CDM Camp Dresser & McKee

Report

Final Work Plan

Remedial Investigation/Feasibility Study

Swivelier Company, Inc.

Village of Nanuet, Clarkstown Township
Rockland County, New York

Site Number 3-44-036

Work Assignment #D002925-4

Prepared for:

New York State
Department Of Environmental Conservation
50 Wolf Road, Albany, New York 12233

Langdon Marsh
Acting Commissioner

Division Of Hazardous Waste Remediation

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Introduction

The Remedial Investigation/Feasibility Study (RI/FS) Work Assignment (D002925-4) for the Swivelier Company, Inc. (Swivelier) site, located in the Village of Nanuet, Clarkstown Township, Rockland County, New York, was authorized by the New York State Department of Environmental Conservation (NYSDEC), under the State Superfund Standby Contract (SSSC). The Work Assignment, and NYSDEC authorization for the expenditure of work plan development cost funds, was assigned to Camp Dresser & McKee (CDM) in a letter received on December 6, 1993 (NYSDEC 1993).

This document is the Swivelier site RI/FS draft work plan, the first deliverable to the NYSDEC under the work assignment (NYSDEC 1993). Corresponding documents under separate cover are the Swivelier site RI/FS draft Site Operations Plan/Quality Assurance Project Plan (SOP/QAPP) (CDM 1994a), which includes a draft site Health and Safety Plan (HASP), and draft Minority Owned Business Enterprise/Woman Owned Business Enterprise (MBE/WBE) Utilization Plan (CDM 1994b).

1.1 Site Background and History

The following sections provide a description of the Swivelier site.

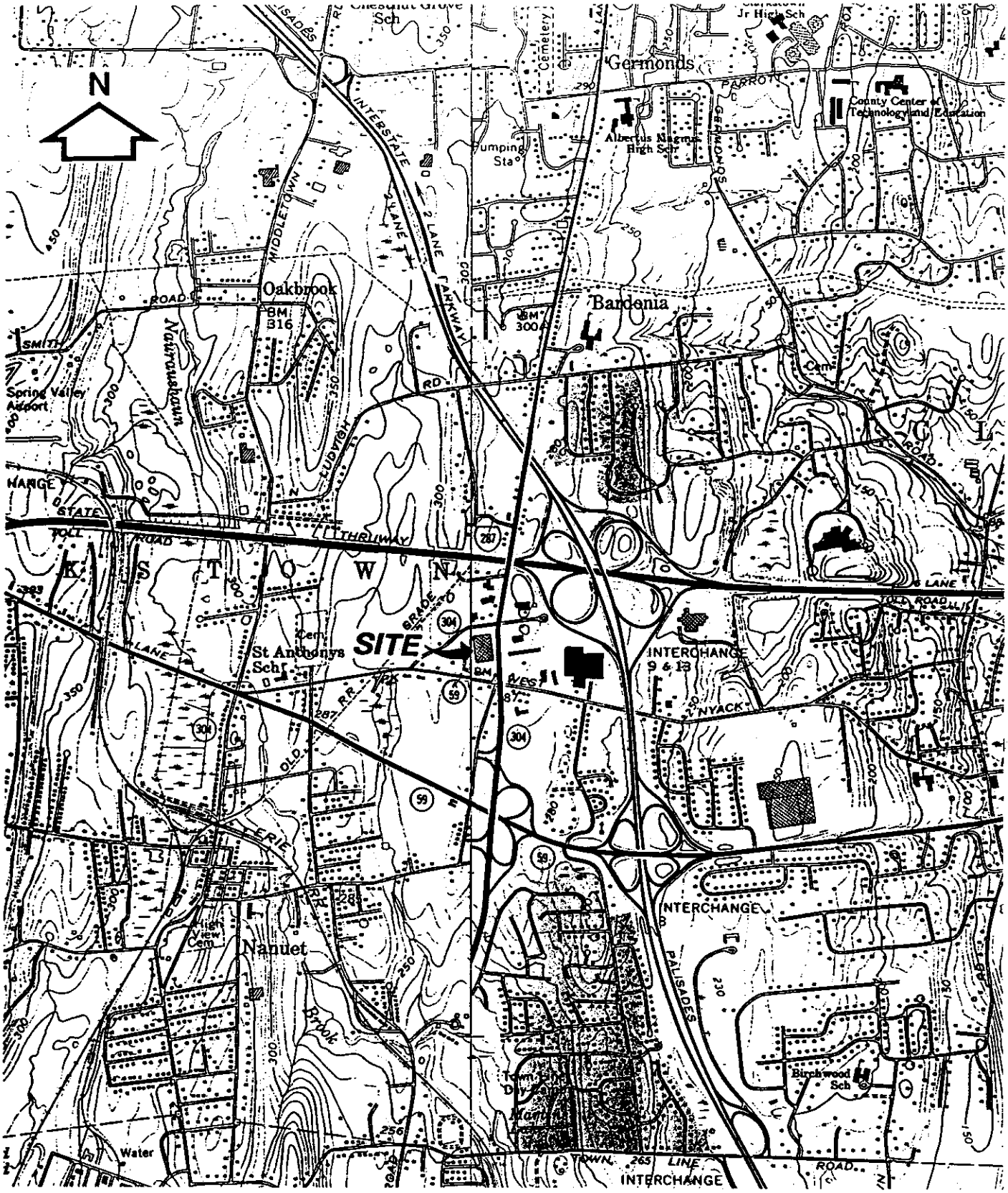
1.1.1 Site Location, Ownership, and Use

The Swivelier site is located at 33 Route 304 in the Village of Nanuet, Clarkstown Township, Rockland County, New York. The site is bounded on the north by Demarest Mill Road, on the south by West Nyack Road, on the east by Route 304, and on the west by a scrap metal facility (see Figures 1-1 and 1-2). It encompasses approximately 10 acres of land and includes a one story masonry and metal frame building, with no basement. The building is surrounded by a paved parking lot (Subsurface Investigations 1993). The site building was constructed in 1956; land use prior to 1956 is unknown by CDM.

Swivelier is owned by Nathan R. Schwartz and is currently operated by Michael I. Schwartz, President of Swivelier. A portion of the site building is tenant-leased. In 1993, Swivelier leased to an automobile parts sales and distribution outlet, billiards hall, video outlet, clothing store (retail, office, and warehouse), limousine service (office), and dance studio. Swivelier utilizes a portion of the site building for the assembly, manufacture, warehousing, and distribution of lighting fixtures (Subsurface Investigations 1993).

1.1.2 Site History

As previously mentioned, the Swivelier site building was constructed in 1956. The site has been serviced by public water and electric since 1956. In the past the site building was heated using No. 2 fuel oil; however, the building is currently heated by natural gas (Subsurface Investigations 1993).



Base Map: Nyack-Park Ridge Quadrangle
New Jersey - New York
USGS. 7.5 Minute Series (Topographic)

Figure 1-1

Site Location Map

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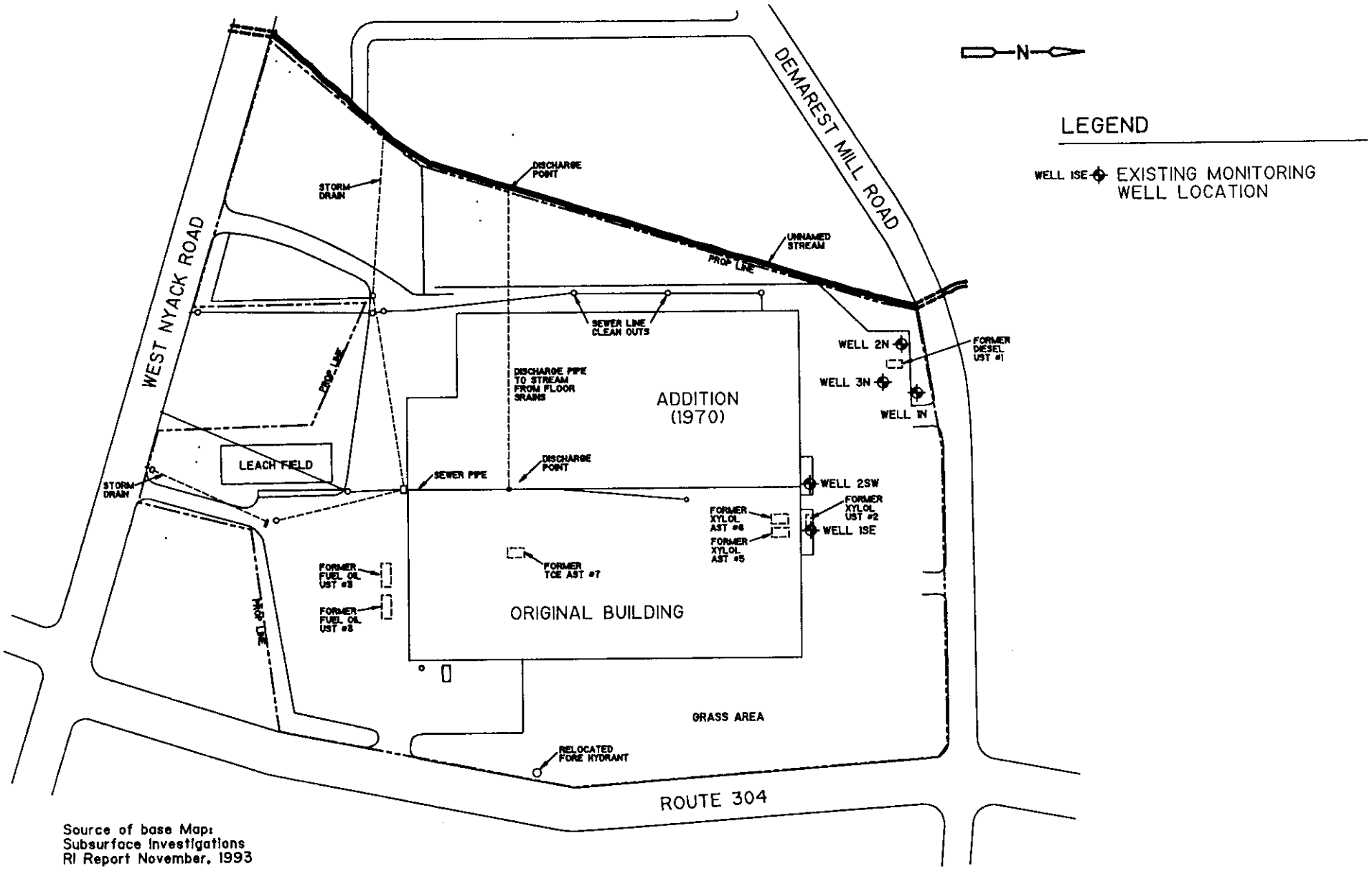
Swivelier Site - Nanuet, New York
NYSDEC Site #3-44-036



Source of base Map:
Subsurface Investigations
RI Report November, 1993

Figure 1-2

Site Plan

Swiveller Site - Nanuet, New York
NYSDEC Site #3-44-036

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The Swivelier site is an active site. Swivelier operations consist of the assembly of pre-manufactured and manufactured lighting components. Premanufactured lighting components are delivered to the site where they are assembled for sale and distribution. On-site manufacturing of lighting components includes drilling, welding, tapping, and milling prior to assembly. In addition, four underground storage tanks (USTs) and three above-ground storage tanks (ASTs) were located and utilized at the site (see Table 1-1). The location of each UST/AST is shown on Figure 1-2.

Table 1-1
Description of Site Underground and Above-Ground Storage Tanks

UST/AST No.	Capacity (gals)	Contents	Type	Date Removed
1	4,000	Diesel	UST	1987
2	1,500	Xylol	UST	1986
3	7,500	Fuel Oil	UST	1987
4	7,500	Fuel Oil	UST	1987
5	500	Xylol	AST	Unknown
6	500	Xylol	AST	Unknown
7	500	Trichloroethene	AST	1980

Source: Subsurface Investigations, 1983.

From 1956 to 1958, all site sanitary wastewaters were discharged to an on-site leachfield (see Figure 1-2). All non-contact process wash and cooling waters, as well as wastewaters from the building floor drain system, were discharged (through an underground pipe) to the drainage ditch in the western portion of the site (see Figure 1-2); these wastewaters were reportedly never discharged to the leachfield. In 1958, reportedly, the site was connected to the municipal sewer system and all sanitary discharges to the leachfield ceased. The building floor drain system was also connected to the municipal sewer system in 1958 (Subsurface Investigations 1993).

To remove residual oils, manufactured components were degreased with trichloroethene (TCE) from a steam heated vapor degreaser (with a heat exchanger), which was supplied with TCE by a nearby AST through above-ground piping (see Table 1-1 and Figure 1-2) . Cooling waters from the heat exchanger were discharged to the floor drain system. Degreased components were then oven dried (Swivelier 1992; Subsurface Investigations 1993). Emissions were regulated under permit.

In 1979, the Rockland County Department of Health (RCDH) received a complaint from a local resident citing discolored water flowing in the drainage ditch at the Swivelier site. Subsequently, in December 1979, the Spring Valley Water Company collected a sample of the Swivelier pipe discharge waters and a surface water sample downgradient of the discharge outfall. Analytical results for the outfall pipe and surface water samples indicated a total

volatile organic compound (VOC) level of 14,425 and 8,962 micrograms per liter (µg/L), respectively, including detected concentrations of TCE, tetrachloroethene (PCE), and methylene chloride. The primary constituent detected in both samples was TCE (Spring Valley Water Company 1980; RCDH 1980a; NYSDEC 1993).

Analytical results for followup sampling of the discharge outfall, and surface waters and sediment downgradient of the outfall, in January 1980, also indicated elevated total VOC concentrations levels (Subsurface Investigations 1993; NYSDEC 1993). Also in January 1980, the RCDH notified Swivelier that the discharge of cooling water from a vapor degreaser requires a State Pollutant Discharge Elimination System (SPDES) permit and that Swivelier was required to immediately cease discharging to the drainage ditch until a valid permit was issued (RCDH 1980b). TCE and methylene chloride were eliminated from the Swivelier degreasing operation and replaced by a phosphate-based system. The RCDH approved the discharge of these process waters to the public sewer system provided that zinc (another site wastewater constituent) was removed prior to discharge (Rockland County 1980; NYSDEC 1993). Also in January 1980, the discharge pipe from Swivelier to the drainage ditch was crushed and sealed (Subsurface Investigations 1993). Since 1980, the drainage ditch has been dredged by the New York State Department of Transportation (NYSDOT), effectively lowering the base of the ditch by 2 to 3 feet, at a minimum, to improve surface water drainage in the area (Subsurface Investigations 1993).

In February 1980, the AST that contained TCE (AST No. 7; see Table 1-1 and Figure 1-2) was removed from the Swivelier site (Subsurface Investigations 1993). In August 1986, UST No. 2, described in Table 1-1 and shown on Figure 1-2, was excavated and removed from the site and a release from the UST was observed and reported to the NYSDEC (Spill No. 8604893). Two post-excavation soil samples were collected and analyzed for total xylene.

Sample analytical results (for the post-excavation samples collected at the UST No. 2 excavation) indicated total xylene concentrations detected at 0.027 and 0.07 milligrams per kilogram (mg/kg), respectively. UST Nos. 1, 3, and 4 (described in Table 1-1 and shown on Figure 1-2) were excavated and removed from the Swivelier site in November 1987. Following the removal of UST No. 1, a release from the tank was observed and reported to the NYSDEC (Spill No. 8707447). Four post-excavation samples were collected and analyzed for total petroleum hydrocarbon (New York State Department of Health (NYSDOH) Method 310.13). Sample analytical results indicated the presence of gasoline and fuel oil No. 2 in three of the four samples analyzed (Subsurface Investigations 1993).

Subsequently, Swivelier installed two shallow monitoring wells (MW-1SE and MW-2SW) in the vicinity of the UST No. 2 excavation and three shallow monitoring wells (MW-1N, MW-2N, and MW-3N) in the vicinity of the UST No. 1 excavation (see Figure 1-2) (Subsurface Investigations 1993). Available well boring logs are provided in Appendix A.

Groundwater samples were collected from monitoring wells MW-1SE and MW-2SW, and analyzed for VOCs, in accordance with United States Environmental Protection Agency (EPA) Methods 503 and 602, from August 1987 through December 1988 (RCDH 1988; RCDH 1989; Subsurface Investigations 1993). Samples were collected from monitoring well MW-1N and analyzed for VOCs beginning in June 1988. In January 1989, approval was granted from the

RCDH for the termination of the monitoring of these three wells (RCDH 1989). However, Swivelier continued to monitor these wells through 1992.

Monitoring wells MW-2N and MW-3N have been monitored for VOCs on a quarterly basis since September 1988. Most recent available analytical results indicate benzene, toluene, ethylbenzene, and xylene (BTEX) concentrations at 58, 64, 6.3, and 49.5 µg/l, respectively, in groundwater samples collected from MW-2N , and 4.1, 65, 5.4, and 134 µg/l, respectively, in groundwater samples collected at MW-3N (Subsurface Investigations 1993). The NYS Standards, Criteria or Guidance (SCG) values (NYSDEC 1992) for BTEX are 0.7, 5, 5, and 5 µg/l, respectively. For groundwater samples collected from 1987 through 1992, TCE was detected above its SCG value (5 µg/l) in a sample collected from monitoring well MW-1N on September 28, 1988 (8.3 µg/l) and in a sample collected from monitoring well MW-1SE on August 12, 1987 (37 µg/l); September 28 and November 11, 1988 (28 and 30 µg/l, respectively); and on May 31, 1990 (27.7 µg/l) (Subsurface Investigations 1993).

In early 1991, groundwater sampling of non-community public water supply (NCPWS) wells was conducted by the RCDH. Analytical results for groundwater samples collected at a NCPWS well located 0.4 miles south-southwest of the Swivelier site (at the "L.A. Woman" night club), which is reportedly downgradient of the site, indicated a TCE concentration level of 5,400 µg/l. TCE was also detected, at levels less than 5,400 µg/l but in exceedance of NYSDOH standards, in groundwater samples collected from other NCPWS wells in the vicinity of "L.A. Woman". These findings raised concerns regarding potential impacts to area drinking water (NYSDEC 1993).

In May 1991, the RCDH identified numerous potential sources (including Swivelier) to the groundwater concentrations detected at the "L.A. Woman" NCPWS well. The RCDH recommended to the NYSDEC that Swivelier be listed on the New York State Registry of Inactive Hazardous Waste Sites (Registry) (RCDH 1991). Swivelier was added to the Registry in July 1991 as a Class 2 site (NYSDEC 1993). In September 1991, Swivelier was notified that it was added to the Registry. In June 1992, the NYSDEC attempted to enter into an RI/FS consent order with Swivelier, which Swivelier was unwilling to do. Subsequently, in October 1993, the NYSDEC Division of Environmental Enforcement (DEE) referred the Swivelier site to the NYSDEC Division of Hazardous Waste Remediation (DHWR) for a State-funded RI/FS (NYSDEC 1993).

1.2 Environmental Setting

The following sections provide a description of the environmental setting at the Swivelier site.

1.2.1 Site Topography

Topographically, the site is relatively flat. However, portions of the site have been cut and regraded for development (Subsurface Investigations 1993; NYSDEC 1993). Regional topography slopes to the south-southwest (Subsurface Investigations 1993).

1.2.2 Geology

The subsurface conditions beneath the site consists of unconsolidated deposits of Pleistocene glacial till and stream deposits overlying the regional bedrock. The glacial till consists primarily of accumulations of poorly sorted sands and gravel.

Existing monitoring wells at the site are about 12 feet deep. The lithology was found to be sand to a depth of 8 to 10 feet, underlain by silty sand. The thickness of the silty sand is unknown.

Specifically, subsurface conditions at the site are described as Urban Land (Ux), which consist of fill materials, overlying natural deposits identified as the Wethersfield Gravelly Silty Loam (WeB). The Wethersfield Loam is described as a silty, clayey sand with varying amounts of gravel. Percolation rates in the Wethersfield loam are slow. Fill materials exist to thicknesses up to about 5 feet beneath the site (Subsurface Investigations 1993).

The bedrock underlying the unconsolidated deposits at the site is identified as the Brunswick (Passaic) Formation of the Newark Group. The formation consists of an alternating sequence of sandstones, shales, and conglomerate. In the vicinity of the site, the lithology is reported to consist of red brown gravely sandstone and conglomerate. The Brunswick Formation is reportedly up to 10,000 feet thick. Locally, the degree of fracturing and faulting within this unit are not defined. The depth to bedrock in the vicinity of the Swivelier site is believed to range between 20 to 30 feet below land surface (bls) (Subsurface Investigations 1993).

1.2.3 Hydrogeology

Shallow groundwater flow in the overburden beneath the site is believed to be to the south-southwest, with localized discharge to the drainage ditch at the site. The depth to groundwater beneath the site ranges from 5 to 8 feet bls (Subsurface Investigations 1993).

Groundwater flow in the bedrock aquifer is controlled primarily by fractures. Three sets of fractures are commonly found in the Brunswick Formation, specifically (1) near horizontal bedding plane fractures that strike northeast, (2) a dominant set of near vertical fractures that also strike northeast, and (3) a secondary set of near vertical fractures that strike northwest. The direction of flow is difficult to anticipate based on available information. In addition, groundwater flow in bedrock can not be assumed to flow directly downgradient because such aquifers are often anisotropic. Literature suggests that the Brunswick Formation is anisotropic with groundwater flow often parallel to the strike of the bedding planes and vertical fractures, which are subparallel and strike generally northeast. There is disagreement in the literature as to which structural feature(s) (bedding planes or vertical fractures) control groundwater flow. Some have found that, within the Brunswick, groundwater flows primarily in the northeast trending vertical fractures while others have found that water is transmitted primarily along bedding plane fractures that subdivide the formation into a layered sequence of thin aquifers and leaky aquitards (Michalski, 1990).

1.2.4 Surface Water and Drainage

A small drainage ditch is located in the western portion of the site and flows southwest to the Nauraushaun Creek, which in turn flows south and discharges into Lake Tappan, 4.5 miles south-southeast of the site. Lake Tappan supplies drinking water to northern Bergen County, New Jersey. The site is located 4.3 miles west of the Hudson River. Prior to the reconstruction of Route 304, the area west of the Swivelier site was a small wetland area. To improve surface drainage, the NYSDOT created the shallow drainage ditch at the site which is now a tributary to the Nauraushaun Creek. To allow for development to the south, the path of the drainage ditch was diverted along perimeter boundaries of developed properties and the former pathway was filled. The Spring Valley Company supplies public water to this area (NYSDEC 1993; Subsurface Investigations 1993).

Runoff from the Swivelier site enters into an on-site storm drain system, percolates into underlying soils, and/or flows into the drainage ditch. Flow in the drainage ditch (stream) is variable, from slow to moderate (i.e., during heavy storm water runoff periods). Flooding was a common occurrence at and in the vicinity of the site prior to dredging of the drainage ditch by the NYSDOT.

1.3 Project Objective

The objective of this Work Assignment, i.e., project, is to complete a phased RI/FS pursuant to NYSDEC requirements, which includes the following:

- Work plan development (including a SOP/QAPP, HASP, and MBE/WBE Utilization Plan)
- Site characterization (first phase remedial investigation [RI])
- Development of alternatives (first phase feasibility [FS] study)
- Preliminary screening of alternatives (second phase FS)
- Post-screening field investigation and treatability studies (second phase RI)
- Detailed analysis of alternatives (third phase FS)
- Recommendation of remedy

This document is the draft RI/FS work plan deliverable. Corresponding documents (draft SOP/QAPP [CDM 1994a], which includes a draft site HASP, and draft MBE/WBE Utilization Plan [CDM 1994b]) are submitted to the NYSDEC concurrently under separate cover.

The objective of the first phase RI for the Swivelier site is to delineate (nature, extent, and source[s] of) contamination at the site, if any, that may be a source of TCE contamination found in potable wells within the bedrock aquifer approximately 1/4 mile southeast of the site (at and in the vicinity of the "L.A. Woman" night club) and to develop applicable remedial action alternative(s) to address on-site, affected media, if deemed necessary. Specifically, the first phase RI is designed to assess on-site environmental, ecological, and health impacts due to on-site affected media.

Specifically, the objectives of the first phase RI for the Swivelier site are:

- to characterize the extent of affected (particularly TCE-affected) soil (if it exists) in the vadose zone, which is approximately 5 to 8 feet thick (Subsurface Investigations 1993), in the vicinity of the former leachfield and the former pathways of the drainage ditch.

- to characterize the hydrogeology of the site including the general flow direction(s) of the overburden aquifer, the hydraulic relationship between the drainage ditch and on-site groundwater (to the extent possible based on one round of synoptic water level measurements in both the drainage ditch and surrounding monitoring wells), the horizontal gradient in the bedrock aquifer, and the vertical gradients between the bedrock and overburden aquifer.

- to characterize the extent of affected (particularly, TCE-affected) groundwater (if it exists) in the overburden aquifer on-site, as well as upgradient and immediately downgradient of the site.

- to characterize the extent of affected (particularly, TCE-affected) groundwater (if it exists) in the first waters encountered in the bedrock aquifer on-site and along probable bedrock groundwater flow directions upgradient and immediately downgradient of the site.

- to characterize the extent of affected (particularly, TCE-affected) surface water and sediment (if it exists) at the site, as well as upgradient and downgradient of the site.

- to delineate wetlands in the immediate vicinity of the site.

- to perform a habitat-based assessment (HBA), if Phase I RI sample analytical results indicate that site surface water and sediment are impacted by VOCs at levels that exceed SCG values.

- to develop a risk assessment for on-site receptors.

- to develop on-site applicable remedial action alternatives, if deemed necessary.

The Phase I RI will also evaluate the need for an additional second phase RI. A second phase RI will be prepared only if Phase I RI sample analytical results indicate the need for an additional RI phase (see Section 2.5 of this work plan). Similarly, the first phase FS and subsequent studies will be prepared only if the RI demonstrates the need for remedial action at the site.

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Section 2
Scope of Work and Description of Tasks

The Swivelier site RI/FS will be implemented in accordance with the scope of work defined in Attachment 1 to Work Assignment No. D002925-4 (NYSDEC 1993). The project is organized into seven major tasks and related subtasks, as detailed below.

2.1 Task 1 - Work Plan Development

A detailed work plan will be developed for the Swivelier site RI/FS. The objective of the work plan and associated documents is to provide a site specific, detailed plan for conducting the site RI/FS so that data generated during the project will be technically accurate and properly documented, and meet the objective of the project (as discussed in Section 1.2 of this work plan) as well as to ensure that the RI/FS is conducted in compliance with Office of Safety and Health Administration (OSHA) regulations.

Work plan preparation for the site RI/FS will consist of two subtasks: Subtask 1.1 - Draft Work Plan (including the preparation of a draft RI/FS SOP/QAPP, that includes a draft site HASP and a draft RI/FS MBE/WBE Utilization Plan) and Subtask 1.2 - Final Work Plan (including the preparation of a final RI/FS SOP/QAPP and HASP, and a final RI/FS MBE/WBE Utilization Plan), the funds for which were authorized in the work assignment (NYSDEC 1993). Task 1 is currently in progress.

2.1.1 Subtask 1.1 - Draft RI/FS Work Plan

This deliverable, the draft RI/FS Work Plan, Subtask 1.1 of Task 1 - Work Plan Development, consists of the following:

- A discussion of the site background and history, including a summary of past operations and constituents of concern.
- A description of major project tasks and subtasks for the Swivelier site RI/FS.
- A detailed discussion of Phase I RI (site characterization) activities.
- A work assignment (project) progress schedule with noted milestones and deliverables.
- A staffing plan identifying management and technical staff to be assigned to the project, and resumes of key project staff.
- A work assignment budget broken down by project task and subtask.
- Identification of areas of work requiring subcontracting.
- A MBE/WBE utilization plan identifying subcontracts most likely to result in MBE/WBE utilization.

Also, during the development of the draft RI/FS Work Plan, the following activities were conducted:

- The NYSDEC DHWR, Albany, New York office correspondence file for the Swivelier site was made available to CDM by the NYSDEC Project Manager for review on December 16, 1993. The NYSDEC Project Manager determined that the NYSDEC Region 3 (New Paltz, New York) and NYSDOH Swivelier site correspondence files contained the same information as the NYSDEC Albany office file; therefore, there was no need for CDM to review these other agency files. In addition, CDM reviewed all available Swivelier site files/information at the RCDH on January 5, 1994.

- On January 6, 1994, CDM (Project Manager and Project Geologist) and the NYSDEC Project Manager conducted a site visit. During the site visit, a visual walkover was made of the site and preliminary locations of drilling/sampling sites were identified.

- A scoping session was held via telephone on January 13, 1994 with CDM (Project Manager and Project Geologist) and the NYSDEC Project Manager to discuss and confirm proposed soil sampling locations, groundwater monitoring well types and locations, and surface water and sediment sampling locations.

This deliverable is accompanied by a corresponding draft RI/FS SOP/QAPP (that includes a draft site HASP) and a draft RI/FS MBE/WBE Utilization Plan. A second draft work plan and associated documents, which incorporates NYSDEC comments on the first draft work plan (and associated documents), will also be submitted to the NYSDEC under Task 1.1. Preparation of the second draft deliverable will begin upon receipt of NYSDEC comments on the first draft deliverable. The first draft work plan and associated documents will be revised once to incorporate one set of NYSDEC written comments. Nine (9) copies of the first and second draft work plans will be submitted to the NYSDEC. For budgetary purposes, it is assumed that NYSDEC comments on the first draft work plan will be discussed via telephone conference.

2.1.2 Subtask 1.2 - Final RI/FS Work Plan

Subtask 1.2 - Final RI/FS Work Plan will consist of preparing a final work plan for the Swivelier site RI/FS that incorporates NYSDEC comments on the second draft work plan. Any other agency comments, as well as comments received during the first public information meeting (to be held after submission of the second draft RI/FS work plan) will be addressed in a technical memorandum to the NYSDEC. Cost quotes for non-standby services will be obtained in accordance with NYSDEC minimum documentation requirements and will be included in the final work plan.

The final RI/FS work plan, including the final RI/FS SOP/QAPP with HASP and MBE/WBE Utilization Plan, will be prepared upon receipt of one set of NYSDEC comments. For budgetary purposes, it is assumed that under Subtask 1.2 the CDM Project Manager will attend one public information meeting, 3 8-hour days will be spent by the CDM Project Manager in preparing for the meeting, and the CDM Project Manager will be required to prepare meeting presentation materials. It is also assumed that, following the meeting, public comments will be discussed with the NYSDEC via telephone such that no meetings at the NYSDEC Albany, New York office will be needed. Twelve copies of the final RI/FS work plan will be submitted to the NYSDEC.

Site work will not commence until CDM has received NYSDEC approval of the final work plan, including final approval of the project budget and scope.

2.2 Task 2 - Site Characterization (First Phase Remedial Investigation)

Field investigations during this initial phase of the site RI will be performed to determine the nature, extent and source(s) of contamination at the site. Samples collected during the Phase I RI will be analyzed for target compound list (TCL) VOCs and semi-VOCs (base neutral/acid extractables [BNAs]), as well as target analyte list (TAL) metals (see Table 2-1).

It is anticipated that an on-site office/storage trailer will be the base of all field work, and investigations will not be conducted inside the site building. It is anticipated that the office/storage trailer will be equipped with electricity, as well as a telephone and telefax line.

For purposes of the work plan, the work associated with the Phase I RI, site characterization, has been divided into seven subtasks. Subtask 2.1 consists of the characterization of subsurface soils at the site; Subtask 2.2 consists of the characterization of the site hydrogeology; Subtask 2.3 consists of the characterization of surface water and sediment at the site; Subtask 2.4 consists of a wetlands delineation and an HBA (if deemed necessary); Subtask 2.5 consists of a site survey; Subtask 2.6 consists of a preliminary data report; and Subtask 2.7 consists of an on-site risk assessment.

2.2.1 Subtask 2.1 - Subsurface Soil Characterization

As discussed in Section 1.1.2, the drainage ditch was dredged and relocated by the NYDOT, at least twice, since 1980 (Subsurface Investigations 1993). During the Phase I RI, a soil gas survey and subsurface soil sampling will be conducted at the former leachfield and in the vicinity of possible former pathways of the drainage ditch to determine the extent of affected soils, if any, in the subsurface at these areas. The results of the soil gas survey will be used in the field by the on-site geologist and NYSDEC Project Manager (or NYSDEC field oversight designee) to determine/confirm final monitoring well and subsurface soil sampling locations.

As shown in Figure 2-1, three areas have been delineated for the subsurface soil characterization. Area 1 encompasses possible former locations of the discharge outfall, Area 2 encompasses possible former drainage ditch pathways as well as possible locations at which dredged materials were placed, and Area 3 encompasses the approximate location of the former leachfield. Available aerial photographs will be reviewed to attempt to better locate the former leachfield, former discharge outfall locations, and former drainage ditch pathways prior to conducting the subsurface investigation.

2.2.1.1 Soil Gas Survey

A soil gas survey will be conducted in each of the areas shown on Figure 2-1. The soil gas surveys will be used as a screening device to confirm proposed subsurface soil sample and monitoring well locations (specifically, proposed locations for monitoring wells MW-4S, MW-5S, and MW-6S). Because the soil gas survey is a screening device, it will not be subject to the QA/QC procedures discussed in Section 8.1 of the draft RI/FS SOP/QAPP (CDM 1994a). In Area 1, soil gas sample locations will be located on a 20 by 20 ft sampling grid. A 50 by 50 ft

Table 2-1
Target Compound List (TCL)
Contract Required Quantitation Limits (CRQL)*

VOCs	CAS Number	Quantitation Limits* Water ug/L	Low Soil ug/Kg	Med Soil ug/Kg	On Column
1. Chloromethane	74-87-3	10	10	1200	(50)
2. Bromomethane	74-83-9	10	10	1200	(50)
3. Vinyl chloride	75-01-4	10	10	1200	(50)
4. Chloroethane	75-00-3	10	10	1200	(50)
5. Methylene chloride	75-09-2	10	10	1200	(50)
6. Acetone	67-64-1	10	10	1200	(50)
7. Carbon Disulfide	75-15-0	10	10	1200	(50)
8. 1,1-Dichloroethylene	75-35-4	10	10	1200	(50)
9. 1,1-Dichloroethane	75-35-3	10	10	1200	(50)
10. 1,2-Dichloroethylene (total)	540-59-0	10	10	1200	(50)
11. Chloroform	67-66-3	10	10	1200	(50)
12. 1,2-Dichloroethane	107-06-2	10	10	1200	(50)
13. 2-Butanone	78-93-3	10	10	1200	(50)
14. 1,1,1-Trichloroethane	71-55-6	10	10	1200	(50)
15. Carbon tetrachloride	56-23-5	10	10	1200	(50)
16. Bromodichloromethane	75-27-4	10	10	1200	(50)
17. 1,2-Dichloropropane	78-87-5	10	10	1200	(50)
18. cis-1,3-Dichloropropene	10061-01-5	10	10	1200	(50)
19. Trichloroethene	79-01-6	10	10	1200	(50)
20. Dibromochloromethane	124-48-1	10	10	1200	(50)
21. 1,1,2-Trichloroethane	79-00-5	10	10	1200	(50)
22. Benzene	71-43-2	10	10	1200	(50)
23. trans-1,3-Dichloropropene	10061-02-6	10	10	1200	(50)
24. Bromoform	75-25-2	10	10	1200	(50)
25. 4-Methyl-2-pentanone	108-10-1	10	10	1200	(50)
26. 2-Hexanone	591-78-6	10	10	1200	(50)
27. Tetrachloroethene	127-18-4	10	10	1200	(50)
28. Toluene	108-88-3	10	10	1200	(50)
29. 1,1,2,2-Tetrachloroethane	79-34-5	10	10	1200	(50)
30. Chlorobenzene	108-90-7	10	10	1200	(50)
31. Ethyl Benzene	100-41-4	10	10	1200	(50)
32. Styrene	100-42-5	10	10	1200	(50)
33. Total Xylenes	1330-20-7	10	10	1200	(50)

Table 2-1 (cont'd)
Target Compound List (TCL)
Contract Required Quantitation Limits (CRQL)*

Semi - VOCs	CAS Number	Quantitation Limits* Water ug/L	Low Soil ug/Kg	Med Soil ug/Kg	On Column
34. Phenol	108-95-2	10	330	10,000	(20)
35. bis(2-Chloroethyl) ether	111-44-4	10	330	10,000	(20)
36. 2-Chlorophenol	95-57-8	10	330	10,000	(20)
37. 1,3-Dichlorobenzene	541-73-1	10	330	10,000	(20)38.
38. 1,4-Dichlorobenzene	106-46-7	10	330	10,000	(20)
39. 1,2-Dichlorobenzene	95-50-1	10	330	10,000	(20)
40. 2-Methylphenol	95-48-7	10	330	10,000	(20)
41. 2,2'-oxybis(1-Chloropropane)#	108-60-1	10	330	10,000	(20)
42. 4-Methyphenol	106-44-5	10	330	10,000	(20)
43. N-Nitroso-di-n-propylamine	621-64-7	10	330	10,000	(20)
44. Hexachloroethane	67-72-1	10	330	10,000	(20)
45. Nitrobenzene	98-95-3	10	330	10,000	(20)
46. Isophorone	78-59-1	10	330	10,000	(20)
47. 2-Nitrophenol	88-75-5	10	330	10,000	(20)
48. 2,4-Dimethylphenol	105-67-9	10	330	10,000	(20)
49. bis(2-Chloroethoxy) methane	111-91-1	10	330	10,000	(20)
50. 2,4-Dichlorophenol	120-83-2	10	330	10,000	(20)
51. 1,2,4-Trichlorobenzene	120-82-1	10	330	10,000	(20)
52. Naphthalene	91-20-3	10	330	10,000	(20)
53. 4-Chloroaniline	106-47-8	10	330	10,000	(20)
54. Hexachlorobutadiene	87-68-3	10	330	10,000	(20)
55. 4-Chloro-3-methyphenol	59-50-7	10	330	10,000	(20)
56. 2-Methylnaphthalene	91-57-6	10	330	10,000	(20)
57. Hexachlorocyclopentadiene	77-47-4	10	330	10,000	(20)
58. 2,4,6-Trichlorophenol	88-06-2	10	330	10,000	(20)
59. 2,4,5-Trichlorophenol	95-95-4	25	800	25,000	(50)
60. 2-Chloronaphthalene	91-58-7	10	330	10,000	(20)
61. 2-Nitroaniline	88-74-4	25	800	25,000	(50)
62. Dimethylphthalate	131-11-3	10	330	10,000	(20)
63. Acenaphthylene	208-96-8	10	330	10,000	(20)
64. 2,6-Dinitrotoluene	606-20-2	10	330	10,000	(20)
65. 3-Nitroaniline	99-09-2	25	800	25,000	(50)
66. Acenaphthene	83-32-9	10	330	10,000	(20)
67. 2,4-Dinitrophenol	51-28-5	25	800	25,000	(50)
68. 4-Nitrophenol	100-02-7	25	800	25,000	(50)
69. Dibenzofuran	132-64-9	10	330	10,000	(20)

Table 2-1 (cont'd)
Target Compound List (TCL)
Contract Required Quantitation Limits (CRQL)*

Semi-VOCs	CAS Number	Quantitation Limits* Water ug/L	Low Soil ug/Kg	Med Soil ug/Kg	On Column
70. 2,4-Dinitrotoluene	121-14-2	10	330	10,000	(20)
71. Diethylphthalate	84-66-2	10	330	10,000	(20)
72. 4-Chlorophenyl phenyl ether	7005-72-3	10	330	10,000	(20)
73. Fluorene	86-73-7	10	330	10,000	(20)
74. 4-Nitroaniline	100-01-6	25	800	25,000	(50)
75. 4,6-Dinitro-2-methylphenol	534-52-1	25	800	25,000	(50)
76. N-nitrosodiphenylamine	86-30-6	10	330	10,000	(20)
77. 4-Bromophenyl phenyl ether	101-55-3	10	330	10,000	(20)
78. Hexachlorobenzene	118-74-1	10	330	10,000	(20)
79. Pentachlorophenol	87-86-5	25	800	25,000	(50)
80. Phenanthrene	85-01-8	10	330	10,000	(20)
81. Anthracene	120-12-7	10	330	10,000	(20)
82. Carbazole	86-74-8	10	330	10,000	(20)
83. Di-n-butyl phthalate	84-74-2	10	330	10,000	(20)
84. Fluoranthene	206-44-0	10	330	10,000	(20)
85. Pyrene	129-00-0	10	330	10,000	(20)
86. Butyl benzyl phthalate	85-68-7	10	330	10,000	(20)
87. 3,3'-Dichlorobenzidine	91-94-1	10	330	10,000	(20)
88. Benz(a)anthracene	56-55-3	10	330	10,000	(20)
89. Chrysene	218-01-9	10	330	10,000	(20)
90. bis(2-Ethylhexyl)phthalate	117-81-7	10	330	10,000	(20)
91. Di-n-octyl phthalate	117-84-0	10	330	10,000	(20)
92. Benzo(b)fluoranthene	205-99-2	10	330	10,000	(20)
93. Benzo(k)fluoranthene	207-08-9	10	330	10,000	(20)
94. Benzo(a)pyrene	50-32-8	10	330	10,000	(20)
95. Indeno(1,2,3-cd)pyrene	193-39-5	10	330	10,000	(20)
96. Dibenz(a,h)anthracene	53-70-3	10	330	10,000	(20)
97. Benzo(g,h,i)perylene	191-24-2	10	330	10,000	(20)

* Quantitation Limits listed for soil/sediment are based on wet weight. The quantiation limits calculated by the laboratory for soil/sediment, calculated on dry weight basis, as required by the protocol, will be higher.

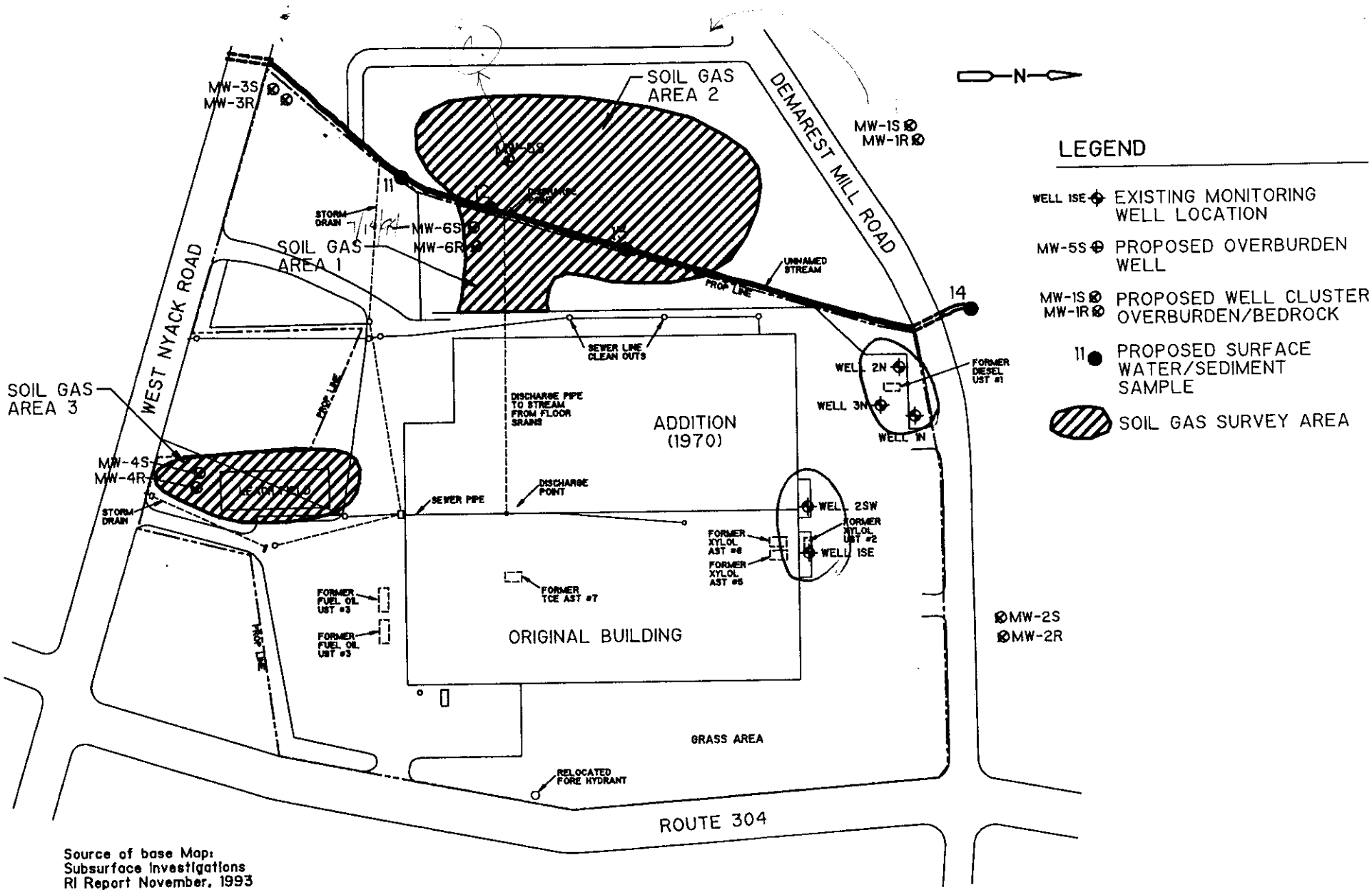
\# Previoulsy known by the name bis(2-Chloroisopropyl) ether

TABLE 2-1 (cont'd)

Target Analyte List (TAL)
Contract Required Quantitation Limit

Metals Only

Parameter	Contract Required Quantitation Level (ug/L)
1. Aluminum	200
2. Antimony	60
3. Arsenic	10
4. Barium	200
5. Beryllium	5
6. Cadmium	5
7. Calcium	5000
8. Chromium	10
9. Cobalt	50
10. Copper	25
11. Iron	100
12. Lead	3
13. Magnesium	5000
14. Manganese	15
15. Mercury	0.2
16. Nickel	40
17. Potassium	5000
18. Selenium	5
19. Silver	10
20. Sodium	5000
21, Thallium	10
22. Vanadium	50
23. Zinc	20



Source of base Map:
Subsurface Investigations
RI Report November, 1993

Figure 2-1

Monitoring Network-On/Near Site

Swiveller Site - Nanuet, New York
NYSDEC Site #3-44-036

CDM Camp Dresser & McKee

sampling grid will be utilized in Area 2 and a 20 by 20 ft sampling grid will be utilized in Area 3. Based upon a review of the field analytical results, additional samples may be collected to further define affected areas within a grid. A detailed description of the field procedures for the site soil gas survey is provided in the draft RI/FS SOP/QAPP (CDM 1994a).

For budgetary purposes, it is assumed that:

- 50 soil gas samples are collected and immediately analyzed, in the field, using a gas chromatograph (GC).
- Required equipment is as described in the draft RI/FS SOP/QAPP (CDM 1994a).
- A supply of potable water will not be available on-site. In addition, potable water will be brought to the site by CDM and/or its subcontractors as needed.
- Work will be performed using Level D PPE (see draft RI/FS HASP [CDM 1994a])
- The soil gas samples (50) will be collected and analyzed, in accordance with the draft SOP/QAPP (CDM 1994a), over an 8-day period; two people will collect the samples and one person will conduct the GC analysis. A 12-hour work day is assumed.
- A budget of $1,500 is provided for Phase I RI consumable supplies. The NYSDEC will be notified of consumable supply costs greater than $1,500; NYSDEC will reimburse these costs upon receipt of cost backup/justification.
- No meetings at the NYSDEC Albany, New York office will be needed.

2.2.1.2 Collection and Analysis of Subsurface Soil Samples

Split spoon samples collected during the drilling of each monitoring well borehole will be screened for VOCs using an organic vapor monitor (OVM) photoionization detector (PID). Based on the results of the VOC-screening, one subsurface soil sample from the vadose zone (i.e., the same for which the highest PID reading was obtained or, in the event PID reading is less than background, from directly above the water table) at each of the monitoring well cluster locations will be collected and analyzed for VOCs (6 samples, total). Additional soil borings may be drilled to collect subsurface soil samples based on the results of the soil gas survey (for the budgeting purposes of the Phase I RI, it is assumed that a maximum of 7 additional soil samples will be collected and analyzed for VOCs; therefore, a maximum of 13 subsurface soil samples are expected to be collected and analyzed for VOCs during the Phase I RI). In addition, one upgradient soil sample (from monitoring well borehole 1S) and three soil samples collected on-site (from monitoring well boreholes 4S, 5S and 6S) will also be analyzed for TCL, semi-VOCs and TAL metals. A detailed description of the field procedures for the collection of subsurface soil samples is provided in the draft RI/FS SOP/QAPP (CDM 1994a).

For budgetary purposes, it is assumed that:

- During the borehole drilling, one subsurface sample will be collected for each monitoring well cluster, for a total of 6 collected samples (see Section 2.2.2.1, Monitoring Well Installation, for estimated sampling time).

- Seven subsurface samples will be collected, based on the results of the site soil gas survey, over a 2-day period. One CDM person working 12-hour days are assumed.
- Required equipment is as described in the draft RI/FS SOP/QAPP (CDM 1994a).
- Prior to the drilling of a borehole, all split spoons will be steam-cleaned, washed with liquinox and rinsed with distilled/deionized water. At a given borehole, split spoons will be washed with liquinox and rinse with distilled/deionized water between sampling events.
- A supply of potable water will not be available on-site. In addition, potable water will be brought to the site by CDM and/or its subcontractors as needed.
- NYSDEC will provide legal access to all off-site sampling locations, as needed.
- Decontamination fluid will be collected and screened using an OVM PID. If deemed necessary, generated wastewater will be treated on-site by a NYSDEC-supplied granular activated carbon (GAC) unit (see draft RI/FS SOP/QAPP [CDM 1994a]).
- Auger cuttings will be screened using an OVM PID. If deemed necessary, cuttings will be disposed off-site as hazardous waste (see discussion in draft RI/FS SOP/QAPP [CDM 1994a]). It is assumed that, during the Phase I RI, a total of 6 drums of cuttings will be disposed off-site as hazardous waste at a cost of $5,000.
- Costs for CDM oversight of wastewater treatment and drum disposal are included.
- The NYSDEC will be responsible for coordinating off-site disposal of hazardous waste generated during the Phase I RI, if any, under a separate contract for disposal costs greater than $5,000.
- A budget of $1,500 is provided for Phase I RI consumable supplies. The NYSDEC will be notified of consumable supply costs greater than $1,500; NYSDEC will reimburse these costs upon receipt of cost backup/justification.
- The NYSDEC will designate a drum storage area.
- A total of 13 soil samples will be analyzed by the contract laboratory for TCL VOCs. A total of 4 soil samples will also be analyzed for TCL semi-VOCs and TAL metals.
- QA/QC samples (as specified in Table 8-2 of the draft SOP/QAPP [CDM 1994a]) will be sent to the contract laboratory for TCL VOC, TCL semi-VOC, and TAL metals analysis.
- Work will be performed using Level D personal protective equipment (PPE) (see draft RI/FS HASP [CDM 1994a]).
- No meetings at the NYSDEC Albany, New York office will be needed.

2.2.2 Subtask 2.2 - Hydrogeologic Characterization

The objective of the site hydrogeologic characterization is to evaluate groundwater quality (nature, extent and source[s]) and flow at the Swivelier site to determine if the site may be a source of TCE found in bedrock non-community potable wells southeast of the site. Specifically, the goals of the site hydrogeologic characterization are:

- to characterize the stratigraphy and groundwater flow in the overburden aquifer at and in the immediate vicinity of the site.
- to characterize the hydraulic relationship between the drainage ditch and the overburden aquifer (to the extent possible based on two rounds (at least 3 months apart) of synoptic water level measurements in both the drainage ditch and surrounding monitoring wells).
- to characterize the lithology and structural geology of the bedrock aquifer at and in the immediate vicinity of the site, to a depth corresponding to first water within this aquifer.
- to characterize the horizontal gradient within the shallow bedrock aquifer, and the gradient relationship between the bedrock and overburden aquifers at and in the immediate vicinity of the site.
- to characterize groundwater quality in both the overburden and bedrock aquifers at and in the immediate vicinity of the site.

2.2.2.1 Monitoring Well Installation

CDM proposes to install 6 overburden and 5 bedrock monitoring wells at the Swivelier site. The proposed monitoring well locations are shown in Figure 2-1. At each well cluster location, one test boring will be conducted. Continuous split spoon samples will be collected from the test boring within the vadose zone and at 5 foot intervals in the saturated zone until bedrock is encountered. As discussed in Section 2.2.1.2, each sample will be screened for VOCs using an OVM PID and one soil sample from each boring will be selected for VOC laboratory analysis. In addition, one upgradient soil sample (from monitoring well borehole 1S) and three soil samples collected on-site (from monitoring well boreholes 4S, 5S, and 6S) will also be analyzed for TCL semi-VOCs and TAL metals. Upon completion of split spoon sampling, the test boring will be converted into a monitoring well. Only one test boring per well cluster will be required. The final design of each overburden monitoring well (depth, screen length) will be determined based on the observed stratigraphy and indication of extent of VOC-affected soils based on collected split spoon samples.

Based upon the flow direction of the drainage ditch, the direction of groundwater flow in the overburden is believed to be to the southeast. Proposed monitoring wells MW-1S and MW-2S are upgradient overburden wells (see Figure 2-1). Two upgradient wells are recommended because the drainage ditch may function as a groundwater divide and, therefore, groundwater may flow towards the site from two different directions. Also, numerous potential upgradient sources of TCE exist (Subsurface Investigations, 1993; NYSDEC 1993). In summary, monitoring wells MW-1S and MW-2S are proposed to adequately evaluate whether the overburden aquifer is impacted by upgradient sources.

Proposed monitoring well MW-3S is located at the southwest corner of the site, near the drainage ditch, downgradient of the former Swivelier discharge outfall (see Figure 2-1). This well will be used to characterize downgradient groundwater quality in the overburden aquifer and to evaluate the hydraulic relationship between the drainage ditch and the overburden aquifer.

Proposed monitoring well MW-4S is located within the former leachfield to characterize groundwater quality in this area (see Figure 2-1). This well will also provide a triangulation point for evaluating groundwater flow in the overburden aquifer.

Also as shown on Figure 2-1, proposed monitoring well MW-5S is located west of the drainage ditch. This well will be used to evaluate the relationship between the drainage ditch and the overburden aquifer and to evaluate ground water quality in this area.

Proposed monitoring well MW-6S is located east of the drainage ditch, as close to, and downgradient of, the former Swivelier discharge outfall as possible, to evaluate impacts to groundwater quality at this location. This well will also be used to evaluate the hydraulic relationship between the overburden aquifer and the drainage ditch.

Proposed locations for bedrock monitoring wells at and in the vicinity of the site were selected to evaluate groundwater quality impacts by the former discharge outfall, the former leachfield, and potential off-site sources as well as to evaluate the hydraulics of the bedrock aquifer. Specifically, the proposed bedrock monitoring well network for the Swivelier site Phase I RI was designed to provide wells along both the anticipated strike and updip/downdip directions for the purpose of providing an observation well network that could evaluate structural controls on groundwater flow in the event it is deemed necessary to conduct a pumping test at the site. Proposed monitoring wells MW-1R and MW-2R are located downdip and along strike (of the geologic bedding plane), respectively, of the former discharge outfall (though not necessarily upgradient of the site) and will provide an indication of off-site bedrock groundwater quality (see Figure 2-1). Proposed monitoring well MW-3R is along strike of the former discharge outfall and is downstream of the surface stream (drainage ditch) flow from the former outfall discharge. Proposed monitoring well MW-4R is a downdip well and will serve to evaluate bedrock groundwater quality in the immediate vicinity of the leachfield. Proposed monitoring well MW-6R is in the immediate vicinity of the former discharge outfall and will be used to evaluate bedrock groundwater quality in this area.

Detailed procedures for the drilling, installation, and development of proposed overburden and bedrock monitoring wells are described in the draft RI/FS SOP/QAPP.

For budgetary purposes, it is assumed that:

- Required equipment is as described in the draft RI/FS SOP/QAPP (CDM 1994a).
- A supply of potable water will be available on-site. In addition, potable water will be brought to the site by CDM and/or its subcontractors as needed.
- All drilling sites will be accessible by a truck-mounted drill rig.

- Well development water will be screened using an OVM PID. If deemed necessary, generated wastewater will be treated on-site by a NYSDEC-supplied GAC unit (see discussion in the draft RI/FS SOP/QAPP [CDM 1994a]).

- Auger cuttings will be screened using an OVM PID. If deemed necessary, cuttings will be disposed off-site as hazardous waste. It is assumed that, during the Phase I RI, a total of 6 drums of cuttings will be disposed off-site as hazardous waste at a cost of $5,000.

- The NYSDEC will be responsible for coordinating off-site disposal of hazardous waste generated during the Phase I RI, if any, under a separate contract for disposal costs greater than $5,000.

- Costs for CDM oversight of wastewater treatment and drum disposal are included.

- The NYSDEC will designate a drum storage area.

- Decontamination of drilling tools and rig will be accomplished using a steam cleaner only. Assume that all wash water, drilling fluids, and decontamination fluids will be drummed (assume nine 55-gal drums of fluid) and disposed off-site as hazardous waste (worst-case assumption) (see detailed discussion in the draft RI/FS SOP/QAPP [CDM 1994a]).

- NYSDEC will designate a drum storage area.

- NYSDEC will provide legal access to all off-site sampling locations, as needed.

- The yield and specific capacity of each well will be evaluated to characterize the permeability of the aquifer(s).

- Packer testing, permeability testing, slug tests, pump tests, grain size analysis, and other physical analyses are not included.

- Borings drilled to bedrock include decontamination, mobilization, split spoons, and cuttings containment at the rate of one boring per 12-hour work day (60 hours for 5 deep wells, 1 CDM person).

- Four-inch casings will be installed, including containment of cuttings (if necessary), mobilization, and grouting, at the rate of one deep well per 12-hour work day (60 hours for 5 deep wells, 1 CDM person).

- Drill nominal 3-inch open holes using NQ core and air develop rock wells at rate of one well every two days (assuming 1 CDM person, 12-hour work day) including cuttings containment, decontamination, and mobilization (120 hours for 5 deep wells).

- Drill and install 6 overburden monitoring wells including mobilization, decontamination, and cuttings containment at rate of 1 well per day, assuming 1 CDM person and a 12-hour work day (72 hours for 6 new shallow wells).

- Develop 6 new, overburden wells including mobilization, decontamination, and water containment, at rate of 2 wells per 12-hour work day, for 1 CDM person (36 hours for 6 overburden wells).

- Develop 5 bedrock wells, including mobilization, decontamination, and water containment, at rate of 2 wells per 12-hour day, for 1 CDM person (30 hours for 5 bedrock wells).

- Driller will obtain all required permits for well installation.

- There are no on-site restrictions on welding and noise.

- All work will be performed using Level D PPE (see draft RI/FS HASP [CDM 1994a]).

- No meetings at the NYSDEC Albany, New York office will be needed.

- An initial site visit will be conducted by the CDM Project Manager, Geologist and Field Operations Manager, and the NYSDEC Project Manager, with the drilling subcontractor prior to commencing this field activity to confirm locations of all proposed wells and to evaluate well location access. Local utility firms will be contacted and available utility maps will be obtained in advance of the initial site visit. This initial site visit will be completed within 10 hours per person for 3 people, including travel time.

- Worst-case estimate of generated cuttings, with respect to the installation of 6 overburden wells (8-inch diameter borehole, 30 ft depth) is about 63 cubic feet (cf) (or 470 gallons [gal]) of cuttings. Assume a safety factor of 1.25, for a total of 587 gallons of cuttings generated (about 11, 55-gal drums).

- Worst-case estimate of generated cuttings, with respect to the installation of 5 bedrock wells (10-inch borehole, 30 ft depth; 6-inch borehole, 10 ft depth), is about 92 cf (690 gal) of cuttings. Assume a safety factor of 1.25, for a total of 862.5 gal of cuttings generated (about 16, 55-gal drums).

- Cores will be kept by the NYSDEC.

- A budget of $1,500 is provided for Phase I RI consumable supplies. The NYSDEC will be notified of consumable supply costs greater than $1,500; NYSDEC will remiburse these costs upon receipt of cost backup/justification.

- Worst-case estimate of generated development water, with respect to the installation of 6 overburden wells, is about 330 gal of water (6, 55-gal drums) assuming that 55 gal of water generated per well. Three-hundred and thirty gallons of wastewater will be treated (by on-site GAC unit) at a rate of 20 gallons per minute (gpm).

- Worst-case estimate of generated development water, with respect to the installation of 5 bedrock wells, is about 3,000 gal of water (55, 55-gal drums) assuming 600 gal of water generated per well. Three thousand gallons of wastewater will be treated (by on-site GAC unit) at a rate of 20 gpm.

2.2.2.2 Synoptic Groundwater Level Measurements

CDM will collect two rounds of synoptic water level measurements, one immediately prior to the Phase I RI groundwater sampling event and a second during a different season (at least 3 months following the first round of measurements). Water level measurements will be taken within the newly installed monitoring wells, as well as in existing site monitoring wells MW-1N, MW-2N, MW-3N, MW-1SE, and MW-2SW, to an accuracy of 0.01 ft. Water levels will also be measured with a rod and level at two points within the drainage ditch, using a nearby monitoring well as a temporary bench mark. Detailed procedures for the measurement of water levels are described in the draft RI/FS SOP/QAPP (CDM 1994a).

For budgetary purposes, it is assumed that:

- Required equipment is as described in the draft RI/FS SOP/QAPP (CDM 1994a).
- NYSDEC will provide legal access to all off-site locations, as needed.
- A supply of potable water will be available on-site. In addition, potable water will be brought to the site by CDM and/or its subcontractors as needed.
- Measurements will be taken over a 1-day period. It is assumed that 2 CDM people will work one 8-hour day for each measurement event.
- All work will be performed using Level D PPE (see draft RI/FS HASP [CDM 1994a])
- No meetings at the NYSDEC Albany, New York office will be needed.

2.2.2.3 Collection and Analysis of Groundwater Samples

A groundwater sample will be collected from each of the newly installed monitoring wells as well as from existing monitoring wells MW-3N and MW-1SE. Each sample will be analyzed for TCL VOCs. In addition groundwater samples collected from monitoring wells MW-1S, MW-2S, MW-4S, MW-4R, MW-5S, MW-6S, and MW-6R will also be analyzed for TCL semi-VOCs and TAL metals. Detailed procedures for groundwater sampling are discussed in the draft RI/FS SOP/QAPP (CDM 1994a).

For budgetary purposes, it is assumed that:

- Required equipment is described in the draft RI/FS SOP/QAPP (CDM 1994a).
- A supply of potable water will be available on-site. In addition, potable water will be brought to the site by CDM and/or its subcontractors as needed.
- Well purge water will be screened using an OVM PID. If deemed necessary, generated wastewater will be treated on-site by a NYSDEC-supplied GAC unit (see detailed discussion in the draft RI/FS SOP/QAPP [CDM 1994a]).
- Approximately 1,540 gal (28, 55-gal drums) of well purge water will be generated. At a rate of 20 gpm, 1,540 gal of wastewater will be treated (by on-site GAC unit) in 77 minutes (1.3 hours).

- Cost for CDM oversight of wastewater treatment is included.
- Pre-cleaned bailers dedicated to each well will be used.
- NYSDEC will be able to provide legal access to all off-site sampling locations, as needed.
- A total of 13 groundwater samples will be collected and sent to the contract laboratory for TCL VOC analysis. In addition, 7 groundwater samples will also be analyzed, by the contract laboratory, for TCL semi-VOCs and TAL metals.
- QA/QC samples (as specified in Table 8-2 of the draft SOP/QAPP [CDM 1994a]) will be sent to the contract laboratory for TCL VOC, TCL semi-VOC, and TAL metals analysis.
- Groundwater wells recover at a reasonable rate, and sampling can be conducted within 2 hours of purging.
- Monitoring wells will be sampled at a rate of 5 wells per 12-hour work day, with 2 CDM people. Total is 36 hours per person for 2 persons (72 hours, total).
- All work will be performed using Level D PPE (see draft RI/FS HASP [CDM 1994a]).
- A budget of $1,500 is provided for Phase I RI consumsable supplies. The NYSDEC will be notified of consumable supply costs greater than $1,500; NYSDEC will reimburse these costs upon receipt of cost backup/justification.
- No meetings at the NYSDEC Albany, New York office will be needed.

2.2.3 Subtask 2.3 - Surface Water and Sediment Characterization

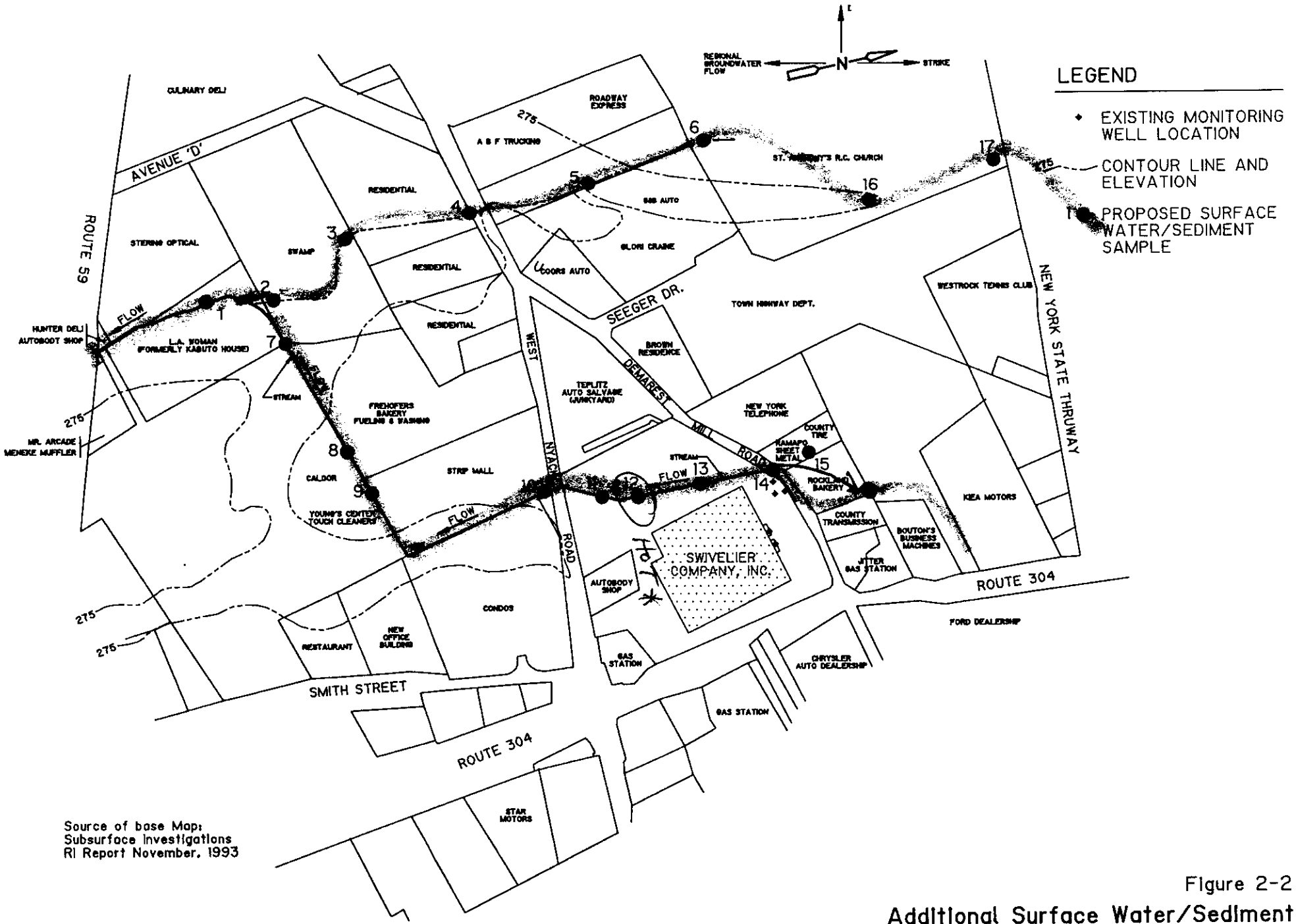
Surface water and sediment quality in the drainage ditch at the site, as well as upgradient and downgradient of the site, will be evaluated. In addition, the quality of surface water and sediment in the drainage ditch stream will be evaluated at observed outfall points downgradient of the site, as well as at, and upgradient and downgradient of, the point at which the drainage ditch is joined by the Nauraushaun Creek. Each collected sample will be analyzed for TCL VOCs. In addition, one upgradient and 3 on-site surface water and sediment samples will also be analyzed for TCL semi-VOCs and TAL metals. A summary of the proposed surface water and sediment sample locations are provided in Table 2-2 and on Figures 2-1 and 2-2. Detailed procedures for the surface water and sediment sampling are discussed in the draft RI/FS SOP/QAPP (CDM 1994a).

For budgetary purposes, it is assumed that:

- Required equipment is as described in the draft RI/FS SOP/QAPP (CDM 1994a).
- A supply of potable water will be available on-site. In addition, potable water will be brought to the site by CDM and/or its subcontractors as needed.
- NYSDEC will be able to provide legal access to off-site sampling locations, as needed.

Table 2-2
Surface Water and Sediment Sample Location Summary

Sample Location	Purpose
1	Evaluate surface water and sediment quality in Nauraushaun Creek immediately downstream of the drainage ditch stream.
2	Evaluate surface water and sediment quality in Nauraushaun Creek immediately upstream of the drainage ditch stream.
3	Evaluate surface water and sediment quality of Nauraushaun Creek in the vicinity of the site.
4	Evaluate surface water and sediment quality of Nauraushaun Creek in the vicinity of the site.
5	Evaluate surface water and sediment quality of Nauraushaun Creek in the vicinity of the site.
6	Evaluate surface water and sediment quality of Nauraushuan Creek in the vicinity of the site.
7	Evaluate surface water and sediment quality of drainage ditch stream in the vicinity of the site.
8	Evaluate surface water and sediment quality of drainage ditch stream in the vicinity of the site.
9	Evaluate surface water and sediment quality drainage ditch stream in the vicinity of the site.
10	Evaluate surface water and sediment quality of drainage ditch stream downgradient of Swivelier site.
11-13	Evaluate surface water and sediment quality of drainage ditch stream at Swivelier site.
14	Evaluate surface water and sediment quality of drainage ditch stream upgradient at Swivelier site.
15	Evaluate surface water and sediment quality of drainage ditch stream upgradient at Swivelier site.
16	Evaluate surface water and sediment quality in the vicinity of the site.
17	Evaluate surface water and sediment quality in the vicinity of the site.



Source of base Map:
Subsurface Investigations
RI Report November, 1993

Figure 2-2

Additional Surface Water/Sediment Sample Location Map

Swivelier Site - Nanuet, New York
NYSDEC Site #3-44-036

CDM Camp Dresser & McKee

- Samples will be collected over a 2-day period. Two CDM people working 8-hour days is assumed (32 hours, total).

- A total of 17 surface water and 17 sediment samples will be collected and sent to the contract laboratory for TCL VOC analysis. In addition, one upgradient and 3 on-site surface water and sediment samples will also be analyzed for TCL semi-VOCs and TAL metals.

- QA/QC samples (as specified in Table 8-2 of the draft SOP/QAPP [CDM 1994a]) will be sent to the contract laboratory for TCL VOC, TCL semi-VOC, and TAL metals analysis.

- All work will be performed using Level D PPE (see draft RI/FS HASP [CDM 1994a]).

- A budget of $1,500 is provided for Phase I RI consumable supplies. The NYSDEC will be notified of consumable supply costs greater than $1,500; NYSDEC will reimburse these costs upon receipt of cost backup/justification.

- No meetings at the NYSDEC office in Albany, New York will be needed.

2.2.4 Subtask 2.4 - Wetlands Delineation and Habitat-Based Assessment

During the Phase I RI, wetlands adjacent to the site will be delineated (if deemed necessary) to determine the necessity of a detailed wetland study. An HBA will be conducted only if, during the Phase I RI, on-site surface water and sediment are found to be impacted by VOCs at levels that exceed SCG values. If required, CDM will perform a preliminary HBA for the site based on the proximity of any fish and wildlife sensitive areas, in accordance with NYSDEC Division of Fish and Wildlife guidelines (NYSDEC 1991).

The objective of the HBA, if required, will be to describe the fish and wildlife resources that could potentially be impacted by on-site surface water and sediment, and to outline any additional studies that should be performed. The Phase I RI HBA, if required, will consist of conducting a natural resource inventory/wildlife habitat survey in the immediate vicinity of the site, including a site reconnaissance as well as a terrestrial and aquatic habitat and stressed ecology inventory, based on existing information to be verified by field reconnaissance. The HBA will include preparation of cover type mapping, a description of fish and wildlife resources, preparation of qualitative faunal/vegetative cover type associations, and qualitative assessments of relative habitat values to fish and wildlife resources.

Specifically, the HBA, if required, will include a specific description of habitats within a 0.5-mile radius of the site and any significant habitats within two miles of the site, including any nearby wetlands, bay, and stream systems that could potentially be impacted by on-site surface water and sediment. The "cover type" map, extending radially 0.5 miles from the site boundary, will consist of a topographic map at 1 inch equal to 500 feet with 5-foot contours. Vegetation by cover type, regulated wetlands, aquatic habitats, NYSDEC significant habitats, and areas of concern as designated by NYSDEC will be identified on the "cover" map using existing aerial photographs, mapping, and delineations. Identified areas will be field checked. Plant and animal species indigenous to these habitats will be identified based upon available data and verified by field reconnaissance.

A USGS topographic map will be used and serve as the base map for the area extending from the site boundary to 2 miles from the site. The scale of this map will be 1 inch equal to 1000 feet. This map will depict documented fish and wildlife resources such as regulated wetlands, bays, and stream systems. The information for this map will be based on already existing information; no field confirmation is anticipated for this 2-mile radius map.

Data sources to be used for the preparation of the 0.5-mile and 2-mile radius maps include NYSDEC tidal and freshwater wetland inventory maps; Soil Conservation Service survey maps; Flood Emergency Management Agency (FEMA) maps; NYSDEC information on sitings of rare, threatened, or endangered species at and in the immediate vicinity of the site; existing aerial photography; and reports on indigenous species to the area. Local agencies, such as the parks and recreations department, will also be contacted for faunal/flora information.

The wetlands delineation and HBA will be incorporated into the RI/FS report.

For budgetary purposes, it is assumed that:

- Wetlands will be delineated; a detailed wetland study will not be conducted.
- An HBA will be conducted during the Phase I RI.
- Habitat assessment field activities will be conducted for a 0.5-mile radius only.
- The habitat field activities will be conducted by three persons and will be conducted within 12 hours (or 1 day) per person including travel time.
- No special field instruments or PPE is needed.
- Aerial photographs of the site will be taken by a contractor.
- No meetings at the NYSDEC Albany, New York office will be needed.

2.2.5 Subtask 2.5 - Site Survey

The survey contractor will prepare a site topographic map of the Swivelier site and its immediate surroundings to establish baseline topographic conditions at the site. The site map will be at a scale of 1 inch equal to 50 feet with 2-foot contour intervals and it will identify significant site surface physical features including the drainage ditch, monitoring wells, buildings, and roadways. Field equipment to be used will be specified in the surveyor's subcontract.

For budgeting purposes, it is assumed that all activities to be performed by the surveyor will be limited to horizontal and/or vertical measurement of:

- Subsurface soil sample locations
- Existing groundwater monitoring wells (total of 5)
- New groundwater monitoring wells (total of 11)
- On-site surface water and sediment sample locations
- Site boundary

- Site building outline (4 corners of building)

For habitat assessment mapping, if required (see Section 2.2.4), the surveyor will provide a topographic survey map at a scale of 1 inch equal to 500 feet with 5-foot contours, which will extend 0.5 miles from the site boundary.

For budgetary purposes, it is assumed that:

- On-site survey activities will be conducted in conjunction with other CDM site activities; no extra field trips by CDM are needed.
- All work will be performed using Level D PPE (see the RI/FS HASP [CDM 1994a]).
- No meetings at the NYSDEC Albany, New York office will be needed.

2.2.6 Subtask 2.6 - Preliminary Data Report

A Phase I RI preliminary data report will be prepared upon completion of Subtasks 2.2.1, 2.2.2, and 2.2.3, and receipt of laboratory sample analytical results. Specifically, the data report will include the following:

- Soil sampling data
- Well drilling logs.
- Groundwater sampling data.
- Surface water and sediment sampling data.

One copy of the soil boring logs, well construction diagrams, and well development records will be submitted to the NYSDEC within two weeks after the completion of the Phase I RI field work.

Soil, groundwater, surface water, and sediment sampling data, including field sampling sheets, will be submitted to the NYSDEC within two weeks after receipt of preliminary laboratory sample analytical results, prior to the receipt of the data validation report, to enable the NYSDEC to review the preliminary data as the data validation report is being completed, thus minimizing unnecessary project delays. Data will be submitted in summary form and maps will be provided to identify all sampling locations.

CDM will provide one copy of the preliminary data report to the NYSDEC. For scheduling purposes, it is assumed that laboratory analysis will be completed within four weeks of sample collection, and data validation will be completed within three weeks of receipt of laboratory data.

The data validation and usability reports will be incorporated as an appendix to the RI/FS report (see Section 2.4).

2.2.7 Subtask 2.7 - Risk Assessment

The Phase I RI risk assessment for the Swivelier site will quantitatively address the public health risks that may exist on-site in the absence of any remedial action. Current EPA risk assessment

guidance for superfund sites (USEPA 1989; 1991) will be followed to the extent appropriate for the Swivelier site. If deemed necessary based upon Phase I RI sample analytical results, and if off-site exposure pathways can be determined, an additional risk assessment will be performed during a second phase RI to quantitatively address the public health risks that may exist off-site, due to Swivelier site operations, in the absence of any remedial action. The Phase I RI risk assessment will be incorporated into the Phase I RI report as an appendix (see Section 2.4).

For budgetary purposes, it is assumed that:

- No additional field activities by CDM are needed.
- No meetings at the NYSDEC Albany, New York office will be needed.

The following sections describe, in detail, what will be included in the Phase I RI risk assessment.

2.2.7.1 Evaluation of Existing Data

This will include presenting site specific information pertinent to the exposure setting, an evaluation of the usability of site-specific chemical data for risk assessment purposes, and a summary of the data that will be used for each media in the risk assessment. Information pertinent to the exposure setting will include surface and groundwater hydrogeology, climate, demography and land use, vegetation, and wildlife.

Data usability will be evaluated based upon detection limits relative to toxicity values, the appropriateness of the analytical methods, a review of laboratory data quality results, and the extent to which the data are representative of the media to which receptors may be exposed.

2.2.7.2 Identification of Constituents of Concern

The constituents of concern will be identified based upon a comparison of VOC-affected site samples with local background samples, the toxicity of site-related chemicals relative to detected concentrations, and the frequency of detection for each constituent. In addition, the fate and transport properties (persistence and mobility) of each constituent will be considered in deciding which constituents should be evaluated as constituents of concern.

2.2.7.3 Exposure Assessment

Exposure assessment is one of the key components of a risk assessment, providing an evaluation of the type and magnitude of potential exposure to the chemicals of concern. Current EPA risk assessment guidance requires evaluation of the highest exposure that is reasonably expected to occur at a site (i.e., the reasonable maximum exposure [RME]). The site exposure assessment will include the following activities:

- Development of a site conceptual exposure model. The model will be used to identify potential on-site receptors and exposure pathways. Potential on-site exposure pathways may include incidental ingestion and dermal absorption of on-site soils, groundwater, surface water, or sediment, and the inhalation of fugitive dust.

- Quantification of exposure based upon the development of site-specific exposure point concentrations and a combination of site-specific, constituent-specific, and exposure-specific assumptions.

2.2.7.4 Toxicity Assessment

Various guidelines, regulations, and standard toxicity values, that are based upon toxicity studies, have been developed to protect human and environmental receptors from the adverse effects of toxic chemicals. These toxicity values, combined with the results of the exposure assessment, provide a basis for quantifying the potential health and environmental risks at the site. The toxicity assessment will provide a brief summary of the potential carcinogenic and toxic effects of each chemical of concern pertinent to the type of exposure presumed to be possible at the site. In addition, current toxicity values for each chemical of concern will be listed.

2.2.7.5 Risk Characterization

The risk characterization will combine information developed in the exposure assessment with toxicity information to determine potential health risks to on-site individuals. Potential risks will be quantified for both carcinogenic and toxic effects. Specific chemicals and exposure routes that contribute the most to estimated risks will be identified.

2.2.7.6 Identification of Uncertainties

The procedures and assumptions used in the risk assessment will be derived from a combination of EPA guidance documents, site-specific information, and professional judgment. These procedures and assumptions are subject to various amounts of uncertainty depending upon the type of assumption or estimate considered. The risk assessment will include qualitative estimate of the degree to which quantitative risk estimates may over- or underestimate risks such that major sources of uncertainty will be identified and evaluated.

2.2.7.7 Development of Cleanup Goals

Based on the results of the risk assessment, media-specific cleanup goals will be developed, if deemed necessary.

2.3 Task 3 - Development of Alternatives (First Phase Feasibility Study)

If deemed necessary based upon Phase I RI sample analytical results, the first phase FS will be conducted; i.e., this task will be conducted only if Phase I RI sample analytical results demonstrate the need for remedial action at the site. Using the information developed during Task 2 of the Phase I RI (site characterization) activities, potential remedial action objectives will be identified for each affected medium and a preliminary list of potentially applicable remedial action technologies and process options will be identified. These remedial technologies and process options will be screened to ensure their effectiveness in achieving compliance with SCG values and risk-based cleanup goals for the site.

CDM will indicate if sufficient data is available to complete the Phase I FS. If additional information is required, it will be obtained during a second phase RI (see Section 2.5). The

Phase I FS will then be completed upon receipt of Phase II RI results. The Phase I FS will be incorporated into the RI/FS report.

2.4 Task 4 - Preliminary Screening of Alternatives (Second Phase Feasibility Study)

The second phase of the FS will include the development of potentially applicable site remedial action alternatives based on the remedial action technologies and process options deemed applicable and appropriate during the Phase I FS. These alternatives will be screened to present the most appropriate site remedial alternatives as determined by their expected effectiveness and implementability. This task will be conducted only if Phase I RI sample analytical results demonstrate the need for remedial action at the site.

CDM will indicate if sufficient data is available to complete the Phase II FS. If additional information is required, it will be obtained during a second phase RI. The Phase II FS will then be completed upon receipt of Phase II RI results. The Phase II FS will be incorporated into the RI/FS report.

As part of Task 4, a RI/FS Report will be prepared to report and summarize field investigation activities, to identify areas and constituents of concern at the site and assess potential on-site environmental and public health risks, and to present site remedial action objectives and alternatives, if necessary. The RI/FS report will also indicate if a second phase RI is necessary. Specifically, the draft RI/FS Report will include the following:

- an introduction, including report purpose, site background, description, history, environmental setting, and previous investigation summary.
- a description of the Phase I RI, including field activities associated with site characterization. This may include a description of site physical and chemical data, constituent sources, geology, subsurface soil characteristics, groundwater/hydrogeology characteristics, and surface water and sediment characteristics, and on-site ecological and human receptors.
- a description of the nature and extent of VOC-affected media at the site, including results of Phase I RI site characterization activities with respect to site subsurface soil, groundwater, and surface water and sediment.
- a discussion of constituent fate and transport, including contaminant migration and persistence on-site.
- conclusions, including data limitations and any recommendations for additional work, as well as remedial action objectives and potentially application remedial action alternatives.
- appendices, including sample analytical data, a site risk assessment, a data validation report, and a data usability report.

The Phase I RI will serve as documentation of data collection and analysis in support of the site FS.

Nine copies of the draft RI/FS report will be submitted to the NYSDEC for review and comment. The draft RI/FS report will be revised once to incorporate one set of NYSDEC written comments (see Section 2.7). One meeting (scoping session) will be conducted at the NYSDEC Albany, New York office to discuss NYSDEC comments on the draft RI/FS report. One public information meeting will be attended by the CDM Project Manager and Geologist. For budgetary purposes, it is assumed that the CDM Project Manager and Geologist will each spend 3, 8-hour days preparing for the public information meeting and CDM will be required to prepare meeting presentation materials.

2.5 Task 5 - Post Screening Field Investigation and Treatability Studies (Second Phase Remedial Investigation)

If deemed necessary, based on Phase I RI sample analytical results and/or the findings of the Phase I and II FS, a second phase RI will be conducted. Specifically, the Phase II RI will include any additional field investigation activities and/or treatability studies deemed necessary by the Phase I RI and Phase I and II FS.

If a Phase II RI is deemed necessary, a work plan for the second phase RI will be developed under Task 5 of the site RI/FS. The Phase II RI work plan will be submitted to the NYSDEC as an addendum to the RI/FS work plan. The Phase II RI, as well as a (subsequent) preliminary data report, will also be executed under Task 5.

If deemed necessary, recommendation and justification for a Phase II RI will be provided in the Phase I RI Report (see Section 2.4) The scope and budget for Task 5, if deemed necessary, will be submitted to the NYSDEC following NYSDEC approval of the Phase I RI report. Subsequent site RI/FS tasks (for example, Task 6 - Phase II FS) will be conducted upon completion of the Phase II RI.

2.6 Task 6 - Detailed Analysis of Alternatives (Third Phase Feasibility Study)

If the site RI demonstrates the need for remedial action at the site, CDM will conduct a detailed analysis of each of the potentially applicable site remedial action alternatives, developed during the Phase II FS, in accordance with CERCLA and TAGM #4030 dated May 15, 1990 (NYSDEC 1990). Specifically, the Phase III FS will include an evaluation and comparison of the remedial alternatives remaining after the preliminary screening conducted during the Phase II FS.

2.7 Task 7 - Recommendation of Remedy

A preferred site remedial alternative will be recommended that is protective of public health and the environment, meets site cleanup objectives that have been identified to the maximum extent practicable, is cost-effective, and represents the best balance of all evaluation criteria and considerations, based upon the results of the Phase III FS.

A conceptual plan for implementing the selected alternative will also be provided. The final RI/FS report will be submitted under this task and will incorporate NYSDEC comments on the draft RI/FS report, the results of the Phase III FS, and a recommended site remedial action alternative, if deemed necessary.

Nine copies of the draft final RI/FS report will be submitted to the NYSDEC. The draft final RI/FS report will be revised once to incorporate one set of NYSDEC written comments into the final RI/FS report. Twelve copies of the final RI/FS report will be submitted to the NYSDEC.

For budgetary purposes, it is assumed that:

- a meeting (final scoping session) will be conducted at the NYSDEC Albany, New York office to discuss NYSDEC comments on the draft final RI/FS.

- Because it is not known whether a second phase RI will be conducted, costs for the inclusion of Phase II RI results into the draft and final RI/FS reports are not included.

- The CDM Project Manager will attend one public information meeting. The CDM Project Manager will spend 3, 8-hour days preparing for the meeting. CDM will be required to prepare meeting presentation materials.

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Section 3
Work Assignment Progress Schedule

The following tabulation provides the proposed project schedule and key milestones and deliverables for this work assignment. As currently planned, field work will be initiated two weeks after written receipt of work plan approval and notice to proceed from the NYSDEC. Field activity duration (actual field time) is estimated to be ten weeks, if no delays are experienced due to inclement weather, site access problems, or for any other reasons beyond the control of CDM.

The scheduled submittal dates for deliverables are based on a standard laboratory turnaround time of four weeks, and a turnaround time for data validation of three weeks.

	Milestone	Date
	RI/FS WORK PLAN DEVELOPMENT	
	TASK 1:	
1.	Receipt of Work Assignment	12/13/93
2.	Return of signed copy of Work Assignment (10 days)	12/24/93
3.	First scoping session to review TASK 1 requirements	01/07/94
4.	**RI/FS Work Plan Development (First Draft)**	**02/25/94**
5.	NYSDEC written comments to CDM	03/21/94
6.	Second scoping session (discuss NYSDEC comments on draft 1)	03/18/94
7.	**RI/FS Work Plan Development (Second Draft)**	**04/08/94**
8.	NYSDEC final written comments to CDM	04/29/94
9.	First public information meeting	04/28/94
10.	**Final RI/FS Work Plan**	**05/06/94**
11.	NYSDEC Approval of RI/FS Work Plan and Notice to Proceed (TASKS 2-4)	05/11/94
	REMEDIAL INVESTIGATION/FEASIBILITY STUDY	
	TASK 2:	
12.	Preparation of Driller Specifications	05/11/94-05/12/94
13.	**Technical Memorandum to Address Any Outstanding Public Comments and Agency Comments**	**05/13/94**
14.	Field Work Kickoff Meeting with Standby Consultant & Subs; Trailer Set-Up	05/19/94-05/20/94
15.	First Phase RI Field Work (10 weeks)	05/23/94-07/26/94
16.	First Phase RI Sample Analysis (4 weeks)	07/26/94-08/26/94
17.	**First Phase RI Preliminary Data (unvalidated data) Report**	**09/09/94**
18.	First Phase RI Data Validation (3 weeks) and Usability Report (1 wk)	09/12/94-10/07/94

19.	Second Round Synoptic Groundwater Level Measurements and Off-Site Disposal of Hazardous Waste/Cuttings (if any)	10/20/94
20.	First Phase RI Site Risk Assessment	10/10/94-11/04/94
	TASK 3:	
21.	First Phase FS	10/17/94-10/28/94
	TASK 4:	
22.	Second Phase FS	10/31/94-11/11/94
23.	**Draft RI/FS Report for Phase I RI**	**11/18/94**
24.	NYSDEC Written Comments to CDM	11/30/94
25.	Meeting with NYSDEC to discuss RI/FS Report	12/01/94
26.	**Revised Draft Final RI/FS Report for Phase I RI**	**12/30/94**
27.	NYSDEC Approval of Draft RI/FS Report	01/06/95
28.	Second public information meeting	01/12/95
	TASK 5 (if deemed necessary):	
29.	Second Phase RI Work Plan Development (Draft)	01/16/95-02/17/95
30.	NYSDEC written comments to CDM	02/24/95
31.	Scoping session (discuss NYSDEC comments on draft)	02/27/94
32.	Final Phase II RI Work Plan	03/17/94
33.	NYSDEC Approval of Work Plan and Notice to Proceed (TASKS 5-7)	03/21/94
34.	Field Work Kickoff Meeting with Standby Consultant & Subs	03/27/95
35.	Second Phase RI Field Work and Treatability Studies (6 weeks)	04/03/95-04/28/95
36.	Second Phase RI Sample Analysis (4 weeks)	05/01/95-05/26/95
*37.	**Second Phase RI Preliminary Data (unvalidated data) Report**	06/09/95
**38.	Second Phase RI Data Validation (3 weeks) and Usability Report (1 wk)	05/29/95-6/23/95
**39.	Second Phase RI Risk Assessment	06/12/95-06/30/95
	TASK 6:	
***40.	Third Phase FS	06/12/95-06/30/95
	TASK 7:	
41.	Recommendation of Remedy	07/03/95-07/12/95
42.	**Draft Final RI/FS Report**	**07/21/95**
43.	NYSDEC written comments to CDM	07/29/95
44.	Meeting with NYSDEC to discuss Report	08/03/95
45.	**Final RI/FS Report**	**08/25/95**
46.	Third public information meeting	09/07/95
47.	Record of Decision (ROD) and Responsiveness Summary	09/22/95

Note: Deliverables and deliverable dates are in bold print.
*Assumes 50 percent less data obtained during Phase II RI than that obtained during Phase I RI.

**Assumes Phase I RI data validation will be conducted concurrent with preparation of Phase II RI Preliminary Data Report and Risk Assessment.

***Assumes Phase III FS conducted concurrent with Phase II RI Risk Assessment.

A bar chart schedule summary by task and subtask, as discussed in Section 2.0 of this work plan, is shown on Figure 3-1. A summary of project labor hours and costs on a task by task as well as a subtask basis, is provided in Table 3-1. Table 3-2 presents a summary of labor hours expended to date; this table will be updated on a monthly basis and provided to the NYSDEC Project Manager.

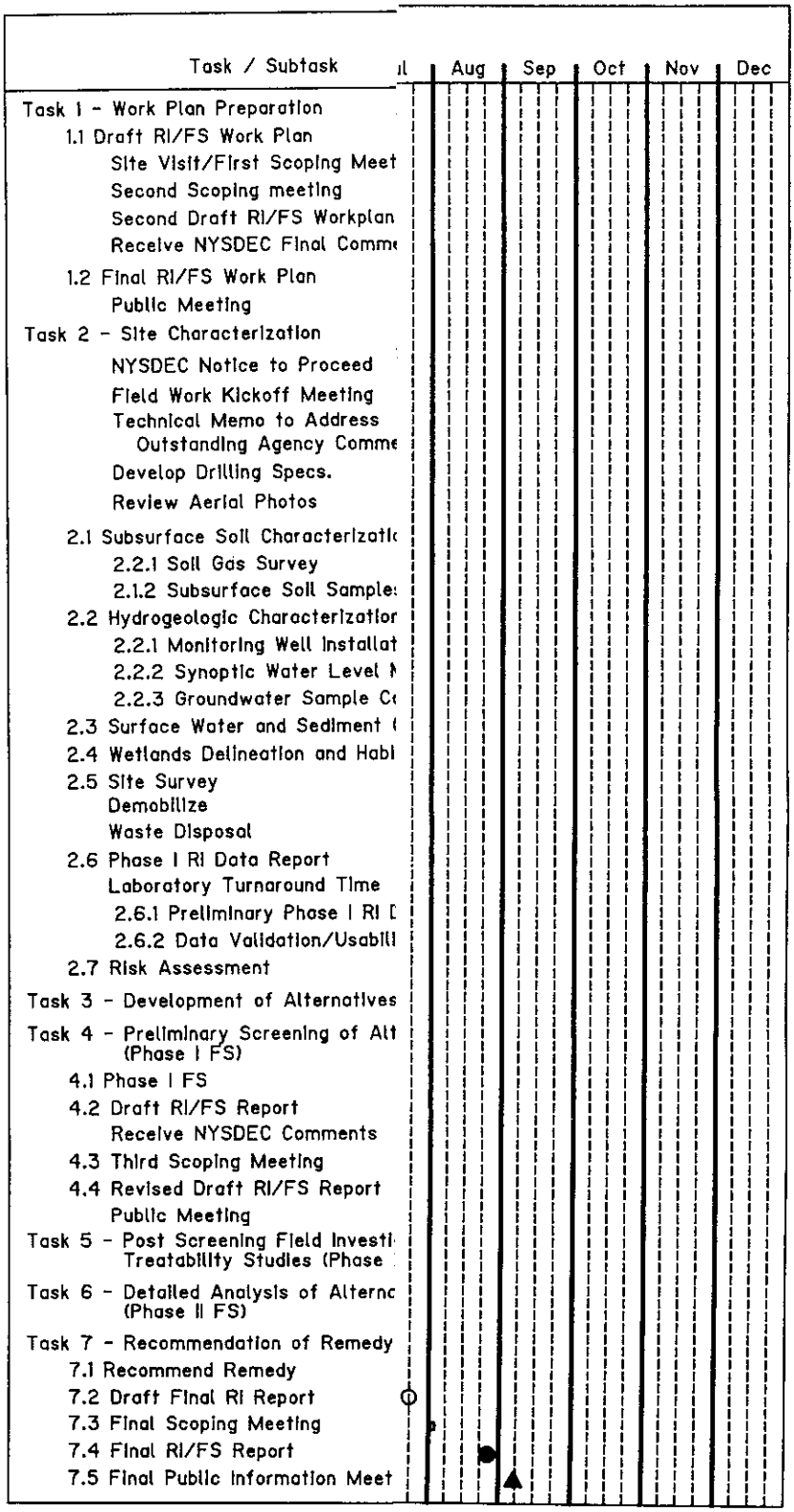

Figure 3-1

Bar Chart Project Schedule

CDM Camp Dresser & McKee

Swivelier Site - Nanuet, New York
NYSDEC Site #3-44-036

TABLE 3 - 1

PROJECT LABOR HOURS AND COSTS SUMMARY

Labor Classification		IX		VIII		VII		VI		V		IV		III		II		I		Technical Report Typing		Adm./ Support		Total No. of Direct Labor Hrs. and Costs Budgeted	
Salary Rates	1994	$47.71		$42.90		$35.59		$32.21		$26.60		$24.91		$20.30		$18.27		$15.51		$15.39		$15.39			
	1995	$50.09		$45.05		$37.37		$33.82		$27.93		$26.15		$21.32		$19.18		$16.28		$16.16		$16.16			
	1996	$52.60		$47.30		$39.24		$35.51		$29.33		$27.46		$22.38		$20.14		$17.10		$16.97		$16.97			
Description		Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Task 1 – Work Plan Development																									
1.1 Draft Phase 1 RI/FS Work Plan																									
1.1.1 Site Visit/First Scoping Session										10	$266.00	9	$224.19											19	$490.19
1.1.2 Review of Regulatory Files										8.5	$226.10	9	$224.19											17.5	$450.29
1.1.3 First Draft RI/FS Work Plan		2	$95.42			19	$676.21			188	$5,000.80	91	$2,266.81	39	$791.70	22	$401.94	16	$248.16	66	$1,015.74	19	$292.41	462	$10,789.19
1.1.4 Second Scoping Session										8	$212.80													8	$212.80
1.1.5 Second Draft RI/FS Work Plan		2	$95.42			10	$355.90			20	$532.00	13.5	$336.29							9	$138.51	19	$292.41	73.5	$1,750.53
1.2 Final RI/FS Work Plan																									
1.2.1 First Public Information Meeting										8	$212.80													8	$212.80
1.2.2 Final RI/FS Work Plan										12.5	$332.50	6	$149.46	2	$40.60					8.5	$130.82			29	$653.38
Total Hours and Cost – Task 1		4	$190.84			29	$1,032.11			255	$6,783.00	128.5	$3,200.94	41	$832.30	22	$401.94	16	$248.16	83.5	$1,285.07	38	$584.82	617	$14,559.18

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TABLE 3-1

PROJECT LABOR HOURS AND COSTS SUMMARY

Labor Classification		IX		VIII		VII		VI		V		IV		III		II		I		Technical Report Typing		Adm./ Support		Total No. of Direct Labor Hrs. and Costs Budgeted	
Salary Rates	1994	$47.71		$42.90		$35.59		$32.21		$26.60		$24.91		$20.30		$18.27		$15.51		$15.39		$15.39			
	1995	$50.09		$45.05		$37.37		$33.82		$27.93		$26.15		$21.32		$19.18		$16.28		$16.16		$16.16			
	1996	$52.60		$47.30		$39.24		$35.51		$29.33		$27.46		$22.38		$20.14		$17.10		$16.97		$16.97			
Description		Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Task 2 - Site Characterization																									
- Technical Memorandum to Address Outstanding Agency Comments						8	$284.72			20	$532.00	20	$498.20	5	$101.50					8	$123.12			61	$1,539.54
- Development of Subcontractor Specifications & Procurement										40	$1,064.00	40	$996.40											80	$2,060.40
2.0 Field Work Kickoff Meeting										19	$505.40	38	$946.58	20	$406.00									77	$1,857.98
2.1 Subsurface Soil Characterization																									
2.1.1 Soil Gas Survey						3	$106.77			20	$532.00	138	$3,437.58			126	$2,302.02	84	$1,302.84					371	$7,681.21
2.1.2 Collection/Analysis of Subsurface Soil Samples						3	$106.77			10	$266.00			24	$487.20									37	$859.97
2.2 Hydrogeologic Characterization																									
2.2.1 Monitoring Well Installation						3	$106.77			35	$931.00			228	$4,628.40	30	$548.10							296	$6,214.27
		2	100.18			3	$112.11			35	$977.55			158	$3,368.56									198	$4,558.40
2.2.2 Synoptic Water Level Measurements (2 Rounds)						3	$112.11					6	$156.90	22	$469.04			20	$325.60					51	$1,063.65
2.2.3 Collection/Analysis of Groundwater Samples						3	$112.11			20	$558.60	5	$130.75	36	$767.52			36	$586.08					100	$2,155.06
2.3 Surface Water and Sediment Characterization						3	$106.77			25	$665.00			16	$324.80			16	$248.16					60	$1,344.73
- Demobilization						1	$37.37			8	$223.44			8	$170.56			8	$130.24					25	$561.61
- Waste Disposal						10	$373.70			26	$726.18	20	$523.00	4	$85.28									60	$1,708.16
2.4 Wetlands Delineation and Habitat - Based Assessment																									
2.4.1 Review of Available Aerial Photographs										25	$665.00	22	$548.02											47	$1,213.02
2.4.2 Review of Agency Files										15	$418.95	12	$313.80											27	$732.75
2.4.3 Site Walkover								12	$405.84			12	$313.80					12	$195.36					36	$915.00
2.4.4 Report of Findings		1	$50.09			4	$149.48	60	$2,029.20	25	$698.25					4	$76.72	120	$1,953.60	25	$404.00	25	$404.00	264	$5,765.34
2.5 Site Survey														8	$170.56									8	$170.56
2.6 Preliminary Phase I RI Data Report																									
2.6.1 Preliminary Phase I RI Data Report						5	$186.85			10	$279.30	20	$523.00	60	$1,279.20			20	$325.60					115	$2,593.95
2.6.2 Data Validation / Usability Report		1	$50.09			32	$1,195.84			12	$335.16					20	$383.60					25	$404.00	90	$2,368.69
2.7 Risk Assessment		1	$50.09			12	$448.44			19	$530.67													32	$1,029.20
Total Hours and Cost - Task 2		5	$250.45			93	$3,439.61	72	$2,435.04	364	$9,908.50	333	$8,388.03	589	$12,258.62	180	$3,310.44	316	$5,067.48	33	$527.12	50	$808.00	2035	$46,393.49

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TABLE 3-1

PROJECT LABOR HOURS AND COSTS SUMMARY

Labor Classification		IX		VIII		VII		VI		V		IV		III		II		I		Technical Report Typing		Adm./ Support		Total No. of Direct Labor Hrs. and Costs Budgeted	
Salary Rates	1994	$47.71		$42.90		$35.59		$32.21		$26.60		$24.91		$20.30		$18.27		$15.51		$15.39		$15.39			
	1995	$50.09		$45.05		$37.37		$33.82		$27.93		$26.15		$21.32		$19.18		$16.28		$16.16		$16.16			
	1996	$52.60		$47.30		$39.24		$35.51		$29.33		$27.46		$22.38		$20.14		$17.10		$16.97		$16.97			
Description		Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Task 3 - Development of Alternatives		4	$200.36	4	$180.20	2	$74.74			81	$2,262.33							60	$976.80	20	$323.20	8	$129.28	179	$4,146.91
Total Hours and Cost - Task 3		4	$200.36	4	$180.20	2	$74.74			81	$2,262.33							60	$976.80	20	$323.20	8	$129.28	179	$4,146.91

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TABLE 3-1

PROJECT LABOR HOURS AND COSTS SUMMARY

Labor Classification		IX		VIII		VII		VI		V		IV		III		II		I		Technical Report Typing		Adm./ Support		Total No. of Direct Labor Hrs. and Costs Budgeted	
Salary Rates	1994	$47.71		$42.90		$35.59		$32.21		$26.60		$24.91		$20.30		$18.27		$15.51		$15.39		$15.39			
	1995	$50.09		$45.05		$37.37		$33.82		$27.93		$26.15		$21.32		$19.18		$16.28		$16.16		$16.16			
	1996	$52.60		$47.30		$39.24		$35.51		$29.33		$27.46		$22.38		$20.14		$17.10		$16.97		$16.97			
Description		Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Task 4 - Preliminary Screening of Alternatives																									
4.1 Phase II FS		4	$200.36			3.5	$130.80	8	$270.56	83.5	$2,332.16							80	$1,302.40					179	$4,236.27
4.2 Draft Phase I RI/FS Report		4	$200.36			16	$597.92	8	$270.56	100	$2,793.00	100	$2,615.00	260	$5,543.20	80	$1,534.40			120	$1,939.20	8	$129.28	696	$15,622.92
4.3 Third Scoping Session		10	$500.90			10	$373.70			10	$279.30	10	$261.50											40	$1,415.40
4.4 Revised Draft RI/FS Report		2	$100.18			8	$298.96	10	$338.20	60	$1,675.80	30	$784.50	40	$852.80	40	$767.20	20	$325.60	40	$646.40	8	$129.28	258	$5,918.92
4.5 Second Public Information Meeting		1.5	$75.14			4	$149.48			36	$1,005.48	36	$941.40	15	$319.80									92.5	$2,491.30
Total Hours and Cost - Task 4		21.5	$1,076.94			41.5	$1,550.86	26	$879.32	289.5	$8,085.74	176	$4,602.40	315	$6,715.80	120	$2,301.60	100	$1,628.00	160	$2,585.60	16	$258.56	1266	$29,684.81

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TABLE 3-1

PROJECT LABOR HOURS AND COSTS SUMMARY

Labor Classification		IX		VIII		VII		VI		V		IV		III		II		I		Technical Report Typing		Adm./ Support		Total No. of Direct Labor Hrs. and Costs Budgeted	
Salary Rates	1994	$47.71		$42.90		$35.59		$32.21		$26.60		$24.91		$20.30		$18.27		$15.51		$15.39		$15.39			
	1995	$50.09		$45.05		$37.37		$33.82		$27.93		$26.15		$21.32		$19.18		$16.28		$16.16		$16.16			
	1996	$52.60		$47.30		$39.24		$35.51		$29.33		$27.46		$22.38		$20.14		$17.10		$16.97		$16.97			
Description		Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Task 5 - Post Screening Field Investigation and Treatability Studies (Phase II R1)																									
Total Hours and Cost - Task 5																									

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TABLE 3 - 1

PROJECT LABOR HOURS AND COSTS SUMMARY

Labor Classification		IX		VIII		VII		VI		V		IV		III		II		I		Technical Report Typing		Adm./ Support		Total No. of Direct Labor Hrs. and Costs Budgeted	
Salary Rates	1994	$47.71		$42.90		$35.59		$32.21		$26.60		$24.91		$20.30		$18.27		$15.51		$15.39		$15.39			
	1995	$50.09		$45.05		$37.37		$33.82		$27.93		$26.15		$21.32		$19.18		$16.28		$16.16		$16.16			
	1996	$52.60		$47.30		$39.24		$35.51		$29.33		$27.46		$22.38		$20.14		$17.10		$16.97		$16.97			
Description		Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Task 6 - Detailed Analysis of Alternatives (Phase III FS)		5.5	$275.50	4	$180.20	5	$186.85	32	$1,082.24	60	$1,675.80	60	$1,569.00					120	$1,953.60	20	$323.20	9	$145.44	315.5	$7,391.83
Total Hours and Cost - Task 6		5.5	$275.50	4	$180.20	5	$186.85	32	$1,082.24	60	$1,675.80	60	$1,569.00					120	$1,953.60	20	$323.20	9	$145.44	315.5	$7,391.83

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TABLE 3 - 1

PROJECT LABOR HOURS AND COSTS SUMMARY

Labor Classification		IX		VIII		VII		VI		V		IV		III		II		I		Technical Report Typing		Adm./ Support		Total No. of Direct Labor Hrs. and Costs Budgeted	
Salary Rates	1994	$47.71		$42.90		$35.59		$32.21		$26.60		$24.91		$20.30		$18.27		$15.51		$15.39		$15.39			
	1995	$50.09		$45.05		$37.37		$33.82		$27.93		$26.15		$21.32		$19.18		$16.28		$16.16		$16.16			
	1996	$52.60		$47.30		$39.24		$35.51		$29.33		$27.46		$22.38		$20.14		$17.10		$16.97		$16.97			
Description		Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Task 7 - Recommendation of Remedy																									
7.1 Recommendation of Remedy		2	$105.20			2	$78.48	4	$142.04	40	$1,173.20							40	$684.00					88	$2,182.92
7.2 Draft Final RI/FS Report		6	$315.60			14	$549.36			60	$1,759.80	20	$549.20	45	$1,007.10			40	$684.00	60	$1,018.20	14	$237.58	259	$6,120.84
7.3 Final Scoping Meeting		10	$526.00			12	$470.88			12	$351.96													34	$1,348.84
7.4 Final RI/FS Report		5	$263.00			14	$549.36			46	$1,349.18	10	$274.60	10	$223.80			20	$342.00	40	$678.80	14	$237.58	159	$3,918.32
7.5 Final Public Information Meeting										36	$1,055.88			15	$335.70									51	$1,391.58
Total Hours and Cost - Task 7		23	$1,209.80			42	$1,648.08	4	$142.04	194	$5,690.02	30	$823.80	70	$1,566.60			100	$1,710.00	100	$1,697.00	28	$475.16	591	$14,962.50
Total Hours and Cost (all tasks)		63	$1,994.08	8	$360.40	212.5	$6,284.37	134	$4,396.60	1243.5	$28,715.37	727.5	$17,760.37	1015	$19,806.72	322	$6,013.98	712	$9,874.04	416.5	$5,044.19	149	$1,936.10	5003	$117,138.72

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Engineer Camp Dresser & McKee
Project Name Swivelier Site
Work Assignment No. D002925-4

Date Prepared March 25, 1994
Billing Period
Invoice No.

TABLE 3-2
SUMMARY OF LABOR HOURS EXPENDED TO DATE

LABOR CLASSIFICATION	IX EXP/EST	VIII EXP/EST	VII EXP/EST	VI EXP/EST	V EXP/EST	IV EXP/EST	III EXP/EST	II &I EXP/EST	ADM./SUPPORT EXP/EST	TOTAL NO. OF DIRECT LABOR HRS. EXP/EST
Task 1 – Work Plan Preparation										
1.1 Draft Phase I RI/FS Work Plan										
1.1.1 Site Visit/First Scoping Session	0 / 0	0 / 0	0 / 0	0 / 0	0 / 10	0 / 9	0 / 0	0 / 0	0 / 0	0 / 19
1.1.2 Review of Regulatory Files	0 / 0	0 / 0	0 / 0	0 / 0	0 / 8.5	0 / 9	0 / 0	0 / 0	0 / 0	0 / 17.5
1.1.3 First Draft RI/FS Work Plan	0 / 2	0 / 0	0 / 19	0 / 0	0 / 188	0 / 91	0 / 39	0 / 38	0 / 85	0 / 462
1.1.4 Second Scoping Session	0 / 0	0 / 0	0 / 0	0 / 0	0 / 8	0 / 0	0 / 0	0 / 0	0 / 0	0 / 8
1.1.5 Second Draft RI/FS Work Plan	0 / 2	0 / 0	0 / 10	0 / 0	0 / 20	0 / 13.5	0 / 0	0 / 0	0 / 28	0 / 73.5
1.2 Final RI/FS Work Plan										
1.2.1 First Public Information Meeting	0 / 0	0 / 0	0 / 0	0 / 0	0 / 8	0 / 0	0 / 0	0 / 0	0 / 0	0 / 8
1.2.2 Final RI/FS Work Plan	0 / 0	0 / 0	0 / 0	0 / 0	0 / 12.5	0 / 6	0 / 2	0 / 0	0 / 8.5	0 / 29
HOURS – TASK 1	0 / 4	0 / 0	0 / 29	0 / 0.0	0 / 255.0	0 / 128.5	0 / 41	0 / 38	0 / 121.5	0 / 617.0

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Engineer Camp Dresser & McKee
Project Name Swivelier Site
Work Assignment No. D002925-4

Date Prepared March 25, 1994
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Invoice No.

TABLE 3-2
SUMMARY OF LABOR HOURS EXPENDED TO DATE

LABOR CLASSIFICATION	IX EXP/EST	VIII EXP/EST	VII EXP/EST	VI EXP/EST	V EXP/EST	IV EXP/EST	III EXP/EST	II &I EXP/EST	ADM./SUPPORT EXP/EST	TOTAL NO. OF DIRECT LABOR HRS. EXP/EST
Task 2 – Site Characterization										
–Technical Memorandum to Address Outstanding Agency Comments	0 / 0	0 / 0	0 / 8	0 / 0	0 / 20	0 / 20	0 / 5	0 / 0	0 / 8	0 / 61
–Developement of Subcontractor Specifications & Procurement	0 / 0	0 / 0	0 / 0	0 / 0	0 / 40	0 / 40	0 / 0	0 / 0	0 / 0	0 / 80
2.0 Field Work Kickoff Meeting	0 / 0	0 / 0	0 / 0	0 / 0	0 / 19	0 / 38	0 / 20	0 / 0	0 / 0	0 / 77
2.1 Subsurface Soil Characterization	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
2.1.1 Soil Gas Survey	0 / 0	0 / 0	0 / 3	0 / 0	0 / 20	0 / 138	0 / 0	0 / 210	0 / 0	0 / 371
2.1.2 Collection/Analysis of Subsurface Soil Samples	0 / 0	0 / 0	0 / 3	0 / 0	0 / 10	0 / 0	0 / 24	0 / 0	0 / 0	0 / 37
2.2 Hydrogeologic Characterization	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
2.2.1 Monitoring Well Installation	0 / 2	0 / 0	0 / 6	0 / 0	0 / 70	0 / 0	0 / 386	0 / 30	0 / 0	0 / 494
2.2.2 Synoptic Water Level Measurements (2 Rounds)	0 / 0	0 / 0	0 / 3	0 / 0	0 / 0	0 / 6	0 / 22	0 / 20	0 / 0	0 / 51
2.2.3 Collection/Analysis of Groundwater Samples	0 / 0	0 / 0	0 / 3	0 / 0	0 / 20	0 / 5	0 / 36	0 / 36	0 / 0	0 / 100
2.3 Surface Water and Sediment Characterization	0 / 0	0 / 0	0 / 3	0 / 0	0 / 25	0 / 0	0 / 16	0 / 16	0 / 0	0 / 60
– Demobilization	0 / 0	0 / 0	0 / 1	0 / 0	0 / 8	0 / 0	0 / 8	0 / 8	0 / 0	0 / 25
– Waste Disposal	0 / 0	0 / 0	0 / 10	0 / 0	0 / 26	0 / 20	0 / 4	0 / 0	0 / 0	0 / 60
2.4 Wetlands Definiation and Habitat-Based Assessment	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
2.4.1 Review of Available Aerial Photographs	0 / 0	0 / 0	0 / 0	0 / 0	0 / 25	0 / 22	0 / 0	0 / 0	0 / 0	0 / 47
2.4.2 Review of Agency Files	0 / 0	0 / 0	0 / 0	0 / 0	0 / 15	0 / 12	0 / 0	0 / 0	0 / 0	0 / 27
2.4.3 Site Walkover	0 / 0	0 / 0	0 / 0	0 / 12	0 / 0	0 / 12	0 / 0	0 / 12	0 / 0	0 / 36
2.4.4 Report of Findings	0 / 1	0 / 0	0 / 4	0 / 60	0 / 25	0 / 0	0 / 0	0 / 124	0 / 50	0 / 264
2.5 Site Survey	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 8	0 / 0	0 / 0	0 / 8
2.6 Preliminary Phase I RI Data Report	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
2.6.1 Preliminary Phase I RI Data Report	0 / 0	0 / 0	0 / 5	0 / 0	0 / 10	0 / 20	0 / 60	0 / 20	0 / 0	0 / 115
2.6.2 Data Validation/Usability Report	0 / 1	0 / 0	0 / 32	0 / 0	0 / 12	0 / 0	0 / 0	0 / 20	0 / 25	0 / 90
2.7 Risk Assessment	0 / 1	0 / 0	0 / 12	0 / 0	0 / 19	0 / 0	0 / 0	0 / 0	0 / 0	0 / 32
HOURS – TASK 2	0 / 5	0 / 0	0 / 93	0 / 72	0 / 364	0 / 333	0 / 589	0 / 496	0 / 83	0 / 2035

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Engineer Camp Dresser & McKee
Project Name Swivelier Site
Work Assignment No. D002925-4

Date Prepared March 25, 1994
Billing Period
Invoice No.

TABLE 3-2
SUMMARY OF LABOR HOURS EXPENDED TO DATE

LABOR CLASSIFICATION	IX EXP/EST	VIII EXP/EST	VII EXP/EST	VI EXP/EST	V EXP/EST	IV EXP/EST	III EXP/EST	II &I EXP/EST	ADM./SUPPORT EXP/EST	TOTAL NO. OF DIRECT LABOR HRS. EXP/EST
Task 3 - Development of Alternatives	0 / 4	0 / 4	0 / 2	0 / 0	0 / 81	0 / 0	0 / 0	0 / 60	0 / 28	0 / 179
HOURS - TASK 3	0 / 4	0 / 4	0 / 2	0 / 0	0 / 81	0 / 0	0 / 0	0 / 60	0 / 28	0 / 179

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Engineer Camp Dresser & McKee
Project Name Swivelier Site
Work Assignment No. D002925-4

Date Prepared March 25, 1994
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Invoice No.

TABLE 3-2
SUMMARY OF LABOR HOURS EXPENDED TO DATE

LABOR CLASSIFICATION	IX EXP/EST	VIII EXP/EST	VII EXP/EST	VI EXP/EST	V EXP/EST	IV EXP/EST	III EXP/EST	II &I EXP/EST	ADM./SUPPORT EXP/EST	TOTAL NO. OF DIRECT LABOR HRS. EXP/EST
Task 4 – Preliminary Screening of Alternatives										
4.1 Phase II FS	0 / 4	0 / 0	0 / 3.5	0 / 8	0 / 83.5	0 / 0	0 / 0	0 / 80	0 / 0	0 / 179
4.2 Draft Phase II RI/FS Report	0 / 4	0 / 0	0 / 16	0 / 8	0 / 100	0 / 100	0 / 260	0 / 80	0 / 128	0 / 696
4.3 Third Scoping Session	0 / 10	0 / 0	0 / 10	0 / 0	0 / 10	0 / 10	0 / 0	0 / 0	0 / 0	0 / 40
4.4 Revised Draft RI/FS Report	0 / 2	0 / 0	0 / 8	0 / 10	0 / 60	0 / 30	0 / 40	0 / 60	0 / 48	0 / 258
4.5 Second Public Information Meeting	0 / 1.5	0 / 0	0 / 4	0 / 0	0 / 36	0 / 36	0 / 15	0 / 0	0 / 0	0 / 92.5
HOURS – TASK 4	0 / 21.5	0 / 0	0 / 41.5	0 / 26	0 / 289.5	0 / 176	0 / 315	0 / 220	0 / 176	0 / 1266

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Engineer Camp Dresser & McKee
Project Name Swivelier Site
Work Assignment No. D002925-4

Date Prepared March 25, 1994
Billing Period
Invoice No.

TABLE 3-2
SUMMARY OF LABOR HOURS EXPENDED TO DATE

LABOR CLASSIFICATION	IX EXP/EST	VIII EXP/EST	VII EXP/EST	VI EXP/EST	V EXP/EST	IV EXP/EST	III EXP/EST	II &I EXP/EST	ADM./SUPPORT EXP/EST	TOTAL NO. OF DIRECT LABOR HRS. EXP/EST
Task 5 – Post Screening Field Investigation and Treatability Studies (Phase II RI)	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
HOURS – TASK 5	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0

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Engineer Camp Dresser & McKee
Project Name Swivelier Site
Work Assignment No. D002925-4

Date Prepared March 25, 1994
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Invoice No.

TABLE 3-2
SUMMARY OF LABOR HOURS EXPENDED TO DATE

LABOR CLASSIFICATION	IX EXP/EST	VIII EXP/EST	VII EXP/EST	VI EXP/EST	V EXP/EST	IV EXP/EST	III EXP/EST	II &I EXP/EST	ADM./SUPPORT EXP/EST	TOTAL NO. OF DIRECT LABOR HRS. EXP/EST
Task 6 – Detailed Analysis of Alternatives (Phase III FS)	0 / 5.5	0 / 4	0 / 5	0 / 32	0 / 60	0 / 60	0 / 0	0 / 120	0 / 29	0 / 315.5
HOURS – TASK 6	0 / 5.5	0 / 4	0 / 5	0 / 32	0 / 60	0 / 60	0 / 0	0 / 120	0 / 29	0 / 315.5

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Engineer Camp Dresser & McKee
Project Name Swivelier Site
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Date Prepared March 25, 1994
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TABLE 3-2
SUMMARY OF LABOR HOURS EXPENDED TO DATE

LABOR CLASSIFICATION	IX EXP/EST	VIII EXP/EST	VII EXP/EST	VI EXP/EST	V EXP/EST	IV EXP/EST	III EXP/EST	II &I EXP/EST	ADM./SUPPORT EXP/EST	TOTAL NO. OF DIRECT LABOR HRS. EXP/EST
Task 7 – Recommendation of Remedy										
7.1 Recommendation of Remedy	0 / 2	0 / 0	0 / 2	0 / 4	0 / 40	0 / 0	0 / 0	0 / 40	0 / 0	0 / 88
7.2 Draft Final RI/FS Report	0 / 6	0 / 0	0 / 14	0 / 0	0 / 60	0 / 20	0 / 45	0 / 40	0 / 74	0 / 259
7.3 Final Scoping Meeting	0 / 10	0 / 0	0 / 12	0 / 0	0 / 12	0 / 0	0 / 0	0 / 0	0 / 0	0 / 34
7.4 Final RI/FS Report	0 / 5	0 / 0	0 / 14	0 / 0	0 / 46	0 / 10	0 / 10	0 / 20	0 / 54	0 / 159
7.5 Final Public Information Meeting	0 / 0	0 / 0	0 / 0	0 / 0	0 / 36	0 / 0	0 / 15	0 / 0	0 / 0	0 / 51
HOURS – TASK 7	0 / 23	0 / 0	0 / 42	0 / 4	0 / 194	0 / 30	0 / 70	0 / 100	0 / 128	0 / 591
TOTAL HOURS	0 / 63	0 / 8	0 / 212.5	0 / 134	0 / 1243.5	0 / 727.5	0 / 1015	0 / 1034	0 / 565.5	0 / 5003

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Section 4
Staffing Plan

The staffing plan identifies CDM management and technical staff to be assigned to complete the tasks outlined in Section 2 and their areas of responsibility. Figure 4-1 shows the project organizational chart.

4.1 Program Manager - Michael Memoli, P.E.

The primary responsibilities for program management activities rest with the Program Manager (PRM). The Program Manager, Mr. Michael Memoli, will have ultimate contract responsibility for the project, including responsibility for the technical content of all engineering work. Mr. Memoli will direct, review, and approve all project deliverables, schedule staff and resources, resolve scheduling conflicts, and identify and solve potential program problems. He will be directly accountable to NYSDEC's Division of Hazardous Waste Remediation for program execution as well as to CDM's Officer-In-Charge. He has authority to assign staff, negotiate and execute contracts and amendments, and execute subcontracts. The PRM will communicate directly with CDM's Project Manger.

4.2 Deputy Program Manager - D. Lee Guterman

The Deputy Program Manager, Ms. Lee Guterman, will assist the Program Manager in all aspects of program administration. Ms. Guterman will be directly responsible for: 1) continuous contact with NYSDEC technical and Figure 4-1 contract administration staff, 2) technical, financial and administrative management on individual tasks and the overall program, 3) standardization of procedures, 4) implementation and oversight of cost control procedures for all assigned activities, and 5) implementation and maintenance of a resource and schedule reporting system. Ms. Guterman will be directly accountable to CDM's Program Manager and directly responsible for the performance of the contract on a day to day basis.

4.3 Program Quality Assurance Officer - Rickie Pelle

The Program Quality Assurance Officer, Ms. Rickie Pelle, will monitor QC activities of program management and technical staff, and identify and report needs of corrective action to the Program Manager. She will also conduct an internal review of all project deliverables prepared by CDM staff and sign off on the final investigation reports.

4.4 Health and Safety Officer - Lisa Granados

The Program Health and Safety Officer, Ms. Lisa Granados, will review and make recommendations to the Subcontractors on health and safety plans for compliance with OSHA requirements. She will develop a site HASP, perform over-sight activities, evaluate the performance of health and safety officers, and maintain required health and safety records. She will report to the Program Manager.

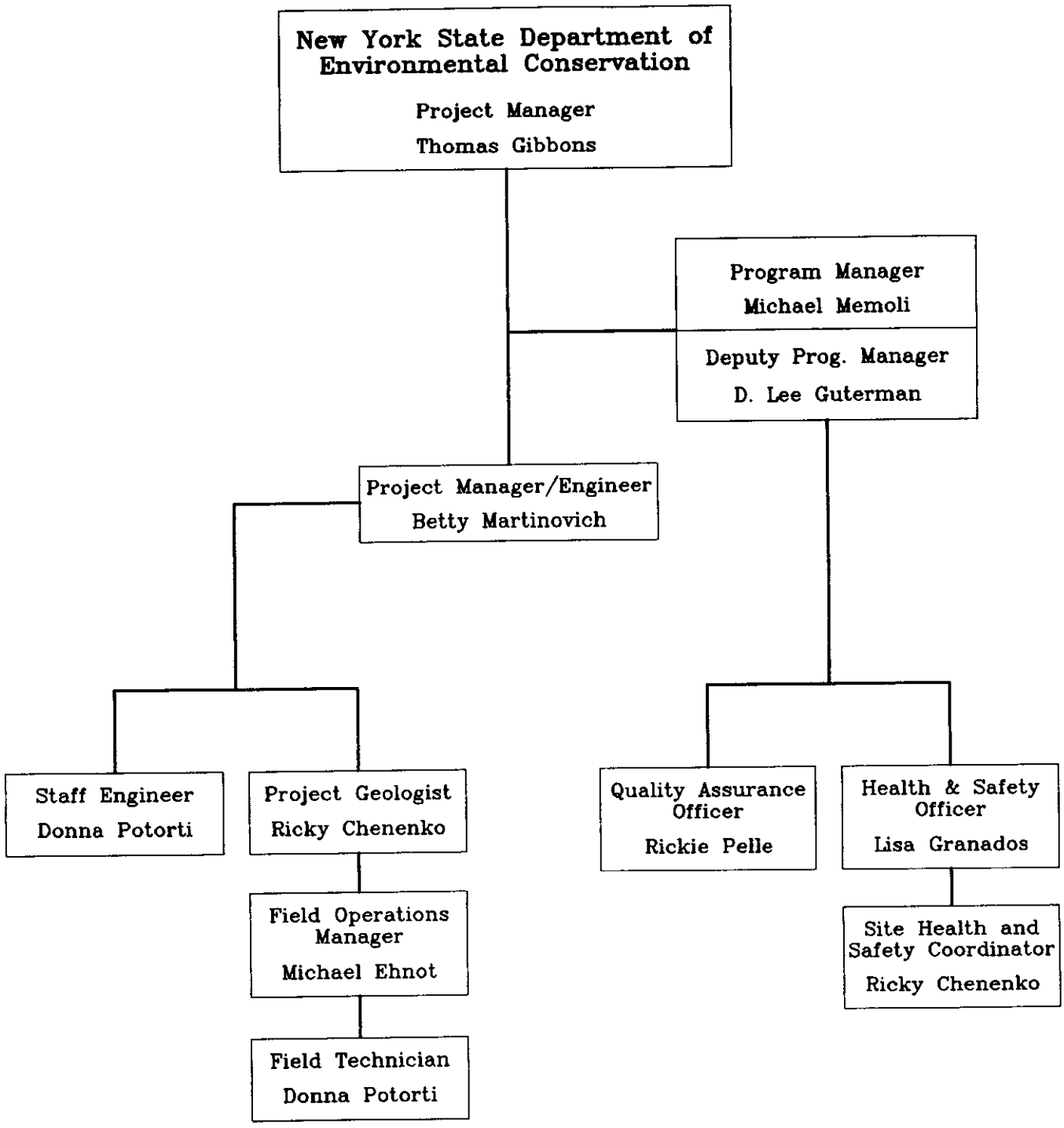

Figure 4-1

Work Assignment Organization Chart

Swivelier Site - Nanuet, New York
NYSDEC Site #3-44-036

4.5 Project Manager/Project Engineer - Betty Martinovich

The Project Manager, Ms. Betty Martinovich, will have overall responsibility for the technical and financial aspects of this project. She will assign technical staff, maintain control of the project budget and schedule, prepare monthly progress reports, review and approve project invoices, evaluate the technical quality of project deliverables and adherence to QA/QC procedures, and manage subcontractors. She will serve as CDM's point of contact for this project.

Having almost 10 years of experience as an environmental engineer, specifically with respect to the development of FSs under the Superfund program, Ms. Martinovich will also serve as the Project Engineer.

4.6 Project Geologist - Ricky Chenenko

The Project Geologist, Mr. Ricky Chenenko, will serve as a technical advisor and coordinator for the site RI. He will also serve as the Health and Safety Site Supervisor/Coordinator. He will be directly accountable to the Project Manager.

As the project geologist, Mr. Chenenko will be responsible for coordinating and overseeing RI field activities including, but not limited to, well installation activities including driller activities as well as media sampling events. As the site Health and Safety Coordinator, Mr. Chenenko will be responsible for ensuring that the site HASP is consistently implemented during field activities and that a copy of the site-specific HASP and the CDM Health and Safety Manual are maintained at the site at all times. He will also be responsible for upgrading or downgrading personnel protection based on actual site conditions at the time of the investigation. The Coordinator must also present an overview of the HASP to field personnel prior to initiating any field activities. He will contact the CDM Program Health and Safety Officer and Project Manager if any questions or issues arise, during the conductance of field activities, that he cannot answer.

4.7 Field Operations Manager - Michael Ehnot

The Field Operations Manager, Michael Ehnot, will be responsible for the execution of field activities, in accordance with the SOP/QAPP, including well installation (and the coordination of driller activities) boring (logging, water-level measurement, sample collection, sample shipment, and the completion of chain-of-custody forms. Mr. Ehnot will also be responsible for the monitoring of health and safety conditions in accordance with the site HASP (CDM 1994a). He will serve as the alternate Health and Safety Site Supervisor/Coordinator. He will be directly accountable to the Project Manager and Project Geologist.

4.8 Field Technician/Staff Engineer - Donna Portorti

The Field Technician, Ms. Donna Portorti, will be responsible for conducting the day to day site sampling and investigation activities, including but not limited to the following: coordinating on-site subcontractor (surveyor) activities, collecting soil, groundwater, surface water, and sediment samples, sample shipment and chain-of-custody, and monitoring health and safety

conditions in accordance with the NYSDEC-approved site HASP. She will be directly accountable to the Project Manager and Project Geologist.

Ms. Portorti will also serve as the Project Staff Engineer, assisting the Project Engineer with the development of the site FS.

4.9 Other Project Staff

Below is a listing of additional CDM staff members who we anticipate to be assigned to this project and their respective responsibilities. CDM will endeavor to utilize these individuals. If, for any reason, these staff become unavailable and substitutions and/or additions are required, NYSDEC will be given advance notification.

Colleen Ranney (VII)	-	Senior Scientist and Technical Reviewer
Joseph Cattafe (VI)	-	Senior Geologist/Consultation and Technical Reviewer
James Miller (VI)	-	Senior Engineer and Technical Reviewer
Nanette Vignola (VI)	-	Senior Scientist/Wetlands and Habitat Assessment Specialist
John Lengel (IV)	-	Engineer/Soil Gas Survey Specialist
Thomas Horn (III)	-	Alternate Field Technician
Noelle Clark (II)	-	Alternate Field Technician
Albert J. Capuzzi (II)	-	Engineer/GC Operator
Dennis Grove (II)	-	Equipment Maintenance
Vince Eugene (I)	-	Alternate Field Technician or Equipment Maintenance
William Capuzzi (I)	-	Scientist/Soil Gas Survey Specialist
Liane Mancini	-	Word Processing
Carole Hoyda	-	Alternate Word Processing
Heechan Lee	-	Drafting and AutoCADD
Anthony Revinski	-	Alternate Drafting and AutoCADD

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Bruce Wynstra

Section 5
Budget Estimate

The following section presents a detailed breakdown of the total cost for each task and subtask outlined in Section 2.0 of this work plan.

Schedule 2.11(a), Summary of Work Assignment Price, provides an overview of the total budget estimate for the work assignment, including subcontract costs and fixed fee. Three separate rate schedules have been prepared, under Schedule 2.11(b), for the portion of the project to be performed before and after the change in reimbursement rates for Direct Salary Cost on June 30, 1994. In Schedule 2.11(b), direct Labor Hours and Costs Budgeted are provided for each labor classification and are derived using corresponding average reimbursement hourly rates in accordance with Schedule 2.10(a) of our contract. Because the duration of this project is anticipated to extend past June 30, 1994 and into December 1995, three separate rate schedules have been prepared under Schedule 2.11(b). Schedule 2.11(b-1) presents the administrative labor hours associated with the non-technical aspects of the work assignment. Total non-direct salary costs are itemized in Schedule 2.11(c).

A list of equipment required for the execution of the work assignment is detailed in Schedules 2.11(d)1 through 2.11(d)4. Estimated costs for consumable supplies, including personal protective equipment and miscellaneous field supplies are provided in Schedule 2.11(d)5. Personal protective equipment has been budgeted in accordance with Schedule 2.10(b) of our contract. Cost-plus-fixed-fee subcontracts are presented in detail in Schedule 2.11(e). Subcontractor costs for unit price subcontracts are provided in Schedule 2.11(f).

The Monthly Cost Control Report, summarizing fiscal information, is presented in Schedule 2.11(g), with a summary of labor hours detailed in Schedule 2.11(h). A monthly cost control report is presented in Schedule 2.11(h) and an equipment inventory control form is presented in Schedule 2.11(i).

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Schedule 2.11(a)

Summary of Work Assignment Price

Work Assignment Number D002925-4
Swivelier Site

1. Direct Salary Costs (Schedules 2.10(a) and 2.11(b))		$117,139
2. Indirect Costs (Schedule 2.10(g))		$195,153
3. Direct Non-Salary Costs (Schedules 2.10(d)(e)(f) and 2.11(c)(d))		$30,280

Subcontract Costs

Cost-Plus-Fixed-Fee Subcontracts (Schedule 2.10(e) and 2.11(e))

Name of Subcontractor		Services To Be Performed	Subcontract Price
A.	Om. P. Popli, P.E.	Surveying	$26,037
B.	Dynamac	Risk Assessment	$28,296
4.	Total Cost-Plus-Fixed-Fee Subcontracts		$54,333

Unit Price Subcontracts (Schedule 2.10(f) and 2.11(g))

Name of Subcontractor		Services To Be Performed	Subcontract Price
A.	VERSAR	Analytical Laboratory	$33,012
B.	Nancy Potak	Data Validation	$5,310
C.	SJB Services Inc.	Well Drilling & Installation	$39,506
D.	Marsden Reproductions, Inc.	Photocopying; Report Binding	$1,883
E.	Disposal Systems, Inc.	Waste Management/Disposal	$4,505
5.	Total Unit Price Subcontracts		$84,216
6.	Subcontract Mangement Fee (Schedule 2.11(f))		$3,626
7. Total Subcontract Costs (lines 4+5+6)			$142,175
8. Fixed Fee (Schedule 2.10(h))			$15,615
9. Total Work Assignment Price (Lines 1+2+3+7+8)			$500,362

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Date Prepared March 28, 1994

Engineer Camp Dresser & McKee
Project Name Swivelier Site
Work Assignment No. D002925-4

Schedule 2.11(b)

Direct Labor Hours and Costs Budgeted

Labor Classification	IX		VIII		VII		VI		V		IV		III		II		I		Technical Report Typing		Adm./ Support		Total No. of Direct Labor Hrs. and Costs Budgeted	
Salary Rates 1994	$47.71		$42.90		$35.59		$32.21		$26.60		$24.91		$20.30		$18.27		$15.51		$15.39		$15.39			
Salary Rates 1995	$50.09		$45.05		$37.37		$33.82		$27.93		$26.15		$21.32		$19.18		$16.28		$16.16		$16.16			
Salary Rates 1996	$52.60		$47.30		$39.24		$35.51		$29.33		$27.46		$22.38		$20.14		$17.10		$16.97		$16.97			
Description	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Task 1 – Work Plan Development	4	$190.84			29	$1,032.11			255	$6,783.00	128.5	$3,200.94	41	$832.30	22	$401.94	16	$248.16	83.5	$1,285.07	38	$584.82	617	$14,559.18
Task 2 – Site Characteriztion	5	$250.45			93	$3,439.81	72	$2,435.04	364	$9,908.50	333	$8,388.03	589	$12,258.62	180	$3,310.44	316	$5,067.48	33	$527.12	50	$808.00	2035	$46,393.49
Task 3 – Development of Alternatives	4	$200.36	4	$180.20	2	$74.74			81	$2,262.33							60	$976.80	20	$323.20	8	$129.28	179	$4,146.91
Task 4 – Preliminary Screening of Alternatives	21.5	$1,076.94			41.5	$1,550.86	26	$879.32	289.5	$8,085.74	176	$4,602.40	315	$6,715.80	120	$2,301.60	100	$1,628.00	160	$2,585.60	16	$258.56	1265.5	$29,684.81
Task 5 – Post Screening Field Investigation and Treatability Studies (Phase II RI)																								
Task 6 – Detailed Analysis of Alternatives (Phase III FS)	5.5	$275.50	4	$180.20	5	$186.85	32	$1,082.24	60	$1,675.80	60	$1,569.00					120	$1,953.60	20	$323.20	9	$145.44	315.5	$7,391.83
Task 7 – Recommendation of Remedy	23	$1,209.80			42	$1,648.08	4	$142.04	194	$5,690.02	30	$823.80	70	$1,566.60			100	$1,710.00	100	$1,697.00	28	$475.16	591	$14,962.50
Total Hours and Cost (all tasks) 1994	4				46				399		364.5		318		178		100		91.5		38		1539	
1995	36		8		124.5		130		650.5		333		627		144		512		225		83		2873	
1996	23				42		4		194		30		70				100		100		28		591	
Total	63	$3,203.88	8	$360.40	212.5	$7,932.45	134	$4,538.64	1243.5	$34,405.39	727.5	$18,584.17	1015	$21,373.32	322	$6,013.98	712	$11,584.04	416.5	$6,741.19	149	$2,401.26	5003	$117,138.72

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Engineer Camp Dresser & McKee
Project Name Swivelier Site
Work Assignment No. D002925-4

Schedule 2.11 (b-1)

Direct Adiministrative Labor Hours and Costs Budgeted

Labor Classification		IX	VIII	VII	VI	V	IV	III	II	I	Technical Report Typing	Adm./ Support	Total No. of Direct Labor Hrs. and Costs Budgeted
Salary Rates	1994	$47.71	$42.90	$35.59	$32.21	$26.60	$24.91	$20.30	$18.27	$15.51	$15.39	$15.39	
	1995	$50.09	$45.05	$37.37	$33.82	$27.93	$26.15	$21.32	$19.18	$16.28	$16.16	$16.16	
	1996	$52.60	$47.30	$39.24	$35.51	$29.33	$27.46	$22.38	$20.14	$17.10	$16.97	$16.97	
Description		Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours	Hours
Task 1 – Work Plan Development		4		20.5		13	0	0	0	0	0	38	75.5
Task 2 – Site Characteriztion		5		31	0	13.5	0	0	4	0	0	50	103.5
Task 3 – Development of Alternatives		0	0	2		1				0	0	8	11
Task 4 – Preliminary Screening of Alternatives		1.5		7.5	0	3.5	0	0	0	0	0	16	28.5
Task 5 – Post Screening Field Investigation and Treatability Studies (Phase II RI)													
Task 6 – Detailed Analysis of Alternatives (Phase III FS)		1.5	0	5	0	2	0			0	0	9	17.5
Task 7 – Recommendation of Remedy		3		14	0	6	0	0		0	0	28	51
Total Hours and Cost (all tasks)		15	0	80	0	39	0	0	4	0	0	149	287

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Schedule 2.11 (c)

Direct Non-Salary Costs
Work Assignment Number D002925-4

Item	Max. Reimbursement * Rate (Specify Unit)	Est. No. of Units	Total Estimated Cost
A. Sample Analysis Rates (In-House Cost Only; For Subcontractors see Schedule 2.10(f) and 2.11(f))			
** Federal Express Shipment	$78.92 /shipment(50lb.)	6 shipments	$473.52
(to/from laboratory - 15 times)	$48.17 /shipment(20lb.)	6 shipments	$289.02
			$762.54
B. Miscellaneous			
1. Phone/Fax	$5.25 /call	320 calls (4 calls/week)	$1,680.00
2. Mail or Federal Express (2 day service)	$12.50 /mailing(10lb.)	25 mailings	$312.50
Federal Express to and from Warehouse	$78.92 /shipment(50lb.)	6 shipments	$473.52
Federal Express round trip shipment of GC (includes insurance)	$400.00 /shipment	1 shipments	$400.00
3. Pick-up truck rental	$30.00 /day	40 days	$1,200.00
4. Historic aerial photos	$500.00 /set	1 set	$500.00
*** 5. Electric/phone hook-up	$994.00 /total	2 hook-ups	$994.00
6. Electric bill for trailer	$40.00 /month	3 months	$120.00
7. Rental car (minimum)	$199.00 /week	4 weeks	$796.00
8. Level D protection	$11.00 /man-day	98 man-days	$1,078.00
9. Reproduction Costs (Napco Copy Graphics)		Lump Sum	$245.77
10. Travel: Pickup Truck Miles (RT to Nanuet) say 12 round trips	$0.23 /mile	1200 miles	$276.00
Miles (site/hotel- 45 days)	$0.23 /mile	900 miles	$207.00
Per diem (Nanuet)	$84.00 /man-day	98 man-days	$8,232.00
Transportation to Albany	$63.00 /trip (Amtrak)	14 man-trips	$882.00
Tolls	$5.00 /trip	30 trips	$150.00
Personal vehicle use (12 round trips)	$0.23 /mile	1200 miles	$276.00
			$17,822.79
Total Direct Non-Salary Costs			$18,585.33

* See Schedule 2.10(b) and 2.10(d) for rates
** Overnight Federal Express Shipment needed to meet laboratory QA/QC holding times.
*** Assumes trailer located 50 ft. from power (electric/phone) source.
phone hookup $144
electric hookup $850

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Work Assignment D002925-4

Schedule 2.11(d)2
Maximum Reimbursement Rates for Consultant/Subconsultant – Owned Equipment

Item	Purchase Price x 85%	Capital Recovery and Usage Rate ($/Unit of Time)	Maximum Days for Usage Rate	Estimated Usage (Unit of Time)	Estimated Usage Cost (Col.3 x Col.4)	Non-Billable Amount
Photoionizer – OVM	$3,800	$23 /day	165 days	50 days	$1,150.00	
Explosimeter	$1,520	$5 /day	304 days	50 days	$250.00	
pH meter	$335	$3 /day	107 days	45 days	$135.00	
Conductivity-Temp. meter	$61	$1 /day	115 days	45 days	$45.00	
Water level meter	$250	$2 /day	125 days	45 days	$90.00	
2 Generators – 5000 W (2)	$1,450 each	$32 /day each	45 days each	10 days each	$640.00	
Drager pump	$250	$2 /day	125 days	45 days	$90.00	
Centrifugal pump	$390	$10 /day	39 days	10 days	$100.00	
D.O. meter	$1,275	$13 /day	98 days	10 days	$130.00	
				Total:	$2,630.00	$0.00

[1] Usage Rate = Capital Recovery Rate + O&M Rate

[2] The maximum usage rate for an item of equipment reverts to the O&M rate when the total recovery reimbursement rate exceeds 85% of the purchase price.

[a] Maximum number of days for usage rate is exceeded.

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Work Assignn D002925-4

Schedule 2.11(d)3

Maximum Reimbursement Rate for Vendor – Rented Equipment

Item	Maximum Reimbursement Rate[1]	Estimated Usage (period of time)	Estimated Rental Cost (Col. 2 x Col. 3)
1. Peristalic Pumps	$40.00 /week	2 weeks	$80.00
2. Rediflow Submersible Pumps	$300.00 /week	2 weeks	$600.00
3. Metal/Cable detector	$275.00 /month	2 months	$550.00
4. Office/Storage trailer	$150.00 /month +$300.00 delivery & pick-up	3 months	$450.00 $300.00
5. Porta John	$95.00 /month	3 months	$285.00
6. Air Sampling Pump	$60.00 /week	10 weeks	$600.00
7. Chromatograph (GC)	$700.00 /week	2 weeks	$1,400.00
8. Standards for GC	$300.00 /each	TCE/PCE	$600.00
9. Soil gas probe set	$100.00 /day	8 days	$800.00
10. Steam Cleaner	$50.00 /day	10 days	$500.00
11. Turbidimeter	$25.00 /week	8 weeks	$200.00
12. Glass Bulbs for Soil Gas Collection	$100.00 /each	2 bulbs	$200.00
13. Mini-Ram Dust Monitor	$500.00 /month	2 months	$1,000.00
		Total	$7,565.00

[1] Reimbursement will be paid at the Maximum Reimbursement rate or the actual rental rate, whichever is less.

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Work Assignment No. D002925-4

Schedule 2.11(d)5*

Consumable Supplies

Item	Estimated Quantity	Unit Cost	Total Budget Cost (Col. 2 x Col. 3)
Hydrocarbon – Free Air	2	$130.00 /each	$260.00
Miscellaneous Supplies	–	Lump Sum	$1,240.00
Total			$1,500.00 *

Note: Consumable Supplies are expected to include:

Log Book
Liquinox
Clear tape
Duct tape
Strapping tape
Paper towels
DI water
Vermiculite
Disposable bailers
1/8 inch poly rope
1/4 inch poly rope
Peristaltic pump hose
Spray paint
Benzene Drager tubes
Carbon tetrachloride tubes
Wooden stakes
Flags
Poly pipe
Zip lock bags
Disposable cameras/developing
Disposable trowels
Plastic sheeting
Gasoine
XAD-2 air sample tubes
Soil gas syringes

* A budget of $1500 is provided for Phase I RI consumable supplies. The NYSDEC will be notified of consumable supply costs greater than $1500; NYSDEC will reimburse these costs upon receipt of cost backup/justification.

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Schedule 2.11 (e)

Cost–Plus–Fixed–Fee Subcontracts
Work Assignment Number D002925–4

1. NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
Om. P. Popli,P.E.,L.S.,P.C.	Surveying	$26,037.40

A. Direct Salary Costs

Professional Responsibility Level (NSPE)	Labor Classification	Average Reimbursement Rate ($/Hr)	Max. Reimbursement Rate ($/Hr)	Estimated No. of Hours	Total Est. Direct Salary Cost (Ave. Reimb. Rate x Est. # of Hours)
VII	Principal Engineer	$41.69	$45.44	4	$166.76
IV	Surveyor	$22.63	$24.89	24	$543.12
III	Surveyor	$17.09	$18.97	148	$2,529.32
III	CADD Technician	$17.09	$18.97	72	$1,230.48
II	Surveyor	$15.51	$17.37	136	$2,109.36
I	Surveyor	$13.09	$14.66	–	–
					$6,579.04

Total Direct Salary Costs

Footnotes:

1) These rates will be held firm until December 31, 1994.

2) Reimbursement will be limited to the lesser of either the individual's actual hourly rate or the maximum rate for each labor category.

3) Reimbursement will be limited to the maximum reimbursement rate for the professional responsibility level of the actual work performed.

4) Only those labor classifications indicated with an asterisk will be entitled to overtime premium.

5) Reimbursement for technical time of principals, owners and officers will be limited to the maximum reimbursement rate of that labor category, the actual hourly labor rate paid, or the State M–6 job rate, whichever is lower.

6) The maximum rates in each labor category can be modified only by mutual written agreement and approved by both the Department and the Comptroller.

7) This Footnote applies to Schedules for years 4 thru 7 only. If the U.S. cost–of–living index increases at a rate greater than 6% compounded annually, the maximum salary rates will be subject to renegotiation for future years of the contract. There shall be no retroactive adjustments of payment as a result of renegotiated salary schedules.

B. Indirect Costs

Indirect costs shall be paid based on a percentage of direct salary costs incurred which shall not exceed a maximum of 117 % or the actual rate calculated in accordance with 48 CFR Federal Acquisition Regulation, whichever is lower.

Amount budgeted for indirect costs is $7,697.48

C. Maximum Reimbursement Rates for Direct Non–Salary Costs

Item	Max. Reimbursement Rate (Specify Unit)	Est. No. of Units	Total Estimated Cost
1. Travel			
Lodging & Per Diem	$84.00 /day	20	$1,680.00
Survey Van	$75.00 /day	13	$975.00
Auto CADD Station	$7.60 /hour	44	$334.40
HNU	$60.00 /day	6	$360.00
Tolls, etc.	$50.00 L.S.	1	$50.00
2. Supplies			
Level "D" Safety Equipment:			
	$11.00 /person/day (per approved CDM Contract)	20	$220.00
3. Aerial Photography and Mapping (0.5 mile radius)	$6,000.00 L.S.	1	$6,000.00
Total Direct Non–Salary Costs			$9,619.40

D. Fixed Fee

The fixed fee is (15% of D.T.L.+Indirect Costs)
The fixed fee is 15 %
See Schedule 2.10(h) for how the fixed fee should be claimed. $2,141.48

TOTAL OF A+B+C+D $26,037.40

Schedule 2.11 (e)

Cost–Plus–Fixed–Fee Subcontracts
Work Assignment Number D002925–4

1. NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
Dynamac Corporation	Risk Assessment	$28,296.07

A. Direct Salary Costs

Professional Responsibility Level	Labor Classification	Average Reimbursement Rate ($/Hr)	Max. Reimbursement Rate ($/Hr)	Estimated No. of Hours	Total Est. Direct Salary Cost (Ave. Reimb. Rate x Est. # of Hours)
Professional Level VIII		$40.72		0	$0.00
Professional Level VII		$33.52		5	$167.60
Professional Level VI		$27.26		289	$7,878.14
Professional Level IV		$17.68		150	$2,652.00
Administrative Support/Clerical		$15.34		18	$276.12
Total Direct Salary Costs					$10,973.86

Footnotes:

1) These rates will be held firm until June 30, 1994.

2) Reimbursement will be limited to the lesser of either the individual's actual hourly rate or the maximum rate for each labor category.

3) Reimbursement will be limited to the maximum reimbursement rate for the professional responsibility level of the actual work performed.

4) Only those labor classifications indicated with an asterisk will be entitled to overtime premium.

5) Reimbursement for technical time of principals, owners and officers will be limited to the maximum reimbursement rate of that labor category, the actual hourly labor rate paid, or the State M–6 job rate, whichever is lower.

6) The maximum rates in each labor category can be modified only by mutual written agreement and approved by both the Department and the Comptroller.

7) This Footnote apllies to Schedules for years 4 thru 7 only. If the U.S. cost–of–living index increases at a rate greater than 6% compounded annually, the maximum salary rates will be subject to renegotiation for future years of the contract. There shall be no retroactive adjustments of payment as a result of renegotiated salary schedules.

B. Indirect Costs

Indirect costs shall be paid based on a percentage of direct salary costs incurred which shall not exceed a maximum of 117 % or the actual rate calculated in accordance with 48 CFR Federal Acquisition Regulation, whichever is lower.

Amount budgeted for indirect costs is $ $12,839.42

C. Maximum Reimbursement Rates for Direct Non–Salary Costs

Item	Max. Reimbursement Rate (Specify Unit)	Est. No. of Units	Total Estimated Cost
1. Overnight Shipping	See Schedule 2.10 (d) for rates		$84.00
2. Mileage			$264.00
3. Per diem			$444.00

Total Direct Non–Salary Costs $ $792.00

D. Fixed Fee

The fixed fee is 15 %
See Schedule 2.10(h) for how the fixed fee should be claimed. $ $3,690.79

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Schedule 2.11 (f)

[a]

Unit Price Subcontracts

Work Assignment Number D002925-4

1. NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE	MGMT. FEE
SJB Services Inc.	Well installation	$39,506.00	$1,975.30
VERSAR	Analytical Laboratory	$33,012.00	$1,650.60
Nancy Potak	Data Validation	$5,310.00	$0.00
Marsden Reproductions Inc.	Photocopying/ Report Binding	$1,883.00	$0.00
Disposal Systems, Inc.	Waste Management/ Disposal	$4,505.00	$0.00

Subtotal-Subcontract Price	$84,216.00
Subcontract Management Fee*	$3,625.90
TOTAL	$87,841.90

* A subcontract management fee of 5% has been included for subcontracts over $10,000.

[a] A separate Schedule 2.11(f) is completed for each of the unit price subcontracts

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Schedule 2.11 (f)1

Unit Price Subcontracts
Work Assignment Number D002925-4

1. NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE	MGMT. FEE
SJB Inc.	Well installation	$39,506.00	$1,975.30

Item	Max. Reimbursement Rate (Specify Unit)	Est. No. of Units	Total Estimated Cost
1. Mob/Demob	$2,000.00 /Each	1	$2,000.00
2. Overburden Monitoring Wells			
4.25 in. ID Hollow Stem Augers	$10.00 /foot	180	$1,800.00
PVC Well Riser	$2.00 /foot	60	$120.00
PVC Well Screen	$3.00 /foot	120	$360.00
Well development	$150.00 /hour	12	$1,800.00
2.0 inch Split Spoon sampling	$7.00 /each	26	$182.00
3.0 inch Split Spoon sampling	$9.00 /each	24	$216.00
Flush Mount 6" I.D. protector	$150.00 /each	6	$900.00
Well screen sand pack	$10.00 /foot	150	$1,500.00
Bentonite pellet seal for 2.0 inch well	$14.00 /foot	12	$168.00
Riser backfill for 2.0 inch well	$7.00 /foot	42	$294.00
Personal protective equipment	$0.00 /day	30	$0.00
3. Bedrock Monitoring Wells (1)			
6-inch air hammer	$40.00 /foot	50	$2,000.00
6.25-inch ID Hollow Stem Augers	$17.00 /foot	150	$2,550.00
4-inch Sch 80 PVC casing	$7.00 /foot	200	$1,400.00
NX/NQ-Coring	$30.00 /foot	300	$9,000.00
Riser backfill for 4.0 inch well	$7.00 /foot	200	$1,400.00
Well development	$150.00 /hour	20	$3,000.00
Flush Mount 8" I.D. protector	$175.00 /each	5	$875.00
4. Soil Borings			
4.25-inch ID Hollow Stem Augers	$10.00 /foot	32	$320.00
2-inch Split Spoon Sampling	$7.00 /each	14	$98.00
3-inch Split Spoon Sampling	$9.00 /each	7	$63.00
5. Miscellaneous			
55-gallon drums	$45.00 /each	7	$315.00
Transporting full 55-gallon drums(liquid)	$35.00 /each	1	$35.00
Transporting full 55-gallon drums(solid)	$35.00 /each	6	$210.00
Steamer Rental	$60.00 /day	30	$1,800.00
Decon Pad	$600.00	1	$600.00
Decon time	$125.00 /hour	20	$2,500.00
Water Tanker, rental	$100.00 /day	30	$3,000.00
Standby time (2)	$125.00 /hour	8	$1,000.00
Subtotal-Subcontract Price			$39,506.00
Subcontract Management Fee (3)			$1,975.30
TOTAL			$41,481.30

Notes: (1) Assumes bedrock is competent and bedrock wells completed as open holes.
(2) Standby time is for moving non-hazardous cuttings.
(3) A subcontract management fee of 5% has been included for subcontracts over $10,000.
Total does not include any standby time, or construction of a drum storage area
if directed by NYSDEC. NYSDEC will determine drum storage and decontamination location.

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Schedule 2.11 (f)2

Unit Price Subcontracts
Work Assignment Number D002925-4

1. NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE	MGMT. FEE
Versar	Analytical Laboratory	$33,012.00	$1,650.60

Item	Analytical Method	Max. Reimbursement Rate (Specify Unit)	Est. No.** of Units	Total Estimated Cost
1. Groundwater / Surface Water (aqueous)				
TCL Volatile+10	91-1	$196.00 /Sample	32	$6,272.00
TCL BNAs+20	91-2	$430.00 /Sample	13	$5,590.00
TAL Metals	CLP-M	$203.00 /Sample	13	$2,639.00
2. Soil / Sediment (non aqueous)				
TCL Volatile+10	91-1	$196.00 /Sample	32	$6,272.00
TCL BNAs+20	91-2	$430.00 /Sample	10	$4,300.00
TAL Metals	CLP-M	$203.00 /Sample	10	$2,030.00
3. Aqueous - Field/Trip Blanks for groundwater and soil sampling events				
TCL Volatile+10	91-1	$196.00 /Sample	14	$2,744.00
TCL BNAs+20	91-2	$430.00 /Sample	5	$2,150.00
TAL Metals	CLP-M	$203.00 /Sample	5	$1,015.00

Subtotal - Subcontract Price	$33,012.00
Subcontract Management Fee*	$1,650.60
TOTAL	$34,662.60

* A subcontract management fee of 5% has been included for subcontracts over $10,000.
**Estimated number excludes matrix spike, matrix spike duplicate, spike samples or re-injection/re-extraction due to matrix effects.

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Schedule 2.11 (f)3

Unit Price Subcontracts
Work Assignment Number D002925-4

1. NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
Nancy Potak	Data Validation	$5,310.00

Item	Max. Reimbursement Rate (Specify Unit)	Est. No. of Units	Total Estimated Cost
1. Surface Water/Groundwater (aqueous)			
TCL Volatile+10 (30 + 2 duplicates)	$30.00 /Sample	32	$960.00
TCL BNAs+20 (11 + 2 duplicates)	$60.00 /Sample	13	$780.00
TAL Metals (11 + 2 duplicates)	$35.00 /Sample	13	$455.00
2. Soil/Sediment, non-aqueous			
TCL Volatile+10 (30 + 2 duplicates)	$35.00 /Sample	32	$1,120.00
TCL BNAs+20 (8 + 2 duplicates)	$70.00 /Sample	10	$700.00
TAL Metals (8 + 2 duplicates)	$40.00 /Sample	10	$400.00
3. Aqueous – Field/Trip Blanks for all sampling events			
TCL Volatile+10	$30.00 /Sample	14	$420.00
TCL BNAs+20	$60.00 /Sample	5	$300.00
TAL Metals	$35.00 /Sample	5	$175.00
TOTAL			$5,310.00

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Schedule 2.11 (f)4

Unit Price Subcontracts
Work Assignment Number D002925-4

1. NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
Marsden Reproductions, Inc.	Photocopying, Report Binding	$1,882.84

Item	Max. Reimbursement Rate (Specify Unit)	Est. No. of Units(books)	Total Estimated Cost
• Second Draft RI/FS Work Plan			
100-8.5x11 pp.	$0.05 /pg	11	$55.00
1-11x17 pp.	$0.12 /pg	11	$1.32
GBC Binding	$3.00 /bk	11	$33.00
Second Draft RI/FS SOP			
300-8.5x11 pp.	$0.05 /pg	11	$165.00
1-11x17 pp.	$0.12 /pg	11	$1.32
GBC Binding	$3.00 /bk	11	$33.00
• First Draft RI/FS Report			
500-8.5x11 pp.	$0.05 /pg	11	$275.00
5-11x17 pp.	$0.12 /pg	11	$6.60
GBC Binding	$3.00 /bk	11	$33.00
Second Draft RI/FS Report			
500-8.5x11 pp.	$0.05 /pg	11	$275.00
5-11x17 pp.	$0.12 /pg	11	$6.60
GBC Binding	$3.00 /bk	11	$33.00
• Draft Final RI/FS Report			
700-8.5x11 pp.	$0.05 /pg	11	$385.00
5-11x17 pp.	$0.12 /pg	11	$6.60
GBC Binding	$3.00 /bk	11	$33.00
Final RI/FS Report			
700-8.5x11 pp.	$0.05 /pg	14	$490.00
5-11x17 pp.	$0.12 /pg	14	$8.40
GBC Binding	$3.00 /bk	14	$42.00
		Total	$1,882.84

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Schedule 2.11 (f)5

Unit Price Subcontracts
Work Assignment Number D002925-4

1. NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
Disposal Systems, Inc.	Waste Management/ Disposal	$4,504.50

Item	Max. Reimbursement Rate (Specify Unit)	Est. No. of Units	Total Estimated Cost
Pick-up, Transport and Disposal of Affected Cuttings	$750.75/ 55-gal drum	6 drums	$4,504.50

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Engineer Camp Dresser & McKee
Project Name Swivelier Site
Work Assignment No. D002925-4
Task #/Name Summary
Complete 0%

Date Prepared February 25, 1994
Billing Period
Invoice No.

Schedule 2.11(g)
MONTHLY COST CONTROL REPORT
SUMMARY OF FISCAL INFORMATION

Expenditure Category	A	B	C	D	E	F	G	H
	Costs Claimed This Period	Paid to Date	Total Disallowed to Date	Total Costs Incurred to Date (A+B+C)	Estimated Costs to Completion	Estimated Total Work Assignment Price (A+B+E)	Approved Budget	Estimated Under/Over (G-F)
1. Direct Salary Costs	$0.00	$0.00	$0.00	$0.00	$117,139.00	$117,139.00	$117,139.00	$0.00
2. Indirect Costs 166.6 %	$0.00	$0.00	$0.00	$0.00	$195,153.00	$195,153.00	$195,153.00	$0.00
3. Subtotal Direct Salary Costs and Indirect Costs	$0.00	$0.00	$0.00	$0.00	$312,292.00	$312,292.00	$312,292.00	$0.00
4. Travel	$0.00	$0.00	$0.00	$0.00	$10,023.00	$10,023.00	$10,023.00	$0.00
5. Other Non-Salary Costs	$0.00	$0.00	$0.00	$0.00	$20,257.00	$20,257.00	$20,257.00	$0.00
6. Subtotal Direct Non-Salary Costs	$0.00	$0.00	$0.00	$0.00	$30,280.00	$30,280.00	$30,280.00	$0.00
7. Subcontractors 7a. Subcontract Mgt. Fee	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$138,549.00 $3,626.00	$138,549.00 $3,626.00	$138,549.00 $3,626.00	$0.00 $0.00
8. Total Work Assignment Cost	$0.00	$0.00	$0.00	$0.00	$484,747.00	$484,747.00	$484,747.00	$0.00
9. Fixed Fee	$0.00	$0.00	$0.00	$0.00	$15,615.00	$15,615.00	$15,615.00	$0.00
10. Total Work Assignment Price	$0.00	$0.00	$0.00	$0.00	$500,362.00	$500,362.00	$500,362.00	$0.00

Date

Project Manager
B. Martinovich

Engineer Camp Dresser & McKee
Project Name Swivelier Site
Work Assignment No. D002925-4
Task #/Name Task 1
Complete 0%

Date Prepared February 25, 1994
Billing Period _____
Invoice No. _____

Schedule 2.11(g)
MONTHLY COST CONTROL REPORT
TASK 1

Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs	$0.00	$0.00	$0.00	$0.00	$14,559.00	$14,559.00	$14,559.00	$0.00
2. Indirect Costs 166.6 %	$0.00	$0.00	$0.00	$0.00	$24,257.00	$24,257.00	$24,257.00	$0.00
3. Subtotal Direct Salary Costs and Indirect Costs	$0.00	$0.00	$0.00	$0.00	$38,816.00	$38,816.00	$38,816.00	$0.00
4. Travel	$0.00	$0.00	$0.00	$0.00	$144.00	$144.00	$144.00	$0.00
5. Other Non-Salary Costs	$0.00	$0.00	$0.00	$0.00	$320.00	$320.00	$320.00	$0.00
6. Subtotal Direct Non-Salary Costs	$0.00	$0.00	$0.00	$0.00	$464.00	$464.00	$464.00	$0.00
7. Subcontractors 7a. Subcontract Mgt. Fee	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$289.00 $0.00	$289.00 $0.00	$289.00 $0.00	$0.00 $0.00
8. Total Work Assignment Cost	$0.00	$0.00	$0.00	$0.00	$39,569.00	$39,569.00	$39,569.00	$0.00
9. Fixed Fee	$0.00	$0.00	$0.00	$0.00	$1,941.00	$1,941.00	$1,941.00	$0.00
10. Total Work Assignment Price	$0.00	$0.00	$0.00	$0.00	$41,510.00	$41,510.00	$41,510.00	$0.00

Project Manager _____
B. Martinovich

Date _____

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Engineer Camp Dresser & McKee
Project Name Swivelier Site
Work Assignment No. D002925-4
Task #/Name Task 2
Complete 0%

Date Prepared February 25, 1994
Billing Period _____
Invoice No. _____

Schedule 2.11(g)
MONTHLY COST CONTROL REPORT
TASK 2

Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs	$0.00	$0.00	$0.00	$0.00	$46,393.00	$46,393.00	$46,393.00	$0.00
2. Indirect Costs 166.6 %	$0.00	$0.00	$0.00	$0.00	$77,292.00	$77,292.00	$77,292.00	$0.00
3. Subtotal Direct Salary Costs and Indirect Costs	$0.00	$0.00	$0.00	$0.00	$123,685.00	$123,685.00	$123,685.00	$0.00
4. Travel	$0.00	$0.00	$0.00	$0.00	$9,383.00	$9,383.00	$9,383.00	$0.00
5. Other Non-Salary Costs	$0.00	$0.00	$0.00	$0.00	$19,137.00	$19,137.00	$19,137.00	$0.00
6. Subtotal Direct Non-Salary Costs	$0.00	$0.00	$0.00	$0.00	$28,520.00	$28,520.00	$28,520.00	$0.00
7. Subcontractors 7a. Subcontract Mgt. Fee	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$136,666.00 $3,626.00	$136,666.00 $3,626.00	$136,666.00 $3,626.00	$0.00 $3,626.00
8. Total Work Assignment Cost	$0.00	$0.00	$0.00	$0.00	$292,497.00	$292,497.00	$292,497.00	$0.00
9. Fixed Fee	$0.00	$0.00	$0.00	$0.00	$6,184.00	$6,184.00	$6,184.00	$0.00
10. Total Work Assignment Price	$0.00	$0.00	$0.00	$0.00	$298,681.00	$298,681.00	$298,681.00	$0.00

Date _____

Project Manager _____
B. Martinovich

Engineer Camp Dresser & McKee
Project Name Swivelier Site
Work Assignment No. D002925-4
Task #/Name Task 3
Complete 0%

Date Prepared February 25, 1994
Billing Period _____
Invoice No. _____

Schedule 2.11(g)
MONTHLY COST CONTROL REPORT
TASK 3

Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs	$0.00	$0.00	$0.00	$0.00	$4,147.00	$4,147.00	$4,147.00	$0.00
2. Indirect Costs 166.6 %	$0.00	$0.00	$0.00	$0.00	$6,908.00	$6,908.00	$6,908.00	$0.00
3. Subtotal Direct Salary Costs and Indirect Costs	$0.00	$0.00	$0.00	$0.00	$11,055.00	$11,055.00	$11,055.00	$0.00
4. Travel	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
5. Other Non-Salary Costs	$0.00	$0.00	$0.00	$0.00	$200.00	$200.00	$200.00	$0.00
6. Subtotal Direct Non-Salary Costs	$0.00	$0.00	$0.00	$0.00	$200.00	$200.00	$200.00	$0.00
7. Subcontractors 7a. Subcontract Mgt. Fee	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00
8. Total Work Assignment Cost	$0.00	$0.00	$0.00	$0.00	$11,255.00	$11,255.00	$11,255.00	$0.00
9. Fixed Fee	$0.00	$0.00	$0.00	$0.00	$553.00	$553.00	$553.00	$0.00
10. Total Work Assignment Price	$0.00	$0.00	$0.00	$0.00	$11,808.00	$11,808.00	$11,808.00	$0.00

Date _____

Project Manager _____
B. Martinovich

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Engineer Camp Dresser & McKee
Project Name Swivelier Site
Work Assignment No. D002925-4
Task #/Name Task 4
Complete 0%

Date Prepared February 25, 1994
Billing Period
Invoice No.

Schedule 2.11(g)
MONTHLY COST CONTROL REPORT
TASK 4

Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs	$0.00	$0.00	$0.00	$0.00	$29,685.00	$29,685.00	$29,685.00	$0.00
2. Indirect Costs 166.6 %	$0.00	$0.00	$0.00	$0.00	$49,455.00	$49,455.00	$49,455.00	$0.00
3. Subtotal Direct Salary Costs and Indirect Costs	$0.00	$0.00	$0.00	$0.00	$79,140.00	$79,140.00	$79,140.00	$0.00
4. Travel	$0.00	$0.00	$0.00	$0.00	$293.00	$293.00	$293.00	$0.00
5. Other Non-Salary Costs	$0.00	$0.00	$0.00	$0.00	$200.00	$200.00	$200.00	$0.00
6. Subtotal Direct Non-Salary Costs	$0.00	$0.00	$0.00	$0.00	$493.00	$493.00	$493.00	$0.00
7. Subcontractors	$0.00	$0.00	$0.00	$0.00	$629.00	$629.00	$629.00	$0.00
7a. Subcontract Mgt. Fee	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
8. Total Work Assignment Cost	$0.00	$0.00	$0.00	$0.00	$80,262.00	$80,262.00	$80,262.00	$0.00
9. Fixed Fee	$0.00	$0.00	$0.00	$0.00	$3,957.00	$3,957.00	$3,957.00	$0.00
10. Total Work Assignment Price	$0.00	$0.00	$0.00	$0.00	$84,219.00	$84,219.00	$84,219.00	$0.00

Date

Project Manager
B. Martinovich

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Engineer Camp Dresser & McKee
Project Name Swivelier Site
Work Assignment No. D002925-4
Task #/Name Task 5
Complete 0%

Date Prepared February 25, 1994
Billing Period _____
Invoice No. _____

Schedule 2.11(g)
MONTHLY COST CONTROL REPORT
TASK 5

Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
2. Indirect Costs 166.6 %	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
3. Subtotal Direct Salary Costs and Indirect Costs	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
4. Travel	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
5. Other Non-Salary Costs	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
6. Subtotal Direct Non-Salary Costs	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
7. Subcontractors 7a. Subcontract Mgt. Fee	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00
8. Total Work Assignment Cost	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
9. Fixed Fee	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
10. Total Work Assignment Price	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

Date _____

Project Manager _____
B. Martinovich

*Engineer Camp Dresser & McKee
Project Name Swivelier Site
Work Assignment No. D002925-4
Task #/Name Task 6
Complete 0%

Date Prepared February 25, 1994
Billing Period _____
Invoice No. _____

Schedule 2.11(g)
MONTHLY COST CONTROL REPORT
TASK 6

Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs	$0.00	$0.00	$0.00	$0.00	$7,392.00	$7,392.00	$7,392.00	$0.00
2. Indirect Costs 166.6 %	$0.00	$0.00	$0.00	$0.00	$12,314.00	$12,314.00	$12,314.00	$0.00
3. Subtotal Direct Salary Costs and Indirect Costs	$0.00	$0.00	$0.00	$0.00	$19,706.00	$19,706.00	$19,706.00	$0.00
4. Travel	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
5. Other Non-Salary Costs	$0.00	$0.00	$0.00	$0.00	$200.00	$200.00	$0.00	($200.00)
6. Subtotal Direct Non-Salary Costs	$0.00	$0.00	$0.00	$0.00	$200.00	$200.00	$0.00	($200.00)
7. Subcontractors 7a. Subcontract Mgt. Fee	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00
8. Total Work Assignment Cost	$0.00	$0.00	$0.00	$0.00	$19,906.00	$19,906.00	$19,906.00	$0.00
9. Fixed Fee	$0.00	$0.00	$0.00	$0.00	$985.00	$985.00	$985.00	$0.00
10. Total Work Assignment Price	$0.00	$0.00	$0.00	$0.00	$20,891.00	$20,891.00	$20,891.00	$0.00

Date _____

Project Manager _____
B. Martinovich

Engineer Camp Dresser & McKee
Project Name Swivelier Site
Work Assignment No. D002925-4
Task #/Name Task 7
Complete 0%

Date Prepared February 25, 1994
Billing Period
Invoice No.

Schedule 2.11(g)
MONTHLY COST CONTROL REPORT
TASK 7

Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs	$0.00	$0.00	$0.00	$0.00	$14,963.00	$14,963.00	$14,963.00	$0.00
2. Indirect Costs 166.6 %	$0.00	$0.00	$0.00	$0.00	$24,927.00	$24,927.00	$24,927.00	$0.00
3. Subtotal Direct Salary Costs and Indirect Costs	$0.00	$0.00	$0.00	$0.00	$39,890.00	$39,890.00	$39,890.00	$0.00
4. Travel	$0.00	$0.00	$0.00	$0.00	$203.00	$203.00	$203.00	$0.00
5. Other Non-Salary Costs	$0.00	$0.00	$0.00	$0.00	$200.00	$200.00	$200.00	$0.00
6. Subtotal Direct Non-Salary Costs	$0.00	$0.00	$0.00	$0.00	$403.00	$403.00	$403.00	$0.00
7. Subcontractors 7a. Subcontract Mgt. Fee	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$0.00 $0.00	$965.00 $0.00	$965.00 $0.00	$965.00 $0.00	$0.00 $0.00
8. Total Work Assignment Cost	$0.00	$0.00	$0.00	$0.00	$41,258.00	$41,258.00	$41,258.00	$0.00
9. Fixed Fee	$0.00	$0.00	$0.00	$0.00	$1,995.00	$1,995.00	$1,995.00	$0.00
10. Total Work Assignment Price	$0.00	$0.00	$0.00	$0.00	$43,253.00	$43,253.00	$43,253.00	$0.00

Date

Project Manager
B. Martinovich

SCHEDULE\XK21G7.WK3

Schedule 2.11(g) – Supplemental

COST CONTROL REPORT
SUBCONTRACTS

Engineer Camp Dresser & McKee

Date Prepared _____

Contract No. _____

Billing Period _____

Project Name Swivelier Site

Invoice No. _____

Work Assignment No. D002925-4

Subcontract Name	A Subcontract Costs Claimed this Application Including Resubmittals	B Subcontract Costs Approved for Payment on Previous Applications	C Total Subcontract Costs to Date (A + B)	D Subcontract Approved Budget	E Management Fee Budget	F Management Fee Paid	H Total Costs To Date (C + F)
1. Om P. Popli, P.E.	$0.00	$0.00	$0.00	$26,037.00	$0.00	$0.00	$0.00
2. Dynamac Corp.	$0.00	$0.00	$0.00	$28,296.00	$0.00	$0.00	$0.00
3. SJB Services, Inc.	$0.00	$0.00	$0.00	$39,506.00	$1,975.00	$0.00	$0.00
4. VERSAR	$0.00	$0.00	$0.00	$33,012.00	$1,651.00	$0.00	$0.00
5. Nancy Potak	$0.00	$0.00	$0.00	$5,310.00	$0.00	$0.00	$0.00
6. Marsden Reproductions, Inc.	$0.00	$0.00	$0.00	$1,883.00	$0.00	$0.00	$0.00
7. Disposal Systems,Ins.	$0.00	$0.00	$0.00	$4,505.00	$0.00	$0.00	$0.00
8.							
9.							
10.							
11. TOTALS	$0.00	$0.00	$0.00	$138,549.00	$3,626.00	$0.00	$0.00

Date _____

Project Manager _____
B. Martinovich

Notes: (1) Costs listed in columns A, B, C & D do not include any management fee costs.
(2) Management fee is applicable to only properly procured, satisfactorily completed, unit price subcontracts over $10,000.
(3) Line 11, Column G should equal Line 7 (Subcontractors), Column D of Summary Cost Control Report.

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Engineer Camp Dresser & McKee
Project Name Swivelier Site
Work Assignment No. D002925-4

Date Prepared March 25, 1994
Billing Period
Invoice No.

MONTHLY COST CONTROL REPORT (SCHEDULE 2.11[h])
SUMMARY OF LABOR HOURS
NUMBER OF DIRECT LABOR HOURS EXPENDED TO DATE*/ESTIMATED NUMBER OF DIRECT LABOR HOURS TO COMPLETION

LABOR CLASSIFICATION	IX EXP/EST	VIII EXP/EST	VII EXP/EST	VI EXP/EST	V EXP/EST	IV EXP/EST	III EXP/EST	II &I EXP/EST	ADM./SUPPORT EXP/EST	TOTAL NO. OF DIRECT LABOR HRS. EXP/EST
Task 1 – Work Plan Preparation	0 / 4	0 / 0	0 / 29	0 / 0.0	0 / 255.0	0 / 128.5	0 / 41	0 / 38	0 / 121.5	0 / 617
Task 2 – Site Characterization	0 / 5	0 / 0	0 / 93	0 / 72	0 / 364	0 / 333	0 / 589	0 / 496	0 / 83	0 / 2035
Task 3 – Development of Alternatives	0 / 4	0 / 4	0 / 2	0 / 0	0 / 81	0 / 0	0 / 0	0 / 60	0 / 28	0 / 179
Task 4 – Preliminary Screening of Alternatives	0 / 21.5	0 / 0	0 / 41.5	0 / 26	0 / 289.5	0 / 176	0 / 315	0 / 220	0 / 176	0 / 1266
Task 5 – Post Screening Field Investigation and Treatability Studies (Phase II RI)	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Task 6 – Detailed Analysis of Alternatives (Phase III FS)	0 / 5.5	0 / 4	0 / 5	0 / 32	0 / 60	0 / 60	0 / 0	0 / 120	0 / 29	0 / 315.5
Task 7 – Recommendation of Remedy	0 / 23	0 / 0	0 / 42	0 / 4	0 / 194	0 / 30	0 / 70	0 / 100	0 / 128	0 / 591
TOTAL HOURS	0 / 63	0 / 8	0 / 212.5	0 / 134	0 / 1243.5	0 / 727.5	0 / 1015	0 / 1034	0 / 565.5	0 / 5003

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Section 6
Description of Subcontracting Needs

CDM proposes to engage subconsultants to provide the following services for this work assignment:

Services to be Provided	Firm
Drilling and Groundwater Monitoring Well Installation	SJB Services, Inc. Box 5793-1 1951 Hamburg Turnpike Buffalo, NY 14218
Chemical Analytical Laboratory	Versar 6850 Versar Center Springfield, VA 22151
Copying Services	Marsden Reproductions, Inc. 30 East 33rd Street New York, NY 10016-5364
Site Survey	Om P. Popli, P.E. 2140 South Clinton Avenue Rochester, NY 14618
Data Validation	Nancy Potak RR1 Box 1295 Greensboro, VT 05841
Risk Assessment	Dynamac Corporation 2275 Research Boulevard Rockville, Maryland 20850-3266
Waste Management	Disposal Systems, Inc. Box 6696 Freehold, NJ 07728

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Section 7
MBE/WBE Utilization Plan

To meet the requirements of the MBE/WBE program, CDM has prepared the following projected EEO and MBE/WBE contract goals.

MBE/WBE Contract Goals

1. Total Dollar Value of the Work Assignment - $500,362
2. MBE Percentage/Amount Applied to the Work Assignment (5.6 percent)
3. WBE Percentage/Amount Applied to the Work Assignment (6.7 percent)
4. MBE/WBE Combined Total (12.3 percent)

Minority and woman-owned firms are expected to participate as noted on the following page.

Proposed MBE/WBE

Services to be Provided	Description of Services	Firm Performing Services	Proposed Subcontract Price
Copying	Copy and bind RI/FS reports.	Marsden (MBE)	$1,883
Data Validation	Perform data validation on environmental samples in accordance with NYSDEC data validation protocol.	Nancy Potak (WBE)	$5,310
Surveying	Prepare base map of site in AutoCADD format, and provide horizontal and vertical coordinates for the monitoring wells. Provide aerial topography for habitat assessment mapping.	Om P. Popli, P.E. (MBE)	$26,037
Risk Assessment	Perform risk assessment in accordance with EPA guidance.	Dynamac (WBE)	$28,296

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Section 8
References

Camp Dresser & McKee (CDM) 1994a. Draft Site Operations, Quality Assurance Project Plan, Remedial Investigation Feasibility Study, Swivelier Company, Inc., Village of Nanuet, Clarkstown Township, Rockland County, New York. February 1994.

Camp Dresser & McKee (CDM) 1994b. Draft MBE/WBE Utilization Plan, Remedial Investigation/Feasibility Study, Swivelier Company, Inc., Village of Nanuet, Clarkstown Township, Rockland County, New York. February 1994.

New York State Department of Environmental Conservation (NYSDEC) 1993. Letter from P. David Smith, P.E., Chief, Contract Development Section, Bureau of Program Management, Division of Hazardous Waste Remediation, NYSDEC, to Michael A. Memoli, P.E., Camp, Dresser & McKee, Inc. (CDM). December 6, 1993.

New York State Department of Environmental Conservation (NYSDEC) 1992. Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels, HWR-92-4046. November 16, 1992.

New York State Department of Environmental Conservation (NYSDEC) 1991. Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Site. June 18, 1991.

New York State Department of Environmental Conservation (NYSDEC) 1990. Selection of Remedial Actions at Inactive Hazardous Waste Sites, HWR-90-4030. May 15, 1990.

Rockland County 1980. Letter from Charles S. Stewart, Jr., P.E., Executive Director, Rockland County Sewer District No. 1, Rockland County, to Gerard Phelan, Swivelier Company, Inc. January 31, 1880.

Rockland County Department of Health (RCDH) 1991. Letter from Thomas M. Micelli, P.E., Director, Environmental Public Health, RCDH, to Ralph Manna, Regional Director, NYSDEC. May 14, 1991.

Rockland County Department of Health (RCDH) 1989. Letter from Catherine M. Quinn, Assistant Public Health Engineer, RCDH, to Gerard Phelan, Swivelier Company, Inc., January 27, 1989.

Rockland County Department of Health (RCDH) 1988. Letter from Catherine M. Quinn, Assistant Public Health Engineer, RCDH, to Gerard Phelan, Swivelier Company, Inc. July 26, 1988.

Rockland County Department of Health (RCDH) 1980b. Letter from Robert J. Mansfield, P.E., Assistant Public Health Engineer, RCDH, to Gerald Phalen, Swivelier Company, Inc. January 8, 1980.

Rockland County Department of Health (RCDH) 1980a. Memorandum from George E. O'Keefe, P.E., Assistant Commissioner for Environmental Health, RCDH, to Gilbert Burns, P.E., Regional Director of Environmental Quality Control, RCDH. June 3, 1980.

Spring Valley Water Company 1980. Letter from Leonard W. Miller, Sanitary Engineer, Spring Valley Water Company, to Robert Mansfield, P.E., Rockland County Department of Health. January 10, 1980.

Subsurface Investigations 1993. Remedial Investigation Report, Swivelier Company, Inc., 33 Route 304, Nanuet, New York. Volume I. November 1993.

Swivelier 1992. Letter from Michael I. Schwartz, President, Swivelier Company, Inc., to Brian H. Mende, Project Manger, Geologist, Subsurface Investigations. June 16, 1992.

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APPENDIX A

LMS DRILLING LOG

Project No: 100-070
Client: SWIVILIER
Drilling Began: 4 AUG 1987 1230
Drilling Completed: 4 AUG 1987 1337
Well Construction Completed: 5 AUG 1987
Development Method/Completed: 6 AUG 1987 / PUMP
Yield: 3 GPM
Total Depth: 12 feet
Depth to Refusal: NA
Screened Interval: 2-12 feet
Aquifer: OVERBURDEN

Boring No.: MW-1
Permit No.: NA

SWL (date): 3.52 feet below ground surface
Elevation, Ground Surface:
Elevation, Top of Casing:
Latitude:
Longitude:
Hole Dia.: 8 inch
Monitoring Tube: 4 inch PVC

Depth in feet	Blows on Sampler 0"-6"	6"-12"	12"-18"	18"-24"	Retained Sample	Recovery (ft.)	Sample No.	Instrument Reading (ppm above background)
0	5	7	11	14	✓	1.2	S-1	0.0
2	12	14	12	14	✓	1.4	S-2	0.0
4	17	70	123	8	✓	1.0	S-3	0.0
6	7	6	5	15	✓	2.0	S-4	0.0
8	10	14	18	20	✓	1.8	S-5	0.0
10	37	52	83	66	✓	1.7	S-6	0.0
12								

3.68 − 1.18 = 2.50
3.77 − 1.15 = 2.54

Stratigraphic Column

Description

Black Asphalt Pavement Top 0.2 ft
Gray to brown Silty SAND, Sand is fine grained, clean, damp, trace fine gravel.

Reddish brown fine to medium SAND, little Silt, wet, clean

LOWER WATER LEVEL WHEN SAMPLED, AFTER

Reddish brown fine SAND, some Silt, trace fine gravel, wet, clean

Reddish brown fine SAND, little Silt, top 0.2 ft
Red brown fine SAND and Silt, wet, bottom 1.8 feet

Reddish brown fine to medium SAND, some fine gravel, wet top 1.6 ft
Red brown SILT and CLAY, tight, moist, non-confining bottom 0.4 ft.

Reddish Brown fine to medium SAND and Silt, little clay, wet, clean, no contamination evident.

LMS DRILLING LOG

Project No: 100-070
Client: SWIVELIER
Drilling Began: 5 AUG 1987
Drilling Completed: 5 AUG 1987
Well Construction Completed: 6 AUG 1987
Development Method/Completed: 6 AUG 1987
Yield: 0.5 gpm
Total Depth: 12 feet
Depth to Refusal: NA
Screened Interval: 2-12 feet
Aquifer: OVERBURDEN

Boring No.: MW-2
Permit No.: NA

SWL (date):
Elevation, Ground Surface:
Elevation, Top of Casing:
Latitude:
Longitude:
Hole Dia.: 8 inch
Monitoring Tube: 4 inch PVC

Depth in feet	Blows on Sampler 0"-6"	6"-12"	12"-18"	18"-24"	Retained Sample	Recovery (ft.)	Samp'e No.	Instrument Reading (ppm above background)	Stratigraphic Column	Description
0	8									Black Asphalt Pavement, Top 0.2 ft.
		3								Brownish Gray Silty SAND, sand is fine grained, damp, trace amounts of clay present. Fill type material
			5							
				4	✓	1.3	S-	0.0		
2	3									Gray Silty Sand and Clay, some fine gravel, moist, fill type material, top 0.6 ft.
		9								Reddish brown fine SAND, moist to wet at bottom 0.8 ft
			11							
				20	✓	1.5	S-2	0.0		
4	11									Reddish Brown fine to coarse SAND, little silt, wet, water table → depth of W.T when sampled (after purged)
		16								
			11							
				15	✓	1.8	S-3	0.0		
6	15									Reddish Brown fine to coarse SAND, wet, top 0.8 feet
		17								Reddish brown fine SAND and Silt, some fine gravel bottom 1.2 feet
			18							
				21	✓	2.0	S-4	0.5		
8	24									Gray SILT and CLAY, wet, NON cohesive top 0.8 ft
		18								Reddish brown fine to medium SAND, wet, bottom 1.2 ft
			16							
				27	✓	1.8	S-5	0.0		
10	31									Reddish brown fine to medium SAND and Silt, some fine to coarse gravel, wet
		22								
			26							
				48	✓	2.0	S-6	0.0		
12										

3.82 − 1.62 = 2.20

7.86 − 1.62 = 6.24

1.62

3.82

where sampled (mid water column)

note relationships: water sample could have picked up whatever the HNu reading could have been. Possibly it was reading TCE?