Technology Section ROD file

Department of Environmental Conservation

Division of Hazardous Waste Remediation

Record of Decision

Tennessee Gas Pipeline Station 237 Site
Town of Hopewell, Ontario County
Site Number 8-35-011

TECHNOLOGY SECTION COPY

March 1995

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor*   MICHAEL D. ZAGATA, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION
Tennessee Gas Pipeline Compressor Station 237
Town of Hopewell, Ontario County, New York
Site No. 8-35-011

Statement of Purpose and Basis

This Record of Decision presents the selected remedial action for the Tennessee Gas Pipeline Compressor Station 237 Inactive Hazardous Waste Disposal Site which was chosen in accordance with the New York State Environmental Conservation Law (ECL). The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40 CFR Part 300).

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Tennessee Gas Pipeline (TGPL) Compressor Station 237 Inactive Hazardous Waste Site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A bibliography of the documents included as a part of the Administrative Record is included in Appendix B.

Assessment of the Site

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

Description of Selected Remedy

Based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) for the site and the criteria identified for the evaluation of alternatives, the NYSDEC has selected a remedy to excavate and remove contaminated soils, grout the on-site drainlines (which contain PCBs), and address groundwater by removing the source of contamination to groundwater (soils) and comprehensive groundwater monitoring.

The major elements of the selected remedy include:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Uncertainties identified during the RI/FS will also be resolved, as needed.

2. The drainlines will be filled with grout (i.e., cement and bentonite) to eliminate the potential for migration to or from the drainlines. During the grouting of drainlines, sediments which contain PCBs with concentrations above 10 ppm will be removed from the manholes and disposed of off site.

3. Excavation of all PCB contaminated soils above cleanup goals. Contaminated soils with concentrations above the cleanup goal, but below 50 ppm will be disposed of in an off-site industrial landfill. Soil with PCB concentrations above 50 ppm will be disposed of in a chemical waste landfill in compliance with the Toxic Substances Control Act (TSCA).

4. Soils located in unrestricted areas on TGPL property (outside the fence) with PCB concentrations greater than one ppm, but less than 10 ppm, will be covered with a one-foot soil cap. Also, if contaminated soils are determined to be inaccessible (due to their proximity to utilities and/or the natural gas pipeline), these soils will be considered for the placement of a soil cover rather than excavation.

5. The perimeter fence will be extended around Drainage ditch F (to make it restricted access), soils above 10 ppm PCB's will be removed, and the areas between 1-10 ppm will be vegetated to prevent erosion.

6. Soils contaminated with volatile organics, which are acting as the source for the groundwater contamination, will be excavated and disposed of off site.

7. Groundwater will be monitored for an estimated period of 10 years (longer if needed) to determine if the chosen alternative is successful in reducing the concentrations of contaminants. Perimeter monitoring wells and nearby off-site residential wells will be monitored to insure that contamination has not migrated off site. If action levels are triggered, contingencies will be implemented to address the needs of off-site users of groundwater. On-site monitoring wells will be monitored to determine if the source removal is effective in reducing groundwater contaminant levels. An evaluation will be performed to determine if active groundwater remediation will be necessary.

8. If cleanup goals are not met (soils in inaccessible areas, groundwater), deed restrictions will be placed.

New York State Department of Health Acceptance

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

Declaration

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

3/30/95

Date

Michael J. O'Toole, Jr., Director
Division of Hazardous Waste Remediation

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Glossary of Acronyms

CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
1,1-DCA	1,1-dichloroethane
ECL	Environmental Conservation Law
FWIA	Fish and Wildlife Impact Analysis
NA	Not Available
NCP	National Contingency Plan
ND	Not Detected
NYCRR	N.Y. Codes, Rules and Regulations
NYSDEC	N.Y. State Department of Environmental Conservation
NYSDOH	N.Y. State Department of Health
O&M	Operation and Maintenance
ppb	parts per billion
ppm	parts per million
PCB	polychlorinated biphenyl
PRAP	Proposed Remedial Action Plan
RI/FS	Remedial Investigation and Feasibility Study
ROD	Record of Decision
SCG	Standards, Criteria, and Guidance
SPDES	State Pollution Discharge Elimination System
1,1,1-TCA	1,1,1-trichloroethane
TCLP	Toxic Characteristic Leaching Procedure
TWA	Time-Weighted Average

Notice

The mention of any trade names or commercial products in this document does not constitute any endorsement or recommendation for use by the New York State Department of Environmental Conservation.

RECORD OF DECISION

Tennessee Gas Pipeline Compressor Station 237

Town of Hopewell, Ontario County, New York

Site No. 8-35-011

March, 1995

SECTION 1: INTRODUCTION

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), has selected a remedial program to address soil and groundwater contamination at the Tennessee Gas Pipeline Compressor Station 237 (TGPL Station 237) Site. The soils contaminated with PCBs and volatile organics will be removed, the on-site drainlines (containing PCB contamination) will be grouted (filled with cement and bentonite), and groundwater contamination will be addressed by instituting a source removal/comprehensive groundwater monitoring program. The components of this plan are described in greater detail later in this document.

This remedy will address the threat to human health and the environment created by the presence of PCBs and volatile organics in the soil, PCB contaminated sediments in on-site drainlines, as well as volatile organics in the groundwater. This Record of Decision (ROD) identifies the selected remedy, summarizes the other alternatives considered, and discusses the rationale for this selection.

SECTION 2: SITE LOCATION AND DESCRIPTION

TGPL Station 237 occupies 112 acres along Archer Township and Taylor Roads, approximately 4 miles south of the Town of Clifton Springs in Ontario County, New York (see Figure 1). The areas adjoining the Station are mainly farm land. Two residences are located 100 feet north of the property boundary, and another is located 100 feet west of the property boundary. Three other residences are located within 400 feet of the station, to the north and west. The area is characterized by relatively flat topography with broad gentle hills.

Station 237 lies at the base of a gentle hill. Ground surface elevations decrease from 742 feet above mean sea level (amsl) at the southwest corner of the site to 700 feet amsl at the northeast corner. Surface soil at the site is primarily silty loam, with some fill, and is well vegetated with grass. The surface soil is underlain with sand and glacial till, with shale bedrock located at a depth of 10 to 13 feet below the ground surface.

Surface drainage from the site is primarily received by Rocky Run Creek, a small creek that crosses the northeast corner of the Station property.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The site is a gas pipeline compressor station that has been in use since 1958 (see Figure 2). PCB-containing oil (Pydraul) was used in the starting air system compressors from 1958 to 1974. In 1974 the use of the PCB-containing oil was discontinued. PCB contamination has occurred in soils, mainly in drain areas, from the air compressor condensate blowdown pipes. Certain volatile organics, which may have been used to clean the compressor piping system, are present in on-site soils and groundwater.

3.2: Previous Investigations/Actions

TGPL conducted a preliminary sampling program in 1988 to determine if PCBs were present in the starting air system and the drainage system. Nine samples were collected for PCB analysis from the Station in May 1988. The samples were collected from various locations in the starting air system, near blowdowns, and from site drainage courses. Media analyzed included oils, soils, and condensate liquid. Results are reviewed below.

Two oil samples were collected from the crankcase of the starting air system compressors 1 and 2. Both samples yielded nondetectable results (< 1 ppm).

A condensate sample was collected from air bottles 1A and 2A (found in Air Receiver Tank areas or ARTs). This sample yielded a nondetectable result (< 1 ppm). Two soil samples were collected from soils around air bottles 1A and 2A, one from the area north of the bottles and one from beneath the blowdown pipe. The sample from north of the bottles contained 86 ppm PCBs. The sample from beneath the blowdown pipe contained 2,764 ppm PCBs. Two soil samples were collected from soils around air bottles 3A1 and 3A2, one from west of the bottles, and one from south of the bottles. The sample from west of the bottles contained 84 ppm PCBs. The sample from south of the bottles contained 23 ppm PCBs.

Also sampled was drainage ditch F, 500 feet east of the compressor building, and the manhole at the end of the subsurface drainage system east of the compressor building. Soil from the drainage ditch had 3 ppm PCBs. Oil from the manhole had 119 ppm PCBs.

The Remedial Investigation (RI) was initiated in 1990 and continued through 1994. A summary of the RI is presented below, in Section 4.1.

3.3: Enforcement Status

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

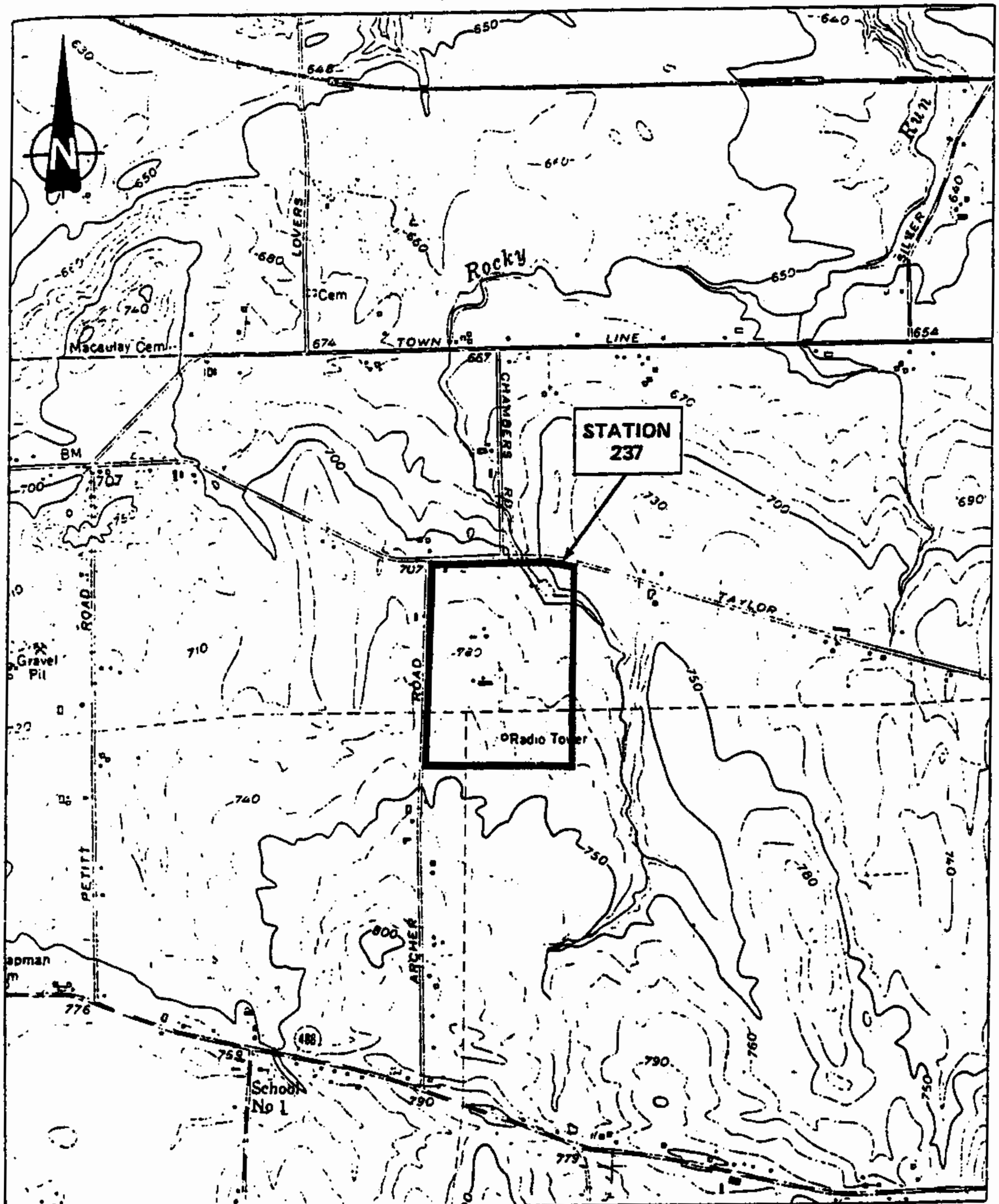
The NYSDEC and the Tennessee Gas Pipeline Corporation (TGPL) entered into a Consent Order on January 23, 1991. The Order obligates the responsible parties to carry out an RI/FS. Upon issuance of the Record of Decision, the NYSDEC will request that the PRP implement the selected remedy under an Order on Consent.

The following consent orders directed the completion of the RI/FS and the IRM.

Date	Index No.	Subject of Order
1/23/91	D0-0003-8903	Implementation of the RI/FS
7/19/93	A4-0302-93-6	Implementation of an IRM to clean the compressed air piping system.

SECTION 4: SUMMARY OF SITE CHARACTERISTICS

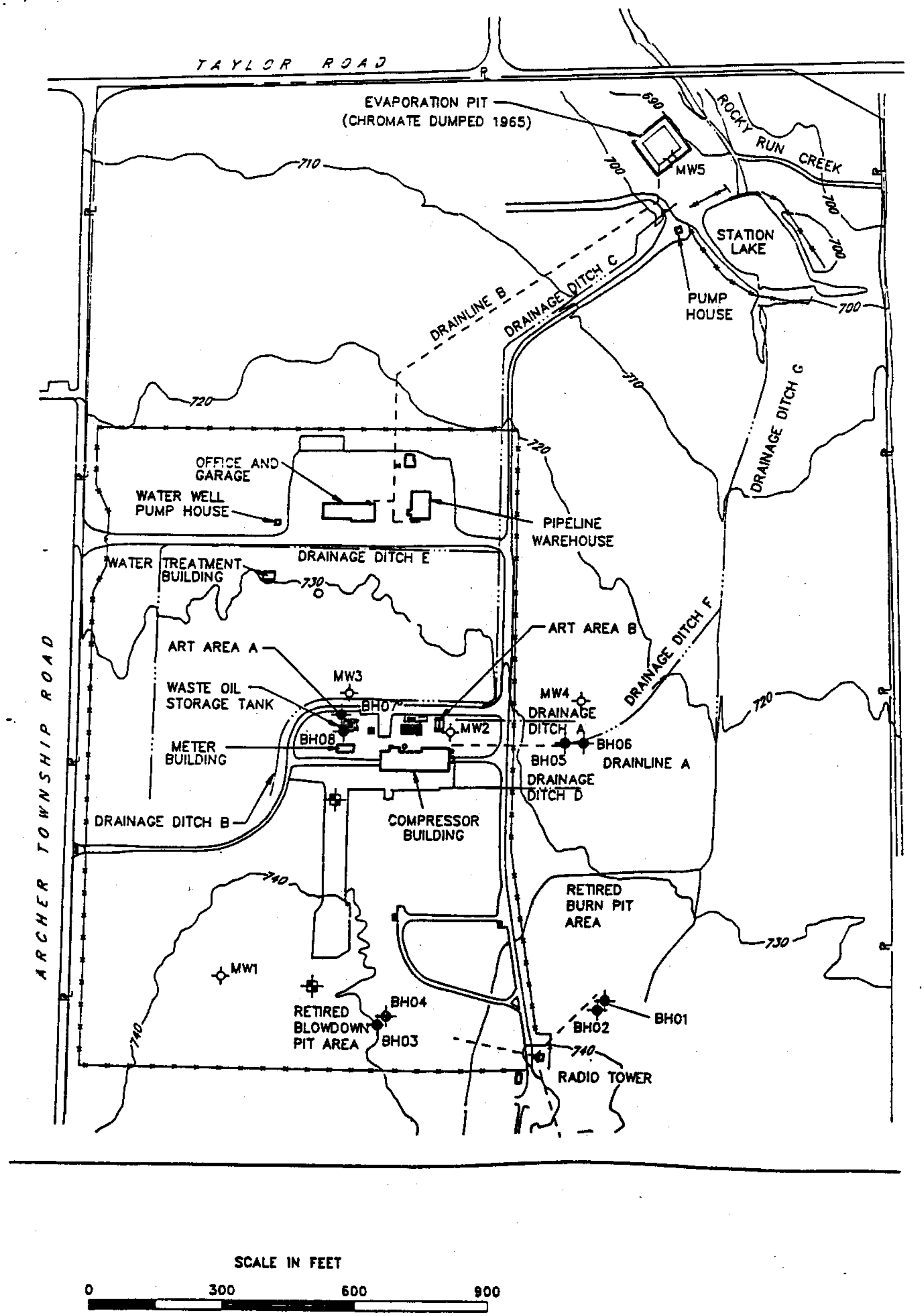
In response to a determination that the presence of hazardous waste at the Site presents a significant threat to human health and the environment, a Remedial Investigation/Feasibility Study (RI/FS) has recently been completed.



SOURCE: U.S.G.S. 7.5 Minute Series (Topographic) Quadrangle, Clifton Springs, NY, 1951, Photorevised 1978.

SCALE
0 ½ 1 MILE
0 .5 1 KILOMETER

Figure 1
LOCATION OF TENNESSEE GAS PIPELINE COMPRESSOR STATION 237



TAYLOR ROAD
EVAPORATION PIT
(CHROMATE DUMPED 1965)
ROCKY RUN CREEK
MW5
STATION LAKE
PUMP HOUSE
DRAINLINE B
DRAINAGE DITCH C
DRAINAGE DITCH G
OFFICE AND GARAGE
WATER WELL PUMP HOUSE
PIPELINE WAREHOUSE
WATER TREATMENT BUILDING
DRAINAGE DITCH E
ART AREA A
ART AREA B
DRAINAGE DITCH F
WASTE OIL STORAGE TANK
MW3
BH07
MW4
MW2
DRAINAGE DITCH A
BH08
BH05
BH06
METER BUILDING
DRAINLINE A
DRAINAGE DITCH D
COMPRESSOR BUILDING
DRAINAGE DITCH B
ARCHER TOWNSHIP ROAD
RETIRED BURN PIT AREA
MW1
RETIRED BLOWDOWN PIT AREA
BH04
BH03
BH02
BH01
RADIO TOWER
SCALE IN FEET
0
300
600
900

FIGURE 2

4.1: Summary of the Remedial Investigation

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

The RI was conducted in a stepwise manner with the collection of additional information, as necessary, to fill in data gaps. The final RI/FS Work Plans were submitted in December 1990. The initial RI sampling was completed by March 1991 and included the sampling of soil, sediment, surface water and groundwater to define the presence of PCBs and to screen the station area for any additional contaminants which may be present. In addition to this initial RI work, the following work was also carried out as a part of the Remedial Investigation (listed in chronological order):

- Habitat Based Assessment - the evaluation to determine if and what impacts the site may have upon fish and wildlife in the area (part of RI Report dated 8/91).
- Second Round Groundwater Report (11/91).
- Phase IIC Soil Sampling Report - additional soil samples were taken from the burn pit area, from the area of drainage ditch F and from south of the compressor building (1/92 Report).
- Burn Pit Sampling - a more comprehensive sampling program to investigate the burn pit area (10/92 Report).
- Third Round Groundwater Report (10/92).
- Soil Gas Survey - volatile organics were detected in on-site groundwater; as a result a soil gas survey was conducted in an attempt to determine the extent of the volatile contamination at the site (1/93 Report).
- Phase I (additional) Groundwater Characterization - temporary drivepoints were installed across the site to determine the areal extent of groundwater contamination (2/94 Report).
- Phase II Groundwater Characterization - additional monitoring wells were installed based on the information gathered during the Phase I characterization (6/94 Report).
- Soils Adjacent to Drainlines - an evaluation was conducted for Station 237 (based on information gathered at other TGPL sites in New York) to determine if there was a potential for contamination in drainlines to migrate to soils adjacent to drainlines. These issues are discussed in the 1/95 FS, Section 1.4.5.1 (pages 27-28).
- Phase III Supplemental Characterization - additional sampling (soil and residue) to, among other things, gather information on potential source areas contributing to volatile organic contamination in the groundwater. Samples were analyzed in order to obtain more data on the distribution of organic and/or inorganic substances (10/94 Work Plan).

To determine which media (soil, groundwater, etc.) is contaminated at levels of concern, the analytical data obtained from the RI were compared to environmental Standards, Criteria, and Guidance (SCGs, defined in Section 8.2 below). Groundwater, drinking water and surface water SCGs identified for this site were based on NYSDEC Ambient Water Quality Standards and Guidance Values. For the evaluation and interpretation of soil and sediment analytical results, NYSDEC soil cleanup guidelines for the protection of groundwater, background conditions, and risk-based remediation criteria were used to develop remediation goals.

Based upon the results of the remedial investigation in comparison to the SCGs and potential public health and environmental exposure rates, certain areas and media of the site require remediation. These are summarized below. Complete information can be found in the RI Report.

Chemical concentrations are reported in parts per billion (ppb) and parts per million (ppm). For comparison purposes, SCGs are given for each medium.

4.2: Nature of Contamination

As described in the Reports which present the RI information (listed above), numerous soil, groundwater, sediment (drainage ditch/Station Lake/Rocky Run Creek) and drainline samples were collected to characterize the nature and extent of the contamination at the site. The primary contaminants of concern include PCBs, 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethane (1,1-DCA), benzene, 1,3,5-trimethylbenzene and xylenes. PCBs have been found in on-site soils, however, they are not very soluble in water and have not been found in groundwater. The remainder of the contaminants listed are volatile organics. Relatively speaking, the volatiles are much more soluble in water and these contaminants are present in on-site groundwater.

Section 4.3 below describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the health risks can be found in Section 6 of the RI Report.

4.3: Extent of Contamination

Table 1 summarizes the extent of contamination in surface/subsurface soil, groundwater, and sediments (Station Lake, Rocky Run Creek and drainage ditch samples) and compares the data with the selected cleanup goals for the site.

Surface Soils

For the purpose of this discussion, surface soils are those soils to a depth of 1 foot. PCB contamination was detected above the 10 ppm cleanup goal in 14 surface soil samples with a maximum concentration of 840 ppm. Elevated PCB concentrations were detected, primarily near the Air Receiver Tank A area (ART A).

Subsurface Soils

For subsurface soils, two of the samples analyzed for PCB's exceeded the cleanup goal of 10 ppm with a maximum concentration of 150 ppm.

Sediment

Eleven sediment samples were collected from Station Lake and 17 samples were collected from Rocky Run Creek. There were no PCBs detected (at a detection limit of 0.1 ppm). Sediment/soil samples were also collected from on-site drainage ditches A-G. Only drainage ditch F samples demonstrated PCB concentrations above the cleanup goal. The sediment/soil samples were taken from in and adjacent to drainage ditch F and ranged in concentrations up to a maximum of 200 ppm.

Groundwater

PCBs were not detected in groundwater samples collected at the site. As discussed above, PCBs are not very soluble in water so it is not unusual that they have not been found in the groundwater. Volatile organics were detected in groundwater at concentrations above groundwater standards.

The analysis of groundwater samples indicated elevated levels of 1,1,1-TCA, 1,1-DCA, benzene, toluene, trimethylbenzene and xylenes. The contaminants present at the highest concentrations were 1,1,1-TCA (at levels up to 2300 ppb, compared to the groundwater standard of 5 ppb) and 1,1-DCA (at levels up to 350 ppb, compared to the groundwater standard of 5 ppb).

Table 1: Representative Contaminants - Tennessee Gas Pipeline Station 237 (Clifton Springs, 8-35-011)

		Surface Soil				
	Concentration Range, ppm			Cleanup	No. that	No. of
Contaminant	*Minimum*	*Maximum*	Average	Goal	Exceed	Samples
PCB	0.5	840	5.7	10	14	372
1,1,1-Trichloroethane	.0005	.015	.003	1*	0	8
Chromium	3.7	21	12.5	50	0	14
		Subsurface Soil (> 1 foot)				
	Concentration Range, ppm			Cleanup	No. that	No. of
Contaminant	Minimum	Maximum	Average	Goal	Exceed	Samples
PCB	0.5	150	5.7	10	2	49
1,1,1-Trichloroethane	0.012	0.8	0.5	1	0	9
Chromium	7.5	280	62.9	50	1	5
		Groundwater				
	Concentration Range, ppb			Cleanup	No. that	No. of
Contaminant	Minimum	Maximum	Average	Goal	Exceed	Samples
PCB	ND	ND	ND	0.1	0	20
1,1,1-Trichoroethane	0.5	2300	262.5	5	9	23
1,1-Dichloroethane	0.4	350	42.9	5	3	23
Benzene	0.4	5	1.9	0.7	4	8
1,3,5-Trimethylbenzene	0.2	18	7.0	5	4	8
Xylenes	0.5	71	20.8	5	5	8
		Station Lake Sediment				
	Concentration Range, ppm			Cleanup	No. that	No. of
Contaminant	Minimum	Maximum	Average	Goal	Exceed	Samples
PCB	0.05	0.05	0.05	0.1**	0	11
		Creek Sediment		Cleanup	No. that	No. of
Contaminant	Minimum	Mazimum	Average	Goal	Exceed	Samples
PCB	0.05	0.05	0.05	0.1**	0	17
		Surface Drainage Ditches				
	Concentration Range, ppm			Cleanup	No. that	No. of
Contaminant	Minimum	Maximum	Average	Goal	Exceed	Samples
PCB	0.5	200	6.4	1	27	87

For calculations, non-detect entered at approx. one-half of deteciton limit.

* Characterization of volatile organic contamination in soils has not been completed. The concentration level included in the cleanup goal column reflects the TAGM 4046 cleanup objective concentration level (starting point for establishing cleanup goals). As analytical data becomes available, site specific cleanup goals will be established.

** The cleanup goal listed for sediment is the concentration level used as the starting point for establishing site specific sediment criteria.

Drainlines

One sediment sample was taken from the Drainline A oil/water separator and one sediment sample was taken from a manhole along Drainline B. The sample results indicated PCB concentrations of 270 ppm and 26 ppm, respectively. Results from similar drainline systems at other TGPL sites in New York indicate the contamination in the drainlines has not impacted soils/backfill outside the drainline (soils adjacent to drainlines).

4.4 Interim Remedial Measures:

Interim Remedial Measures (IRMs) are conducted at sites when a source of contamination or an exposure pathway can be effectively addressed before completion of the RI/FS.

Residual PCB's, in the compressed air piping system, were removed during an IRM carried out in September 1993 in accordance with an order on consent between the NYSDEC and TGPL. The IRM involved cleaning the compressed air piping system using a pressurized, closed system, solvent cleaning method.

SECTION 5: SUMMARY OF SITE RISKS

5.1 Summary of Human Exposure Pathways:

An exposure pathway is the process by which an individual is exposed to a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media (e.g., soil, groundwater) and transport mechanisms; 3) the point of exposure; 4) the route of exposure (e.g., ingestion, inhalation); and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

Completed pathways known to or that may exist at the site include:

- Dust could become airborne and migrate from the site. This would provide the potential for inhalation or ingestion of these materials. Although this is a potential exposure pathway, the site is well vegetated which minimizes the amount of dust being generated.
- Although there is a fence to limit access to certain areas of the property, there is potential for unauthorized access. In addition, there are elevated levels of contamination located on the property in areas that are not currently fenced. As a result, there is potential for skin contact and ingestion of contaminated soils.
- There is the potential for contact with and/or ingestion of contaminated groundwater. Although there are off-site users of groundwater, the contamination in the groundwater has not migrated from the site.

5.2 Summary of Environmental Exposure Pathways:

The presence of contamination in an ecosystem can result in a variety of effects on wildlife population, ranging from a reduction in population size to changes in the community structure. As a part of the RI field work, the area was characterized in terms of terrestrial and aquatic ecosystems.

The contamination at the site is limited to localized areas on site, as well as, areas in and adjacent to drainage ditch F, located on site but outside the fence. Drainage ditch F eventually discharges to Rocky Run Creek after flow passes through drainage ditch G and Station Lake. There was no contamination found in soil/sediment samples taken downstream of drainage ditch F (drainage ditch G/ Station Lake/Rocky Run Creek). Drainage ditch F is nothing more than a ditch. Although there is potential for migration of contamination to other areas that would have a greater potential for exposure to wildlife, the sampling data have indicated this has not occurred.

SECTION 6: REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR 375-1.10. These goals are established under the overall goal of protecting human health and the environment and meeting all Standards, Criteria, and Guidance (SCGs).

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

The goals selected for this site are:

- Reduce, to the extent practicable the contamination present within the on-site soils.
- Prevent, or greatly reduce, the potential for migration of contaminants via surface run-off from the contaminated on-site soils/sediments.
- Prevent, or greatly reduce, the potential for direct human or animal contact with the contaminated soils/sediment on site.
- Mitigate the impacts of contaminated groundwater.
- To the extent practicable, provide for attainment of SCGs for groundwater.

The cleanup goals for the predominant contaminants on the site are given in Table 1.

SECTION 7: DESCRIPTION OF REMEDIAL ALTERNATIVES

Potential remedial alternatives for the TGPL Compressor Station 237 site were identified, screened and evaluated in a three phase Feasibility Study. This evaluation is presented in the report entitled "Feasibility Study Report, TGPL Compressor Station 237," dated January 31, 1995. A summary of the detailed analysis follows. The potential remedies are intended to address the contaminated soils, sediments, drainlines and groundwater at the site.

No Further Action

The no further action alternative recognizes the remediation of the site completed under the previously completed IRM. It requires continued monitoring only, to evaluate the effectiveness of the remediation completed under the IRM.

This is an unacceptable alternative as the site would remain in its present condition and the threat presented by the PCB and volatile organic contamination would remain.

It has been included below as a baseline condition against which the other response actions will be compared.

A. Remedial Alternatives for Drainlines (approximately 2,500 linear feet).

Alternative 1D - No Further Action

Present Worth .... $ 0

No additional action would take place other than the abandonment and outlet capping that have already been carried out.

Alternative 2D - Fill with Grout

Present Worth .... $ 167,000
Capital Cost .... $ 167,000
Time to Construct .... < 1 month

This alternative would fill the drainline with grout material (i.e., cement and bentonite) to eliminate the potential for migration of PCBs to or from the drainlines.

Alternative 3D - Flush and Cap

Present Worth .... $ 352,000
Capital Cost .... $ 352,000
Time to Construct .... < 1 month

Drainlines A and B have been previously plugged so these plugs would be removed. The drainline and manholes would be flushed/cleaned with water to remove any loose sediment and debris. All the flush water and sediment generated would be treated or disposed of properly. At this point the drainlines would be inspected using a video camera to evaluate the effectiveness of the flushing/ cleaning procedure.

Alternative 4D - Excavation and Treatment/ Disposal

Present Worth .... $ 578,000
Capital Cost .... $ 578,000
Time to Construct .... 2-3 months

This alternative would involve the excavation of the soils above the drainline and removal of the drainline. The manholes associated with the drainlines would also be removed. The drainlines removed would be cleaned and tested for appropriate reuse/disposal. Any liquids in the pipe would be tested and disposed of properly. As a part of this alternative approximately 650 linear feet of inaccessible drainline would have to be addressed with one of the other drainline alternatives.

B. Remedial Alternatives for PCB Soils (approximately 525 tons of soil exceed cleanup goals)

Alternative 1S - No Action

Present Worth .... $ 0

The no action alternative would leave the site without any remedial action. This is the baseline condition against which all other response actions will be compared.

Alternative 2S - Stabilization

Present Worth .... $ 419,000
Capital Cost .... $ 419,000

Time to Construct . . . . < 2 months

PCB contaminated soils would be mixed with cement, fly ash, and water to solidify the material (monolith). Depending on the soil type the monolithic mass would have a volume 25% - 50% larger than the untreated soils. The PCB contaminated soils would be excavated and stockpiled for eventual treatment in an aboveground mixer. The final solidified mass would either be redeposited in the excavated area or placed in a selected area on site.

Alternative 3S - Thermal Desorption

Present Worth . . . . $ 1,020,000
Capital Cost . . . . $ 1,020,000
Time to Construct . . . . < 2 months

PCB contaminated soils would be heated to volatilize the PCBs using a heated air stream. The vapor stream would be condensed or absorbed into solvents to remove the PCBs. The condensed PCBs or PCB-sorbed solvents would require proper disposal, which generally involves off-site incineration. The treated soils would be redeposited in the excavated area.

Alternative 4S - Off-site Incineration

Present Worth . . . . $ 1,140,000
Capital Cost . . . . $ 1,140,000
Time to Construct . . . . < 2 months

Under the remedial alternative, all soil and sediment exceeding the cleanup goals would be excavated and transported off site to an incinerator permitted to treat the type of waste to be generated.

Alternative 5S - Off-site TSCA/Industrial Landfill

Present Worth . . . . $ 199,000
Capital Cost . . . . $ 199,000
Time to Construct . . . . < 2 months

Soils with PCB concentrations below 50 ppm (approximately 415 tons) would be sent to an off-site industrial landfill permitted to accept material containing PCB soils below 50 ppm. Soils with PCB concentration above 50 ppm (approximately 110 tons) would be sent to an off-site chemical waste landfill permitted to accept TSCA waste material (a landfill that complies with 40 CFR 761.75). The areas where material had been excavated would be backfilled with clean fill.

Alternative 6S - Capping of Limited Areas

Present Worth . . . . To be Determined
Time to Construct . . . . < 3 months

This alternative would be implemented, on a limited basis, outside of the fenced areas (unrestricted access) of the site that have shown surface soils contaminated with PCBs above 1 ppm, but below 10 ppm. This alternative would also be applicable where soils are considered "inaccessible" because of their proximity to underground utilities/pipeline. Specifically, this alternative would be used to address a small area (approximately 20-foot by 20-foot) at the retired burn pit area. A one-foot thick layer of soil would be used to construct the cap. Although costs associated with this cap are not discussed above, they would be relatively minor compared to the cost of the overall remedial program.

C. Remedial Alternatives for Groundwater

Alternative 1G - No Action

Present Worth	$ 295,000
Capital Cost	$ 0
Annual O & M	$ 19,150
Time to Implement	N/A

The no action alternative has been included as a baseline for comparison purposes. There would be no remediation of groundwater, however, it is assumed that groundwater monitoring would be conducted for a period of 30 years.

Alternative 2G - Source Removal/Natural Attenuation

Present Worth	$ 821,000
Capital Cost	$ 673,000
Annual O & M	$ 19,150
Time to Implement	< 2 months

Volatile organic contamination in soils would be identified and removed. Target areas for characterization/removal would include Air Receiver Tank Areas A and B. The delineation of the source areas could involve the use of a soil gas survey and/or a soil boring program. Soils identified with elevated concentrations of volatiles would be removed and disposed of off site in accordance with land disposal regulations. If contamination is found in inaccessible areas, other in-situ treatment options (such as soil vapor extractions) would be evaluated.

Groundwater monitoring would continue after source removal to evaluate the effectiveness of source removal relative to the restoration of groundwater quality. For purposes of this evaluation, a 10-year monitoring period has been used. After adequate monitoring, the data would be evaluated to determine if natural attenuation of residual groundwater contamination would restore groundwater quality in a relatively short time frame. If, at any time, the perimeter wells detect groundwater contamination at or above groundwater standards, a contingency plan would be implemented. The contingency plan would be implemented to prevent off-site migration of contaminants and ensure the quality of potable water for residences adjacent to the site. Possible contingencies may include: (a) construction of engineering controls such as an interceptor trench to contain contaminated groundwater, and/or (b) providing off-site residents with an alternate drinking water source or point-of-use treatment, as necessary.

Alternative 3G - Source Removal/Enhanced Degradation (In-situ)

Present Worth	$ 1,770,000
Capital Cost	$ 1,166,000
Annual O & M	$ 124,150 (years 1-5) /// $ 19,150 (years 6-10)
Time to Implement	5 years

This alternative would involve the source removal, discussed in Alternative 2G, along with the stimulation of in-situ bioremediation. The process would require the injection of an electron donor (such as sodium benzoate) to accelerate the natural biological breakdown of the volatile organic contaminants in groundwater at the site. This alternative would include groundwater monitoring similar to that discussed in Alternative 2G.

Alternative 4G - Source Removal, Groundwater Extraction, Air Stripping / Carbon Polishing

Present Worth	$ 1,580,000
Capital Cost	$ 1,300,000
Annual O & M	$ 36,250
Time to Implement	10 years

This alternative would utilize the source removal discussed in Alternative 2G. Groundwater would be extracted (collection trench) and would be treated using an air stripper followed by activated carbon polishing. The vapors from the air stripper would be treated, as necessary, by vapor phase carbon or catalytic combustion. Residual organic contamination remaining in the water would be removed by an activated carbon absorber. Groundwater monitoring, similar to that in Alternative 2G, would be carried out to evaluate the effectiveness of this alternative.

Alternative 5G - Source Removal, Groundwater Extraction, UV-Hydrogen Peroxide Treatment of Groundwater

Present Worth	$ 1,590,000
Capital Cost	$ 1,370,000
Annual O & M	$ 28,500
Time to Implement	10 years

This alternative would be similar to Alternative 4G with the exception of the method of treatment of the groundwater. The groundwater treatment would consist of chemical or photochemical destruction of the target organic contamination in the groundwater. Available photochemical destruction processes include UV/hydrogen peroxide/ozone treatment. Monitoring of downgradient wells would be carried out during the remediation period to evaluate its effectiveness.

SECTION 8: SUMMARY OF THE COMPARATIVE ANALYSIS OF THE ALTERNATIVES

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

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

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet applicable environmental laws, regulations, standards, and guidance.

The most significant SCGs for this site include:

Toxic Substance Control Act (TSCA)	Federal Regulations which govern how PCBs are handled.

6 NYCRR Part 375	Regulation directing the investigation/cleanup of inactive hazardous waste sites.
6 NYCRR, Parts 700-705	Water Quality Regulations for surface water and groundwater.
TAGM HWR-4031	Fugitive dust suppression and particulate monitoring.
TAGM HWR-4046	Guidance regarding soil cleanup objectives and cleanup levels.
6 NYCRR Part 373	Regulation governing the management of hazardous waste.
6 NYCRR Part 376	Land Disposal Regulation.
6 NYCRR Part 212 and Air Guide 1	Requirements and Guidance regulation regarding the control of air contaminants.

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

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

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

6. Implementability. The technical and administrative feasibility of implementing each alternative is evaluated. Technically, this includes the difficulties associated with the construction, the reliability of the technology, and the ability to monitor the effectiveness of the remedy. Administratively, the availability of the necessary personnel and equipment is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.

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

8. Community Acceptance - Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan are evaluated. A "Responsiveness Summary" has been prepared that describes public comments received and how the Department will address the concerns raised (Appendix A).

A. Drainlines

1. Protection of Human Health and the Environment

Alternative 2D would prevent any potential future migration of contamination from the drainlines. Information gathered indicates that contaminants are not migrating to the soils adjacent to the drainlines. It would be a reliable alternative to achieve remedial objectives that could be implemented in a short time frame.

Alternative 3D would use a high pressure flush to remove contamination from the drainlines. There would be short-term risks associated with the high pressure flushing relative to it promoting migration of the contaminants at cracks or joints in the pipe.

Alternative 4D would be the most protective of human health and the environment. It would be permanent (relative to the site), it would be reliable and would be implemented in a relatively short time frame.

Alternative 1D would not provide any protection and would not address the remedial objectives.

2. Compliance with New York State Standard, Criteria and Guidance (SCGs)

As presented in Table 1, the cleanup goal for subsurface PCB contamination is 10 ppm. Alternatives 2D, 3D and 4D address soils contaminated with PCBs above this cleanup goal. Alternative 1D would do nothing to address the contamination in the drainlines.

3. Short-term Impacts and Effectiveness

Alternative 2D would be expected to have no short-term impacts associated with its implementation. Alternative 3D would have potential short-term impacts associated with the high pressure flushing forcing contamination out of the drainline through joints and cracks. Little could be done to prevent this type of impact to the environment. Alternative 4D would have short-term impacts associated with excavation activities (dust, erosion). Appropriate controls could be used to prevent erosion and control dust. These controls could be easily implemented and would be reliable. Alternative 1 would have no short-term impacts. All four of the alternatives would be implemented in a short time frame (less than 3 months).

4. Long-term Effectiveness and Permanence

Alternative 4D would be the most effective/ permanent remedy because the contamination would be excavated and disposed of off site. Alternative 3D would also be effective since the drainlines would have contaminants removed. However, there could be residuals left behind. Alternative 2D would be effective in isolating the contamination and preventing it from migrating. Alternative 1D would not reduce the potential for future releases from the drainlines.

5. Reduction of Toxicity, Mobility and Volume

Alternatives 3D and 4D would reduce the toxicity mobility, and volume relative to the site since the contamination would be removed and disposed of off site. Alternative 2D would decrease the mobility of the contamination in the drainlines in a reliable manner. The residuals would not pose a problem since there would be little to no potential for them to migrate. Alternative 1D would not reduce the toxicity, mobility or volume from the situation which currently exists.

6. Implementability

All four alternatives involve readily available resources that could be easily implemented. The Implementability of alternative 4D is limited to accessible areas for excavation.

7. Cost

The following table summarizes the costs for the drainline remedial alternatives.

Alt	Capital Cost	Annual O&M	Total
1D	0	0	0
2D	$167,000	0	$167,000
3D	$352,000	0	$352,000
4D	$578,000	0	$578,000

8. Community Acceptance

A Responsiveness Summary has been prepared to address public comments received (Appendix A).

B. Soils

1. Protection of Human Health and the Environment

Alternatives 4S and 5S would be the most protective of human health and the environment since the contaminated soils would be removed and disposed of off site. Alternative 3S would be the next most protective since it would treat the waste, however, controls would be necessary during implementation to prevent short-term impacts. Alternative 2S would control the potential for contact with and migration of contaminants, however, the waste material would remain. Alternative 6S, in its limited scope, would isolate contaminants to prevent surface contact. Alternative 1S would not address remedial objectives. All six of the remedial alternatives could be implemented in a relatively short time frame and any potential short-term impacts could be reliably controlled with appropriate contingencies, as necessary.

2. Compliance with New York State Standards, Criteria and Guidance (SCGs)

Alternatives 2S, 3S, 4S and 5S would achieve soil SCGs at the site either through some type of on-site treatment or through proper disposal of the material off site. Although alternative 6S is a containment type remediation in the capacity it would be implemented, it would eliminate the potential for direct contact and erosion/off-site migration. Alternative 1S would not address soil SCGs.

3. Short-term Effectiveness and Impacts

Alternatives 2S, 3S, 4S and 5S would all involve excavation of contaminated soil and would have the potential for short-term impacts through fugitive dust emissions. Alternative 3S would have additional potential short-term impacts associated with vapor emission. Site remediation workers would be protected through use of appropriate personal protection equipment as required by the Occupational Safety and Health Administration (OSHA) and the site specific health and safety plan to be developed prior to remediation. The surrounding community would be protected through measures to prevent fugitive emissions and runoff of contaminated excavated material. As long as these control measures are used properly they are effective in minimizing any potential short-term impacts.

Alternative 6S would have little short-term impacts. Alternative 1S would have no short-term impacts. All of the alternatives would be completed in less than three months.

4. Long-term Effectiveness and Permanence

Alternatives 4S and 5S are permanent relative to the site. Contaminated soil would be removed from the site so any potential risk/exposure pathway would be removed. Alternatives 2S and 3S would treat soils on site and thus would offer long-term effectiveness and permanence by removing/isolating contaminants. The level of confidence would be greater for alternative 3S as compared to alternative 2S. Alternative 6S is not a permanent/ treatment technology, but rather would offer an isolation of the waste material. Alternative 1S would not be considered permanent or offer any long-term effectiveness.

5. Reduction of Toxicity, Mobility or Volume

Alternatives 4S and 5S would reduce the toxicity, mobility, and volume, relative to the site, by removal and off-site treatment/disposal. Alternative 3S would reduce the mobility and volume by using on-site treatment by thermal desorption. Alternative 2S would reduce the mobility of the waste material, however, it is likely to increase the volume as a result of the solidification process. Alternative 1S would not reduce the toxicity, mobility or volume.

6. Implementability

All of the alternatives could be implemented and the required materials/services are readily available. Alternative 6S represents the most readily implementable alternative, other than alternative 1S (no action), due to the relatively simple constructability of a cap. There could be potential problems implementing removal of contaminated soils, as a part of alternatives 2S, 3S, 4S and 5S, in inaccessible areas. Alternatives 4S and 5S would be more difficult to implement since excavation and off-site transport of the contaminated material would be required. Alternatives 2S and 3S may be difficult to implement because of the need to excavate, treat the contaminated material and backfill that treated material on site.

7. Cost

The cost for each of the remedial alternatives for soil are summarized below:

Alt	Capital Cost	Annual O&M	Total
1S	0	0	0
2S	$ 419,000	0	$ 419,000
3S	$ 1,020,000	0	$ 1,020,000
4S	$ 1,140,000	0	$ 1,140,000
5S	$ 199,000	0	$ 199,00
6S	To be Determined	0	TBD

8. Community Acceptance

A Responsiveness Summary has been prepared to address public comments received (Appendix A).

C. GROUNDWATER

1. Protection of Human Health and the Environment

Alternatives 2G, 3G, 4G and 5G would all be protective of human health and the environment. Alternatives 4G and 5G would be more reliable since the groundwater would be removed and treated. Alternative 3G would treat groundwater, but the treatment would be in-situ without extraction of contaminated groundwater. Alternative 2G would treat the source of the groundwater contamination, however, it would depend on natural attenuation to restore groundwater quality. With alternative 2G, a comprehensive monitoring/contingency plan would be in place to insure that groundwater contamination would not migrate off site at levels above groundwater standards. Alternatives 3G, 4G and 5G are permanent remedies. Alternative 2G is a control/isolation technique that, although it would not be permanent, would be reliable in controlling any threat to human health and the environment.

It is anticipated that alternatives 3G, 4G and 5G would restore the aquifer, to the extent practicable, within a time frame of approximately five (3G) to ten (4G and 5G) years. Within five years, it is anticipated that alternative 2G would reduce groundwater contamination to acceptable levels; this would be determined based on comprehensive groundwater monitoring.

2. Compliance with New York State Standards, Criteria and Guidance (SCGs)

Alternatives 3G, 4G and 5G would actively address the contaminated groundwater and would restore groundwater quality, to the extent practicable, in a time frame of approximately 5-10 years. Alternative 2G would actively remediate the source of the groundwater contamination, however, existing contamination in the groundwater would not be actively remediated. As a result it would take a longer period of time to restore the on-site groundwater quality. Alternative 2G would incorporate contingencies to address any contamination that could potentially migrate off site. Alternative 1G would not achieve groundwater SCGs.

3. Short-term Effectiveness and Impacts.

During construction activities for the source removal of VOC contaminated soils (for alternatives 2G, 3G, 4G and 5G) there would be short-term risks associated with volatile emissions, noise and dust. The implementation of a comprehensive safety and monitoring program would effectively mitigate these potentially adverse affects and provide a high degree of community protection. Alternative 1G would have no potential short-term impacts due to construction.

With the exception of aquifer restoration, all alternatives can be implemented in a short time frame (less than two years).

4. Long-term Effectiveness and Permanence

Alternatives 2G, 3G, 4G and 5G would all prevent off-site migration of contaminated groundwater and would result in eventual restoration of groundwater quality. Alternatives 3G, 4G, and 5G would actively remediate groundwater and would restore aquifer quality, to the extent practicable, within approximately 5-10 years. Alternative 2G would include only source removal, not active groundwater remediation. With alternative 2G, contingencies would be in place to prevent off-site migration. A data review would be performed to determine the effectiveness of source removal/natural attenuation on the restoration of groundwater quality.

Alternatives 2G, 3G, 4G and 5G would be considered permanent remedies (2G-permanent relative to source removal). Alternative 1G would not be effective in the long-term.

5. Reduction of Toxicity, Mobility or Volume

Alternatives 2G (relative to source removal) 3G, 4G and 5G would all reduce the toxicity, mobility and volume of volatile organics in the groundwater. Alternative 1G would not reduce toxicity, mobility or volume.

6. Implementability

All of the alternatives would utilize readily available construction equipment/materials and would be reliable. Since the site is rather large, there would be no space constraints during implementation. There would be no difficulties associated with coordinating with other divisions/agencies. There could be difficulty associated with delivery of biostimulants (3G) and the extraction of groundwater from low yielding aquifer (4G and 5G).

7. Cost

The costs for the groundwater remediation alternatives are summarized below:

Alt	Capital Cost	Annual O&M	Total
1G	0	$ 19,150	$ 148,000
2G	$ 673,000	$ 19,150	$ 821,000
3G	$ 1,166,000	$124,150 (yrs. 1-5) $19,150 (yrs 6-10)	$ 1,770,000
4G	$ 1,300,000	$ 36,250	$ 1,580,000
5G	$ 1,370,000	$ 28,500	$ 1,590,000

8. Community Acceptance

A Responsiveness Summary has been prepared to address public comments received (Appendix A).

SECTION 9: SELECTED REMEDY

Based upon the results of the RI/FS, as well as the evaluation presented in Section 8, the NYSDEC is selecting the combination of alternatives 2D, 5S/6S and 2G (filling drainlines with grout, excavation and off-site disposal of contaminated soils, and source removal/ monitoring to address groundwater) as the remedy for this site.

The no action alternatives for the various media were not acceptable because they would not address the remedial goals.

For drainlines, alternative 3D could cause short and long-term impacts by promoting migration of contaminants from the drainlines. Both alternatives 2D and 4D would be protective of human health and the environment, however, the cost of 4D was much greater than the cost for 2D.

For soils, alternatives 2S, 3S, 4S and 5S would address all accessible soils above the cleanup goal of 10 ppm for PCBs. Alternatives 2S and 3S would involve on-site treatment. Although there would be reliable engineering controls in place, there would be a greater potential for short-term impacts as compared with alternatives 4S and 5S. Alternatives 4S and 5S would provide similar protection (both would dispose of material off site), however, the cost for 4S is much greater than the cost for 5S.

For groundwater, alternatives 2G, 3G, 4G and 5G would all prevent off site migration of contaminated groundwater. Alternatives 3G, 4G and 5G would perform source removal as well as active remediation of the groundwater. Alternative 2G will include source removal only, along with groundwater monitoring to: (1) insure contamination does not migrate off site, and (2) determine if groundwater restoration will occur, without active groundwater remediation, through natural attenuation; contingency plans will be in place if either condition is not met. As a result, alternatives 2G, 3G, 4G and 5G would all be protective, however, the costs for 3G, 4G and 5G are much greater than the cost for 2G.

The estimated present worth cost to carry out the remedy is $1,187,000. The cost to construct the remedy is estimated to be $1,039,000 and the estimated average annual cost for operation and maintenance/ monitoring will be $19,150 for a duration of approximately 10 years.

The main elements of the selected remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Uncertainties identified during the RI/FS will also be resolved, as needed.

2. The implementation of the remedial program will include the following components:

- The drainlines will be filled with grout (i.e., cement and bentonite) to eliminate the potential for migration to or from the drainlines. During the grouting of drainlines, sediments which contain PCBs with concentrations above 10 ppm will be removed from the manholes and disposed of off site.

- Excavation of all PCB contaminated soils above cleanup goals. Contaminated soils with concentrations above the cleanup goal, but below 50 ppm will be disposed of in an off-site industrial landfill; soil with PCB concentrations above 50 ppm will be disposed of in a TSCA landfill.

- Soils located in unrestricted areas on TGPL property (outside the fence) with PCB concentrations greater than one ppm, but less than 10 ppm, will be covered with a one-foot soil cap. Also, if contaminated soils are determined to be inaccessible (due to their proximity to utilities and/or the natural gas pipeline), these soils will be considered for the placement of a soil cover rather than excavation.

- The perimeter fence will be extended around Drainage ditch F (to make it restricted access), soils above 10 ppm PCB's will be removed, and the areas between 1-10 ppm will be vegetated to prevent erosion.

- Soils contaminated with volatile organics, which are acting as the source for the groundwater contamination, will be excavated and disposed of off site.

- Groundwater will be monitored for an estimated period of 10 years (longer if needed) to determine if the chosen alternative was successful in reducing the concentrations of contaminants. Perimeter wells and nearby residential wells will be monitored to insure that contamination has not migrated off site. If action levels are triggered, contingencies will be implemented to address the needs of off-site users of groundwater. On-site monitoring wells will be monitored to determine if the source removal is effective in reducing groundwater contaminant levels. An evaluation will be performed to determine if active groundwater remediation will be necessary.

- If cleanup goals are not met (soils in inaccessible areas, groundwater) deed restrictions will be placed.

SECTION 10.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

Citizen Participation (CP) Activities were implemented to provide concerned citizens and organizations with opportunities to learn about and comment upon the investigations and studies pertaining to the Tennessee Gas Pipeline Station 237 Site. All major reports were placed in a document repository in the vicinity of the site and made available for public review. A public contact list was developed and used to distribute fact sheets and meeting announcements.

On March 2, 1995, a public meeting was held at the Hopewell Town Hall, Hopewell, New York to describe the Proposed Remedial Action Plan. Prior to the meeting, an invitation/fact sheet was mailed to those persons on the contact list. The public comment period extended from February 21, 1995 until March 23, 1995. Comments received regarding the Proposed Remedial Action Plan have been addressed and are documented in the Responsiveness Summary (Exhibit A).

APPENDIX A
RESPONSIVENESS SUMMARY
Tennessee Gas Pipeline Compressor Station 237
Ontario County
ID No. 8-35-011

This document summarizes the comments and questions received by the New York State Department of Environmental Conservation (NYSDEC) regarding the Proposed Remedial Action Plan (PRAP) for the subject site. A public comment period was held between February 21, 1995 and March 23, 1995 to receive comments on the proposal. A public meeting was held on March 2, 1995 at the Hopewell Town Hall to present the results of the investigations performed at the site and to describe the PRAP. The information below summarizes the comments and questions received and the Department's responses to those comments.

DESCRIPTION OF THE SELECTED REMEDY

Based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) for the site and the criteria identified for the evaluation of alternatives, the NYSDEC has selected a remedy to address soil and groundwater contamination at the Tennessee Gas Pipeline Compressor Station 237 (TGPL Station 237) Site. The soils contaminated with PCBs and volatile organics will be removed, the on-site drainlines (containing PCB contamination) will be grouted (filled with cement) and groundwater contamination will be addressed by instituting a source removal/comprehensive groundwater monitoring program. The selected remedy is the same as was proposed in the PRAP.

The major elements of the selected remedy include:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Uncertainties identified during the RI/FS will also be resolved, as needed.

2. The implementation of the remedial program will include the following components:

- The drainlines will be filled with grout (i.e., cement and bentonite) to eliminate the potential for migration to or from the drainlines. During the grouting of drainlines, sediments which contain PCBs with concentrations above 10 ppm will be removed from the manholes and disposed of off site.

- Excavation of all PCB contaminated soils above cleanup goals. Contaminated soils with concentrations above the cleanup goal, but below 50 ppm will be disposed of in an off-site industrial landfill; soil with PCB concentrations above 50 ppm will be disposed of in a TSCA landfill.

- Soils located in unrestricted areas on TGPL property (outside the fence) with PCB concentrations greater than one ppm, but less than 10 ppm, will be covered with a one-foot soil cap. Also, if contaminated soils are determined to be inaccessible (due to their proximity to utilities and/or the natural gas pipeline), these soils will be considered for the placement of a soil cover rather than excavation.

- The perimeter fence will be extended around Drainage ditch F (to make it restricted access), soils above 10 ppm PCB's will be removed, and the areas between 1-10 ppm will be vegetated to prevent erosion.

- Soils contaminated with volatile organics, which are acting as the source for the groundwater contamination, will be excavated and disposed of off site.

- Groundwater will be monitored for an estimated period of 10 years (longer if needed) to determine if the chosen alternative was successful in reducing the concentrations of contaminants. Perimeter wells and nearby residential wells will be monitored to insure that contamination has not migrated off site. If action levels are triggered, contingencies will be implemented to address the needs of off-site users of groundwater. On-site monitoring wells will be monitored to determine if the source removal is effective in reducing groundwater contaminant levels. An evaluation will be performed to determine if active groundwater remediation will be necessary.

- If cleanup goals are not met (soils in inaccessible areas, groundwater) deed restrictions will be placed.

I. QUESTIONS / COMMENTS RAISED DURING THE PUBLIC MEETING

1. Issue: The person asking the question indicated that he owns 10 acres of land with a pond and a stream. Tennessee Gas Pipeline (TGPL) gets an A^+ for being a good neighbor. His question was will his well/pond be sampled?

   Response: As a part of the selected remedy at this site, there will be a comprehensive perimeter groundwater monitoring program in place to insure that contamination is not migrating off site. In addition those residential wells closest to the downgradient perimeter of the site (north-northeast), will also be sampled. The person asking the question lives on Taylor Road immediately north of the site. If that is the case, his well will be sampled. There are no plans to sample any surface water, including ponds. The surface water is not going to be sampled because volatiles generally flash-off (volatilize) in surface water because of exposure to the air. In addition there isn't the potential for exposure like there is with water in residential wells.

2. Issue: One person asked if the cleanup of the site would loosen anything up and/or cause more of a problem. He expressed concern about the contamination present in the groundwater.

   Response: The cleanup plan involves the excavation and removal of contaminated soils. There are potential short-term impacts associated with air emissions (vapors/particulates) and erosion as the soils are excavated. However, during the excavation steps will be taken to address these potential impacts. Air monitoring will be performed to determine if action levels are being exceeded. If air monitoring indicates elevated levels, steps will be taken to control the situation (i.e., a light mist could used to prevent dust generation during excavation). The remedial construction will not adversely impact the groundwater or promote the migration of contaminants in the groundwater.

3. Issue: One person indicated that he has been a life long resident of the road adjacent to the site, and has never had a problem with anyone or anything. NYSDEC employees work for the people of New York. The person indicated that he feels using the terms government and cost efficiency in the same sentence is an oxymoron. If the problem was discovered at the site twenty years ago, what has taken so long to go out and dig it up? Instead of talking about it, why not just dig it up?

   Response: The fact that there is PCB contamination at this site was not discovered until 1988. Remedial programs move forward in a phased approach. A site is investigated to determine the extent of contamination, alternatives are evaluated and a cleanup plan is proposed, followed by the design and implementation of the selected cleanup plan. Remedial programs at hazardous waste sites are lengthy. However, considering the large investment of resources required, enough information needs to be gathered to make informed and appropriate decisions during the process. Until that was done, a cleanup plan for this site could not be properly developed. Although excavation of contaminated soils is a major part of the cleanup plan, other issues are also addressed (drainlines, groundwater) as a part of the plan. At any point during the process, if it was determined that a situation existed that was an immediate threat to health and/or the environment, action would have been taken in the form of an interim remedial measure or IRM.

4. Comment: One person indicated that the letter (information sheet sent out by NYSDEC) said that residents had nothing to worry about, "so we haven't worried."

   Response: As presented in the information sheet, and again during the formal presentation (at the public meeting), groundwater contamination has been detected above groundwater standards on site. However, the groundwater at the downgradient perimeter of the site has not shown levels above of groundwater standards. Elevated levels of site related contaminants have been found on site (in soils and groundwater), but they have not migrated off site.

5. Issue: What is the projected cost?

   Response: The estimated present worth cost (which includes the cost to construct the remedy and the long-term monitoring) to implement the remedy is $1,187,000.

6. Issue: Who will pay for it?

   Response: Tennessee Gas Pipeline funded the RI/FS and they will pay for design and construction of the remedy as well.

7. Issue: When will the remediation take place?

   Response: Tennessee Gas Pipeline (TGPL) and NYSDEC intend to pursue an aggressive schedule for this site. Once the Record of Decision (ROD) is signed, plans and specifications will be prepared during the remedial design. At the completion of the remedial design, the project will move into remedial construction during which the remedy will be implemented. It is TGPL and NYSDEC's intention to complete the remedial design and construction during 1995. There are other compressor stations in New York requiring remediation and the proposed schedule is very aggressive. However, every attempt will be made to construct the remedy this year.

8. Issue:: Who will give this a "clean bill of health"?

   Response: During the remedial construction samples will be taken to confirm that all of the soils with concentrations above the cleanup goals have been removed. In addition, the long-term groundwater monitoring program will evaluate the effectiveness of the remediation and it will insure that groundwater contamination is not migrating off site. If groundwater contamination exceeds standards at the perimeter of the site, steps will be taken to protect residential water supplies.

   During the actual remedial construction, representatives of the NYSDEC will be present on site to oversee the work activities. Once the construction is complete, Tennessee Gas Pipeline will submit a certification that the work was done in accordance with the approved remedial design. At that point, if the certification is agreed upon, NYSDEC will accept that the job was satisfactorily completed.

9. Issue: What are the parts per million on that solvent (concentration levels of groundwater contamination)?

Response: The highest levels of groundwater contamination were detected in monitoring wells MW-2 and MW-3 near the Compressor Building. The highest concentration was 2,300 parts per billion (ppb) of 1,1,1-trichloroethane (1,1,1-TCA). As stated previously, groundwater concentrations decrease to levels below groundwater standards (5 ppb for 1,1,1-TCA) at the downgradient edge of the site perimeter.

10. **Issue:** The person who spoke earlier reiterated that his biggest concern was the fact that its been there for 20 years and it will be there for however long before its cleaned up. Tennessee Gas Pipeline would have fixed it; why does the bureaucracy take so long?

    Response: Elevated levels of PCBs were first discovered at the site in 1988. There are over 700 inactive hazardous waste site in New York State. NYSDEC does as much as possible, as fast as possible within the limits of the available resources and personnel. In addition, the remedial process itself takes a long time to complete. The steps taken during the remedial process are required in order to make informed and appropriate decisions. It is in everyone's best interest to insure that any cleanup plan is comprehensive and is protective of human health and the environment.

II.. QUESTIONS/COMMENTS RECEIVED IN WRITING

No written comments were received during the public comment period.

APPENDIX B
ADMINISTRATIVE RECORD
Tennessee Gas Pipeline Compressor Station 237
Ontario County
ID No. 8-35-011

1. Record of Decision, dated March 1995.

2. Proposed Remedial Action Plan, dated February 1995

3. Consent Order to perform RI/FS, index # D0-0003-89-03, dated January 1991.

4. Remedial Investigation (RI) Report, Volumes I, II, and III, dated August 1991.

5. Second Round Groundwater Report, Volume 1, dated November 1991.

6. Third Round Groundwater Report, Volume 1, dated October 1992.

7. Evaluation of Groundwater Monitoring Data, dated September 1993.

8. Addendum to Remedial Investigation - Phase IIC Soil Sampling, dated January 1992.

9. Addendum to Remedial Investigation - Burn Pit Sampling Report, dated October 1992.

10. Soil Gas Survey, dated January 1993.

11. Report on Phase I Additional Groundwater Characterization, dated February 1994.

12. Report on Phase II Groundwater Characterization, dated October 1994.

13. Information Sheet, dated January 1995.

14. Feasibility Study, dated January 31, 1995.

15. Fact Sheet, announcing March 2, 1995 Public Meeting.

16. NYSDOH concurrence with 2/95 PRAP, dated February 15, 1995.

17. Responsiveness Summary, prepared in March 1995 and attached to Record of Decision as Exhibit A.