attenuation or enhanced biodegradation (e.g., introduction of air to increase the rate of biodegradation) would be able to achieve a similar level of contaminant removal and containment as groundwater extraction and treatment, but at a lower cost. Such information would be utilized during the remedial design to maximize the effectiveness and efficiency of the system. The information would also be used to reassess the time frame and technical practicability of achieving cleanup standards.

Alternative GW-2, Option B: Extraction, on-site treatment via biological treatment, and discharge to surface water

Capital Cost:	$2,058,600
O & M Cost:	$626,500
Present Worth Cost:	$9,832,800
Implementation Time:	24 months

This option is virtually identical to Alternative 2, option A. The only difference is that, following pretreatment, the remaining contaminants in the groundwater would be pumped to an aerobic biological reactor for treatment. This reactor would contain bacterial cultures capable of degrading the contaminants in the groundwater. Wastes (e.g., sludges) generated during the treatment process would be disposed off-site at a permitted disposal/treatment facility.

Alternative GW-3: Extraction, on-site pretreatment, discharge to publicly owned treatment works (POTW) for final treatment

Capital Cost:	$1,904,000
O & M Cost:	$613,600
Present Worth Cost:	$9,518,200
Implementation Time:	24 months

The major features of this alternative are groundwater extraction, collection, pretreatment and discharge to the local POTW. In order to comply with POTW influent requirements, manganese would have to be removed from the groundwater. This would be accomplished by using conventional pretreatment methods for manganese removal such as the treatment train described under Alternative GW-2. The extraction/collection system and pretreatment for this alternative would also be the same as that discussed for Alternative GW-2. Therefore, only those operations that differ from previous alternatives are discussed below.

Treatment of organic contaminants would be accomplished by the Village of Sidney POTW utilizing a conventional sanitary wastewater treatment process consisting mainly of aerobic biodegradation. The facility was designed for a maximum wastewater treatment capacity of 1.7 million gallons per day (MGD), and currently operates at an average capacity of 0.6 to 0.7 MGD. Effluent from the pretreatment system would be discharged to the sanitary sewer line via a metered control manhole, which would record flow to the POTW. The nearest sanitary sewer is located parallel to Delaware Avenue, approximately 80 feet south of the roadway.

Groundwater would have to meet pretreatment requirements prior to discharge to the POTW. The Village of Sidney Municipal Code governs sewer use within the Village and regulates the discharge of wastes into the POTW. The Village has indicated that final acceptance of the pretreated GCL wastewater would not be available until a detailed application is submitted.

As described under Alternative GW-2, due to the characteristics of creosote and the complex hydrogeological setting, it is unlikely that groundwater restoration would be achieved within a reasonable time frame for areas containing the creosote layer (e.g., shallow groundwater). The discussion of waiving chemical-specific ARARs for a portion of the aquifer and/or containing the groundwater contamination described for Alternative GW-2, would similarly apply for GW-3.

The remedial alternatives developed for surface-water sediments (SD) are discussed below.

Alternative SD-1: No Action

Capital Cost:	$0
O & M Cost:	$18,900 for biannual monitoring $20,000 for each five-year review
Present Worth Cost:	$277,700
Implementation Time:	6 months

The No Action alternative for the sediments at the GCL Site would consist of a long-term monitoring program. For cost-estimation purposes, it is assumed that sediments would be monitored semiannually and that eight sediment samples would be collected and analyzed.

Because this alternative does not include contaminant removal, the Site will have to be reviewed every five years for a period of 30 years per the requirements of CERCLA, as amended. These five-year reviews would include the reassessment of human health and environmental risks due to the contaminated material left on-site, using data obtained from the monitoring program.

Alternative SD-2: Excavation, treatment, and disposal with GCL-property soils

Capital Cost:	$298,400
O & M Cost:	$0
Present Worth Cost:	$298,400
Implementation Time:	12 months

The contaminated sediments would be excavated during periods of no or low flow using conventional earth moving equipment such as backhoes, bulldozers, etc. Excavation would be performed under moistened conditions to minimize the generation of fugitive dust. Erosion and sediment control measures such as silt curtains would be provided during excavation to control migration of contaminated sediment. Adjacent wetlands would be protected by erosion and sediment control measures.

The sediments would be treated via thermal desorption along with the GCL property soils as specified in the Record of Decision dated September 30, 1994 for the Site. A typical thermal desorption process consists of a feed system, thermal processor, and gas treatment system (consisting of an afterburner and scrubber or a carbon adsorption system). Screened sediments are placed in the thermal processor feed hopper. Nitrogen or steam may be used as a transfer medium for the vaporized PAHs to minimize the potential for fire. The gas would be heated and then injected into the thermal processor which would operate at a temperature of 700°F to 1000°F. PAH contaminants of concern and moisture in the contaminated sediments would be volatilized into gases, then treated in the off-gas treatment system. Treatment options for the off-gas include burning in an afterburner (operated to ensure complete destruction of the PAHs), adsorbing contaminants onto activated carbon, or collection through condensation followed by off-site disposal. Thermal desorption achieves approximately 98 to 99 percent reduction of PAHs in soil. If an afterburner were used, the treated off-gas would be treated further in the scrubber for particulate and acid gas removal. A post-treatment sampling and analysis program would be instituted in order to ensure that contamination in the soil/sediment had been reduced to below cleanup levels. The treated sediment would be redeposited along with treated soils in excavated areas on the GCL property.

Remedial activities will be conducted in a manner to minimize impact to wetlands to the extent feasible. The excavated areas of the intermittent stream and wetlands edge would be backfilled with clean material and restored to pre-excavation conditions. A wetland restoration plan will be prepared for any wetlands impacted or disturbed. The restoration would take place as soon as practicable after the sediments have been excavated, in order to minimize the period of impact to the stream and wetland. All applicable wetlands management guidelines would be followed.

The total volume of sediments to be excavated is estimated to be 125 cy. Further delineation of the extent of contamination will be conducted during the remedial design phase.

Alternative SD-3: Excavation and off-site disposal

Capital Cost:	$820,300
O & M Cost:	$0
Present Worth Cost:	$820,300
Implementation Time:	6 months

This alternative consists of excavation of 125 cy contaminated sediment as described in Alternative SD-2 and transportation of all contaminated materials to an off-site RCRA permitted facility for treatment and disposal. One hundred twenty-five cy of clean fill would be used to restore excavated areas. Wetlands would be restored as discussed in Alternative SD-2.

SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

In selecting a remedy, EPA considered the factors set out in section 121 of CERCLA, 42 U.S.C. §9621, by conducting a detailed analysis of the viable remedial alternatives pursuant to the NCP, 40 CFR §300.430(e)(9) and OSWER Directive 9355.3-01. The detailed analysis consisted of an assessment of the alternatives against each of nine evaluation criteria and a comparative analysis focusing upon the relative performance of each alternative against those criteria.

The following "threshold" criteria must be satisfied by any alternative in order to be eligible for selection:

1. Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

2. Compliance with ARARs addresses whether or not a remedy would meet all of the applicable (promulgated by a State or Federal authority), or relevant and appropriate requirements (that pertain to situations sufficiently similar to those encountered at a Superfund site such that their use is well suited to the site) of State and Federal environmental statutes or provide grounds for invoking a waiver.

The following "primary balancing" criteria are used to make comparisons and to identify the major trade-offs between alternatives:

3. Long-term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

4. Reduction of toxicity, mobility, or volume through treatment refers to a remedial technology's expected ability to reduce the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants at the site.

5. Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation periods until cleanup goals are achieved.

6. Implementability refers to the technical and administrative feasibility of a remedy, including the availability of materials and services needed.

7. Cost includes estimated capital, operation and maintenance costs, and the present-worth costs.

The following "modifying" criteria are considered fully after the formal public comment period on the Proposed Plan is complete:

8. State acceptance indicates whether, based on its review of the RI/FS and the Proposed Plan, the State supports, opposes, and/or has identified any reservations with the preferred alternative.

9. Community acceptance refers to the public's general response to the alternatives described in the Proposed Plan and the RI/FS reports. Community acceptance factors to be discussed below include support, reservation, and opposition by the community.

A comparative analysis of the remedial alternatives based upon the evaluation criteria noted above follows.

Groundwater

- Overall Protection of Human Health and the Environment

Over time, Alternative GW-1 would provide some limited protection of human health and the environment since contaminants would be attenuated through natural processes (e.g., biodegradation, dispersion). However, it is unlikely that full restoration of groundwater resources would be achieved. Alternatives GW-2 and GW-3 would be protective of human health and the environment, since they would actively reduce the toxicity, mobility, and volume of contaminants in the groundwater, and would protect groundwater surrounding the GCL site from further contamination. Although GW-2 and GW-3 would result in significant reduction in the mass of contaminants present in the aquifer, it is unlikely that full restoration of groundwater resources would be achieved within a reasonable time frame.

- Compliance with ARARs

Alternative GW-1 would not comply with Federal or State drinking water standards or criteria or those ARARs required for protection of groundwater. Alternatives GW-2 and GW-3 would be designed to treat the aquifer to chemical-specific ARARs associated with State and Federal groundwater and drinking water standards. Extracted groundwater would be treated to achieve NYSPDES requirements under Alternative GW-2; under Alternative GW-3 the extracted groundwater would be treated to local pretreatment standards prior to discharge to the POTW. Each of these alternatives would be capable of removing a significant mass of contaminants in the groundwater. The goal of these alternatives is to restore groundwater to drinking water standards. However, due to the characteristics of creosote and the complex hydrogeological setting, it is unlikely that this goal will be achieved within a reasonable time frame for areas containing the creosote layer (e.g., shallow groundwater). Current estimates of DNAPL remediation are on the order of several hundred years. As such, it is likely that chemical-specific ARARs will be waived for those portions of the aquifer based on the technical impracticability of achieving further contamination reduction within a reasonable time frame.

- Long-Term Effectiveness and Permanence

Alternative GW-1 would not provide for active treatment and would rely on natural attenuation processes to restore the contaminated aquifer. Therefore, this alternative would not be an effective long-term remedy.

Alternatives GW-2 and GW-3 would reduce the potential risk associated with contaminated groundwater by extracting and treating the groundwater to remove a significant mass of contaminants from the aquifer. The time to achieve these risk reductions is limited by the effective extraction rates from the aquifer. However, it is unlikely that DNAPL contamination present in the shallow aquifer can be completely remediated due to the tendency of DNAPLs to attach to the aquifer. Although none of the alternatives would be able to clean the aquifer to drinking water standards in a short period of time, the treatment alternatives would protect surrounding groundwater from further contamination.

- Reduction in Toxicity, Mobility, or Volume Through Treatment

Alternative GW-1 would not involve any removal or active treatment of the contaminants in the aquifer; therefore, would not be effective in reducing the mobility, toxicity, or volume of contaminants. However, over time, natural attenuation processes would provide some reduction of the toxicity and volume of contaminants.

Alternatives GW-2 and GW-3 would reduce the toxicity, mobility and volume of contaminants in the aquifer to a larger extent than GW-1, since extraction and treatment of groundwater are provided.

- Short-Term Effectiveness

The implementation of Alternative GW-1 would result in no additional risk to the community during remedial activities, since no construction or remediation activities would be conducted. Workers involved in periodic sampling of site soils would be exposed to minimal risks because appropriate health and safety protocols would be followed for this activity. For purposes of this analysis, monitoring of the Site would occur for 30 years.

Alternatives GW-2 and GW-3 involve construction and operation of an on-site treatment plant. Procedures for proper handling of the treatment reagents would be followed for all treatment alternatives. Any process residuals generated would be properly handled and disposed off-site. The risk to workers involved in the remediation also would be minimized by establishing appropriate health and safety procedures and preventive measures to avoid direct contact with contaminated materials and ingestion/inhalation of fugitive dust. All site workers would be OSHA-certified and would be instructed to follow OSHA protocols.

It is estimated that the treatment alternatives would take well over 30 years to achieve the remedial action objectives. However, a 30-year period was used for cost estimation. Operation of the treatment plant would be stopped when remedial objectives are achieved i.e., levels of contaminants in the aquifer are reduced to State and Federal drinking water standards, unless it is determined that ARARs would be waived in portions of the aquifer.

- Implementability

Alternative 1 would not involve any major site activities other than monitoring and performing five-year reviews. These activities are easily implemented.

The treatment components of Alternatives GW-2 and GW-3 would be easily implemented, as the technologies are proven and readily available. The carbon adsorption technology proposed for use in Alternative GW-2A is a proven and efficient method for removal of organic contaminants. Biological treatment, specified in Alternatives GW-2B and GW-3, has been used successfully for groundwater contaminated with creosote wastes. The manganese removal pretreatment technology required under Alternatives GW-2 and GW-3 is proven and readily available. Sufficient space is available on-site for a treatment plant.

Alternatives GW-2 and GW-3 would require institutional management of the operation and maintenance of the treated groundwater discharge system. Off-site disposal facilities are available for the disposal of the oil/water separator sludge and skimmings generated from Alternatives GW-2 and GW-3. Disposal (or recycle) facilities are also available for recovered DNAPL and the other residues generated from those alternatives.

Alternatives GW-2A and GW-2B both provide for discharge to the small stream located at the Site's southern border. Based on the review of the treated groundwater discharge requirements for the Route 8 Landfill site and the successful operation of the groundwater remediation system at this site, discharge to the stream is expected to be readily implementable for Alternative GW-2.

The Village of Sidney expressed its interest in having the pretreated groundwater transmitted to the local POTW as described under Alternative GW-3. There is a degree of uncertainty, however, as to whether final approval would be granted which would be contingent upon factors such as available capacity, waste characteristics, and POTW permit requirements concerning effluent and sludge quality. Due to this uncertainty, this alternative is considered less implementable than Alternative GW-2.

- Cost

GW-1 is the least expensive of all alternatives but would not involve treatment. Alternative 1 has a present worth cost of $380,700 which is associated with conducting a sampling and analysis program and five-year reviews over a 30-year period.

Alternative GW-2A would be the most expensive treatment alternative followed by GW-3 and GW-2B. However, the cost differences between GW-2A, GW-2B and GW-3 would be so small as to not be significant.

- State Acceptance

The New York State has concurred with the selected remedy.

- Community Acceptance

No objections by the community were raised concerning the selected remedy. The Village of Sidney has requested that EPA select Alternative GW-3 which includes discharge of the pretreated groundwater to the local POTW. A responsiveness summary which addresses all comments received during the public comment period is attached as Appendix IV.

Sediments

- Overall Protection of Human Health and the Environment

Alternative SD-1 would not meet any of the remedial objectives and thus would not be protective of the environment. Contaminated sediments would remain on-site and would continue to pose a risk to the biota. Natural flushing would reduce contaminants in the sediments somewhat, especially after the contaminated soils on the GCL-property are remediated.

Alternative SD-2, involving on-site sediment treatment and Alternative SD-3 involving off-site treatment/disposal of sediments, would remove contamination and eliminate any environmental threats posed by the sediments. Therefore, these alternatives would meet remedial objectives.

- Compliance with ARARs

There are no chemical-specific ARARs for the contaminated sediments. Alternative SD-1 would comply with appropriate requirements such as New York State Technical and Administrative Guidance Memoranda.

Alternatives SD-2 and SD-3 would be designed and implemented to satisfy all appropriate requirements and location-specific ARARs identified for the Site. Excavation activities would be conducted in compliance with the OSHA standards, soil erosion, sediment control and wetland protection requirements. Alternative SD-2 also would comply with ARARs related to on-site treatment (e.g., disposal of treatment residuals, stormwater discharge requirements and air pollution control regulations pertaining to fugitive emissions and air quality standards).Under Alternative SD-3, excavated sediments would be sent to an appropriate treatment/disposal facility in accordance with applicable ARARs.

- Long-Term Effectiveness

Alternative SD-1 would monitor contamination in the sediments and would not remove and/or treat contaminants. Therefore, this alternative would not reduce the long-term risks to the environment associated with the sediments.

Alternative SD-2 calls for on-site sediment treatment along the GCL-property soils. The soil treatment system would reduce the levels of PAH contaminants in sediments by 98 to 99 percent.

Alternative SD-3 would provide long-term protection by removing the contaminated sediments which would be sent to an approved disposal facility. Soil cover and revegetation would provide protection against erosion. No long-term monitoring would be required.

- Reduction of Toxicity, Mobility, or Volume Through Treatment

Alternative SD-1 would not provide immediate reduction in toxicity, mobility, or volume of contaminants because treatment is not included as part of this alternative. Some reduction may be realized after the GCL-property soils have been remediated through natural attenuation processes.

Alternatives SD-2 and SD-3 would reduce the toxicity, mobility, and volume of contaminants by removal and on-site treatment (Alternative SD-2) or off-site disposal (Alternative SD-3).

- Short-Term Effectiveness

The implementation of Alternative SD-1 would not pose any additional risks to the community, since this alternative does not involve any construction or remediation. Workers involved in periodic sampling of sediments would be exposed to minimal risks because appropriate health and safety protocols would be followed for this activity.

Alternatives SD-2 and SD-3 include activities such as excavation, screening, shredding, and handling of contaminated sediments which could result in potential exposure of workers and residents to fugitive dust, and possible suspension of sediments. In order to minimize potential short-term impacts, the area would be secured and access would be restricted to authorized personnel only. In addition, dust control measures such as wind screens and water sprays would be used to minimize fugitive dust emissions from material handling. The risk to workers involved in the remediation would also be minimized by establishing appropriate health and safety procedures and preventive measures, (e.g., enclosed cabs on backhoes and proper personal protection equipment) to prevent direct contact with contaminated materials and ingestion/inhalation of fugitive dust. All site workers would be OSHA certified and would be instructed to follow OSHA protocols. Some increase in traffic and noise pollution would be expected from site activities. Short-term impacts may be experienced for about a six-month period which is the estimated time for construction and remedial activities.

Under Alternatives SD-2 and SD-3, short-term impacts on the environment from removal of vegetation and destruction of habitat could occur. A plan would be prepared and implemented to minimize and restore (i.e., revegetate) any damage to the environment. Erosion and sediment control measures such as silt curtains and berms would be provided during material handling activities to control migration of contaminants.

- Implementability

Alternative SD-1 would not involve any major site activities except monitoring and sampling. These activities would be easily implementable.

Alternative SD-2 would be easily implemented, as the technology is proven and readily available. The thermal desorption component of this alternative has been shown to be effective for destruction of PAHs, and is commercially available. Sufficient land is available at the Site for operation of a mobile thermal desorption system and supporting facilities. Alternative SD-3 involves off-site disposal. Capacity for the small volume of sediment should be available at a permitted facility. Implementation of Alternatives SD-2 and SD-3 would require restriction of access to the Site during the remediation process. Coordination with state and local agencies would also be required during remediation.

- Cost

Alternative SD-1 is the less expensive alternative, but does not provide treatment of contaminated sediments. Alternative SD-1 has a present worth cost of $277,700 which is associated with conducting a sampling and analyses program and five-year reviews over a 30-year period.

Alternative SD-2 is the least expensive of the treatment alternatives and has a present worth cost of $298,000. The most expensive Alternative is SD-3 with a present worth cost of $820,300.

- State Acceptance

The New York State has concurred with the selected remedy.

- Community Acceptance

No objections from the community were raised regarding the selected surface-water sediment portion of the remedy.

SELECTED REMEDY

EPA and NYSDEC have determined, after reviewing the alternatives and public comments, that Alternatives GW-2 and SD-2 are the appropriate remedies for the Site, because they best satisfy the requirements of Section 121 of CERCLA, 42 U.S.C. §9621, and the NCP's nine evaluation criteria for remedial alternatives, 40 CFR §300.430(e)(9). The total capital costs of the groundwater portion of the remedy are $1.9 million for GW-2A and $2.1 million for GW-2B; the operation and maintenance cost is $0.6 million a year for both GW-2A and GW-2B; the present worth cost are $9.4 million for GW-2A and $9.8 million for GW-2B. The total capital cost of the surface-water sediment portion of the remedy is $0.3 million; no long-term operation and maintenance costs are expected.

The major components of the selected remedy are as follows:

- Extraction, collection, and on-site treatment of groundwater contaminated with organic compounds; discharge of treated groundwater to the surface water. The selected remedy provides two options for primary treatment of organics: carbon adsorption or biological treatment. Information will be obtained during the remedial design to reassess the time frame and technical practicability of achieving State and Federal drinking water standards in the aquifer. Should the remedial design data indicate that groundwater restoration through extraction and treatment is feasible and practical, additional work will be conducted to determine which groundwater treatment option (carbon adsorption or biological treatment) is more appropriate and cost-effective. If groundwater restoration is not feasible or practical, the remedy will then focus on containing the groundwater contamination within the GCL property boundaries in which case chemical-specific ARARs may be waived for all or some portions of the aquifer based on the technical impacticability of achieving further contamination reduction within a reasonable time frame. Under such a scenario, it may be determined that natural attenuation or enhanced biodegradation (e.g., introduction of air to increase the rate of biodegradation) would be able to reduce the concentration of contaminants in the aquifer groundwater to levels which are similar to those achievable under extraction and treatment, but at a lower cost. Such information would be utilized during the remedial design to maximize the effectiveness and efficiency of the system; and,

- Excavating and treating contaminated sediments on-site through a thermal desorption process along with the GCL-property soils. The selected remedy will also provide for the mitigation of damages to the aquatic environment which may occur during implementation (i.e., revegetation).

In addition, EPA will recommend to local agencies that institutional control measures be undertaken to ensure that future land use of the property continues to be industrial/commercial, and precludes the use of Site groundwater for human consumption until drinking water quality is restored in the aquifer.

Remedial Goal

The goal of the groundwater portion of the remedy is to restore groundwater to drinking water quality. However, due to the characteristics of creosote (e.g., extremely viscous and difficult to pump) and the complex hydrogeological setting, it is unlikely that this goal will be achieved within a reasonable time frame for areas containing the creosote layer (e.g., shallow groundwater). Current estimates of shallow groundwater remediation are on the order of several hundred years. As such, it is likely that chemical-specific ARARs will be waived for those portions of the aquifer based on the technical impracticability of achieving further contamination reduction within a reasonable time frame. If groundwater restoration is not feasible or practical, the alternative may then focus on containing the extent of groundwater contamination within the site boundaries. Restoration of the groundwater outside the DNAPL source areas (e.g., intermediate groundwater) is likely to be feasible, since it is mostly contaminated with mobile organic contaminants (e.g., benzene). The treated effluent will meet NYSPDES requirements.

During design or operation of the system, it may also be determined that natural attenuation or enhanced biodegradation (e.g., introduction of air to increase the rate of biodegradation) would be able to achieve a similar level of contaminant removal and containment as groundwater extraction and treatment, but at a lower cost. Such information would be utilized during the remedial design to maximize the effectiveness and efficiency of the system. The information would also be used to reassess the time frame and technical practicability of achieving cleanup standards.

The goal of the sediment excavation and treatment is to eliminated potential threats to the aquatic environment due to the presence of elevated concentrations of organic contaminants.

STATUTORY DETERMINATIONS

As previously noted, Section 121(b)(1) of CERCLA, 42 U.S.C. §9621(b)(1), mandates that a remedial action must be protective of human health and the environment, be cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, or contaminants at a site. Section 121(d) of CERCLA, 42 U.S.C. §9621(d), further specifies that a remedial action must attain a degree of cleanup that satisfies ARARs under State and Federal laws, unless a waiver can be justified pursuant to section 121(d)(4) of CERCLA, 42 U.S.C. §9621(d)(4). As discussed below, EPA has determined that the selected remedy meets the requirements of section 121 of CERCLA, 42 U.S.C. §9621.

Protection of Human Health and the Environment

The selected remedy is considered fully protective of human health and the environment. Extraction and treatment of groundwater through the implementation of Alternative GW-2 will reduce the toxicity, mobility, or volume of contaminants in the groundwater and result in overall protection of human health and the environment. If groundwater restoration is not feasible or practical, and the selected remedy focusses on containing the extent of groundwater contamination, the remedy will reduce the mobility of contaminants in groundwater and result in overall protection of human health and the environment. Prior to discharge, the groundwater will meet all state (e.g., NYSPDES) and/or federal discharge standards. Alternative SD-2, the excavation and treatment of the contaminated surface-water sediments through a thermal desorption process, will remove the organic contaminants from the surface-water sediments. Treatment of the surface-water sediments will result in the elimination of the ecological threats posed by these sediments.

Compliance with ARARs

The selected groundwater remedy, Alternative GW-2, may not be able to comply with associated chemical-specific ARARs for at least some portions of the aquifer (e.g., shallow aquifer) within a reasonable time frame. Therefore, it is likely that chemical specific-ARARs will be waived for those porions of the aquifer based in technical impracticability. However, the treatment system with meet other ARARs, including:

Action-Specific ARARs:

- RCRA - Land Disposal Restrictions
- RCRA - Standards Applicable to Transport of Hazardous Waste
- RCRA - Standards for Owners/Operators of Permitted Hazardous Waste Facilities
- RCRA - Preparedness and Prevention
- RCRA - Contingency Plan and Emergency Procedures
- DOT - Rules for Transportation of Hazardous Materials
- New York State Hazardous Waste Manifest System Rules

- New York State Hazardous Waste Treatment Storage and

Disposal facility Permitting Requirements

- New York State Pollutant Discharge Elimination System Requirements
- OSHA - Safety and Health Standards
- OSHA - Record-keeping, Reporting and Related Regulations

Chemical-Specific ARARs:

- New York State Groundwater Standards

Location-Specific ARARs:

- Clean Water Act - Wetland Protection

The selected surface-water sediment remedy, Alternative SD-2, will meet all ARARs, including:

Action-Specific ARARs:

- RCRA - Land Disposal Restrictions
- RCRA - Standards Applicable to Transport of Hazardous Waste
- RCRA - Standards for Owners/Operators of Permitted Hazardous Waste Facilities
- DOT - Rules for Transportation of Hazardous Materials
- New York State Hazardous Waste Manifest System Rules
- New York State Hazardous Waste Treatment Storage and Disposal facility Permitting Requirements
- New York State Pollutant Discharge Elimination System Requirements
- OSHA - Safety and Health Standards
- OSHA - Record keeping, Reporting and related Regulations
- Clean Water Act - Wetland Protection

Chemical-Specific ARARs:

- None

Location-Specific ARARs:

- Clean Water Act - Wetland Protection

A full list of ARARs and TBCs (e.g., advisories, criteria, and guidance) being utilized is provided in Table 9.

Cost-Effectiveness

The selected remedy is cost-effective in that it provides overall effectiveness proportional to its cost. The total capital costs of the groundwater portion of the remedy are $1.9 million for GW-2A and $2.1

million for GW-2B; the operation and maintenance cost is $0.6 million a year for both GW-2A and GW-2B; the present worth cost are $9.4 million for GW-2A and $9.8 million for GW-2B. The total capital cost of the surface-water sediment portion of the remedy is $0.3 million; no long-term operation and maintenance costs are expected. A breakdown of the costs associated with the selected remedy is provided in Table 10.

Utilization of Permanent Solutions and Alternative Treatment (or Resource Recovery) Technologies to the Maximum Extent Practicable

The selected remedy utilizes permanent solutions and treatment technologies to the maximum extent practicable. The groundwater portion of the selected remedy will reduce the toxicity, mobility, and volume of contaminants in the groundwater underlying the Site and prevent further degradation of the area groundwater. The selected remedy employs permanent treatment of the PAH-contaminated surface-water sediments on the Site through excavation, treatment and disposal with GCL-property soils. The potential for direct and indirect threats to human health and the environment will be eliminated. The selected remedy represents the best balance of trade-offs among the alternatives with respect to the evaluation criteria.

Preference for Treatment as a Principal Element

In keeping with the statutory preference for treatment as a principal element of the remedy, the remedy provides for the treatment of contaminated groundwater and surface-water sediments which constitute the remaining threats known to exist at the Site.

DOCUMENTATION OF SIGNIFICANT CHANGES

There are no significant changes from the preferred alternative presented in the Proposed Plan.

APPENDIX I

FIGURES

<IMG SRC 0295244B>
<IMG SRC 0295244C>
<IMG SRC 0295244D>
<IMG SRC 0295244E>

APPENDIX II

TABLES

TABLE 1: SUMMARY OF NON-GCL PROPERTY SOILS ANALYTICAL RESULTS
(All values in parts per million [ppm])

CONTAMINANT	HIGHEST CONCENTRATION
Volatile Organics	
Trichloroethene	0.01
Toluene	0.024
Total Volatiles	0.042
Polyaromatic Hydrocarbons	
Fluoranthene	9.5
Pyrene	6.3
Benzo[a]anthracene	1.5
Chrysene	2.7
Benzo[b]fluoranthene	3.2
Benzo[k]fluoranthene	3.2
Benzo[a]pyrene	2.9
Total PAHs	24
Metals	
Aluminum	14.300
Arsenic	10.4
Beryllium	3.2
Cadmium	0.91
Chromium	20.8
Copper	176
Lead	46
Nickel	29.6
Zinc	78.9

Benchmark levels for comparison are NYSDEC soil cleanup objectives (VOCs on only), and risk-based cleanup levels for industrial use (PAHs only, consist Operable Unit 1).

TABLE 2: SUMMARY OF SURFACE WATER ANALYTICAL RESULTS
(All values in parts per billion [ppb])

CONTAMINANT	BENCHMARK LEVEL FOR COMPARISON	HIGHEST CONCENTRATION
Arsenic	0.018	11.4
Copper	12	35.2
Manganese	Not available	8.710
Nickel	6.1	19.6
Zinc	110	116

Benchmark levels for comparison are the lower value for that contaminant from criteria or NYSDEC ambient water standards.

TABLE 3: SUMMARY OF SURFACE-WATER SEDIMENT ANALYTICAL RESULTS
(All values in parts per billion [ppb])

CONTAMINANT	BENCHMARK LEVEL FOR COMPARISON	HIGHEST CONCENTRATION
Polyaromatic Hydrocarbons		
Benzo[a]anthracene	20.8	2.200
Chrysene	20.8	4.000
Benzo[b]fluoranthene	20.8	4.300
Benzo[k]fluoranthene	20.8	3,100
Benzo[a]pyrene	20.8	1.700
Indeno[1,2,3-cd]pyrene	8.8	1,100
Total PAH	Not available	23.850
Metals		
Arsenic	5,000	16,400
Chromium	26,000	32,000
Copper	19,000	51,900
Lead	27,000	70,200
Manganese	428,000	547,000
Mercury	110	690
Nickel	22,000	43,600
Zinc	85,000	173,000

Benchmark levels for comparison are the lower value for that contaminant fr aquatic sediments (human health basis criteria) or NYSDEC sediment criteria

TABLE 4: SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
(All values in parts per billion [ppb])

CONTAMINANT	BENCHMARK LEVEL FOR COMPARISON	WELLS INFLUENCED BY ROUTE 8 LANDFILL CONTAMINATION [Highest Concentration]	ALL SAMPLES EXCEPT WELLS INFLUENCED BY ROUTE 8 LANDFILL CONTAMINATION [Highest Concentration]
Volatile Organics			
Vinyl chloride	2	4.700	
Chloroethane	5	19	
Methylene chloride	5	25	
1,1-Dichloroethene	7	17	8
1,1-Dichloroethane	5	1,200	15
cis-1,2-Dichloroethene	70	4,300	36
Trichloroethene	5	1,000	48
Benzene	5	9	220
Polyaromatic Hydrocarbons			
Benzo[a]anthracene	0.1		6
Chrysene	0.2		4
Benzo[b]fluoranthene	0.2		3
Benzo[k]fluoranthene	0.2		2
Benzo[a]pyrene	0.2		2
Indeno[1,2,3-cd]pyrene	0.4		0.7
Metals			
Aluminum	50	6,210	2,230
Antimony	6	10	44.3
Arsenic	50	51.1	7.8
Chromium	100	166	40.7
Iron	50	15,400	37,60
Manganese	50	3,360	17,60
Nickel	100	131	74.2

Benchmark levels for comparison are taken from USEPA and NYSDOH drinking water
denote a value below analytical detection limit.

Table 5: Chemicals of Potential Concern

Groundwater

Acetone
Benzene
2-Butanone
Carbon tetrachloride*
Chlorobenzene*
Chloroform
Chloroethane*
1,2 Dichlorobenzene
1,1 Dichloroethane
1,2 Dichloroethane*
1,1-Dichloroethene
cis-1,2 Dichloroethene
trans-1,2 Dichloroethene*
Ethylbenzene
Methylene chloride*
4-Methyl-2-pentanone
Styrene
Tetrachloroethene*
Toluene
1,1,1-Trichloroethane
1,1,2-Trichloroethane*
Trichloroethene
Vinyl chloride
Xylenes
Acenaphthene
Anthracene
Benzo(a)anthracene
Benzo(b)flouranthene
Bis(2-ethylhexyl)phthalate
Chrysene
Fluoranthene
Fluorene
2-Methylnaphthalene*
2-Methylphenol
4-Methylphenol
Naphthalene
Phenol
Pyrene
Aldrin
Alpha BHC
beta BHC*
gamma BHC
Chlordane
DDD*
DDE
Dieldrin
Endrin
Heptachlor epoxide

Antimony
Arsenic*
Barium*
Chromium
Copper
Manganese
Nickel
Selenium
Silver
Vanadium
Zinc

Soil

Acenaphthene
Anthracene
Benzene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Bis(2-ethylhexyl)phthalate
Chrysene
DDT
Dibenz(a,h)anthracene
Ethylbenzene
Flouranthene
Fluorene
Indeno (1,2,3-cd)pyrene
Methoxychlor
4-Methylphenol
Naphthalene
PCBs
Pyrene
Styrene
Toluene
Xylenes

Surface Water

Arsenic
Barium
Chloroethane
Chromium
Copper
Manganese
Nickel
Selenium
Zinc

Sediment

Acenaphthene
Aldrin
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Bis(2-ethylhexyl)pht
Chlordane
4-Chloro-3-Methylphe
2-Chlorophenol
Chrysene
DDT
2,4-Dinitrotoluene
Endosulfan
Fluoranthene
Indeno(1,2,3-cd)pyre
Methylene Chloride
PCBs
Pentachlorophenol
Phenol
Pyrene

* Not a contaminant of concern when Route 8 Landfill wells are excluded.

<IMG SRC 0295244F>
<IMG SRC 0295244G>

<IMG SRC 0295244H>
<IMG SRC 0295244I>
<IMG SRC 0295244J>
<IMG SRC 0295244K>

Table 8

Sheet 1 of 1

SITE WORKER RISK LEVELS AND HAZARD INDEX VALUES
SUMMARY ACROSS EXPOSURE PATHWAYS
PRESENT/FUTURE USE SCENARIOS

Present/Future Use Scenarios:

	Carcinogenic Risk Levels Exposure to non-GCL Property Soil	Noncarcinogenic Hazard Index Val Reasonable Maximum Exposure	R
Site Worker			
1) Inhalation	8.90E-12	1.26E-09	
2) Ingestion	1.40E-05	2.04E-03	
3) Dermal Contact	6.88E-08	3.57E-04	

Total Health Risk = Soil Inhalation + Soil Ingestion + Soil Dermal Contact

Summation Results - Site Worker:

Carcinogenic Health Effects = 1.40E-05 Noncarcinogen

Table 8

Sheet 1 of 2

OFF-SITE RESIDENT RISK LEVELS AND HAZARD INDEX VALUES
SUMMARY ACROSS EXPOSURE PATHWAYS
PRESENT/FUTURE USE SCENARIOS

Present/Future Use Scenarios:

	Carcinogenic Risk Levels	Noncarcinogenic Hazard Index Val
Exposure to non-GCL Property Soil		Reasonable Maximum Exposure R
Off-Site Resident Adults		
1) Inhalation	1.49E-12	2.20E-10
2) Ingestion	3.92E-06	5.95E-04
Off-Site Resident Young Children		
1) Inhalation	2.06E-11	1.54E-09
2) Ingestion	9.16E-06	5.56E-03
Exposure to Groundwater (including R8 wells)		
Off-Site Resident Adults		
1) Inhalation	2.98E-02	4.85E-01
2) Ingestion	1.05E-01	1.17E+02
3) Dermal Contact	2.48E-03	9.95E+00
Off-Site Resident Young Children		
1) Inhalation	2.78E-02	2.27E+00
2) Ingestion	9.80E-02	5.45E-02
3) Dermal Contact	9.24E-05	1.85E+00

Table 8

OFF-SITE RESIDENT RISK LEVELS AND HAZARD INDEX VALUES
SUMMARY ACROSS EXPOSURE PATHWAYS
PRESENT/FUTURE USE SCENARIOS

Exposure to Groundwater (excluding R8 wells)	Carcinogenic Risk Levels	Noncarcinogenic Hazard Index Val Reasonable Maximum Exposure Exposure
Off-Site Resident Adults		
1) Inhalation	6.99E-05	6.17E-02
2) Ingestion	2.38E-04	1.06E+02
3) Dermal Contact	2.15E-03	1.72E+01
Off-Site Resident Young Children		
1) Inhalation	6.54-05	2.88E-01
2) Ingestion	1.33E-04	4.94E+02
3) Dermal Contact	8.01E-05	3.21E+00

Total Health Risk = Soil Inhalation + Soil Ingestion + Groundwater Ingestion
Groundwater Dermal Contact

Summation Results (including R8 wells) - Off-Site Resident Adults:

Carcinogenic Health Effects = 1.37E-01 Noncarcinogenic Health E

Summation Results (including R8 wells) - Off-Site Resident Children:

Carcinogenic Health Effects = 1.26E-01 Noncarcinogenic Health E

Summation Results (excluding R8 wells) - Off-Site Resident Adults:

Carcinogenic Health Effects = 2.46E-03 Noncarcinogenic Health E

Summation Results (excluding R8 wells) - Off-Site Resident Children:

Carcinogenic Health Effects = 2.88E-04 Noncarcinogenic Health E

Table 8

Sheet 1 of 2

SITE TRESPASSER RISK LEVELS AND HAZARD INDEX VALUES
SUMMARY ACROSS EXPOSURE PATHWAYS
PRESENT/FUTURE USE SCENARIOS

Present/Future Use Scenarios:

Exposure to non-GCL Property Soil	Carcinogenic Risk Levels	Noncarcinogenic Hazard Index Val Reasonable Maximum Exposure	R
Adult Trespassers			
1) Inhalation	1.20E-11	1.76E-09	
2) Ingestion	3.92E-06	5.95E-04	
3) Dermal Contact	3.35E-07	1.45E-03	
Older Child Trespassers			
1) Inhalation	3.74E-12	2.20E-09	
2) Ingestion	3.92E-06	2.38E-03	
3) Dermal Contact	9.24E-08	2.00E-03	
Exposure to Surface Water			
Adult Trespassers			
1) Inhalation	1.52E-05	3.18E+00	
2) Dermal Contact	2.15E-06	9.32E-03	
Older Child Trespassers			
1) Inhalation	3.05E-06	6.36E+00	
2) Dermal Contact	4.87E-07	3.78E-03	
Exposure to Sediment			
Adult Trespassers			
1) Inhalation	1.08E-05	2.70E-03	
2) Dermal Contact	2.15E-06	9.32E-03	

Table 8

SITE TRESPASSER RISK LEVELS AND HAZARD INDEX VALUES
SUMMARY ACROSS EXPOSURE PATHWAYS
PRESENT/FUTURE USE SCENARIOS

	Carcinogenic Risk Levels Exposure to Sediment (Cont'd)	Noncarcinogenic Hazard Index Val Reasonable Maximum Exposure	R
Older Child Trespassers			
1) Ingestion	8.60E-06	1.08E-02	
2) Dermal Contact	5.94E-07	6.93E-06	

Total Health Risk = Soil Inhalation + Soil Ingestion + Soil Dermal Contact + Dermal Contact + Sediment Ingestion + Sediment Dermal Contact

Summation Results - Adult Trespassers:

Carcinogenic Health Effects = 3.41E-05 Noncarcinogeni

Summation Results - Older Child Trespassers:

Carcinogenic Health Effects = 1.66E-05 Noncarcinogenic Health

Table 9. List of Applicable or Relevant and Appropriate Requirements (ARAR
Selected Remedy

REGULATION STATUS REGULATORY
LEVEL

ACTION-SPECIFIC

RCRA- Land Disposal Restrictions ARAR Federal Regul
Disposal of Treatment
(40 CFR 268) Hazar

RCRA- Standards Applicable to Transport ARAR Federal
Disposal of Treatment
of Hazardous Waste (CFR 263.11, 263.20-21 And
263.30-31)

RCRA- Standards for Owners/Operators of Permitted ARAR Federal
Off-site Disposal of Treatment
Hazardous Waste Facilities (40 CFR 264.10-264.18)
Facilities

DOT- Rules for Transportation of Hazardous Materials ARAR Feder
(49 CFR Parts 107, 171.1-172.558)

New York State Hazardous Waste Manifest System ARAR NY State
Rules (6NYCRR 372) Hazardous Waste

New York Hazardous Waste Treatment Storage and ARAR NY State
Disposal Facility Permitting Requirements
(6 NYCRR 370 and 373) Facilities

OSHA- Safety and Health Standards (29 CFR 1926) TBC Feder
Exposure/Protection

OSHA- Record keeping, Reporting and related TBC Federal
Regulations (29 CFR 1904) Repor

CHEMICAL-SPECIFIC

National Ambient Air Quality TBC Federal Regul
Standards (NAAQS) (40 CFR 50)

Safe Drinking Water Act ARAR Federal Regulat
Treatment
(40 CFR 141) Drink

New York State Air Criteria Requirements TBC NY State
6 NYCRR 200-212) Requirements

New York State Pollution Discharge Eliminantion TBC NY State
Groundwater Treatment
System (SPDES) (6 NYCRR 750)

New York State Surface and Groundwater Quality ARAR NY St
Standards (6NYCRR Part 703) Groundwater Quality

REGULATION STATUS REGULATORY
RATIONALE
LEVEL
LOCATION-SPECIFIC

New York State Wetland Protection Regulations ARAR NY State
Surface-water Sediment Remediation
(6 NYCRR 661) Fresh

New York State Floodplain Management Regulations ARAR NY St
Surface-water Sediment Remediation
(6 NYCRR 500) Flood

National Historic Preservation Act TBC Federal Regul
Sediment Remediation
and Cultural Reso

Executive Orders on Floodplain Management and TBC Federal
Surface-water Sediment Remediation
Wetland Protection #11988 and 11990

<IMG SRC 0295244L>
<IMG SRC 0295244M>
<IMG SRC 0295244N>
<IMG SRC 0295244O>
<IMG SRC 0295244P>
<IMG SRC 0295244Q>
<IMG SRC 0295244R>
<IMG SRC 0295244S>

APPENDIX III

ADMINISTRATIVE RECORD INDEX

GCL TIE & TREATING SITE
OPERABLE UNIT TWO
ADMINISTRATIVE RECORD FILE
INDEX OF DOCUMENTS

3.0 REMEDIAL INVESTIGATION

3.4 Remedial Investigation Reports

P. 300001-300936 Report: Final Remedial Investigation Report, GCL Tie & Treating Site, Sidney, New York, Volume I of II, prepared by Mr. Howard Lazarus, P.E., Site Manager, Ebasco Services Incorporated, January 1995.

P. 300937-300959 Report: Final Remedial Investigation Report, GCL Tie & Treating Site, Sidney, New York, Volume II of II, prepared by Mr. Howard Lazarus, P.E., Site Manager, Ebasco Services Incorporated, January 1995.

4.0 FEASIBILITY STUDY

4.3 Feasibility Study Reports

P. 400001-400511 Report: Final Feasibility Study Report, GCL Tie & Treating Site, Sidney, New York, prepared by Mr. Howard Lazarus, P.E., Site Manager, Ebasco Services Incorporated, January 1995.

APPENDIX IV

STATE LETTER OF CONCURRENCE

New York State Department of Environment
50 Wolf Rood, Albany, New York 12233-7010

Ms. Kathleen C. Callahan
Director Commissioner
Emergency & Remedial Response Division MAR 30 1995
United States Environmental Protection Agency
Region II
290 Broadway, 19th Floor
New York, NY 10007-1866

Dear Ms. Callahan:

Re: GCL Tie & Treating Site ID # 413011
Draft Record of Decision, Operable Unit 2

The New York State Department of Environmental Conservation (NYSDE and the New York State Department of Health (NYSDOH) have reviewed the Record of Decision (ROD) for the GCL Tie & Treating site, Operable Unit remediation of contaminated groundwater and sediments, and in particular selection of Alternatives GW-2 and SD-2. These alternatives will incorp following:

SD-2, Sediment excavation, treatment, and disposal with GCL proper

1. Thermal desorption of 125 cubic yards of contaminated sedime the GCL-property and non-GCL property portions (Operable Uni the site;

2. Post-treatment sampling and analysis to ensure attainment of established cleanup levels;

3. Deposition of treated soils into areas excavated during the O.U. 1, grading to restore drainage pathways, backfilling wi material, seeding to establish vegetation cover, general res pre-excavation conditions;

4. Remedial design in concert with Operable Unit 1 to determine operating specifications, and performance parameters (includ studies) for the on-site thermal desorption system; engineer controls and mitigation options for emissions, dusts, runnof residual wastes generated during the remedial action; off-si options for untreatable residues; sampling and analytical pr grading and vegetation plans; and site security and access.

Ms. Kathleen C. Callahan

GW-2, Groundwater extraction and treatment.

1. Groundwater and DNAPL extraction through a combination of collection trenches and extraction wells;

2. On-site treatment to ARAR levels;

3. Remedial design to include: plume and DNAPL area delineation; investigation of current aquifer conditions and hydrologic pa evaluation of additional groundwater treatment alternatives; operating specifications, and performance parameters for on-s groundwater treatment; engineering controls and mitigation op discharges and other residual wastes generated during the rem action; off-site disposal options for untreatable residues; s analytical protocols; and maintenance, site security and acce

The NYSDEC and NYSDOH concur with the selected remedies for Operab Unit 2. Our concurrence is conditioned on the completion of a Remedial which further evaluates the feasibility and practicability of groundwate It is understood that the results of the additional investigations of th DNAPL areas will be used to develop a detailed evaluation of the actual the groundwater remedial program. Alternatives to the full scale progra in the ROD might include enhanced bioremediation or DNAPL removal only, alternatives which would represent significant capital and O&M cost savi yet be equally protective. The operation and maintenance (subject to th 90%/10% federal/State split) of any system will be the responsibility of a period of ten (10) years.

It is also understood that EPA may seek technology-based chemical- waivers of ARARs for the DNAPL areas of the site if it is determined fro Remedial Design or through operation of a groundwater treatment system t contaminant reductions to standards are not feasible or cannot be achiev a reasonable time frame. The NYSDEC reserves concurrence on this issue.

If you have any questions, please contact Walter E. Demick, P.E. a 457-5637.

Sincerely,

Michael J. O'Toole, Jr.
Directer
Div. of Hazardous Waste Remediatio

APPENDIX V

RESPONSIVENESS SUMMARY

GCL TIE & TREATING SUPERFUND SITE

INTRODUCTION

A responsiveness summary is required by the Superfund legislation. It provides a summary of citizens' comments and concerns received during the public comment period, and theUnited States Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation's (NYSDEC's) responses to those comments and concerns. All comments summarized in this document have been considered in EPA and NYSDEC's final decision for selection of a remedial alternative for the GCL Tie & Treating site.

SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

Community involvement at the site has been moderate. EPA has served as the lead Agency for community relations and remedial activities at the site. EPA initiated its community relations activities on August 19, 1993 with the conduct of community interviews with local officials and residents. Public meetings were held on August 19, 1993 and August 5, 1994 to discuss planned site activities and seek comments on the preferred remedy for contaminated soils (Operable Unit 1), respectively.

The remedial investigation and feasibility study (RI/FS) reports and the Proposed Plan for Operable Unit 2 of the site were released to the public for comment on March 1, 1995. These documents were made available to the public in the administrative record file at the EPA Docket Room in Region II, New York City, and in the information repository at the Sidney Memorial Library, Main Street, Sidney, New York. The notice of availability for the above-referenced documents was published in the Oneonta Daily Star on March 1, 1995. The public comment period on these documents was held from March 1, 1995 to March 30, 1995.

On March 8, 1995, EPA conducted a public meeting at the Civic Center in Sidney, New York to discuss remedial alternatives for the second operable unit of site remediation, namely, contaminated groundwater and surface-water sediments, to present EPA's preferred remedial alternative, and to provide an opportunity for the interested parties to present oral comments and questions to EPA.

Attached to the Responsiveness Summary are the following Appendices:

Appendix A - Proposed Plan

Appendix B - Public Notice

Appendix C - March 8, 1995 Public Meeting Attendance Sheets

Appendix D - March 8, 1995 Public Meeting Transcript

Appendix E - Letters Submitted During the Public Comment Period

SUMMARY OF COMMENTS AND RESPONSES

Comments expressed at the public meeting and written comments received from the Village of Sidney and New York State Electric and Gas Corporation during the public comment period have been categorized as follows:

A. Selected Remedy

B. Nature and Extent of Contamination

C. Health Effects

D. Land Use

E. Impact of Cleanup Activities on the Local Economy and Job Market

A summary of the comments and EPA's responses to the comments is provided below.

A. Selected Remedy

Comment #1: EPA received correspondence from the Village of Sidney requesting that EPA consider selecting Alternative GW-3 for the groundwater remedy. The Village indicated that the relatively low estimated pretreated groundwater effluent flow of approximately 30 gallons per minute generated under Alternative GW-3 would not be expected to interfere with the treatment process at the publicly owned treatment works (POTW). Although the Village could not presently commit to accepting the waste stream, they expressed their desire and willingness to pursue this issue by obtaining additional information on the impact of the potential discharge on the POTW's effluent and sludge quality, and consulting with NYSDEC and Delaware County on these issues.

Response #1: Given the information currently available, and lacking a firm commitment from the Village of Sidney, EPA believes that Alternative GW-2 is the best choice for remediating groundwater at the site. EPA's main concern regarding Alternative GW-3 is the uncertainty associated with whether the Village would be able to obtain the necessary clearances (from local and State agencies) to accept the groundwater effluent. Less uncertainty is associated with the implementation of Alternative GW-2 since a similar groundwater pump and treat system is being utilized for remediation of the Route 8 Landfill, located just southeast of the site. The treated effluent from the Route 8 Landfill is discharged into the same drainage ditch contemplated as a discharge point under Alternative GW-2. The Route 8 discharge has been able to meet all New York State Pollutant Discharge Elimination System (NYSPDES) requirements. The effluent generated under Alternative GW-2 would meet standards similar to those required for the Route 8 Landfill system.

Pending the results of the work to be conducted during the remedial design phase, and pending further input from the Village as to whether they will enter into a long-term commitment to accept the waste stream, EPA may re-evaluate the feasibility and cost-effectiveness of utilizing the POTW. If after evaluating the additional information EPA determines that the Village is willing and able to accept pretreated groundwater at the POTW and that this is the most cost-effective alternative, EPA may consider modification of the groundwater remedy.

Comment #2: Village representatives were interested in obtaining information regarding the anticipated chemical characteristics of the groundwater following separation and manganese pretreatment which could potentially be discharged to the POTW.

Response #2: A detailed characterization of the groundwater at various stages of treatment would be available during the remedial design phase.

Comment #3: Proposed Remedy, page 12. The "goal" of Alternative GW-3, referred in the last paragraph of the alternative description, is not stated.

Response #3: The "goal" of the active groundwater restoration alternatives was detailed in the Alternative GW-2 description summary. The groundwater remediation goal is the same for both Alternatives GW-2 and GW-3, namely, to restore the groundwater to drinking water quality.

Comment #4: Village officials submitted additional cost data, including information on likely discharge fees associated with discharge of pretreated effluent to the POTW.

Response #4: EPA considered the revised estimate and acknowledges that this estimate would result in an overall lower cost for Alternative GW-3. However, as noted above, significant uncertainty exists regarding the implementability of Alternative GW-3. This uncertainty, rather than cost, was the significant factor in selecting Alternative GW-2 rather than Alternative GW-3.

Comment #5: The Village also noted that although the closest connection point to the public sewer system is on the south side of Delaware Avenue, the most expedient connection point would be to the public sewer on Unalam property which runs in a north-south direction in the vicinity of the Unalam water well.

Response #5: This information will be considered during the remedial design phase for any action which may require connection to the sanitary sewer.

B. Nature and Extent of Contamination

Comment #1: A commenter suggested that groundwater contaminant boundaries in the shallow intermediate and deep zones had not been established and was confirmed as indicated by contamination found in perimeter wells. It was also noted that since there are residential groundwater users located northwesterly of the site, the potential impact to these users due to offsite migration, whether site or nonsite related, should be considered.

Response #1: Contamination due to GCL site activities has been established. The information obtained as part of EPA's RI indicates that GCL-related groundwater contamination is limited vertically to the shallow and intermediate deep zones, and horizontally to a narrow portion of the aquifer beneath the GCL facility. There is no evidence that suggests that the GCL contaminant plume has moved beyond the GCL property boundaries. Groundwater contamination, especially in the wells along the northern perimeter, is attributed to the Route 8 Landfill. Although additional information will be collected during the remedial design phase (including installation of new monitoring wells, and sampling of existing and newly installed wells) to refine further the extent of the GCL contaminant plume, it is unlikely that private residential wells will be sampled unless the data generated during the remedial design suggest that such action is warranted. The selected remedy will be designed to contain the GCL groundwater contamination within the property boundaries so that offsite wells (including those located northwesterly of the site) are not affected. Individuals concerned with the quality of their residential well water could have their private wells tested by the New York State Department of Health (NYSDOH).

Non-GCL contamination associated with the Route 8 Landfill plume is already being remediated under the NYSDEC's hazardous waste remediation program; a groundwater collection and treatment system designed to address the groundwater contamination was constructed and recently started operation. It is expected that operation of the Route 8 Landfill remediation system will significantly reduce or eliminate groundwater contamination from upgradient sources. EPA will work with New York State and the responsible party for the Route 8 Landfill site to evaluate the effectiveness of the groundwater restoration system.

Comment #2: EPA should consider including monitoring of existing downgradient wells in all alternatives including "no build" for reasons mentioned above.

Response #2: All of the groundwater remedial alternatives evaluated in the Proposed Plan, including the selected remedy, include further delineation of the GCL contaminant plume. Although the exact location and number of wells to be installed and sampled will be determined during the remedial design phase, sampling of existing residential wells will be conducted provided it is deemed to be necessary for developing the remedial design (see also comment #1 above).

Comment #3: It appears that there is significant groundwater contamination which is not related to the GCL site. Since the full extent of the non-GCL contamination was not addressed in the RI, is EPA planning to define other contaminant plumes, even if they are not related to the GCL site?

Response #3: Two contaminant plumes were identified in the area of study: the GCL site plume and the Route 8 Landfill plume. The Route 8 Landfill plume is considerably deeper and larger in extent than the GCL plume, and consists of some contaminants (e.g., PCBs) not found in the GCL contaminant plume. The Route 8 Landfill contamination is not related to the activities conducted at the GCL site; remediation at the Route 8 Landfill site is being undertaken by a private party under the supervision of NYSDEC. One of the activities being conducted at the Route 8 Landfill is the installation and sampling of numerous monitoring wells to define the nature and extent of groundwater contamination. Individuals interested in learning more about remedial activities at the Route 8 Landfill should contact NYSDEC Region 4 in Schenectady, NY., at (518) 357-2045.

EPA's RI focused on contamination which resulted from wood-preserving activities at the GCL site. The contaminant plume originating at GCL appears to be limited to the shallow/intermediate portion of the aquifer and contained within the property boundaries. However, additional sampling of existing and new monitoring wells will be conducted during the remedial design phase to further detail the extent of groundwater contamination and to ensure that the contamination will not impact areas outside the GCL property.

C. Health and Environmental Effects

Comment #1: Residents expressed concern about health threats resulting from exposure to contaminated groundwater.

Response #1: The results of the RI indicate that site-related groundwater contamination is contained within the GCL property boundaries. No private or public drinking water supply wells exist within the boundaries or immediately adjacent to the GCL contaminant plume. Therefore, there is no known current human exposure to contaminated groundwater from the GCL site: the groundwater remedy will prevent future exposure to contaminated groundwater. However, due to the existence of other potential sources of groundwater contamination in the area such as the Route 8 Landfill, households which have private wells should consider having their water tested for drinking water parameters. NYSDOH has recently sampled private wells in the Delaware County area and should be contacted for additional information on regional groundwater quality.

Comment #2: A resident expressed concern about health and environmental threats resulting from the discharge of treated groundwater to the surface water.

Response #2: The groundwater remedy provides for discharge of treated groundwater to the drainage ditch that runs along the southern border of the site. The treated groundwater would comply with the NYSPDES requirements, which are designed to protect both human health and the environment. Therefore, no significant impact to human health or the environment is expected due to the discharge of treated GCL site groundwater to the drainage ditch.

D. Land Use

Comment #1: Village officials and residents have expressed concern about future land use of the site property. They noted that the site is zoned for industrial use, with no change in zoning expected.

Response #1: The remedy that EPA has selected for the site soils, sediments and groundwater will allow for an industrial/commercial use of the property in the future. In addition, EPA will recommend to local agencies that institutional control measures be undertaken to ensure that future land use of the property continues to be industrial/commercial, and precludes the use of Site groundwater for human consumption until drinking water quality is restored in the aquifer.

E. Impact of Cleanup Activities on the Local Economy and Job Market

Comment #1: After the selected remedies for soil, surface-water sediments and groundwater are implemented, can the land be utilized?

Response #1: Based upon input from community and local officials, the selected soils, sediments and groundwater remedies will be designed to allow for an industrial/commercial use of the property in the future. EPA shares the Village's interest of returning the property to productive use as soon as possible. To achieve this, the most important step is completing the soil remediation. As no viable potentially responsible parties (PRPs) have been identified to implement the site remedies, EPA would utilize the Superfund to pay for the remedies. It is expected that EPA will complete the design and procurement of a contractor to remediate the soils and surface-water sediments in approximately 1.5 years. In addition, the remedial action for soils and surface-water sediments should be completed approximately 1 year thereafter. During this time, EPA will be conducting the additional investigatory work needed to implement the groundwater remedy. Although a small portion of the property may be required for the long-term operation of the groundwater restoration system, the majority of the property could be returned to productive use shortly after implementation of the soil and sediment remedy.

Comment #2: Representatives of local industries were generally concerned about the job market. They noted that manufacturing jobs have decreased in the area and expressed their desire that remediation activities not cause any further losses of jobs. They asked whether local merchants and contractors will be utilized or benefit from the remedial work to be conducted at the site.

Response #2: EPA does not anticipate any negative impact to the local economy as a result of the remedial activities planned for the GCL property. It is EPA's intent to remediate the property as quickly as possible, so that it can be returned to productive use.

All cleanup activities to date have been funded by the Federal government. When hiring contractors to perform work at a site, EPA must abide by federal procurement regulations. The regulations are intended to ensure fair, competitive bidding, resulting in the hiring of responsible firms, capable of performing the type of specialized work required at Superfund sites. EPA cannot assure that local contractors will be hired to perform work at the site. Conducting work at hazardous waste sites requires certain level of worker health and safety training, which is often difficult for small local companies to afford. However, local contractors capable of performing requisite Superfund site work are frequently utilized, since they may have a competitive advantage over nonlocal contractors who would incur expenses for travel, lodging, etc. In addition, EPA contractors often utilize local services and suppliers (e.g., lodging, food, and general supplies).

APPENDIX A

PROPOSED PLAN

Superfund Proposed Plan

GCL TIE & TREATING SITE

Operable Unit 2

Town of Sidney
Delaware County, New York

EPA
Region 2

February 199

PURPOSE OF PROPOSED PLAN

This Proposed Plan describes the remedial alternatives considered for the contaminated groundwater and surface-water sediments located at the GCL Tie & Treating site and identifies the preferred remedial alternative with the rationale for this preference. The Proposed Plan was developed by the U.S. Environmental Protection Agency (EPA), as lead agency, with support from the New York State Department of Environmental Conservation (NYSDEC). EPA is issuing the Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and Section 300.430(f) of the National Contingency Plan (NCP). The remedial alternatives summarized here are described in the remedial investigation and feasibility study (RI/FS) reports which should be consulted for a more detailed description of all the alternatives.

This Proposed Plan is being provided as a supplement to the RI/FS reports to inform the public of EPA's and NYSDEC's preferred remedy and to solicit public comments pertaining to all the remedial alternatives evaluated, as well as the preferred alternative.

The remedy described in this Proposed Plan is the preferred remedy for contaminated groundwater and surface-water sediments at the site. Changes to the preferred remedy or a change from the preferred remedy to another remedy may be made, if public comments or additional data indicate that such a change will result in a more appropriate remedial action. The final decision regarding t be made after EPA has taken i all public comments. We a comment on all of the a the detailed analysis s EPA and NYSDEC may s than the preferred r

COMMUNITY ROLE IN SE

EPA and NYSDEC rely on public in that the concerns of th considered in select each Superfund site. reports, Proposed Plan, documentation have been public for a public on March 1st and end

Dates to reme
MARK YOUR CAL

March 1st to March 3
Public comment perio posed Plan, and reme

March 8th, 19
Public meeting at the C Street, Sidney NY

A public meeting wil comment period at the S March 8, 1995 at 7:00 p conclusions of the FS, to reasons for recommendin alternative, and to

Comments received at the public meeting, as well as written comments, will be documented in the Responsiveness Summary Section of the Record of Decision (ROD), the document which formalizes the selection of the remedy.

All written comments should be addressed to:

Carlos R. Ramos, Remedial Project Manager
U.S. Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007-1866

Copies of the Remedial Investigation and Feasibility Study Reports dated January 1995, Proposed Plan, and supporting documentation are available at the following repositories:

Sidney Memorial Library
Main Street
Sidney, NY
Telephone: (607) 563-8021

and

U.S. Environmental Protection Agency
Emergency and Remedial Response Division
Superfund Records Center
290 Broadway, 18th Floor
New York, N.Y. 10007-1866

[After March 1, 1995]

SITE BACKGROUND

The GCL Tie and Treating site occupies approximately 60 acres in an industrial/commercial area of Delaware County, New York (see Figure 1). According to an analysis of historical photographs conducted by EPA and accounts by local residents, wood-preserving activities at the site date as far back as the 1940's.

The site is bordered on the north by a railroad line. A warehouse and a municipal airport are located to the north of the railroad line. Route 8 and Delaware Avenue delineate the eastern and southern borders of the site, respectively. A drainage ditch (Unalam Tributary) and woodland area lie between Delaware Avenue and the site.

The western porti
impoundment and
eventually drain
Susquehanna Rive
mile of the site

The site includ
referred as the "GCL property" a
property". The
wood-treating f
and includes four structures.
building housed the wood pressure trea
operations including two treatme
feet in length by 7 feet in d
and a small laboratory. W
ties) and creosote were in
vessels which were subsequently
order to treat the wood
structures housed a sawmill and storage spac
The non-GCL portion of the site includes two
active light manufacturing companies (whi
not conduct wood treatmen
on a parcel of land adj

Approximately 1,100 people are employed in a
nearby industrial area. Abou
within 2 miles of the site and depend on
groundwater as their potable
nearest residential well is with
site. Two municipal wells, s
of Sidney, are locate
site. A shopping pla
restaurants and several st
mately 300 feet south of the site. Other
(i.e., a hospital, public schools, senior citizen
housing, and chi
2 miles of the site.

The site first came to the attention of the
NYSDEC in 1986, af
vessels used at the GCL fa
causing a release of
creosote. GCL representat
contaminated surface so
mound; no further actio
time.

In September 1990, NYSDEC req
conduct a removal as
Consequently, EPA co
GCL Tie and Treat
October 1990, and Au
the data and informa
part of the assessme
initiated by EPA in

Activities conducted as part of the removal effort included: site stabilization (e.g., run-off and dust control), delineation of surface contamination, installation of a chain-link fence, identification and disposal of containerized (e.g., tanks, drums) and uncontainerized hazardous wastes (e.g., wastes in sumps); preparation of approximately 6,000 cubic yards (cy) of contaminated soil and wood debris for disposal; and a pilot study to determine the effectiveness of composting for bioremediation of creosote-contaminated soils.

The site was proposed for inclusion on the National Priorities List (NPL) in February 1994 and was added to the NPL in May 1994. In September 1994, EPA signed a Record of Decision for the first operable unit which called for the excavation and on-site treatment of approximately 36,100 cubic yards of contaminated soil and debris by a thermal desorption process.

EPA has been conducting a search for potentially responsible parties (PRPs). If EPA determines that there are one or more viable PRPs, EPA will take appropriate enforcement actions to recover its response costs pursuant section 107(a) of CERCLA, 24 U.S.C. § 2907(A). To date, only one PRP has been identified and notified of his potential liability under CERCLA; however, this PRP was not considered to be a viable candidate to undertake the necessary response actions.

SCOPE AND ROLE OF ACTION

The GCL Tie & Treating site was selected as a pilot project for the Superfund Accelerated Cleanup Model (SACM) initiative. The purpose of SACM is to make Superfund cleanups more timely and efficient. Under this pilot, activities which would normally have been performed sequentially (e.g., site assessment, NPL placement, removal assessment) were performed concurrently. In June 1993, while attempting to determine if the site would score high enough for inclusion on the NPL, EPA initiated RI/FS activities to delineate further the nature and extent of contamination at the site. These activities would not typically have been initiated until after the site had been proposed to the NPL.

Site remediation activities are sometimes segregated into different phases, or operable units, so that remediation of different environmental media or areas of a site can

proceed separate
remediation of t
designated two o
Treating site as

- Operable unit
contaminated soi
portion of the s
remedial design

- Operable unit
in the soils on the remain
GCL property), a
water, and surfa
final operable u
focus of this Pr

REMEDIAL INVESTI

The nature and e
the GCL site was assessed
comprehensive sa
surface water, a
Sampling was conducted
of 1993. The investi
contaminants typicall
creosote wood-preserv
contaminants typicall
polyaromatic hydrocar
benzo[a]anthracene, c
benzo[b]fluoranthene,
[k]fluoranthene, benzo[a]p
pyrene and dibenzo[a,

The following paragra
characterization of c
unit 2 study ar
property soils, groun
surface-water sedimen

Soils

Soil samples were col
and soil borings dril
on the non-GCL proper
collected at off-site
information on backgr
summarizes the analyt
sampling for the non-
relatively low levels
detected with total PAHs r
per million (ppm
of metals detected on
above background conc
exception of bery

<IMG SRC 0295244T>

significantly exceeded state or federal ambient water quality standards. Elevated PAH concentrations were detected at 3 of the 7 sediment sampling locations. PAHs were detected in these areas with total concentrations ranging up to 23,850 ppb. The PAH contamination detected in the sediments is most likely attributed to runoff from the site soils. Lead, chromium, and mercury were detected in concentrations above background levels which could be attributed to regional background variations or from off-site sources, as these contaminants are not typically associated with the wood-preserving operations conducted at the site. The results of the sediment sampling indicate that unconsolidated sediments along the Unalam tributary and the impoundment along the western side of the site contain elevated levels of PAHs. The extent of contamination is approximately 2,850 feet in length, 1.5 feet in width and 0.5 feet in depth in the tributary, as well as a 5-foot wide strip along the edge of the impoundment.

Groundwater

Site-specific geology within the GCL property is characterized by a layer of fill approximately 5 feet thick in the western portion of the site which gradually decreases to approximately 2 to 3 feet in the eastern section of the GCL property. The fill consists predominantly of silt and clay with significant amounts of wood and assorted debris on the GCL property. The fill is underlain by silt and clay type soils.

There are two hydrogeologic systems consisting of the overburden and bedrock units. The overburden unit can be further divided into shallow (approx. 5 to 16 feet in depth) and intermediate (approx. 11 to 25 feet in depth) groundwater zones. Groundwater is first encountered at depths ranging from 5 to 8 feet below grade around the site. As a general rule, groundwater flow in the overburden aquifer appears, to be in a north-northwesterly direction; groundwater movement in the bedrock appears to be in a northerly direction. Permeability of the overburden and bedrock soils is relatively low; groundwater flow through the bedrock aquifer occurs primarily through fractures.

Six previously existing groundwater monitoring wells and 14 newly installed wells were sampled

during the RI. Samp
separate rounds of samplin
full range of organic a
Table 4 summarizes the
main groups of organic
the groundwater above drin
namely, volatile organic c
PAHs. PAHs, including
to 3 ppb), benzo[a]pyrene
(up to 4 ppb) and benze
exceeded drinking water st
same type of contaminan
concentrations in th
VOCs such as vinyl c
1,1-Dichloroethane (up
dichloroethene (up t
trichloroethene (up
at concentrations ex
standards, however, the
related to the ac
site. It is lik
originated from the former
located across from Delaware Ave
hydraulically upgradient from
data obtained during the RI s
contaminant plume origi
Landfill extends beneat
Currently, the Route
under the New York S
remediation program;
and treatment system de
groundwater contamin
recently started ope

Aluminum (up to 6,210 ppb), i
ppb), manganese (up
44.3 ppb), chromium (up to
(up to 131 ppb) were de
samples in concentratio
drinking water standard
of most of these metals at
in background and of
indicative of backgroun
sources.

It is estimated that
extends over an area
square feet with a thic
feet. The volume of wa
drinking water standards is e
million gallons.

During the RI, a cre

as dense nonaqueous phase liquid [DNAPL]) was discovered in the shallow groundwater, in a localized area near the wood treatment/process buildings. The DNAPL appears to be perched on many thin soil layers rather than in a single well-defined pool. It is estimated that the DNAPL layer ranged from 1 to 2 feet in thickness, and contained concentrations of PAHs in excess of 8,000 ppm. The volume of the DNAPL layer is estimated at 10,000 to 30,000 gallons. The data suggest that the DNAPL layer is contained within the property boundaries. DNAPLs are heavier than water, and have a tendency to sink. PAH compounds, which are the principal components of creosote, are extremely immobile and tend to sorb to the aquifer rather than move with the groundwater. DNAPLs constitute a highly significant source of soil and groundwater contamination at the site.

SUMMARY OF SITE RISK

Based upon the results of the investigations, a baseline risk assessment was conducted to estimate the risks associated with current and future site conditions. The baseline risk assessment estimates the human health and ecological risk which could result from the contamination at the site, if no remedial action were taken.

Human Health Risk Assessment

A four-step process is utilized for assessing site related human health risks for a reasonable maximum exposure scenario: Hazard Identification--identifies the contaminants of concern at the site based on several factors such as toxicity, frequency of occurrence, and concentration. Exposure Assessment--estimates - the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g., ingesting contaminated well-water) by which humans are potentially exposed. Toxicity Assessment--determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response). Risk Characterization-summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks.

The baseline ris
contaminants of
representative o
are summarized i
contaminants whi
laboratory anima
carcinogens. In
use of the prope
input from the c
was assumed that
would continue t

The baseline ris
effects which co
contamination as

< Ingestion and
children and adu

< Ingestion, inhalation and
soil by older children and ad
the site;

< Ingestion and
water and sedime
trespassing on t

< Ingestion, in
groundwater by c
vicinity of the site in th

< Ingestion, inhalation and
soil by on-site workers.

Current federal
exposures are an individua
carcinogenic ris
a one-in-ten-tho
cancer risk) and
(which reflects
human receptor)
greater than 1.0
noncarcinogenic

The results of t
indicate that of
only one, future
poses a potentia
groundwater is n
human consumptio
use scenario, ch
contaminated gro
site would be at risk. Th

<IMG SRC 0295244U>

carcinogenic health risk due to ingestion, inhalation and dermal contact with contaminated groundwater (from site related and upgradient contaminant sources) by future children and adult residents is 1.3 x 10-1. For site-related groundwater contamination only, the total potential carcinogenic health risk is 7.1 x 10-4. These risk numbers mean that approximately one person out of ten and one person out of ten-thousand respectively, would be at risk of

developing cancer
remediated. The
health risks (vi
sediments, and s
receptors were within E
varied from 10-5 to 10-12.
for all receptors, e
groundwater under th
HI=387) and exposure to
current and future uses (u

Ecological Risk Assessment

A four-step process is utilized for assessing site related ecological risks for a reasonable maximum exposure scenario: Problem Formulation - a qualitative evaluation of contaminant release, migration, and fate; identification of contaminants of concern, receptors, exposure pathways, and known ecological effects of the contaminants; and selection of endpoints for further study. Exposure Assessment--a quantitative evaluation of contaminant release, migration, and fate; characterization of exposure pathways and receptors; and measurement or estimation of exposure point concentrations. Ecological Effects Assessment-literature reviews, field studies, and toxicity tests, linking contaminant concentrations to effects on ecological receptors. Risk Characterization--measurement or estimation of both current and future adverse effects.

The ecological risk assessment began with evaluating the contaminants associated with the site in conjunction with the site-specific biological species/habitat information. Principal ecological communities at the site consist of a deciduous wetland area within the southern portion of the site (Unalam tributary), and an emergent wetland/open water complex (impoundment) to the west of the site (see Figure 1). The wetland areas support a wide array of animal species, including 5 mammal species, 3 frog species, and 17 bird species.

This risk assessment evaluated the site ecological communities and their responses to toxicological exposures. The threat of lethal accumulations of contaminants in plant and animal populations was evaluated. The results of the ecological risk assessment indicate the potential for ecological impacts due to the presence of PAH contamination in the surface water and sediments of the Unalam Tributary, drainage ditches, wetlands and pond. The invertebrate and plant communities present at the site appear to bioconcentrate PAHs. Since both aquatic plants and invertebrates form a portion of the diets of wading birds ant waterfowl, their diet poses a potential exposure route. Although adult mallard ducks subjected to dietary exposure of levels similar to those found on site displayed no toxic effects, studies have shown significant mortality and deformities in mallards embr following exposure to similar le Therefore, ingestion may affect nesting su habitats present on a

Actual or threatened substances from this preferred alternative measures considered, potential threat to p environment.

REMEDIAL ACTION OBJEC

Remedial action objec protect human health These objectives are information and stand relevant and appropri and risk-based levels assessment.

Organic contamination site at concentration be protective of huma environment in ground respectively. Theref action objectives hav contaminated soil:

< Prevent public and nant sources that pr taminated groundwater sediments); and,

< Reduce the concent the groundwater to le human health and the e wildlife).

< Prevent further mi contamination.

SUMMARY OF REMEDIAL A

CERCLA requires that be protective of huma environment, be cost- statutory laws, and u and alternative treat resource recovery alt extent practicable.

Table 5. Chemicals of Potential Concern

Groundwater		Surface Water
Acetone	Antimony	Arsenic
Benzene	Arsenic*	Barium
2-Butanone	Barium*	Chloroethane
Carbon tetrachloride*	Chromium	Chromium
Chlorobenzene*	Copper	Copper
Chloroform	Manganese	Manganese
Chloroethane*	Nickel	Nickel
1,2 Dichlorobenzene	Selenium	Selenium
1,1 Dichloroethane	Silver	Zinc
1,2 Dichloroethane*	Vanadium	
1,1-Dichloroethene	Zinc	
cis-1,2 Dichloroethene		Sediment
trans-1,2 Dichloroethene*		
Ethylbenzene	Soil	Acenaphthene
Methylene chloride*		Aldrin
4-Methyl-2-pentanone	Acenaphthene	Anthracene
Styrene	Anthracene	Benzo(a)anthracene
Tetrachloroethene*	Benzene	Benzo(a)pyrene
Toluene	Benzo(a)anthracene	Benzo(b)fluoranthene
1,1,1-Trichloroethane	Benzo(a)pyrene	Benzo(k)fluoranthene
1,1,2-Trichloroethane*	Benzo(b)fluoranthene	Bis(2-ethylhexyl)pht
Trichloroethene	Benzo(k)fluoranthene	Chlordane
Vinyl chloride	Bis(2-ethylhexyl)phthalate	4-Chloro-3-Methylphe
Xylenes	Chrysene	2-Chlorophenol
Acenaphthene	DDT	Chrysene
Anthracene	Dibenz(a,h)anthracene	DDT
Benzo(a)anthracene	Ethylbenzene	2,4-Dinitrotoluene
Benzo(b)flouranthene	Flouranthene	Endosulfan
Bis(2-ethylhexyl)phthalate	Fluorene	Fluoranthene
Chrysene	Indeno (1,2,3-cd)pyrene	Indeno(1,2,3-cd)pyre
Fluoranthene	Methoxychlor	Methylene Chloride
Fluorene	4-Methylphenol	PCBs
2-Methylnaphthalene*	Naphthalene	Pentachlorophenol
2-Methylphenol	PCBs	Phenol
4-Methylphenol	Pyrene	Pyrene
Naphthalene	Styrene	
Phenol	Toluene	
Pyrene	Xylenes	
Aldrin		
Alpha BHC		
beta BHC*		
gamma BHC		
Chlordane		
DDD*		
DDE		
Dieldrin		
Endrin		
Heptachlor epoxide		

* Not a contaminant of concern when Route 8 wells are excluded.

includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances. Implementation time includes time necessary to contract and design the alternative.

In the spirit of the SACM initiative and relying on the Agency's technology selection guidance for wood-treating sites, EPA considered technologies which have been consistently selected at wood-preserving sites with similar characteristics (e.g., types of contaminants present, types of disposal practices, environmental media affected) during the development of remedial alternatives.

The alternatives developed for groundwater (GW) are:

Alternative 1: No Action

Capital Cost: Not Applicable
O & M Cost: $27,200 for biannual monitoring
$20,000 each five-year review
Present Worth Cost: $380,700 (over 30 years)
Implementation Time: Not Applicable

The Superfund program requires that the No Action alternative be considered as a baseline for comparison with other alternatives. The No Action alternative for the contaminated groundwater would only include a long-term monitoring program. The contaminated groundwater and DNAPL present in the subsurface would be left to naturally attenuate without any treatment. The long-term monitoring program would consist of semiannual sampling for PAHs at existing wells on-site and around the site. A 30-year monitoring period was assumed for estimating the cost of this alternative. A total of six existing monitoring wells would be utilized to sample the groundwater to determine whether the concentration of the contaminants of concern have been lowered to cleanup levels through natural attenuation and to monitor the migration of contaminants and free-phase DNAPL in areas surrounding the site.

Because this alternative would result in contaminants being left on-site above health based levels, the site would have to be reviewed

every five years for a
requirements of CERCLA.
reviews would include t
health and environmenta
contaminated material left on
obtained from the monitoring pro

Alternative GW-2, Optio
site treatment via acti
adsorption, and dischar

Capital Cost:
O & M Cost: $603,
Present Worth Cost:
Implementation Time: 24 months

The major features of this al
groundwater extraction, collecti
discharge of treated groundwa
system would consist of an oil/w
phase separation, followed
manganese removal (necessa
potential interferences with sub
processes) and removal of org
by activated carbon adsorption.
groundwater would be disch
unnamed stream adjacent to the site
is likely to take consider
to achieve remediation goals, the treatment plant
design and cost e
period of 30 years

The extraction/col
combination of a c
groundwater and an extract
intermediate groundwater. Th
approximately 700
at the northwestern (downgrad
the site. It is e
gallons per minute (
be pumped from the
approximately 26.4
the extraction wel
system.

In addition to gro
DNAPL is found to be
extraction wellpoi
of suspected DNAPL
wellpoints would be installed in the shallow
overburden and wou
pumping rates (les
flow to the on-sit

approximately 30 gpm. All pumping rates would be refined during the design phase based on pumping tests. Extracted groundwater would be delivered to a collection tank before treatment.

Because of the nature of the creosote contaminants and the observation of DNAPL during field activities, oily product is likely to be present with the extracted groundwater. Heavy or light product would be separated using an oil/water separator. Solids and/or heavy product would settle by gravity into the separator's sludge hopper and would be removed periodically for disposal to a permitted treatment facility. Lighter product would float to the surface and be removed by a skimmer for disposal/reuse at a licensed off-site treatment/recycling facility.

The pretreatment system would consist of an individual treatment train designed for the removal of manganese. Manganese would be removed through pH adjustment, oxidation, precipitation, coagulation, clarification, neutralization and filtration steps with the addition of caustic, acid, and polymer. Sludges produced during this step would be stored in drums or rolloffs, and sent out to an approved disposal facility. Filtration may be required to further pretreat the effluent.

After pretreatment, groundwater would be pumped to a carbon adsorption system consisting of two carbon beds connected in series. Organic contaminants (PAHs) would be removed by the carbon adsorption units to target groundwater cleanup levels. The spent carbon would be collected and chipped for off-site disposal or regeneration and reuse.

Treated groundwater would be discharged via a culvert to the small unnamed stream located on the southern border of the site. This stream in turn discharges to an unnamed tributary to Unalam Creek, which eventually discharges to the Susquehanna River. The discharge structure would include appropriate erosion control devices such as rip rap and energy dissipation features. The discharge would comply with the New York State Pollutant Discharge Elimination System (NYSPDES) requirements. All waste residuals generated from the treatment process would be tranported off-site to a permitted treatment and disposal facility, or (in the case of carbon) to a

recycling facilit

The goal of this alt
groundwater to drinking
due to the characteristics
extremely viscous and diff
complex hydrogeological se
that this goal wi
time frame for areas
(e.g., shallow groundwa
shallow ground water
order of several hun
likely that chemical-sp
for those portion
technical impractica
contamination reduct
frame. If groundwater res
or practical, the alternative
containing the extent o
contamination within th
Restoration of the groundw
DNAPL source areas (e.g.,
groundwater) is likely
mostly contaminated wit
contaminants (e.g., ben

During design or ope
also be determined t
enhanced biodegradation (e
to increase the rate of bi
able to achieve a similar
removal and containm
extraction and treatmen
Such information would
remedial design to m
efficiency of the syste
also be used to reasses
technical practicability o
standards.

Alternative GW-2, Op
site treatment via biol
discharge to surface water

Capital Cost:
O & M Cost:
Present Worth Cost:
Implementation Ti

This option is virtuall
option A. The only
pretreatment, the re
groundwater would

biological reactor for treatment. This reactor would contain bacterial cultures capable of degrading the contaminants in the groundwater. Wastes (e.g., sludges) generated during the treatment process would be disposed off-site at a permitted disposal/treatment facility.

Alternative GW-3: Extraction, on-site pretreatment, discharge to publicly owned treatment works (POTW) for final treatment

Capital Cost: $1,904,000
O & M Cost: $613,600
Present Worth Cost: $9,518,200
Implementation Time: 24 months

The major features of this alternative are groundwater extraction, collection, pretreatment and discharge to the local POTW. In order to comply with POTW influent requirements, manganese would have to be removed from the groundwater. This would be accomplished by using conventional pretreatment methods for manganese removal such as the treatment train described under Alternative GW-2. The extraction/collection system and pretreatment for this alternative would be the same as that discussed for Alternative GW-2. Therefore, only those operations that differ from previous alternatives are discussed below.

Treatment of organic contaminants would be accomplished by the Village of Sidney POTW utilizing a conventional sanitary wastewater treatment process consisting mainly of aerobic biodegradation. The facility was designed for a maximum wastewater treatment capacity of 1.7 million gallons per day (MGD), and currently operates at an average capacity of 0.6 to 0.7 MGD. Effluent from the pretreatment system would be discharged to the sanitary sewer line via a metered control manhole, which would record flow to the POTW. The nearest sanitary sewer is located parallel to Delaware Avenue, approximately 80 feet south of the roadway.

Groundwater would have to meet pretreatment requirements prior to discharge to the POTW. The Village of Sidney Municipal Code governs

sewer use within the
discharge of wastes int
has indicated that f
pretreated GCL wastewat
until a detailed app

It is noted, however, that due t
characteristics of creosot
and difficult to pump) and
hydrogeological setting, i
goal will be achieved within
frame for areas containing the creo
shallow groundwater). Current esti
DNAPL remediation are on the ord
hundred years. As such, it i
specific ARARs will be waived for those p
of the aquifer based on th
impracticability of ach
contamination reduction
timeframe.

The alternatives develo
sediments (SD) are:

Alternative SD-1: No Acti

Capital Cost:
O & M Cost:
monitoring

Present Worth Co
Implementation Ti

The No Action altern
the GCL site would c
monitoring program. Fo
purposes, it is assumed
monitored semiannual
samples would be col

Because this alt
nant removal, th
every five years
requirements of
five-year reviews would include, the reassessment
of human health
the contaminated materi
obtained from the

Alternatve SD-2: Excavation, treatment and disposal with GCL-property soils

Capital Cost:	$298,400
O & M Cost:	$0
Present Worth Cost:	$298,400
Implementation Time:	24 months

The contaminated sediments would be excavated during periods of no or low flow using conventional earth moving equipment such as backhoes, bulldozers, etc. The total volume of sediments to be excavated is estimated to be 125 cy. Excavation would be performed under moistened conditions to minimize the generation of fugitive dust. Erosion and sediment control measures such as silt curtains would be provided during excavation to control migration of contaminated sediment. Adjacent wetlands would be protected by erosion and sediment control measures.

The sediments would be treated via thermal desorption along with the GCL property soils (see Record of Decision dated 9/30/94); the design of the remedy was recently initiated. A typical thermal desorption process consisting of a feed system, thermal processor, and gas treatment system (consisting of an afterburner and scrubber or a carbon adsorption system). Screened sediments are placed in the thermal processor feed hopper. Nitrogen or steam may be used as a transfer mediun for the vaporized PAHs to minimize the potential for fire. The gas would be heated and then injected into the thermal processor at a typical operating temperature of 700°F to 1000°F. PAH contaminants of concern and moisture in the contaminated sediments would be volatilized into gases, then treated in the off-gas treatment system. Treatment options for the off-gas include burning in an afterburner (operated to ensure complete destruction of the PAHs), adsorbing contaminants onto activated carbon, or collection through condensation followed by off-site disposal. Thermal desorption achieves approximately 98 to 99 percent reduction of PAHs in soil. If an afterburner were used, the treated off-gas would be treated further in the scrubber for particulate and acid gas removal. A post-treatment sampling and analysis program would be instituted in order to ensure that contamination in the soil/sediment had been reduced to below cleanup levels. The treated sediment would be redep
soils in excavated areas on t

The excavated areas of the in
and wetlands edge would be ba
material and restored to pre-exc
conditions. The restoration wou
soon as practicable after
excavated, in or
impact to the st
wetlands managem
followed.

Alternative SD-3
disposal

Capital Cost:
O & M Cost:
Present Worth Co
Implementation T

This alternative consists
contaminated sed
Alternative SD-2
contaminated mat
permitted facili
One hundred twen
used to restore
be restored as d

EVALUATION OF AL

During the detai
tives, each alte
evaluation crite
human health and
with ARARs, long
permanence, reduction o
volume, short-te
implementability,
acceptance.

The evaluation c

< Overall prote
environment addresse
provides adequa
risks posed thro
reduced, or cont
neering controls

< Compliance wi
appropriate requ

whether or not a remedy will meet all of the applicable or relevant and appropriate requirements of other federal and environmental statutes and requirements or provide grounds for invoking a waiver.

< Long-term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met.

< Reduction of toxicity, mobility, or volume through treatment is the anticipated performance of the treatment technologies a remedy may employ.

< Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.

< Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

< Cost includes estimated capital and operation and maintenance costs, and net present worth costs.

< State acceptance indicates whether, based on its review of the FFS report and Proposed Plan, the concurs, opposes, or has no comment on the preferred alternative at the present time.

< Community acceptance will be assessed in the Record of Decision (ROD) following a review of the public comments received on the FFS report and the Proposed Plan.

A comparative analysis of the remedial alternatives based upon the preceding evaluation criteria follows.

Groundwater

< Overall Protection of Human Health and the Environment

Over time, Alternative GW-1 would provide some

limited protectio
environment sinc
attenuated throu
biodegradation,
and GW-3 would be protecti
and the environment, since th
reduce the toxic
contaminants in
protect groundwa
from further con
GW-3 would result in signi
mass of contaminants present
unlikely that ful
resources would
time frame.

< Compliance with ARARs

Alternative GW-1
or state drinkin
those ARARs requ
groundwater. Al
be designed to treat the aqui
chemical-specific ARARs assoc
federal groundwa
standards. Extr
treated to achie
Alternative GW-2; under Al
tracted groundwater would be
pretreatment sta
POTW. Each of t
capable of removing a sign
contaminants in the groundwat
these alternativ
drinking water s
characteristics
and difficult to
hydrogeological setting, it is unlikely that this
goal will be ach
frame for areas
shallow groundwa
DNAPL remediation are on t
hundred years. As such, it i
specific ARARs w
of the aquifer b
impracticability of achiev
contamination reduction withi
timeframe.

< Lone-Term Eff

Alternative GW-1 would not pr
treatment and wo

processes to restore the contaminated aquifer. Therefore, this alternative would not be an effective long-term remedy.

Alternatives GW-2 and GW-3 would reduce the potential risk associated with groundwater ingestion by extracting and treating the groundwater to remove a significant mass of contaminants from the aquifer. The time to achieve these risk reductions is limited by the effective extraction rates from the aquifer. However, it is unlikely that DNAPL contamination present in the shallow aquifer can be completely remediated due to the tendency of DNAPLs to sorb to the aquifer. Although none of the alternatives would be able to clean the aquifer to drinking water standards in a short period of time, the treatment alternatives would protect surrounding groundwater from further contamination.

< Reduction in Toxicity, Mobility, or Volume Through Treatment

Alternative GW-1 would not involve any removal or active treatment of the contaminants in the aquifer; therefore, would not be effective in reducing the mobility, toxicity, or volume through a treatment process. However, over time, natural attenuation processes would provide some reduction of the toxicity and volume of contaminants.

Alternatives GW-2 and GW-3 would reduce the toxicity, mobility and volume of contaminants in the aquifer to a larger extent than GW-1 since extraction and treatment of groundwater are provided.

< Short-term Effectiveness

The implementation of Alternative GW-1 would result in no additional risk to the community during remedial activities, since no construction or remediation activities would be conducted. Workers involved in periodic sampling of site soils would be exposed to minimal risks because appropriate health and safety protocols would be followed for this activity. For purposes of this analysis, monitoring of the site would occur for 30 years.

Alternatives GW-2 and GW-3 involve construction and operation of an
Procedures for proper h
reagents would be followed for a
alternatives. Any process
would be properly handl
The risk to workers involv
would also be minimized by
appropriate health and
preventive measures to
contaminated materia
of fugitive dust. All
certified and would be instru
protocols.

It is estimated that th
would take well over
remedial action objecti
period was used for
of the treatment plant would
remedial objectives are achie
contaminants in the aquife
and Federal drinking wa
determined that ARARs must be waived in
portions of the aquifer.

< Implementability

Alternative 1 would
activities other tha
five-year reviews. These
implemented.
The treatment components of A
and GW-3 would be easily i
technologies are proven
The carbon adsorption t
use in Alternative G
efficient method for re
contaminants. Biological tre
Alternatives GW-2B and GW-3,
successfully for groundwater
creosote wastes. The mang
ment technology require
2 and GW-3 is proven an
Sufficient space is
treatment plant.

Alternatives GW-2 and GW-3
institutional managemen
maintenance of the t
discharge system. O
available for the disposal of
separator sludge and skimm
Alternatives GW-2 an

recycle) facilities are also available for recovered DNAPL and the other residues generated from those alternatives. Although treatment processes utilized in Alternative GW-3 are proven, it is uncertain whether the Village of Sidney POTW would accept the treated groundwater. Acceptance of the GCL effluent by the POTW would be contingent upon factors, such as capacity available, waste characteristics, and permit requirements.

< Cost

GW-1 is the least expensive of all alternatives but would not involve treatment. Alternative 1 has a present worth cost of $380,700 which is associated with conducting a sampling and analyses program and five-year reviews over a 30-year period.

Alternative GW-2A would be the most expensive treatment alternative followed by GW-3 and GW-2B. However, the cost differences between GW-2A, GW-2B and GW-3 would be so small as to not be significant.

< State Acceptance

NYSDEC concurs with the preferred remedy.

< Community Acceptance

Community acceptance of the preferred alternative will be assessed in the ROD following review of the public comments received on the RI/FS reports and the Proposed Plan.

Sediments

< Overall Protection of Human Health and the Environment

Alternative SD-1 would not meet any of the remedial objectives and thus would not be protective of the environment. Contaminated sediments would remain on-site and would continue to pose a risk to the biota. Natural flushing would reduce contaminants in the sediments somewhat, especially after the contaminated soils on the GCL-property are remediated.

Alternative SD-2, involving on-site sediment

treatment and Al
treatment/dispos
contamination an
threats posed by
alternatives wou

< Compliance wi

There are no che
taminated sediments. Alterna
comply with appropriate requirem
New York State Technical and
Guidance Memorandums.

Alternatives SD-
and implemented
requirements and
identified for t
be conducted in compliance with
standards, soil
wetland protecti
2 would also com
site treatment (
residuals, stormwater discharge
air pollution control regulation
fugitive emissions and air qu
Under Alternative SD-3, excav
would be sent to
treatment/disposal facility i
applicable ARAR's.

< Long-Term Effectiv

Alternative SD-
the sediments a
contaminants. Therefore, this a
not reduce the long-term risk
environment associated with the

Alternative SD-2 calls for on
treatment along the GCL-property
treatment syste
reduce the leve
sediments by 98

Alternative SD-
protection by r
sediments which
disposal facili
would provide protection a
long-term monitoring would be re

< Reduction of Toxicity, Mobility or Volume Through Treatment

Alternative SD-1 would not provide immediate reduction in toxicity, mobility or volume of contaminants because treatment is not included as part of this alternative. Some reduction may be realized after the GCL-property soils have remediated through natural attenuation processes.

Alternatives SD-2 and SD-3 would reduce the toxicity, mobility and volume of contaminants by removal and on-site treatment (Alternative SD-2) or off-site disposal (Alternative SD-3).

Short-Term Effectiveness

The implementation of Alternative SD-1 would not pose any additional risks to the community, since this alternative does not involve any construction or remediation. Workers involved in periodic sampling of sediments would be exposed to minimal risks because appropriate health and safety protocols would be followed for this activity.

Alternatives SD-2 and SD-3 include activities such as excavation, screening, shredding, and handling of contaminated sediments which could result in potential exposure of workers and residents to fugitive dust, and possible suspension of sediments. In order to minimize potential short-term impacts, the area would be secured and access would be restricted to authorized personnel only. In addition, dust control measures such as wind screens and water sprays would be used to minimize fugitive dust emissions from material handling. The risk to workers involved in the remediation would also be minimized by establishing appropriate health and safety procedures and preventive measures, (e.g., enclosed cabs on backhoes and proper personal protection equipment) to prevent direct contact with contaminated materials and ingestion/inhalation of fugitive dust. All site workers would be OSHA certified and would be instructed to follow OSHA protocols. Some increase in traffic and noise pollution would be expected from site activities. Short-term impacts may be experienced for about a six-month period which is the estimated time for construction and remedial activities.

Under Alternativ
pacts on the environment f
vegetation and d
A plan would be
minimize and res
damage to the en
sediment control
and berms would
handling activities to
contaminants.

< Implementability

Alternative SD-1
activities excep
activities would be easily
Alternative SD-2 would be
the technology is proven a
The thermal deso
alternative has
destruction of P
available. Suff
for operation of
system and suppo
involves off-sit
volume of sediment should be
permitted facility. Imple
Alternatives SD-
restriction of a
remediation proc
local agencies w
remediation.

< Cost

Alternative SD-1
but does not provide tr
sediments. Alte
cost of $277,700
conducting a sam
five-year review

Alternative SD-2
treatment altern
cost of $298,000. The most e
is SD-3 with a p

< State Accepta

NYSDEC concurs w

< Community Acceptance

Community acceptance of the preferred alternative will be assessed in the ROD following review of the public comments received on the RI/FS reports and the Proposed Plan.

PREFERRED ALTERNATIVE

Based upon an evaluation of the various alternatives, EPA and NYSDEC recommend Alternatives GW-2 and SD-2 as the preferred alternatives for remediation of contaminated groundwater and sediment on the GCL site.

Alternative GW-2 would address the contaminated groundwater through the extraction, collection, on-site treatment and discharge of treated groundwater to the surface water. Alternative GW-2 provides two options for primary treatment of organics, carbon absorption (GW-2A) and biological treatment (GW-2B). Given the information currently available, both options appear to be equally reliable and cost-effective. Therefore, a more detailed evaluation of the two options will be conducted during the remedial design through treatability studies. The additional information gathered from the treatability studies will be used to determine which option is more appropriate and cost-effective. As noted above, the information gathered during remedial design would also be used to reassess the timeframe and technical practicability of achieving State and Federal drinking water standards.

Alternative SD-2 will address the contamination by excavating and treating contaminated sediment on-site through a thermal desorption process. Treating the contaminated sediments along with the GCL-property soils provides an effective and cost-effective method for addressing the contaminated sediments. Alternative SD-2 will also provide for the mitigation of damages to the aquatic environment which may occur during the implementation of this alternative.

The preferred alternative would provide the best balance of trade-offs among alternatives with respect to the evaluating criteria. EPA and the NYSDEC believe that the preferred alternative would be protective of human health and the environment, would comply with ARARs (unless it is subsequently proven to be tec impracticable), would be cost utilize permanent treatment techno technologies to The remedy also preference for the use of treatm element.

<IMG SRC 0295244V>

APPENDIX B

PUBLIC NOTICES

<IMG SRC 0295244W>
<IMG SRC 0295244X>

APPENDIX C

MARCH 8, 1995 PUBLIC MEETING ATTENDANCE SHEETS

<IMG SRC 0295244Y>
<IMG SRC 0295244Z>
<IMG SRC 0295244AA>

APPENDIX D

MARCH 8, 1995 PUBLIC MEETING TRANSCRIPT

U.S. ENVIRONMENTAL PROTECTION AGENCY PUBLIC MEETING

GCL TIE & TREATING SUPERFUND SITE

A public meeting held at the Sidney Civic Center, 21 Liberty Street, Sidney, New York, 13838, on Wednesday, the 8th day of March, 1995, commencing at 7:06 p.m.

APPEARANCES: CECILIA ECHOLS
Community Relations Coordinator

DOUGLAS GARBARINI, Chief
New York/Caribbean Superfund Section I

CARLOS RAMOS
Project Manager

BEFORE: Ruth I. Lynch
Registered Professional Reporter

Empire Court Reporters
One Marine Midland Plaza
Binghamton, NY 13901

MS. ECHOLS: Okay, we're ready to begin. Good evening, I'm Cecilia Echols, Community Relations Coordinator for the GCL Tie and Treating Superfund Site. We're here to speak about the second operable unit regarding the site and to give EPA's preferred remedy for the groundwater and surface water sediments. I would assume that everyone received a proposed plan in the mail and has been able to review it, if not I think everyone received one from the table in the back. I hope everyone has signed in.

The public comment period began on March 1st, it ends on March 30th. If you have any comments or questions to ask the EPA you can send in your written comments to Carlos Ramos, his address is in the proposed plan. And he will address all of your questions in a responsiveness summary which will become part of the record of decision. If you're interested in finding out more information about the GCL Tie and Treating plant, there is an information repository at the Sidney Memorial Library on Main Street. And I'm gonna pass it over to Doug.

MR. GARBARINI: Okay, thank you, Cecilia.

My name is Doug Garbarini, I'm the supervisor in the Region II New York City office, and Region II is one of ten regional office across the country that EPA has, and we're responsible for environmental protection in New York, New Jersey, Puerto Rico and the Virgin Islands. I think before we get into the project details here of the GCL site, what I typically do is go through a ten-minute spiel on the Superfund process. But looking out here, I think all of you were present at the last meeting, so I don't want to necessarily bore you with that. There might be one new face.

AN ATTENDEE: I was at one -- one meeting, I don't know whether --

MS. ECHOLS: The last one was in August you were here probably for.

AN ATTENDEE: Yeah, original one.

MR. GARBARINI: The original one. Okay. Do you have a little bit of familiarity with the Superfund process, or do you --

AN ATTENDEE: Yeah.

MR. GARBARINI: Would you like me to go over anything for you?

AN ATTENDEE: I'm just interested in listening to what's being said anyway. I haven't got any ax to grind or anything.

MR. GARBARINI: Okay, I guess, then, what we'll do is just get right into the project details. And if you have any overall related questions about the

Superfund process, you know, feel free to ask them at that point in time.

Yeah, I guess in general, you know that it's -- we're here representing the Federal Government, and the Superfund program just deals with federally -- federal sites on the national priorities list, I guess you're pretty much familiar with that. Okay, so what I'll do is just pass it right on over to Carlos.

MR. RAMOS: My name's Carlos Ramos, and I am the project manager for this specific site. And I won't give you too much detail and background because most of you know the site, you know where it is and everything, but I just want to go briefly about some of the features of the site.

This is what they call the historical GCL -- can everybody see this, or am I blocking views?

MS. ECHOLS: I'll turn off the lights.

MR. RAMOS: Okay. This is the site, this is the historical size of the site. We divided the site into two areas, what we call the GCL portion, which is this area in general, and the non-GCL portion, which is kind of historical site. We did sampling throughout all the property, we took surface sediment samples from the drainage ditch that runs around the south to the side, this is the blue line here, and also from the impoundment area on this other portion of the site. We took soil samples from all the areas of the site. We took groundwater samples through all the site.

And just to show you the property, you're pretty much familiar that the shopping center, the Kmart is on this outer edge of the property, the northern area is Keith Clark and the airport, and Route 8 is on eastern portion of the site. Just to give you an idea of how the site looks.

MS. ECHOLS: Excuse me, by the way, all of this information that Carlos is looking at is in the handout. Okay?

MR. RAMOS: The second slide is just to refresh your minds regarding how EPA is -- is working at this site. You know, how -- how is our cleanup working at this site.

We have three main phases. The first one started is what we call a removal action. And a removal action was designed to address the most immediate threats associated with the site. And that was the disposal of wastes contained in drums, in tanks, and so forth. That phase is completed already. All the immediate threats, potential threats associated with the site in terms of immediate concerns are being addressed, and that -- that activity's close.

Last summer we came here to talk about the focus feasibility study and to talk about cleaning up the soils on the GCL portion of the site, and that was that yellow portion of the figure I showed you before. That work is already in the remedial design phase. Tonight we are here basically to talk about this last portion of the site, which is the remedial investigation that we did in the remaining portions of the site, and that includes groundwater, surface water and soils on the non-GCL portions of the site. That's outside that yellow area.

So we did the remedial investigation, we -- we actually defined the nature and the extent of contamination of the site, we did a feasibility study which tells you what can you -- what shall we do or what alternative do we have for addressing that contamination found at the site, and we are here tonight with a proposed remedy. And inform you on that.

Now I'm just gonna go briefly about some of the sampling soil results that we found at the site. This figure again is in your handout. Specifically for the non-GCL property soils. And just let me superimpose another one here. Remember, the non-GCL is the western -- the eastern portion of the site. Which is the non -- non yellow one.

You can see from -- from this figure, you compare the benchmark, which is just a level to help you compare it, the concentration we found on the site versus what could be considered as a safe level, in some cases it's just background, like in the case of metals, these are typical background concentrations for this area. That means if you are testing soils that were not contaminated, these were the typical concentration that you will find. You can see we didn't find really much on the non-GCL property soils.

We just try to take concentrations of organic compounds and some concentrations of metals which are close to background in most of the cases. The components that we are most interested with are these components here, which are creosote-related compounds, and creosote was the contaminant that we found at this property. So these are the ones that we are more concerned about, polyaromatic hydrocarbons, as you can see that even those, these benchmark, and what we found at the site, the non-GCL property, is -- is way below benchmarks. So that means that there's really nothing much to be concerned about on the non--GCL property, as far as soil contamination.

We're going to the groundwater, we have a similar analysis. We have here five columns. The first column is the contaminants of concern, the second column is the benchmark, which in this case is the drinking water standard. The next column is what we call a GCL property highest concentration. Those highest concentration are for that yellow portion of the site. Then we go into non-GCL property and off-site contamination, which were wells located outside the influence of the site.

We have three types of contaminants here also, three -- three criterias. We have volatile organics, polyaromatic hydrocarbons, and metals. Of these three contaminants the only one which is site related is polyaromatic hydrocarbons, because those were the materials used at the site and those were also the materials found in the site soils. For a specific case of polyaromatic hydrocarbons, you see that you compare the benchmark and the GCL concentration, we indeed have concentration in the groundwater which is above the drinking water standards for most of the polyaromatic hydrocarbons. We see that we don't find the hydrocarbon off site of the GCL property wells. We didn't find them in locations outside the GCL site influence.

You look at volatile organics, you see that we found very rather low concentration of most of the volatile organics at the GCL property. To compare that to the MCL, or the maximum contaminant level, the drinking water standard, which is the same thing, these are relatively low levels. We compared those levels to non-GCL property wells, you can see they are much, much higher on wells which are not actually affected by the GCL site but which are actually affected by other sites in the region. So that tells you that there is a groundwater problem in the area which is not site related. Related to other sites in the area.

When you go to metals you'll see that some of the metals are elevated, but there are no metals we can see that are much concern. So in the case of manganese, which is much higher elevated, we also find it in other wells outside of the property. Most of the property relates to polyaromatic hydrocarbons, which is related to the operations of the GCL property, and volatile organic compounds, which are not related to the GCL site.

We go into surface water, we see that we didn't have as much a problem there neither. There were some -- some of the metals that were slightly elevated, but not really in that significant amount. Arsenic is too high.

Then we jump in surface water sediments. And again we have contaminants of concern and then we have the benchmark levels which are kind of guidance volumes that we use to define whether contaminants may be high or low, and we have the concentrations that we find at the site. As you can see here, again we have kind of a relatively high concentrations of polyaromatic hydrocarbons. On the sediments which we collected from the -- that drainage ditch at the site. Metals can kind of vary through, most of the time metals were at the -- you know, within one or two times benchmark levels.

Here we are, okay. And this is just a figure that summarize the extent of groundwater contamination that we found at the site. And let me explain this thing. The orange dots are water wells that we found or installed at the site, and we sampled them. You can see they cover pretty much the whole property, there are some around here also, you can see with the colors. And what we did, we sampled all those wells twice, at different times of the year, we collected the data, and we -- based on that data we developed the extent of the groundwater contamination at the site. And this is what you have here.

In this area you have an aquifer to be called overburden, which is the first aquifer you encounter, and then we have what we call a deep aquifer, which is kind of bedrock in this area. The contamination that we found which is related to this site is all within the overburden, it's on the overburden aquifer. Within that overburden aquifer we -- we divided that zone -- that aquifer into two zones, we call them shallow zone and then we have the intermediate zone. And that's where we had contamination which is related to the GCL site. The green color, that's the shallow aquifer. In that area we found that we actually had what we call pure creosote. And that was creosote that was used during the operation of the GCL facility, and through the years made its way into the soils, into the groundwater. It's a very limited area, about 250 feet in diameter, as far as we know. This, of course, will be very further delineated, but right now that's the approximate extent of contamination.

Creosote is a very viscous material, it really binds pretty well to the soils. Once -- once it moves to a certain distance it tends not to move anymore. It doesn't move very rapidly also. Kind of it's like you're pouring oil, it's pretty much putting oil into the ground, goes down to a certain level, but at some point it reaches a depth where it doesn't move anymore.

That's what we have here.

The yellow zone is an area where we have a different type of contaminant, which is benzene. Mostly benzene. Which is more soluble and more -- more mobile than -- than creosote. And that's a bit -- bit bigger plume than the one before. But it still is a relatively small area of the site if you look at the site as a whole. This is a relatively small area.

Okay. This area is to show you the approximate extent of sediment contamination at the site. This is the drainage ditch that runs about the southern edge of the site, and the approximate extent of the soil contamination is around this area here.

Okay. So what we did with this information? Now we know what's at the site, and we know where that contamination is. Based on that we -- we start what we call a risk assessment. A risk assessment is a document that looking at the concentrations and looking at the selection of contaminants at the site tells you what kind of risk might be associated with that contaminant. And to do that the first thing that we do is that we identify chemicals of concern. And that's done based on the frequency, on the toxicity and the distribution of those contaminants at the site. Once we do that we go through a screening process and we determine which -- which chemical we should be paying more attention to and which chemicals will be driving the risks at the site.

Okay. And this is basically the result of the risk assessment that we did. And in the risk assessment we look at different things. We look at different scenarios and we try to check all the potential populations that could be in contact with contamination and could be at risk. In this case we have children and adults living off site but near the site; children and adults trespassing on the site. We have -- we have -- we have children living in the vicinity of the site, we have adults living in the vicinity of the site, and we have on-site workers. And for those scenarios we have different pathways. For children living off site, what will happen, they will ingest or inhalate some of the soils at the site. What would happen with them if they ingest or inhalate some of the soil. And to each one of those pathways and scenarios we calculated a potential health risk number. We have to tell you what would be the potential risk to that person.

So if you go scenario for scenario, you will see that most of the risks are really reasonable. The EPA has what we call an acceptable risk range, which is actually 1 to 10, 000 to 1 in a million. That's what we call acceptable risk range. If we are within that risk range, usually we don't take any action at a site. In this -- in this case you can see that for most of these pathways, the risk are very small, they're in the range of 9 out of a million, 4 out of a million, and so forth.

The only two pathway scenarios where they have some significant risk is for people ingesting, inhaling or in dermal contact with the groundwater. And that's an assumption that that -- that's a pathway that assumes that somebody will be drinking that contaminated water at the site, which is not the case. The contamination, as you saw, is a very localized to what's in the site; nobody's drinking that water. But this scenario assumes that somebody in the future might drink that water. And if that were the case then you will assign the risk number to that.

In the case of people exposed to groundwater, you'll see that the risk are much more significant. In the range of 2 out of a thousand. And we have here, we decorated the risk of groundwater two ways, since we know that we have a real groundwater problem in the area, we have contamination there which is not related to GCL in that area, we calculated the risk posed by exposure to all the contamination in the groundwater, site related and non site related, and that's the total. How we decorated the number just for the GCL contamination.

As you can see, once you take out in those times the contamination, the risk is much more smaller.

Okay. Knowing all the contamination that we have at a site, knowing all the risks posed by the site, we develop our alternatives for that contamination at the site. An alternative available focus on those two medias which are the concern. One media that is a concern is the groundwater where we found contamination which is above drinking water standard. The other concern is the surface water sediments, since we found contamination which is above the benchmark levels that we have established. We went through a process where we -- we tried to look at different technologies and different ways of getting up the groundwater. And we developed these three alternatives for the groundwater.

The first once that we have is no action. We are required by law to first consider no action, as a baseline. Just to give you a comparison number for the rest of the alternatives. So we did no action, which actually what is involved is long-term monitoring. Just going out there and sampling the wells year after year to see what will happen to the contamination. The cost for that activity over a 30-year period will be roughly $380,000.

The next alternative that we developed was extraction of the groundwater, on-site treatment of that groundwater, and discharge of the treated groundwater to surface water. Which was that drainage ditch that runs around the southern edge of the property.

In terms of treating the groundwater, we had different ways that we could do that. We could do carbon absorption, which is a very common treatment technology where you put your contamination through a carbon filter and at the end you have clean groundwater and the carbon retains the contamination. You can also go a way of biological treatment, which is not too far from what you have in your local wastewater treatment facility.

We have some problem at this site regarding the cleaning up of the aquifer. And these -- and it relates to the -- to the type of contamination we have there, and -- and the geology that we have at the site. And the first one that we have is that creosote, as I mentioned before, tends to bind pretty tightly with the soil particles. So it is very difficult to clean up areas where we have creosote contamination. And our experience has been that in places where we have topical contamination we pretty much can pump the water for many, many, many years and still there will be some residue creosote in the water. So that's -- that's very unlikely that we'll be able to clean up that portion of the aquifer containing creosote.

However, there is another portion of the aquifer, and that was the benzene area I showed you before in green, and that area is -- we would like it to be clean. And about -- well, before we start actually pumping and treating, we would like to try some things which have been tried at other sites to clean up groundwater. And we would like to see whether technology such as bioremediation would work for the benzene, specifically. We have seen that sometimes benzene can be biodegrated. By treating the soils you provide the material with some help. Like in some cases you can provide oxygen or nutrient to the bacteria and that helps to clean up the water.

So this is one of the things that we have to try before we start pumping and treating to see how much of that we can -- how much contamination reduction we can achieve that way. If not, you know, you know, we will be then pumping and treating.

Our first concern is to make sure that the plume doesn't move from the site, it doesn't leave the site and move anywhere. And that's -- that's our first priority. And once we made sure that that's done, then we -- we have time to address the groundwater either through pumping it, to pumping and treating, or to using some of these natural attenuation processes which might get us the same type of attenuation, at a more lower cost.

For the second alternative we have extracting the water, doing on-site treatment and then sending the discharge to a POTW, which is your local wastewater treatment facility.

And those are the two alternatives that we have for the groundwater.

The costs associated with those two alternatives are two million, pretty much. The differentiation of the cost estimates are wide enough that there's no significant difference to those numbers. So either alternative would cost about 2 million in capital costs, and the alternative, the alternative for on-site treatment and the discharge of surface water, will take -- cost about ten million.

You can see there is a long-term operation and maintenance cost of the wastewater treatment facility.

For the -- the discharge to a POTW, the total cost is about $9.5 million, that's including the operation and maintenance over a 30-year period.

The other media that we are addressing is surface water sediments, and again we have three alternative, the first one being no action, which we're again required to include. And the cost of just monitoring the sediment contamination will cost -- will be roughly about 277,000 over a 30-year period. The other alternative that we have is the first one, on-site treatment of those sediments, using the same thermal desorption system that we're going to be using for the GCL property soils.

As you might remember from before, last summer we selected the remedy for the soils which actually includes excavation of the soils and treating them on-site using that thermal desorption system. Since the sediment has the same type of contamination, you could excavate the sediments and run them through the same treatment system as you -- as you've already assigned for the soils. The cost of doing that will be roughly $300,000.

If you were to take the same sediments and you were to send them off site to a private treatment and disposal facility, that would cost you roughly

$820,000.

So those are -- we have three alternative, then, for groundwater, and three for surface water sediments.

Do you have any questions at any point, please feel free to interrupt me.

The next thing that we did was we put those six alternative through a detailed evaluation process, and for doing that we have a set of criteria that include nine elements. And this is what is required by law for us to do. The first criteria is overall protection of human health and the environment. Second one, in compliance with all applicable regulations. The third one is long-term effectiveness and permanence. The next one is reduction of toxicity, mobility, or volume through treatment. Next one is short-term effectiveness, implementability, cost, the state acceptance, and that's New York State acceptance; and the last one, which is the one that we are here for, is community acceptance.

So we put our alternatives through that nine criteria process. And based on that we are recommending that we implement on the site the second alternative for the groundwater, which is extracting the groundwater and treating the groundwater on-site with the discharge of the treated groundwater to surface water. And we are proposing that we implement on-site treatment of the sediments with the soils on-site.

So those -- those two items must constitute our preferred alternative for the site, and we will -- we would like to hear from you in terms of what you think of cleaning of the property using those -- those two alternatives.

MS. ECHOLS: Finished?

MR. RAMOS: I think that's pretty much it, yeah.

MS. ECHOLS: Okay, we're gonna open up for questions and answers. Please state your name loudly so the stenographer can record it properly.

Any questions? Let me turn on the lights.

Don't be shy now.

AN ATTENDEE: Are you gonna further investigate the possibility of using our wastewater treatment facility?

MR. RAMOS: Yes.

AN ATTENDEE: Instead of this, you know, as John Woodisheck expressed earlier?

MR. GARBARINI: Yeah. I guess based upon the meeting that we had this afternoon it sounded like John was going to be sending in a comment letter to us.

AN ATTENDEE: I just thought the people here might like to know that, that the thing is even though these are your recommendations at the moment, John Woodisheck, the village engineer, indicated that he thought it could be done more cost effectively by putting it through our wastewater treatment plant, there are certain details that would have to be worked out, but. I thought the people should know that.

MR. GARBARINI: Yeah, I think that's very important. As with any of the alternatives that were mentioned there, the people here could express their desire for us to implement any one of those, but I think the Town's willingness to allow us to use the POTW is a very important consideration for us. And I guess John will be putting something in writing to that effect.

AN ATTENDEE: Right.

MR. GARBARINI: It had seemed a lot more uncertain to us going back a few months ago whether there would be the ability to use the POTW. But if we could get something in writing.

AN ATTENDEE: John will get something to you in writing.

MR. GARBARINI: And I guess actually in going through our cost analysis we had used the higher end range of treatment costs for going through the POTW.

But apparently John is indicating that's probably a high end range cost, and maybe he will give us some additional cost information. That may make that alternative the less costly or significantly less costly than the one we're currently proposing.

AN ATTENDEE: Okay, thank you.

MR. GARBARINI: I guess, I guess one thing I just can't emphasize too much here regarding the groundwater remedy is the fact that when we deal with pump and treat systems, we really are dealing with some great unknowns as to how long it might take to clean up an aquifer and how effective actual pumping and treating might be. We get into a lot of these cases where we have dense, nonaquous phase liquids on-site, and as Carlos has mentioned we found out that it could take, you know, centuries to clean them up. So that's a very, very important consideration. We do have the benzene plume here, which looks like it might be manageable. And we're really gonna start to target our efforts at cleaning that benzene plume up. But again, during the design phase we'll be doing greater investigation of the subsurface.

AN ATTENDEE: Good question.

MR. GARBARINI: And that could definitely impact the type of remedy we ultimately implement here.

We had stated that we would try to achieve the ARARs, which are basically drinking water standards for the groundwater. But it may not actually be possible to achieve those levels. So that's an important consideration in selecting a remedy as well as how long we actually operate the system that is designed to achieve those levels.

AN ATTENDEE: I should point out that if it were feasible to use the wastewater treatment plant, we -- we aren't proposing that we lock you into a long-term contract, because at some time you -- at some point decide that you didn't need to do it anymore or whatever. So there'd be that flexibility built into the agreement, which -- which could be lived -- lived by by both parties. I'm sure we could work that out.

MR. GARBARINI: Okay.

AN ATTENDEE: We aren't particularly interested in -- I mean this isn't baseball, but this is, you know.

MR. GARBARINI: Right. Right.

AN ATTENDEE: Go on strike?

MR. GARBARINI: As I had mentioned to you earlier, sometimes we're a little bit reluctant to go ahead and select a remedy that involves sending the discharge off to a POTW --

AN ATTENDEE: Right.

MR. GARBARINI: -- when we really don't have a firm commitment on behalf of the town. Certainly as you understand with potential change in administrations and all that, we have to take that all into consideration. So the stronger opinion we get from you on that end of things the better the likelihood that we would, you know, select that alternative.

AN ATTENDEE: Well, it's in our best interest as taxpayers to keep the costs down as much as possible, and if we can -- and we have the capacity at our treatment plant and it's doable from your standpoint, why not. So.

MR. GARBARINI: I appreciate that.

AN ATTENDEE: James Carr. I assume that area down there will be locked as far as further usage for quite a period of time for anything else?

MR. GARBARINI: The site?

AN ATTENDEE: That GCL will be a 30-year plan?

MR. GARBARINI: No, not necessarily.

AN ATTENDEE: Okay.

MR. GARBARINI: Basically the key thing that we are concerned about is getting the soils and the leftover creosote scraps of wood out of there, basically, and treat it. And then obviously if --

depending upon what our ultimate groundwater remedy looks like, we're gonna need some space for piping and for the treatment facility itself. So, but aside from that small amount of area, the rest of the property would be useable. After the soil work is all completed.

AN ATTENDEE: I should point out that that area is zoned industrial, and there's -- I can't see anybody's intention of ever zoning it otherwise. I mean it's -- it's all contiguous with other industrial facilities, so it -- there'd be no point, the point being that nobody is going to sell it for a housing development.

AN ATTENDEE: Which wouldn't be recommended by you people anyway.

MR. GARBARINI: Exactly. And I guess we'd be very interested in working with you and trying to get the property back to some sort of use as soon as possible also.

AN ATTENDEE: Let us know who owns it.

AN ATTENDEE: Do you have any -- do you have any target, target dates or time frame, or, am I putting you on the spot?

MR. GARBARINI: Well, you're putting us on the spot, but that's fine. Basically, as Carlos mentioned, we're about to go through the remedial design process now for the soil treatment system. So generally, you know, that takes us anywhere about -- I'd say about 18 months or so to complete that process. And then I think we were projecting about another year to treat the contaminated soils after that. So I think we're probably looking at about two and a half years from now before the soil work is all done. And in the meantime the design, if we go ahead and move forward with the selection of the groundwater remedy, we would be out there probably doing some significant additional investigatory work to try and figure out exactly how to implement the remedy. And I'd -- I'd say the design of that system would probably be more in the order of maybe two and a half years, two, two and a half years.

AN ATTENDEE: Thank you.

MS. ECHOLS: Any more questions?

AN ATTENDEE: Brent Hollenbeck for the Daily Star. I talked with Carlos last week. I'm still a little unclear as to the total, total cost of the Phase 1 and Phase 2. I know the EPA talked about a 15 million cost at one point, and I wasn't sure if that was just for Phase 1 or if that included Phase 1 and Phase 2, the entire cleanup at the site. Do you have an overall total cost estimate for the work there?

MR. RAMOS: Yes, but you called it Phase 1, this is remedy, we selected last summer for the soils, and that's roughly close to five -- you know, 14 point something, I guess, or roughly about $15 million. That's only for the soils. What we're saying today is the cost for this additional work that needs to be done at the site, and that's -- that's the cost for the groundwater and the sediments, and the groundwater I guess the cost is roughly about ten million over a 30-year period, and for the sediments about $300,000. So you add all that up, I guess we have 15 plus 10, plus 25, plus 300, so it's about 25.3, roughly.

AN ATTENDEE: 25.3 million for the both phases?

MR. RAMOS: Yeah, all the phases.

MR. GARBARINI: That is an estimated cost too. One thing that we've learned since the last public meeting, actually when we came -- arrived at those costs of the $15 million, is that there is the possibility that approximately one-third of the material may be able to go over to the New York State Electric and Gas authority for treatment. We're going to be exploring that option with them based upon some input we got from the community and -- and NYSEG also. So that could result in some significant savings on that front. And again, this -- this estimate for the groundwater, we're looking at $2 million in capital costs, and then the projected cost for 30 years of treatment bring it up to the $10 million total. So there's -- depending upon what our future investigations reveal, that number could be very different.

MS. ECHOLS: Any more questions? Okay.

MR. GARBARINI: People want a few more minutes to think about things before we close the meeting? See if you have any other questions?

AN ATTENDEE: Does anybody check your risk analysis figures?

MR. RAMOS: We do have our contractor working out the numbers and we have our in-house risk assessor that verify the numbers. So they are checked twice, by our contractors, by ourselves. Plus we brought it up for public comment also.

AN ATTENDEE: So if -- if someone had made a mistake, say, and -- and I guess the one risk area was the groundwater, if someone actually ingested the groundwater?

MR. RAMOS: Yeah.

AN ATTENDEE: That's the one that is requiring this to be cleaned up?

MR. RAMOS: Yes.

AN ATTENDEE: And there's only --

MR. RAMOS: In addition to that risk, the contaminations in the groundwater is above the drinking water standards. So just by being above the drinking water standard, which is a health based number, an action may need to be taken. This just quantifies a number of what would be the risk. But yes, we have a very lengthy internal review and extensive review process, comes from the contractor to us, we review them, we send them also to New York State and they review them.

AN ATTENDEE: So that was two -- there was a risk of 2 in 1,000 or 2 in 10,000 was it, that --

MR. RAMOS: For --

AN ATTENDEE: For drinking the groundwater?

MR. RAMOS: If the groundwater will be roughly at two -- two in a thousand for adults living in the vicinity of the site.

MR. GARBARINI: Lots of time at sites groundwater remedies will just be driven by the fact that levels are above drinking water standards.

AN ATTENDEE: How much, can you reach that - just from background information for future thought, to reach that 2 in 1,000, how much water did the individual have to drink over how much -- what period of time? -

MR. RAMOS: I don't recall the exact number. But it's -- it considers the amount of water that the person drinks, it includes the body weight, children have a different body weight than adults; it includes the typical contaminated areas, it includes the amount of time, I mean the -- the -- for example, children who were drinking water for a year, that can happen. So there are different -- all these factors are -- are put together into a formal list, then you come up with a calculation on that. The specific numbers, liters of -- of water per day, I don't recall. We can check it out when the meeting's finished, I have the report there. And we can -- do you remember that by any chance, off the top of your head? I'm sorry, do you remember from the top of your head?

AN ATTENDEE: No. It's a reasonable amount. All the -- there is three factors there too, there's -- there's not only ingestion but there's inhalation, if you have volatiles and you -- typical case is in a shower, where it volatilizes and it also contacts with the skin. Through washing of hands and other things. All the parameters that went into the models are in the remedial investigation report.

MR. RAMOS: Yeah.

AN ATTENDEE: And they're all based, as Carlos said, upon body weight, upon number of days in the area, especially when you deal with older children who may be gone. And all those are based upon EPA acceptance standards and practices which we employ quantitative amount.

AN ATTENDEE: But it's just like not casual contact if you --

AN ATTENDEE: They're based on prolonged exposure.

MR. GARBARINI: And lots of cases, I'm not saying for this site that was done, but in a lot of cases standards of acceptances are something like 2 liters a day over the course of 30 years, assuming a lifetime of 70 years, something like that.

AN ATTENDEE: And then there is an increased possibility of the 2 in 1,000 that they could develop some --

MR. RAMOS: That's -- that's a potential risk, doesn't mean that you're gonna get any cancer, that's just a potential risk. And that's just a way for us to assess the potential problems that maybe that will be caused by the site. So it's not that it's gonna happen, but there's a potential that it can happen.

MR. GARBARINI: Especially, as you know, we've all discussed before, no one is currently drinking the groundwater at the site, and it is zoned industrial. So.

MS. ECHOLS: Okay. Any more questions?

AN ATTENDEE: Thank you for the presentation and the opportunity to ask questions. Appreciate your coming.

MR. RAMOS: As Cecilia mentioned, the comment period ends on March 30th. So if you have any comments you want to put in, you know, on paper, please feel free to do that. And send it to us, we'll be happy to include that in our responsiveness summary section of the record of decision. Or, you know, just a comment, if you want to call us up and just let us know about it, that's fine.

AN ATTENDEE: Who reads that?

MR. RAMOS: Who reads what?

AN ATTENDEE: Reads the public comment.

MR. GARBARINI: Basically the way the process works is the public comments will come in to Carlos and Cecilia, either written or verbal here tonight, then there will be -- the responsiveness summary will be prepared. It usually goes -- that's part of a larger document called the record of decision. And a record of decision is the document that provides a conceptual plan for the remedy, it actually selects the remedy that's gonna be implemented, and that's signed by the highest ranking official in the Region II office, the regional administrator. And so the entire document generally goes through the loop all the way up the chain of command, so a lot of people read it.

AN ATTENDEE: Well, what just appears to me is that you've already got -- you've got those nine criteria, you've already made your decision, we've got public comment tonight, it's kind of after the fact.

MR. GARBARINI: No. No. That's not the case. The idea, that's why we're using the term the preferred alternative. We're saying that that's what's preferred at this point in time. We've basically taken our -- we've -- we've figured out what the nature and extent of contamination is, we have determined what the risks are, we have determined that there are some unacceptable risks and some levels of contamination in the groundwater that look like they need remediation, we've looked at different alternatives for cleaning up the site to acceptable levels, and now what we're doing is saying based upon our evaluation of those alternatives we are preferring the one alternative for the groundwater, alternative two, and alternative three for the -- alternative two for the soils -- sed -- I'm sorry, surface water sediments also. But that's why we're soliciting comments, because we could ultimately change that when we sign the record of decision. And that would also be documented, any significant changes would be documented in the record of decision.

MR. RAMOS: I just -- I mean we take comments very seriously. Last year we did modify the remedy between -- the remedy for the soils to incorporate the comments that we received here. So, you know, we do indeed take very seriously your comments. And in many cases we will modify or change remedies based on that.

MS. ECHOLS: Sir?

AN ATTENDEE: Glen Umbra, from Unadilla. Do you -- it says here in the risk assessment, it just says potential excess cancer risk for GCL related only. There seems to be a lot more, you know, chemicals, metals in there other than what is just from the polyaromatic from the plant itself. Are you gonna are you doing anything with these other, you know, the other high metal con' -- you know, concentrations that are in there? Is there any risk from them being there?

MR. RAMOS: You talking about the metals -- excuse me, let me just put that table up. Okay. Here we are. Yes. Your comment specifically about the non-GCL risk?

AN ATTENDEE: Right, well, you've only -- you've only covered -- there's only so many things from the GCL plant that's on the -- in the ground there.

MR. RAMOS: Yeah.

AN ATTENDEE: There seems to be a heck of a lot more with your volatile organics and your metals that are in there.

MR. RAMOS: That's true.

AN ATTENDEE: Are you taking that into consideration with these risks?

MR. RAMOS: Yes, it is. When we have the risk that we calculated for total, which is this -- this column here, we have total risk, it includes everything; includes metal, volatile organic compounds, all the contamination that we found there, which is -- which isn't the less contaminant of concern. Let me just backtrack a bit here. You can see this is more from this figure. These are the contaminants of concern. You can see quite a few of the contaminants have to be more clear asterisks next to it. And there's a note at the end to say not a contaminant of concern when Route 8 landfill wells are excluded. And what that means is that those were contaminants which were included in the risk assessment for total risk. But we know that they are not site related. So that, to answer your question, we have, yes, you're right, there are many other contaminants which are not GCL site contaminants. But they were indeed included when we calculated the total risk.

AN ATTENDEE: You already have the Route -- the Route 8 site's already there, you're gonna be setting up another site, another whatever you want to call it, on that site, the GCL site, to --

MR. RAMOS: You're talking about groundwater restoration system.

AN ATTENDEE: Right.

MR. RAMOS: Exactly.

AN ATTENDEE: So you're gonna be more or less, are you gonna be working hand in hand with the other one to be remediating that site? Of everything?

MR. RAMOS: From the very beginning, for example, we went to Una-Lam and asked them for the information that they have in the groundwater. They have a very extensive network of -- of monitoring wells. So from the beginning we went there to say, you know, you have wells in the area, can we have your data. So they supply us with data. After we examine that data we say, you know, we want samples on your wells as part of your investigation. So we use -- we used their wells and took samples for us. And we used that to determine what was site related and what wasn't site related. And also determine the full extent of contamination from the GCL site.

After that the Route 8 landfill was in the process of putting together groundwater extraction and treatment system, they have remediation system on their -- under the -- under the New York State Department of Environmental Conservation oversight, which is actually addressing groundwater contamination, they're already there pumping their own water and treating the groundwater. And we certainly -- we will continue to make efforts in the future to make sure that one system doesn't interfere with the other system, second, make sure that whatever they -- you know, we do, just addresses our plume, if they're doing something to help us then we don't have to redo it.

Certainly as more information is developed from their system and more information is developed from our system, we will make sure that -- that both systems are -- are operating in the fashion that they compliment each other and they don't actually interfere one with the other. So there will be a lot more coordination in the future as we move from the design into the actual remedial action phase.

AN ATTENDEE: Okay. What about the -- you said over land flow, you're gonna be -- that was one option of pumping it out and then just over land flow to the -- after you treat it?

MR. RAMOS: Discharging into the drainage ditch.

AN ATTENDEE: The drainage, where does that flow?

MR. RAMOS: That flows eventually through the Una-Lam and further down the line to the Susquehanna River. And that's the same point where -- actually where that landfill is -- is discharging their treated water.

AN ATTENDEE: Okay. My -- my -- I guess what I was asking is there --

MR. RAMOS: I'm sorry.

AN ATTENDEE: Is there a potential risk for the farther on, like the back River Road and on the back side of the airport farther on down Gifford Road?

MR. RAMOS: No, we didn't find any contamination outside, as a matter of fact we have a well which is close to the railroad tracks, let me just pull the other figures with the nice colors on.

MR. GARBARINI: Are you concerned about the existing contamination or contamination that might be caused by our discharge?

AN ATTENDEE: Both. Both from, you know,

going -- it would be heading -- well, this is north so it would be heading toward west, toward the back River Road and back of the airport. Where there's a farm back that way.

MR. RAMOS: From groundwater or from discharged water?

AN ATTENDEE: Discharge water.

MR. RAMOS: Okay, the water which is gonna be discharged somewhere around this drainage ditch here. And we'll meet all -- all the cleanup standards, that's the Federal Government and the state required to make sure that doesn't have any impact in the -- in the eco system or in the drinking wa' -- in the surface water or supposed to be made for the underlined.

MR. GARBARINI: You could probably -- you could drink the water that we're gonna be discharging in there.

MR. RAMOS: Basically many times it's - it's more cleaner than drinking water.

MR. GARBARINI: Yeah.

MR. RAMOS: You know, sometimes -- sometimes some of these cleanup numbers are more stringent than drinking water standards. So. It is extremely good quality water. So, and that's -- I mean that's for the discharge.

As of contamination of the property, so far we haven't found any GCL related contamination of the groundwater outside the property, there is some contamination in the area, in the groundwater, but it's not site related. It's probably that renewed program with the VOCs for the Route 8 landfill, and that's, as I mentioned before, being addressed, they're now operating groundwater pump on two different systems so hopefully that will resolve significantly that problem.

That's -- I mean creosote, you know, has a good side and a bad side. You know, the -- the bad side is that once it gets into the groundwater it's very hard to clean. But the good side is that it doesn't move freely much. So once it gets there and reaches a certain level it really doesn't move much more. Doesn't move more, much, it will stay pretty much put. And that's why after all these years at the site you only have, you know, some very limited areas of groundwater contamination.

MR. GARBARINI: They really -- our primary concern too is making sure that the contaminants don't migrate off site. So the key thing is to make sure everything is contained. I mean we could -- we could ultimately just end up in designing some sort of remedy where we made sure if the contaminants aren't already contained, just made sure that they don't migrate off site. And then perhaps when we look at the pumping and treating we may find out that hey, we're really not doing the groundwater any good by continuing to pump and treat. So let's just hold our horses and make sure that we contain the contamination. Because --

AN ATTENDEE: The groundwater flow actually does flow that -- toward the west, right?

MR. RAMOS: It flows towards the Susquehanna River.

AN ATTENDEE: To the northwest, right?

MR. RAMOS: No, actually it runs toward -- funny thing is that groundwater movement there is a bit complex in terms of shallow aquifer is a little bit different than the deep aquifer in a different direction. But generally it moves toward the Susquehanna River. This is north here, the Susquehanna is near north, kind of northeast kind of fashion. So this is most of the general flow of the groundwater there. In different areas it moves a bit different, but it moves always toward the Susquehanna.

AN ATTENDEE: Where does your ditch go you're talking about?

MR. RAMOS: It will be on-site, it will --

AN ATTENDEE: On-site, where does it -- it's got to go somewhere, is it just gonna be a lagoon?

MR. RAMOS: Exactly, it would be on the edge -- you mean the collection?

AN ATTENDEE: Where is it gonna go eventually, the ditch?

MR. RAMOS: Oh, the ditch where we're gonna be discharging the water? Yeah, that's the --

AN ATTENDEE: It isn't gonna go north towards the Susquehanna.

MR. RAMOS: Eventually, eventually goes to the Susquehanna.

AN ATTENDEE: Yeah, it will, but it has to go west, as he says, before it ever gets there. East, I'm sorry, I'm sorry.

MR. RAMOS: Yeah, this is additional here, the discharge to this point, let's say discharge here the water would direction this way.

AN ATTENDEE: It's gonna go that way.

MR. RAMOS: That way, until eventually --

AN ATTENDEE: That's toward the town wells.

AN ATTENDEE: On the other side of Route 8.

AN ATTENDEE: Okay, okay, now I see.

AN ATTENDEE: It goes both ways, doesn't it? Right about -- right about where your pen is it starts going the other way, doesn't it?

MR. RAMOS: You are down here, this is a wetland here, if you are within the wetland area, it goes that way.

AN ATTENDEE: Right.

MR. RAMOS: It goes toward the west.

AN ATTENDEE: How far?

AN ATTENDEE: It's heading west, and the groundwater flows toward the back River Road toward the barn, toward that farm.

AN ATTENDEE: No.

MR. RAMOS: That water moves towards the Susquehanna that way.

AN ATTENDEE: Surface water does.

MR. RAMOS: Surface water. There's a point here, there's like a barrier here, from -- from some point here down the groundwater moves -- moves east. At some point here it moves west.

AN ATTENDEE: Surface water.

MR. RAMOS: Surface water we're talking about, yeah. Surface water. So if it went to the chart, it would chart someplace here, which would eventually go towards this, from the drainage ditch to that Una-Lam, and eventually it would reach into the Susquehanna River.

But as I mentioned before, the water that will be discharging there is -- is many cases cleaner than drinking water. So we -- you know, we are not discharging -- if we were to pump and treat, you know, we would not be discharging any water that have contamination that would affect either the biol -- the biology of the stream or people down the line.

MS. ECHOLS: Any more questions?

Okay, I guess we're gonna wrap it up. And as Carlos said, the public comment period ends on March 30th, if you have any comments you can write into our office, our address is in the proposed plan. And thanks so much for coming out.

MR. GARBARINI: Thank you very much.

MR. RAMOS: Thanks a lot.

(Proceedings were adjourned at 8:06 p.m.)

C E R T I F I C A T E

IN THE MATTER OF: Public Meeting
GCL Tie & Treating Superfund Site

ON: Wednesday, March 8, 1995

BEFORE: RUTH I. LYNCH
Registered Professional Reporter

This is to certify that the foregoing is a true and correct transcript, to the best of my ability, of the stenographic minutes of a public hearing held in the above-mentioned matter, on the above-mentioned date, and of the whole thereof, taken by Ruth I. Lynch, Registered Professional Reporter.

EMPIRE COURT REPORTERS

Signed this ____ day of _________, 1995

By_______________________________
Ruth I. Lynch
Registered Professional Reporter

Telephone: (607) 724-8724

APPENDIX E

LETTERS SUBMITTED DURING THE PUBLIC COMMENT PERIOD

<IMG SRC 0295244AB> FAXED & MAILED

VILLAGE OF SIDNEY

Sidney Civic Center, 21 Liberty Street
Sidney, New York 13838
Phone (607) 561-2324
Fax (607) 561-2310

March 21, 1995

Mr. Carlos R. Ramos
Remedial Project Manager
US Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007-1866

Re: GCL Tie & Treating Site Operable Unit 2
Village of Sidney, Delaware County, New York

Dear Mr. Ramos:

The following comments are provided in review of the above referenced project:

1. Ground water contaminant boundaries in the shallow intermediate and deep zones have apparently not been established and confirmed as evidenced by contamination in perimeter wells. At the preliminary meeting on March 8, 1995 it was noted by EPA representatives that contamination due to GCL site activities have been established and that contamination especially in the wells along the northern perimeter is attributed to the Rt. 8 landfill project. As there are residential ground water users located northwesterly of the site the potential impact to these users due to offsite migration whether GCL or non GCL related should be considered.

2. With respect to alternatives evaluation consider including monitoring of existing down stream wells in all alternatives including "no build" for reasons mentioned above.

3. After soils are remediated through operable unit 1 and 2 and the ground water recovery system is in place, can the land be utilized?

4. Ref. page 12 of Summary: The goal of alternative GW-3 referred in the last paragraph of the alternative description is not stated. I would suggest inserting "the goal of alternate GW-3 is -----" prior to last paragraph (complete the statement as appropriate).

5. Although the closest connection point to the public sewer system on the south side of Delaware Avenue, probably the most expedient connection point would be to the public sewer on Unalam property running in a north-south direction in the vicinity of the Unalam water well which sewer continues along the southerly side of the railroad near MW-04 shown on figure 1-12 (see attached sewer drawing).

6. Can EPA furnish the anticipated makeup (even worst case) of the discharge following separation and manganese pretreatment, i.e., what would be discharged to the public sewer under alternate GW-3?

7. EPA has identified two basic technologically feasible remediation alternative with treatment onsite (GW-2) and treatment offsite at the Village POTW (GW-3). Carbon adsorption and biological treatment would be options within the GW-2 alternative.

   $5/1000 gal. was used as the treatment cost at the POTW which implies $92,000/yr. O&M cost.

   The current rate for sewage treatment is $2.26/1000 gal. At 30 gpm this rate would imply $35,635/yr. O&M cost.

   The Present Worth (P.W.) of $92,000/yr., 30 yrs., 7% = $1,141,628
   The P.W. of $35,635/yr., 30 yrs., 7% = 442,194

   P.W. difference = $699,434

   Therefore, the potential P.W. of alternate GW-3 = $8,818,766

   Both alternatives, GW-2 and GW-3, are expected to require phase separation and pretreatment. The GW-2 alternative may require bench or pilot studies for: bioreaction sizing, nutrient addition, media replacement; provision for removal of excess biomass, recycling of biomass, and/or excess biomass disposal; contaminant degradation levels evaluation with further bench or pilot studies to determine if carbon adsorption would be needed to polish the effluent prior to surface discharge. In other words, the selection of GW-2 is not without possibly significant further investigation.

   With respect to alternative GW-3 (treatment at the Village POTW): 30 gpm is small in comparison with the normal 416 gpm average plant flow and is not expected to interfere with the treatment process. Discharges from the POTW as in the case of GW-2 are liquid (effluent), solid (sludge) and air. Plant effluent is discharged to the Susquehanna River via a SPDES permit regulated by NYSDEC. Dewatered sludge is disposed of at the Delaware County landfill regulated by Delaware County and NYSDEC. Air discharges are not regulated.

If EPA requires a long term commitment on behalf of the Village to accept the effluent, the Village prudently should:

1) Get a formal opinion on the likely impact on our effluent and sludge discharges based on a profile of the expected influent.
2) Obtain concurrence of NYSDEC with respect to the SPDES discharge permit.
3) Obtain concurrence of Delaware County and NYSDEC with respect to the sludge discharge to Delaware County landfill.

I expect that Delaware County would require that our sludge not exceed land application criteria and I have no reason to believe that it would exceed this criteria as a result of accepting this discharge.

The revenue to the Village of Sidney would benefit the sewer fund budget. One of the reasons and probably the primary reason that the Village has not implemented water metering for residential customers is due to the loss of revenue that would take place in the switch from flat rate to metered rate. The revenue accrued from accepting this flow could help make complete water metering feasible thereby providing a secondary benefit to the Village and help meet the NYSDEC objective of metering.

We request that EPA consider making alternative GW-3 the preferred alternative.

It is understood that with preliminary conceptual approval the Village would pursue the three items outlined above in a timely fashion and would complete some on a mutually agreed upon schedule.

We would appreciate your consideration and response, and if you have any questions, please contact me.

Sincerely,
VILLAGE OF SIDNEY

John J. Woodyshek, P.E.
Village Engineer

JJW:hj

Attachment

cc: Mayor Davis
Trustees
Frank Holley

<IMG SRC 0295244AC>
NYSEG

March 17, 1995

Mr. Timothy Fields, Jr.
Deputy Assistant Administrator
Office of Solid Waste and Emergency Response
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Dear Mr. Fields:

It was indeed a pleasure meeting you at Temple University's works "Impact of Environmental Remediation Requirements on Inner City Revita listening to your update on the Superfund program and the Brownfield R Program. As we had discussed, I've attached information for your revi NYSEG is doing for remediation of former Manufactured Gas Plant (MGP)

NYSEG has obtained permits from NYSDEC to burn coal tar soil (CTS MGP sites in our utility boilers. In the last six months, NYSEG has p environmentally safe and economic remediation technology for clean-up sites in the northeast.

Maybe just a drop in the bucket when considering the estimated 1, sites that may exist nationwide, but it was only six months, and doesn other utilities across the country with similar capability.

The biggest asset to this movement has been the EPA's approval of site remediation strategy. Rather than having to manage the MGP conta as a characteristic hazardous waste, the strategy allows for blending contaminated material on site to render the entire volume non-hazardou the utility can transport and burn the material as a solid waste. In associated with remediation is significantly reduced. As the cost of down, this is an incentive to clean up more sites.

If the strategy developed by EEI for MGP sites could be utilized contaminated sites, similar remediation activity would begin to take p have contaminated material of high BTU value, making them ideal for co

An Equal Opportunity Employer

New York State Electric & Gas Corporation Corporate Drive-Kirkwood Industri
Binghamton, New York 13902-5224 (607) 729-2551

utility boilers as an alternative fuel. So, rather than these sites con harm to the environment until Superfund or the PRP's have the money to c up, lets begin to extract the beneficial use from these sites.

I will be developing a cost estimate for remediation of the GCL tie creosote contaminated Superfund site located in Sidney, NY which will de how the EEI strategy document, when applied to this site, results in sig remediation cost savings, while at the same time meeting the required si standards. It is anticipated that the estimate will be completed by the Once completed, I will provide copies to you, Carlos Ramos, Remedial Pro Manager (Sidney site), and Doug Garbarni, Chief NY Region Superfund Sect

I believe that this strategy will support the objectives of the Redevelopment Program, as well as the new direction of the Superfund

I look forward to your suggestions and comments on this idea.

Sincerely,

Keith C. Day

Attachments

cc: C. Ramos - EPA
D. Garbarni - EPA
A. Butkas - DEC
W. R. Weisman - Piper & Marbury

KCD:das:fields.wp

APPENDIX VI

STATISTICAL SUMMARY OF ANALYTICAL RESULTS

<IMG SRC 0295244AD>
<IMG SRC 0295244AE>
<IMG SRC 0295244AF>
<IMG SRC 0295244AG>
<IMG SRC 0295244AH>
<IMG SRC 0295244AI>
<IMG SRC 0295244AJ>
<IMG SRC 0295244AK>
<IMG SRC 0295244AL>
<IMG SRC 0295244AM>
<IMG SRC 0295244AN>
<IMG SRC 0295244AO>
<IMG SRC 0295244AP>
<IMG SRC 0295244AQ>
<IMG SRC 0295244AR>
<IMG SRC 0295244AS>
<IMG SRC 0295244AT>
<IMG SRC 0295244AU>
<IMG SRC 0295244AV>
<IMG SRC 0295244AW>
<IMG SRC 0295244AX>
<IMG SRC 0295244AY>
<IMG SRC 0295244AZ>
<IMG SRC 0295244BA>
<IMG SRC 0295244BB>
<IMG SRC 0295244BC>
<IMG SRC 0295244BD>

RECORD OF DECISION FACT SHEET
EPA REGION II

Site:

Site name: GCL Tie & Treating, Operable Unit 2

Site location: Sidney, Delaware County, New York

HRS score: 48.54 (10/14/93)

Listed on the NPL: 5/94

Site ID #: NYD981566417

Record of Decision, Operable Unit 2:

Date signed: March 31, 1995

Selected remedy: Extraction and on-site treatment of contaminated groundwater, with a contingency for containment and/or natural attenuation; excavation and on-site treatment of PAH-contaminated sediments on-site along the GCL-property soils (OU-1) via a thermal desorption system.

Estimated Construction Completion: 2 years

Capital cost: $1.9 - $2.1 million for groundwater portion
$0.3 million for surface-water & sediment portion

O & M cost: $0.6 million a year

Present-worth: $9.4 - $9.8 million for groundwater portion
$0.3 million for the sediment portion

Lead: EPA, remedial

Primary Contact: Damian Duda, (212) 637-4269

Secondary Contact: Doug Garbarini, (212) 637-4263

Main PRPs: Harris Goldman

Waste:

Waste type: PAHs

Waste origin: On-site spills

Estimated waste quantity: Approx. 10 million gallons of contaminated groundwater; 125 cy of sediments.

Contaminated medium: groundwater, sediments