



**US Army Corps
of Engineers®**
Buffalo District

FUSRAP

**QUALITY CONTROL PLAN
REMEDIAL INVESTIGATION/
FEASIBILITY STUDY**

**FOR THE TONAWANDA LANDFILL
FUSRAP SITE**

TONAWANDA, NEW YORK

MAY 4, 2000

**QUALITY CONTROL PLAN
 REMEDIAL INVESTIGATION/FEASIBILITY STUDY
 TOWN OF TONAWANDA LANDFILL FUSRAP SITE
 TONAWANDA, NY**

TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	PROJECT DESCRIPTION.....	1
1.1.1	Site Description.....	1
1.1.2	Site History.....	1
1.1.3	Previous Investigative Studies.....	5
1.2	SCOPE OF WORK.....	6
2.0	MANAGEMENT PHILOSOPHY.....	6
2.1	MANAGEMENT APPROACH.....	7
2.2	MANAGEMENT STRUCTURE.....	7
2.2.1	Key Personnel Responsibilities.....	7
2.2.1.1	SAIC Program Manager.....	7
2.2.1.2	SAIC Project Manager.....	10
2.2.1.3	SAIC Health and Safety Officer.....	10
2.2.1.4	SAIC Data Manager.....	11
2.2.1.5	SAIC Quality Assurance/Quality Control Officer.....	11
2.2.1.6	SAIC Field Manager.....	11
2.2.1.7	SAIC Laboratory Coordinator.....	11
2.2.1.8	SAIC Risk Assessment Manager.....	11
2.2.1.9	SAIC Engineering Analysis Manager.....	12
2.2.1.10	SAIC Technical Manager.....	12
2.2.1.11	SAIC Radiation Safety Officer.....	12
2.3	DESIGN TOOLS.....	12
2.4	PROJECT SCHEDULE.....	12
2.5	COST CONTROL.....	14
2.6	CONSTRUCTION COST ESTIMATE CONTROL.....	14
2.7	COMMUNICATION.....	14
2.8	PROJECT TEAM.....	15
2.9	INDEPENDENT TECHNICAL REVIEW (ITR) TEAM.....	15
3.0	CUSTOMER INVOLVEMENT.....	16
4.0	IDENTIFICATION OF QUALITY INDICATORS.....	16
5.0	PROVISIONS FOR FEEDBACK AND LESSONS LEARNED.....	20
6.0	REFERENCES.....	20

LIST OF TABLES

Table 1-1 Delivery Order Detailed Task Description..... 6
Table 2-1 Key SAIC Personnel Assignments and Qualifications for the RI/FS at the
Tonawanda Landfill Site, Tonawanda, New York..... 9
Table 2-2 Proposed Project Schedule..... 13
Table 2-3 Project Team Identification..... 15

LIST OF FIGURES

Figure 1-1 Site Locus..... 2
Figure 1-2 Plan of Tonawanda FUSRAP Sites 3
Figure 1-3 Tonawanda Landfill/Mudflats Site Plan 4
Figure 2-1 Organization Chart for the RI/FS at the Tonawanda Landfill Site, Tonawanda,
New York 8
Figure 2-2 Statement of Independent Technical Review..... 17
Figure 2-3 Certification of Independent Technical Review..... 18
Figure 2-4 SAIC-Document Review Record..... 19

ACRONYMS AND ABBREVIATIONS

AEC	Atomic Energy Commission
ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CQC	Chemical Quality Control
CRF	Central Records Facility
CX	Center of Expertise
DOE	Department of Energy
EE/CA	Engineering Evaluation/Cost Analysis
EEMG	Engineering and Environmental Management Group
FUSRAP	Formerly Utilized Sites Remedial Action Program
FS	Feasibility Study
HTRW	Hazardous, Toxic, Radioactive Waste
ITR	Independent Technical Review
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MED	Manhattan Engineer District
NMPC	Niagara Mohawk Power Company
NYSDEC	New York State Department of Environmental Conservation
QA/QC	Quality Assurance/Quality Control
QAP	Quality Assurance Program
QAAP	Quality Assurance Administrative Procedure
QATP	Quality Assurance Technical Procedure
QCP	Quality Control Plan
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SAIC	Science Application International Corporation
SAP	Sampling and Analysis Plan
SOW	Scope of Work
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
USACE	U.S. Army Corps of Engineers
WWTP	Waste Water Treatment Plant

1.0 INTRODUCTION

Science Applications International Corporation (SAIC) has been contracted by the U.S. Army Corps of Engineers (USACE) to conduct a Remedial Investigation/Feasibility Study (RI/FS) of the Town of Tonawanda Landfill Site under Contract Number DAHA90-94-D-007, Delivery Order Number DN02.

The activities discussed in this Quality Control Plan (QCP) detail the effort required to conduct and document the RI/FS of the Site to address site and project strategies in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process and the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) guidelines. This project involves the assessment of current site conditions and previous investigation and remediation activities, the development of investigation work plans, implementation of field investigation activities, production of a RI report and subsequent FS, and preparation of supporting and decision documents. These activities and reports will be submitted to the USACE, Buffalo District in support of their mission to complete any necessary CERCLA remediation of the Tonawanda Landfill Site under the Formerly Utilized Sites Remedial Action Program (FUSRAP).

To ensure the objectives of this delivery order are met and submitted products will be of acceptable quality, SAIC has prepared this QCP. Field activities will be performed in a manner conforming to applicable federal, state, and local regulations. All submittals will be complete and concise and conforming to applicable USACE guidelines and regulatory requirements for format and content.

1.1 PROJECT DESCRIPTION

1.1.1 Site Description

The Tonawanda Landfill Site (Site) is located approximately 1.5 miles north of the Linde FUSRAP Site. It is comprised of two main parcels – the Town of Tonawanda Landfill (Landfill) and the Mudflats. The Landfill parcel is located at the northern end of East Park Drive and is bounded by the residential developments to the north and northwest, a railroad line to the east, and a right of way belonging to the Niagara Mohawk Power Company (NMPC) to the south. The Mudflats portion of the property is located on the opposite side of the Niagara Mohawk Power Company right of way that borders the Landfill. The parcel is approximately 115 acres and is bordered by the NMPC right of way to the north, a railroad line to the east, on the west by the former Town of Tonawanda incinerator, and to the south by the New York State Thruway. Both properties are owned by the Town of Tonawanda, NY and the area is essentially zoned as commercial/ industrial except for the bordering residential areas referenced above. A site locus plan (Figure 1-1), a plan showing Tonawanda FUSRAP sites (Figure 1-2), and a Landfill site plan (Figure 1-3) are attached.

1.1.2 Site History

The Landfill was operated as a municipal landfill by the Town of Tonawanda (Town) from the mid-1930's through October, 1989. The primary waste streams for the landfill were ash generated by the incinerators, construction/demolition debris, and yard refuse (leaves, branches, etc.) collected from town residents. On occasion, the landfill did accept municipal solid waste and wastewater sludges, but only when the incinerators were temporarily inoperable.

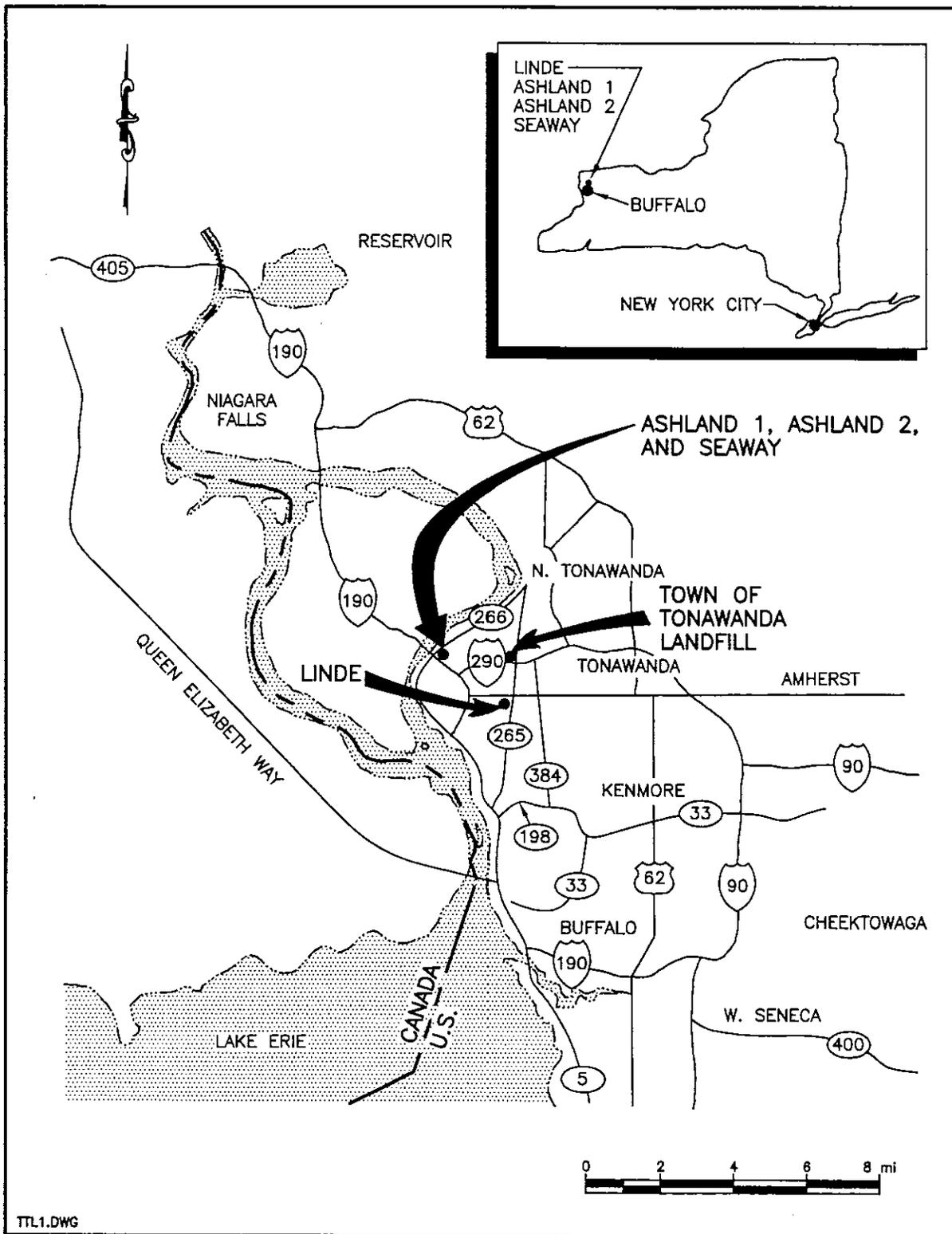


FIGURE 1-1
 REGIONAL LOCATION OF THE TOWN OF TONAWANDA, NEW YORK AND THE
 ASHLAND 1, ASHLAND 2, SEAWAY, LINDE AND THE TOWN OF TONAWANDA LANDFILL SITES

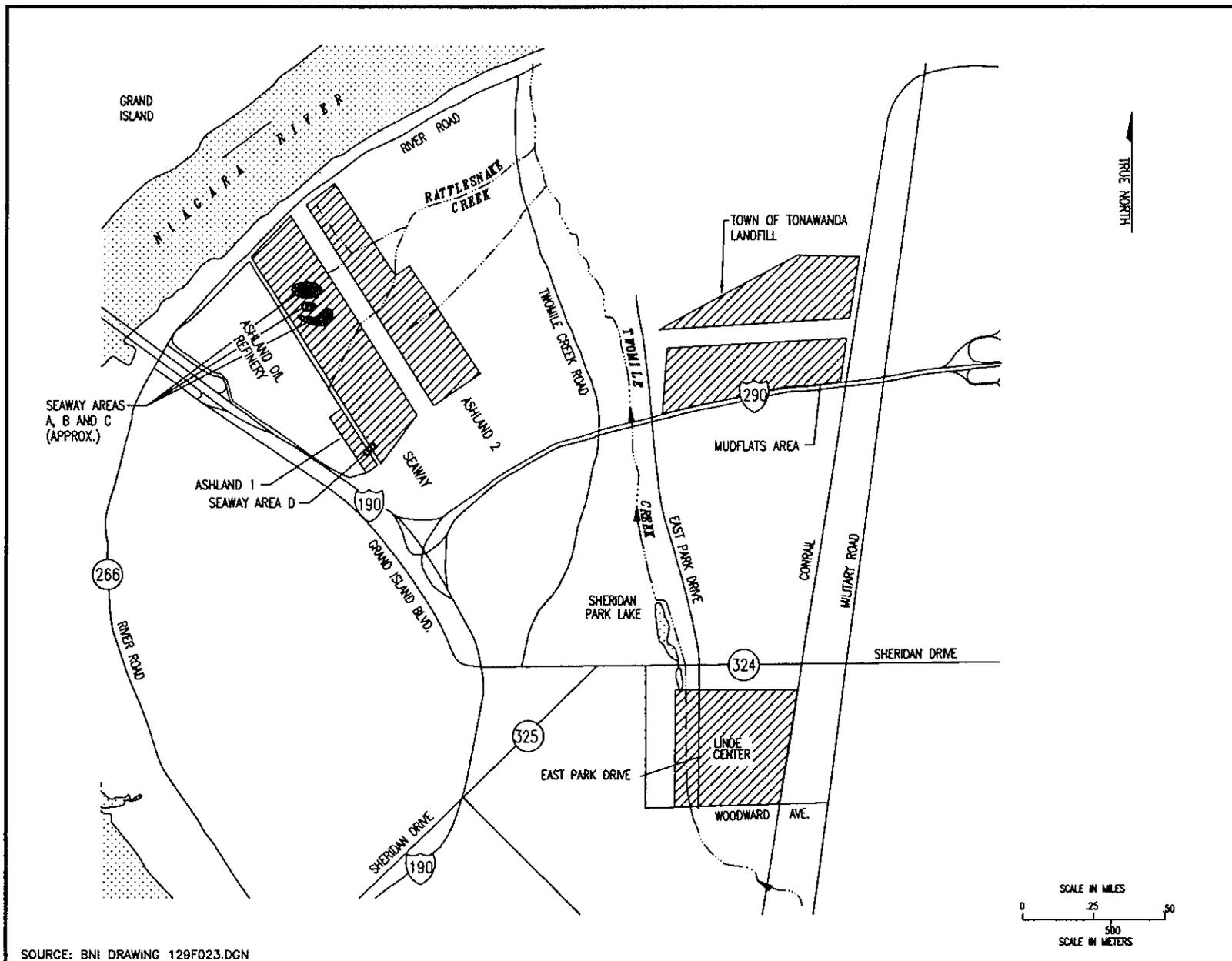


FIGURE 1-2
 LOCATIONS OF ASHLAND 1, ASHLAND 2,
 SEAWAY, LINDE AND THE TOWN OF TONAWANDA LANDFILL SITES

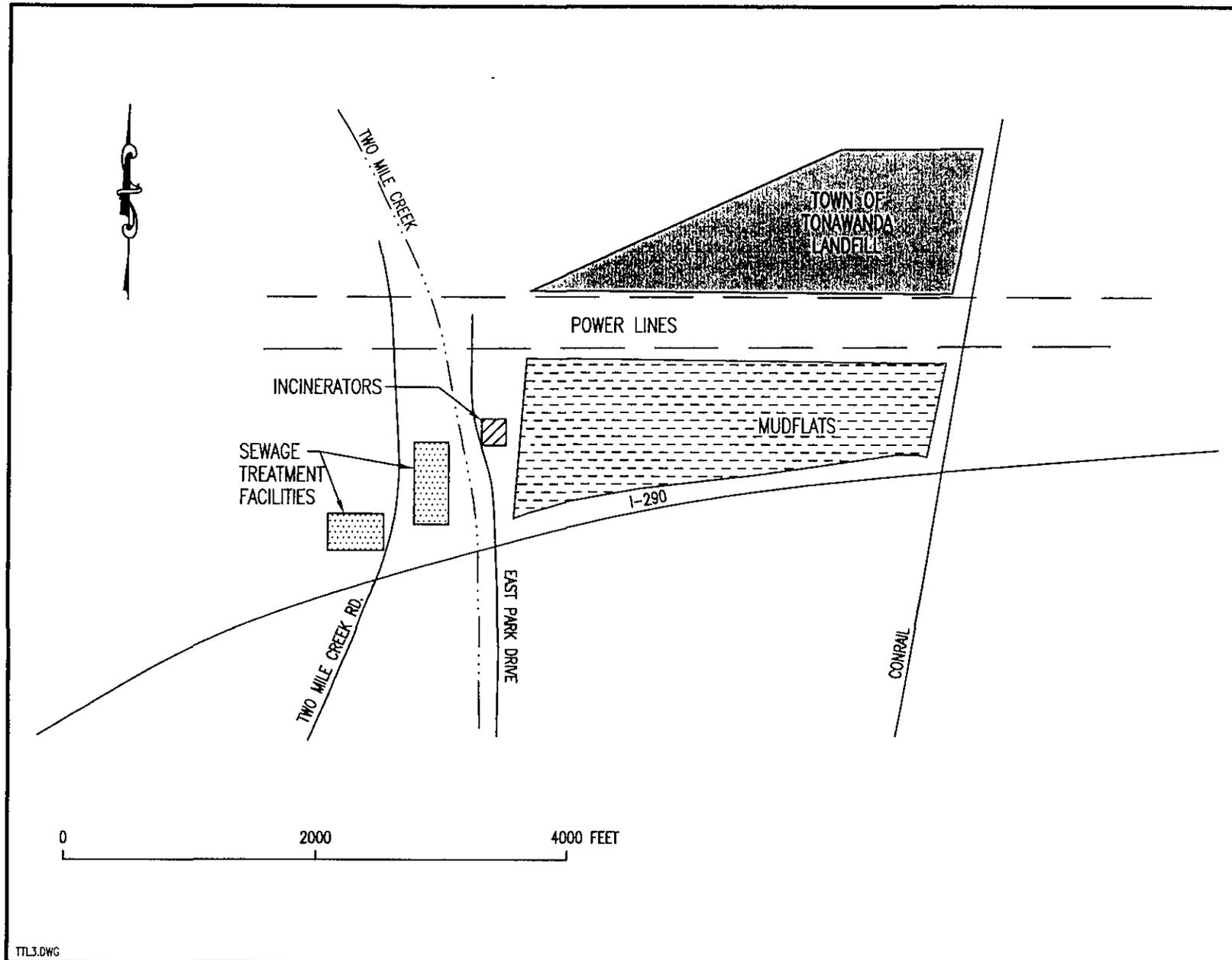


FIGURE 1-3
TOWN OF TONAWANDA LANDFILL APPROXIMATE LOCATIONS

The incinerators, operated by the Town between the 1940s and early 1980s, were used to burn municipal solid waste and sludges generated by the Town's wastewater treatment plant (WWTP). The incinerators are located at the western edge of the Mudflats area. Other than the incinerators, the Mudflats have always remained vacant. (USACE 1999a)

Although neither the Landfill or Mudflats were directly involved with activities normally covered under the FUSRAP program, the Site was designated a FUSRAP Vicinity Property due to the potential for Manhattan Engineer District (MED)-related material from the Linde Site having been placed in the Landfill. The Linde Site is the former location of ore processing activities by the Linde Air Products Division (Linde) of the Union Carbide Corporation of Tonawanda, New York. Linde performed these activities under contract to the MED and the Atomic Energy Commission (AEC) between 1942 and 1948. Processing activity byproducts consisted mainly of solid filter cake and liquid filtrate. Between 1942 and 1944, the liquid filtrate was discharged directly to the municipal sanitary sewer collection system for treatment by the Town WWTP. Sludges generated by the WWTP were either directly placed in the Landfill or first incinerated at the and then disposed at the Landfill. (USACE 1999a)

Direct discharge of liquid filtrate from the Linde Site to the sanitary sewer collection system was stopped in April, 1944. After that, liquid filtrate disposal was completed via on-site deep well injection. However, during periods when the injection wells were backed up or unusable, liquid filtrate was discharged to a nearby storm sewer or drainage ditch located adjacent to the Linde facility. Liquids directed to the storm sewer and drainage trench ultimately discharged into the Twomile Creek. (USACE 1999a)

1.1.3 Previous Investigative Studies

Initial radioactive material surveys at the Landfill and Mudflats were conducted by the Department of Energy (DOE) in 1990 as part of the Linde FUSRAP Site investigation. The intent of the survey was to assess whether any radioactive material had been transported and disposed of off-site in the general area surrounding the Linde facility. The preliminary survey was completed using a mobile gamma scanning van. An anomaly in the survey detected in the Mudflats during the mobile scanning activities was verified using handheld gamma screening devices. Subsequent soil samples collected from the area around the anomaly indicated elevated levels of U-238 and Ra-226 - two isotopes consistent with material expected to be in ore processing byproducts generated at the Linde Site (ORNL 1990).

A limited radiological survey was conducted by DOE in September 1991. The survey focused on the Landfill and Mudflats and consisted of a gamma walkover scan, measurement of radiation levels, and the collection and analysis of systematic and biased soil samples. The results of the survey detected soils in the Landfill and Mudflats exceeding the radionuclide guideline standards established by the DOE. Laboratory results received indicated some soil samples exhibited characteristics similar to the MED product formerly produced at the Linde facility and others were consistent with the byproducts of the refinery process conducted at the same Linde facility. The Landfill and Mudflat were subsequently designated as a Vicinity Property of the Linde FUSRAP Site (ORNL 1992).

DOE conducted additional soil sampling activities at the Landfill and Mudflats in 1994 to determine the vertical extent of the radiological contamination at the site. Analytical results obtained for subsurface soil, sediment, surface water, and groundwater samples indicated the radiological contamination was essentially limited to the upper 1.5 feet of soil. However, contamination was detected in one sample collected 11.5 feet below existing grade (BNI 1995).

The USACE completed a Radiological Human Health Assessment for the Landfill and Mudflats site in February 1999. After reviewing several closure scenarios and the radiation doses and health risks associated with each alternative, the USACE concluded that if the Landfill was closed with radiologically impacted soil left in place and if the Landfill is properly maintained after closure, risk of exposure to the public would be minimal. The assessment also concluded that if the Mudflats area is developed for industrial use it could pose a public health risk. Closure scenarios for the Landfill addressed under the assessment included capping the contaminated soil in place and excavation and removal of the impacted soil. Closure alternatives evaluated for the Mudflats area included no action, covering the impacted area with clean soil, and excavation and removal of impacted soil (USACE 1999b).

1.2 SCOPE OF WORK

The project tasks identified in the SOW to complete the RI/FS process are presented in Table 1-1.

Table 1-1. Delivery Order Task Descriptions

Task Number	Task Description
1.	Visual Site Inspection
2.	Quality Control Plan and Independent Technical Review
3.	Project Work Plan
4.	Records Review and Evaluation
5.	Identify ARARs
6.	Data Summary and Data Needs Determination
7.	Health, Safety, and Radiation Protection Plan
8.	Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP)
9.	Specification and Acquisition of Field Data
10.	Fate, Transport, and Exposure Analysis
11.	Baseline Risk Assessment
12.	Preparation of RI/FS Report
13.	Preparation of Proposed Plan and ROD (Optional)
14.	Community Relations and General Support
15.	Technical Support Services

2.0 MANAGEMENT PHILOSOPHY

SAIC is dedicated to providing its clients unequaled quality work products with ongoing Quality Assurance/Quality Control (QA/QC) measures. The full SAIC QA/QC program consists of the Quality Assurance Program (QAP) and the Quality Assurance Administrative Procedures (QAAPs). SAIC is committed to meet or exceed our clients' expectations with respect to quality.

2.1 MANAGEMENT APPROACH

A major objective of SAIC is to achieve and maintain the highest standards of quality in all areas. To meet this objective, SAIC has an internal QAP that has been developed to delineate the quality controls and procedures necessary to help ensure the consistency, integration, and disciplined control of work which will deliver the quality required by our clients, our management and our stakeholders. Achieving this objective requires a sustained and consistent effort on the part of all personnel. All SAIC staff and subcontractors performing work are responsible for the quality of their work, and for implementing applicable sections of this QCP and the SAIC QAP. All management level personnel will ensure that applicable QA program requirements are adhered to and will encourage staff to identify technical or administrative problems and participate in their resolution. The SAIC QA program has the complete approval and support of the SAIC senior management, including the resources necessary to ensure its implementation.

The QA program will provide control over activities to an extent consistent with risk, complexity, duration, importance, health and safety considerations, and USACE expectations. SAIC will provide indoctrination and training of personnel to the extent necessary to perform their assigned tasks, and to ensure that proficiency is achieved and maintained.

SAIC senior management is responsible for the scope and implementation of the QA program. The program and project managers are responsible for delivering cost-effective, high quality products, on time within the scope of the contract. Each individual is responsible for the quality of his or her work.

2.2 MANAGEMENT STRUCTURE

The organization chart illustrated in Figure 2-1 outlines the management structure that will be used to implement the project. The functional responsibilities of the key SAIC personnel are described in the following parts of this plan. The assignment of personnel to each project position is based on a combination of (1) experience in the type of work to be performed, (2) experience working with USACE personnel and procedures, (3) a demonstrated commitment to high quality and timely job performance, and (4) staff availability. The key project personnel have been assigned based upon the minimum education and qualification requirements for each assigned position, as shown in Table 2-1. In the event that personnel identified in Figure 2-1 and Table 2-1 must be replaced after issuance of these documents, SAIC will provide the names and resumes for the replacement individuals to the USACE Buffalo District Project Manager prior to mobilization for field work.

2.2.1 Key Personnel Responsibilities

2.2.1.1 SAIC Program Manager

The SAIC Program Manager manages the overall performance and quality of SAIC projects for the USACE - Buffalo District. This individual will oversee the SAIC Project Manager in meeting project goals and objectives in a high-quality and timely manner. Quality assurance issues will be addressed by this individual, in coordination with the SAIC Project Manager and QA/QC Officer, including identification of nonconformances and verification of corrective action.

FIGURE 2-1
 FUSRAP-TONAWANDA LANDFILL SITE
 RI/FS
 ORGANIZATION CHART

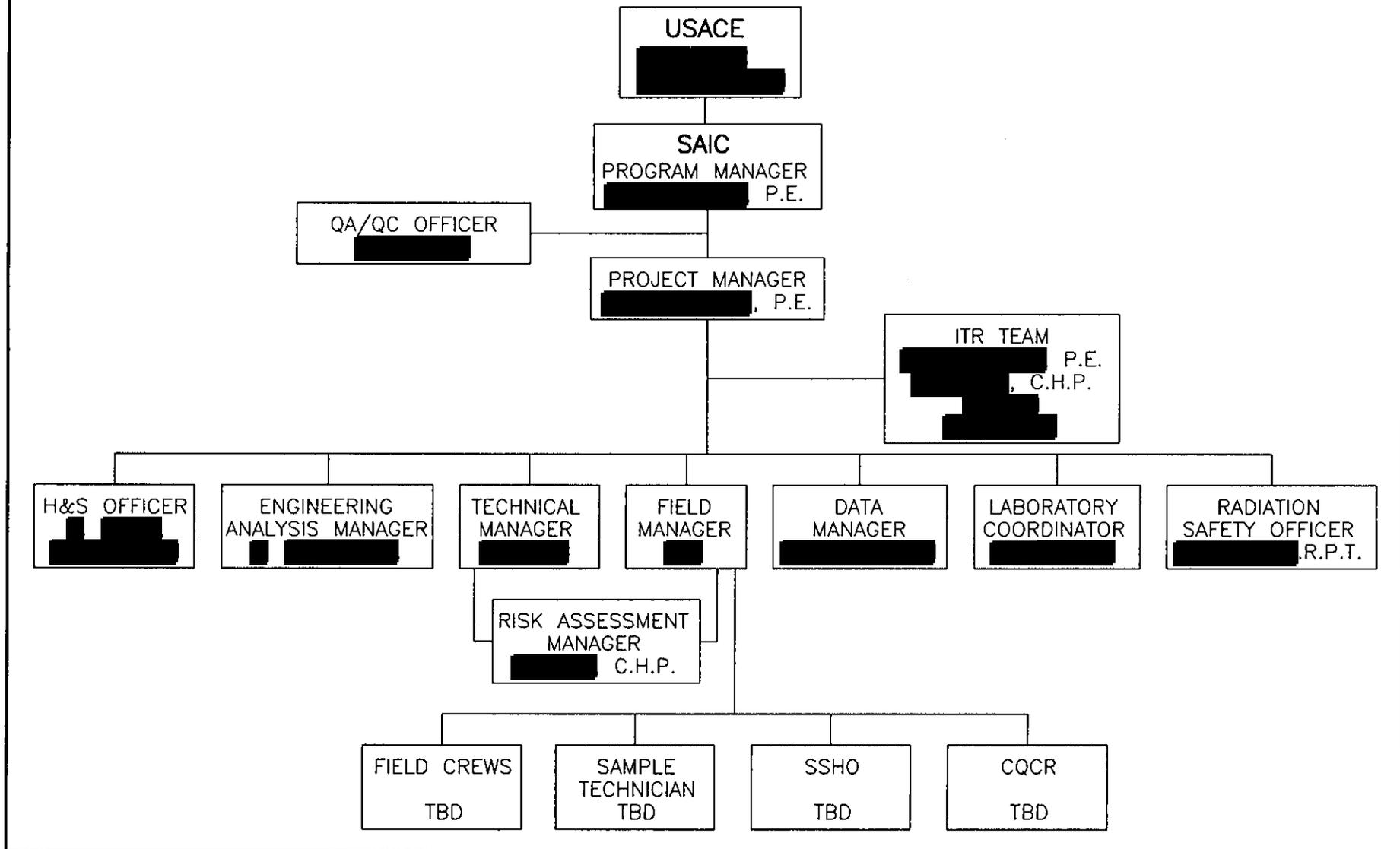


Table 2-1. Key SAIC Personnel Assignments and Qualifications for the RI/FS at the Tonawanda Landfill Site in Tonawanda, New York

Project Assignment	Educational Background	Relevant Experience
Program Manager ██████████, P.E.	B. S. Chemical Engineering	16+ years experience in HTRW projects including site investigations and related environmental evaluations / studies.
Project Manager ██████████, P.E.	M. S. Civil/Environmental Engineering B.S. Civil Engineering	25+ years of experience in HTRW and FUSRAP projects including site investigations and related environmental evaluations/studies.
Health & Safety Officer ██████████, C.S.P, C.I.H.	M. S. Public Health B.S. Zoology	15+ years experience in HTRW projects and associated worker protection and health & safety issues.
Data Manager ██████████	M. S. Geology	12+ years experience in HTRW projects including data management for site investigations.
QA/QC Officer ██████████	M.S. Library and Information Science B.S. Business Administration	23+ years of quality assurance, configuration management, information management, and project control
Field Manager TBD	B.S. Engineering/Geology or Equivalent	7+ years of experience in HTRW projects including management of field projects for site investigations, remedial investigations, and related environmental evaluations/studies.
Laboratory Coordinator ██████████	B.S. Chemistry	7+ years of experience in HTRW projects including laboratory interface for site investigations, remedial investigations, and related environmental evaluations/studies.
Risk Assessment Manager ██████████	M.S. Radiation Protection Engineering	7+ years of experience in HTRW Project including site investigations, baseline risk assessments and related environmental evaluations/studies
Engineering Analysis Manager ██████████	M.P.A. Public Administration B.S. Civil Engineering	22+ years of experience in HTRW and FUSRAP projects including site investigations and related environmental/studies
Technical Manager ██████████	M.S. Environmental Engineering B.S. Civil Engineering	11+ years of experience in HTRW projects including management of field projects for site investigations, remedial investigations, and related environmental evaluations/studies.
RAD Safety Officer ██████████	High School Diploma	15+ years of radiation protection and health physics support. Registered Radiological Protection Technologist.
Chemical Quality Control Representative TBD	A.S. in Science or Engineering Technology or related field or equivalent field work experience	3+ years of experience HTRW projects including soil and groundwater sampling, and monitoring well installation.

Project Assignment	Educational Background	Relevant Experience
Sampling Technicians TBD	A.S. in Science or Engineering Technology or related field or equivalent field work experience	3+ years of experience HTRW projects including soil and groundwater sampling, and monitoring well installation.
Primary ITR (Engineer) [REDACTED]	M.E. Civil Engineering B.S. Civil Engineering	18+ years of experience in HTRW and FUSRAP projects including site investigations and related environmental evaluations/studies.
ITR Team (Health Physicist) [REDACTED]	B.S. Health Physics	15+ years of experience relating to radiological contamination and radiation protection programs.
ITR (Risk Assessment) [REDACTED]	M.S. Environmental Policy/Public Health	18+ years of experience in FUSRAP and HTRW Project including management of field projects for site investigations, remedial investigations, hydrogeological and geological studies, and related environmental evaluations/studies.
ITR (Hydrogeology) [REDACTED]	Ph. D Geology	6+ years of experience in HTRW Project including site investigations, air quality assessments and related environmental evaluations/studies.

2.2.1.2 SAIC Project Manager

The SAIC Project Manager has responsibility for oversight of all project activities, including work plan development, field activities, data management, and data reporting. This individual will also provide the overall financial management of the project, and serve as the point of contact with the USACE-Buffalo District Project Manager ([REDACTED]) and USACE-Buffalo District Project Engineer ([REDACTED]). The SAIC Project Manager will also develop, monitor, and fill project staffing needs, delegate specific responsibilities to project team members, and coordinate with administrative staff to maintain a coordinated and timely flow of project activities and submittals. The SAIC Project Manager reports directly to the SAIC Program Manager.

2.2.1.3 SAIC Health and Safety Officer

The SAIC Health and Safety Officer is responsible for confirming that health and safety procedures designed to protect personnel are maintained throughout the field activities conducted for the project. This will be accomplished by strict adherence to the project Site Safety and Health Plan (SSHP), which will be presented in the project SAP. This individual, in coordination with the SAIC Site Safety and Health Officer (SSHO), will have the authority to halt field work if health and/or safety issues arise that are not immediately resolvable in accordance with the project SSHP. The SAIC Health and Safety Officer reports directly to the SAIC Project Manager, but will inform the SAIC Field Manager of all information and decisions reported.

2.2.1.4 SAIC Data Manager

The SAIC Data Manager, and data management personnel, will be responsible for managing the field and analytical data generated during the project. The data management team will be responsible for the accumulation, control, reduction, validation, documentation, and storage of project data in accordance with the Data Management Plan. The SAIC Data Manager will also assist the SAIC QA/QC Officer in the review of laboratory procedures if required. The SAIC Data Manager reports directly to the SAIC Project Manager.

2.2.1.5 SAIC Quality Assurance/Quality Control Officer

The SAIC Quality Assurance/Quality Control (QA/QC) Officer is responsible for the project QA/QC in accordance with the requirements of the project QAPP, other work plan documentation, and appropriate management guidance. This individual, in coordination with the SAIC Chemical Quality Control (CQC) Representative, will be responsible for participating in the project field activity readiness review; approving variances during field activities before work continues; approving, evaluating, and documenting the disposition of Nonconformance Reports (NCRs); overseeing and approving any required project training; and designing audit/surveillance plans followed by supervision of these activities. The SAIC QA/QC Officer reports directly to the SAIC Program Manager, but will inform the SAIC Field Manager of all information and decisions reported. The CQC Representative is responsible for overseeing contract compliance in the field and completing the Daily Chemical Quality Control Reports (DCQCRs).

2.2.1.6 SAIC Field Manager

The SAIC Field Manager is responsible for implementing field activities conducted during the project in accordance with the project SAP. This individual is responsible for proper technical performance of drilling operations and field sampling activities, adherence to required sample custody and other related QA/QC field procedures, coordination of field personnel activities, management of investigation-derived wastes, field documentation, and preparation of Field Change Requests if required. The SAIC Field Manager reports directly to the SAIC Project Manager (or to the SAIC Program Manager) except with regard to significant QA/QC matters that are reported directly to the SAIC QA/QC Officer. Also, significant health and safety matters that are reported directly to the SAIC Site Safety and Health Officer (SSHO).

2.2.1.7 SAIC Laboratory Coordinator

The SAIC Laboratory Coordinator is responsible for coordination of sample collection, and subsequent chemical analysis and data reporting performed by the subcontract laboratories at the project level, in accordance with the requirements defined in the QAPP. This individual will also coordinate the shipment of QA samples to the USACE Chemical Quality Assurance Laboratory with project personnel, and review received analytical results for the project from the SAIC subcontracted laboratory. This individual will be responsible for resolving questions the laboratory may have regarding QAPP requirements and deliverables, and coordination of reduction, validation, and documentation activities related to sample data package deliverables. The SAIC Laboratory Coordinator reports directly to the SAIC Project Manager.

2.2.1.8 SAIC Risk Assessment Manager

The SAIC Risk Assessment Manager is responsible for providing technical support to the project related to Human Health issues. This individual is responsible for developing risk methodologies and

evaluations for issues related to the Tonawanda Landfill site. This individual will provide support to the SAIC Technical Manager and SAIC Field Manager if questions arise related to field samples and their use for risk assessments.

2.2.1.9 SAIC Engineering Analysis Manager

The SAIC Engineering Analysis Manager, and engineering personnel, will be responsible for identifying, developing, and evaluating remedial alternatives to mitigate contamination associated with the Tonawanda Landfill site. The SAIC Engineering Analysis Manager will assist the SAIC Field Manager in assessing the nature and extent of contamination and will assist the SAIC project manager in assessing the requirements for early or interim actions. The SAIC Engineering Analysis Manager reports directly to the SAIC Project Manager.

2.2.1.10 SAIC Technical Manager

The SAIC Technical Manager is responsible for ensuring that the intent and goals of the project are met. This individual is responsible for ensuring that the project is performed in a manner that provides the quantity and quality of technical data required for project success. The SAIC Technical Manager will have site knowledge and history required to make technical decisions for the addition, deletion or relocation of sample locations and/or numbers. The SAIC Technical Manager reports directly to the SAIC Project Manager, but will coordinate field decisions with the SAIC Field Manager and USACE Project Manager.

2.2.1.11 SAIC Radiation Safety Officer

The SAIC Radiation Safety Officer is responsible for confirming that radiation safety procedures designed to protect personnel are maintained throughout the field activities conducted for the project. This will be accomplished by strict adherence to the project Site Safety and Health Plan (SSHP), which will be presented in the project SAP. This individual, in coordination with the SAIC Health and Safety Officer (SHSO), will have the authority to halt field work if health and/or safety issues, as they apply to radiological issues, arise that are not immediately resolvable in accordance with the project SSHP. The SAIC Radiation Safety Officer reports directly to the SAIC Project Manager, but will inform the SAIC Field Manager of all information and decisions reported.

2.3 DESIGN TOOLS

This section does not currently have direct applicability to the Tonawanda Landfill Scope of Work (SOW). However, if the need arises for design work performed for the project, SAIC will submit a list and description of the design tools necessary to complete the project.

2.4 PROJECT SCHEDULE

The project schedule for this delivery order is presented in Table 2-2. Successful completion of this schedule will require close coordination by all parties. SAIC will attempt to minimize impacts to this schedule as a result of external project delays. This schedule will be re-baselined as necessary or when requested by USACE.

Table 2-2
Proposed Project Schedule

Task Number	Task	Start Date	Completion Date	USACE Required Completion Date	Number of Days from Prev. Task
	Notice to Proceed (NTP)	3/7/00	3/7/00		
1	Sitewalk	3/20/00	3/20/00	3/21/00	14 days from NTP
2	QC Plan and ITR	3/28/00	3/28/00	3/28/00	21 days from NTP
3	Work Plan	3/28/00	6/29/00	06/29/2000 (AWP)	
	SAIC Prep of Draft	3/28/00	4/11/00	4/11/00	35 days from NTP
	USACE Review	4/12/00	5/2/00		21
	SAIC Prep of 1st Revision	5/3/00	5/16/00		14
	NYSDEC Review	5/17/00	6/15/00		30
	SAIC Prep of Final Rev./Submission (AWP)	6/16/00	6/29/00		14
4	Records Review and Evaluation	6/30/00	7/20/00	7/20/00	21 days from AWP
5	ARARs Identification	6/30/00	8/3/00	8/3/00	35 days from AWP
6	Data Needs Determination	6/30/00	8/10/00	8/10/00	42 days from AWP
10	Fate and Transport Analysis	7/20/00	8/24/00	8/24/00	56 days from AWP
7	HASP/Rad Safety Plans (HASP)	8/5/00	11/26/00	11/26/2000 (HASP)	
	SAIC Prep of Draft	8/5/00	9/7/00		70 days from AWP
	USACE Review	9/8/00	9/28/00		21
	SAIC Prep of 1st Revision	9/29/00	10/12/00		14
	NYSDEC Review	10/13/00	11/12/00		30
	SAIC Prep of Final Rev./Submission	11/13/00	11/26/00		14
8	Field Sampling/QA Plan (FSP)	8/5/00	11/26/00	11/26/2000 (FSP)	
	SAIC Prep of Draft	8/5/00	9/7/00		70 days from AWP
	USACE Review	9/8/00	9/28/00		21
	SAIC Prep of 1st Revision	9/29/00	10/12/00		14
	NYSDEC Review	10/13/00	11/12/00		30
	SAIC Prep of Final Rev./Submission	11/13/00	11/26/00		14
9	Field Investigation (FI)	11/27/00	01/21/2001**	1/21/01	
	Plan Approval Period	11/27/00	12/24/00		28
	Gamma Walkover Survey*	12/4/00	12/11/00		
	Install/Develop Monitoring Wells	12/25/00	1/2/01		28 days from HASP/FSP
	Soil Borings	12/25/00	1/21/01		28 from start of fieldwork
	Sample Collection/Analysis	12/27/00	2/25/01		
11	Baseline Risk Assessment	2/20/01	3/20/01	N/A	
12	RI/FS Report	2/26/01	7/9/01	7/9/01	
	SAIC Prep of Draft	2/26/01	4/29/01		98 days from end FI
	USACE-PT Review	4/30/01	5/20/01		21
	SAIC Prep of 1st Revision	5/21/01	6/3/01		14
	USACE-CX Review	6/4/01	6/25/01		21
	SAIC Prep of Final Rev./Submission	6/26/01	7/9/01		14
13a	Proposed Plan	7/10/01	12/28/01	12/28/01	
	SAIC Prep of Draft	7/10/01	8/6/01		28 days from RI/FS
	USACE-PT Review	8/7/01	8/27/01		21
	SAIC Prep of 1st Revision	8/28/01	9/10/01		14
	USACE-CX Review	9/11/01	10/1/01		21
	SAIC Prep of 2nd Revision	10/2/01	10/15/01		14
	NYSDEC Review	10/16/01	11/14/01		30
	SAIC Prep of 3rd Revision	11/15/01	11/28/01		14
	Public Comment (PC)	11/29/01	12/28/01		30
13b	Responsiveness Summary (RS)	12/29/01	1/27/02	1/27/02	21 days from PC
13c	Record of Decision	2/2/02	6/4/02	6/4/02	
	SAIC Prep of Draft	1/28/02	2/10/02		14 days from RS
	USACE-PT Review	2/11/02	3/3/02		21
	SAIC Prep of 1st Revision	3/4/02	3/17/02		14
	USACE-CX Review	3/18/02	4/7/02		21
	SAIC Prep of 2nd Revision	4/8/02	4/21/02		14
	NYSDEC Review	4/22/02	5/21/02		30
	SAIC Prep of Final Rev./Submission	5/22/02	6/4/02		14
14	Community Relations	3/7/00	6/4/02	N/A	
15	Technical Support	3/7/00	6/4/02	N/A	

* = Assumes gamma walkover can be performed during 28 day approval period.
 ** = Fieldwork done 1/24/01. End date represents add'l time for lab analysis.

2.5 COST CONTROL

Financial management tools and client reports will be developed to track project cost information and report to USACE. Budgets have been prepared on a task order basis to allow for close control and tracking of project costs. The project manager is directly responsible for cost and schedule control. Prior to the start of each task, the project manager will meet with the project team to discuss the budget or level of effort required for each task. This will help to ensure a clear understanding of the scope and effort for each task prior to beginning work.

The program manager will provide an independent review of the budget on a bi-monthly basis to ensure adherence to the budget and schedule, and mitigate any possible overruns before they become an issue.

2.6 CONSTRUCTION COST ESTIMATE CONTROL

This section is not currently applicable to the Tonawanda Landfill SOW. However, if the need arises for construction cost estimate controls to be established, SAIC will submit a description of the construction cost estimate controls necessary to complete the project.

2.7 COMMUNICATION

Communications with the USACE and SAIC will consist of the following:

- During field activities weekly memorandum (or e-mail communication) summarizing the work performed the previous week, work anticipated for the following week, outstanding issues, and any other pertinent information. This schedule may be modified based on the level of effort for the project each week.
- Biweekly teleconference call between USACE and SAIC to discuss project progress and issues.
- Daily quality control reports documenting field work during field activities to the USACE site representative. Reports will include activities, health and safety issues, relevant quantities, etc.
- Monthly Cost/Schedule Reports will be submitted to USACE.
- Project decisions shall be documented by correspondence from the SAIC project manager to the USACE Project Engineer and USACE Project Manager. This correspondence shall be issued no later than 5 days after a decision has been made.

The individuals involved in this communication include:

- USACE Project Manager
- USACE Project Engineer
- SAIC Program Manager
- SAIC Assistant Program Manager
- SAIC Project Manager

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

2.8 PROJECT TEAM

The project team will be comprised of SAIC personnel under the direction of the USACE, Buffalo District Project Engineer and Project Manager for the Tonawanda Landfill Site. The Project Team is identified in Table 2-3.

Table 2-3. Project Team Identification

Name	Position/Role	Phone	Fax	Organization
[REDACTED]	Project Manager	(508) 946-3500	(508) 946-3509	SAIC
TBD	Field Manager	TBD	TBD	SAIC
[REDACTED]	SAIC Health and Safety Officer	(865) 481-4755	(865) 482-7257	SAIC
[REDACTED]	SAIC Radiation Safety	(865) 481-4600	(865) 482-7257	SAIC
[REDACTED]	Risk Assessment Manager	(865) 481-4782	(865) 482-4757	SAIC
[REDACTED]	Technical Manager	(865) 946-3500	(508) 946-3509	SAIC
[REDACTED]	Engineering Analysis Manager	(508) 946-3500	(508) 946-3509	SAIC
[REDACTED]	Project Controls	(865) 481-4620	(865) 481-4774	SAIC
[REDACTED]	Independ. Tech. Review	(865) 481-4705	(865) 481-4757	SAIC
[REDACTED]	Contract Officer	(865) 481-4700	(865) 481-4693	SAIC
[REDACTED]	Purchasing Officer	(865) 481-4691	(865) 481-4774	SAIC
[REDACTED]	Document Production	(508) 946-3500	(508) 946-3500	SAIC

2.9 INDEPENDENT TECHNICAL REVIEW (ITR) TEAM

In order to ensure criteria and standard details appropriate for this project's requirements, draft submittals for this delivery order will have an independent technical review (ITR) before being submitted to the customer. SAIC has selected a team of technical specialists in assumed areas of expertise for the project to perform ITRs on all project documents. The ITR team consists of a professional engineer with extensive experience in FUSRAP related projects ([REDACTED], P.E.), a risk assessor ([REDACTED]), a certified health physicist ([REDACTED], CHP), and a hydrogeologist with a doctorate in geology ([REDACTED]). Each team member conducting ITRs will not be involved in the preparation of the submittal in question and does not work under the SAIC branch managing the Tonawanda Landfill FUSRAP project. Depending upon the submittal, it may not be necessary to have all ITR members review every document. ITR personnel will be selected on a task by task basis by SAIC to ensure the most qualified professional(s) will review the project submittals and data. In the event that certain members of the ITR Team are not available to perform a submittal review, a qualified alternate ITR reviewer will be selected by the Project Manager to perform the ITR.

The Statement of Independent Technical Review (Figure 2-2) and Certification of Independent Technical Review (Figure 2-3) will be included with all products submitted for this project to the USACE. The ITR Statement will be signed by the ITR reviewer(s) and Project Manager, and state that they have reviewed the product and resolved all internal comments and the product is ready for release to the USACE. Comments generated by the reviewer(s) and the resolution of these comments will be submitted with this statement. The Certificate will be completed by the ITR reviewer and Project Manager, and will be signed by the Program Manager or Assistant Program Manager.

The technical reviews also will be conducted in accordance with SAIC Quality Assurance Administrative Procedure QAAP 3.1, "Document Review", as shown in Figure 2-4. The peer reviewer will indicate acceptance of the final product by signing the signature page of submitted reports.

Large documents (>30 pages) shall be technically reviewed at least one week before submittal to the customer, when possible.

3.0 CUSTOMER INVOLVEMENT

The primary customer for the services provided through this delivery order is the USACE, Buffalo District. Project deliverables will also be reviewed by additional USACE personnel (i.e., Division, CX, HQ) and by various regulatory organizations, including, but not limited to the New York State Department of Environmental Conservation. Representatives of these organizations may be involved in meetings pertaining to implementation of delivery order activities and in review of draft documents generated in the process.

4.0 IDENTIFICATION OF QUALITY INDICATORS

SAIC Procedures QAAP 15.1, "Control of Nonconforming Items and Services," and QAAP 16.1, "Corrective Action," shall be used to identify, track, and correct items and services that could have a potentially adverse effect on the quality of the work to be performed. Nonconformance issues shall be tracked and managed using nonconformance reports.

SAIC Procedure QAAP 17.1, "Records Management," will be used for the collection, control, processing, storage, and retrieval of critical project records submitted to the SAIC Central Records Facility (CRF).

SAIC Procedure QAAP 3.1, "Document Review," will be implemented to document and track both technical and editorial review of draft submittals. Document review records will be maintained in the Project File and the CRF.

SAIC Procedure QAAP 18.4, "Client Assessments," will be implemented by the SAIC Program Manager or an independent senior designee to ensure SAIC performance under this delivery order is meeting client expectations and to identify areas for improvement.

Where not superseded by upper-tier (USACE) requirements, field, data, and engineering processes will be governed by SAIC Quality Assurance Technical Procedures (QATP) contained in QATP Volume I Data Management, QATP Volume II Field Standard Operating Procedures, and QATP Volume III Engineering and construction. Three field procedures have been selected from the SAIC EEMG Health Physics Manual as being applicable to this task:

FUSRAP – Tonawanda Landfill RI/FS
USACE Contract No: DAHA90-94-D-0007-DN05

STATEMENT OF COMPLETION OF TECHNICAL REVIEW

SAIC has completed the _____ of the Tonawanda Landfill FUSRAP Site in Tonawanda, New York. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project, as defined in the Quality Control Plan. During the independent technical review, compliance with established policy, principles and procedures, utilizing justified and valid assumptions, was verified. This included review of assumptions; methods, procedures, and material used in analysis; alternatives evaluated; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing USACE policy. All internal comments were resolved and the document indicated above is ready for release to the USACE.

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

Program Manager

(Date)

Project Manager

(Date)

Task Manager (if applicable)

(Date)

Independent Technical Reviewer

(Date)

Figure 2-2

FUSRAP – Tonawanda Landfill RI/FS
USACE Contract No: DAHA90-94-D-0007-DN05

CERTIFICATION OF INDEPENDENT TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows:

(Description of major technical concerns, possible impact, and proposed resolutions)

As noted above, all concerns resulting from the independent technical review of the project have been considered.

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

(Signature)

(Date)

(Title)

Figure 2-3

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

DOCUMENT REVIEW RECORD

DOCUMENT PREPARER: _____ SHEET _____ of _____
 DOCUMENT TITLE: _____
 DOCUMENT NUMBER: _____
 REVISION: _____
 DATE TRANSMITTED: _____ DATE COMMENTS REQUIRED: _____
 REVIEW TYPE: TECHNICAL EDITORIAL

COMMENTS THAT ARE ANNOTATED WITH AN (*) ARE MANDATORY AND REQUIRE RESPONSE AND RESOLUTION

PAGE OR SECTION/ PARAGRAPH	REVIEWER COMMENTS	PREPARER RESPONSE	REVIEWER ACCEPT/ REJECT

REVIEWED BY:

 PRINT NAME

 SIGNATURE _____ DATE _____

RESPONSE BY:

 PRINT NAME

 SIGNATURE _____ DATE _____

Revision 1, 6/13/96 QAAP 3.1

Figure 2-4

- SAIC EEMG HP-405 "Radiological Surveys"
- SAIC EEMG HP-108 "Operation of Portable Radiation Survey Instruments"
- SAIC EEMG HP-004 "Quality Control of Radiation Monitoring Equipment"

Project Status Reports shall be prepared and submitted to the SAIC Program Manager within 5 working days of the last day of each SAIC accounting period. The status report is used to track SAIC's financial, technical, and administrative issues and actions.

SAIC will also use available USACE guidance documents (USACE 1993 and USACE 1998), as applicable, in developing project specific data management procedures.

5.0 PROVISIONS FOR FEEDBACK AND LESSONS LEARNED

Documented feedback from the client is obtained through regular communication and client assessment of SAIC performance. Client assessments will be performed by the SAIC Program Manager's designee in accordance with SAIC Procedure QAAP 18.4 "Client Assessments."

Lessons learned are communicated at scheduled monthly status meetings attended by delivery order managers performing work for the USACE Buffalo District. Lessons learned are also documented through the SAIC monthly reporting process and the Engineering and Environmental Management Group Lessons Learned process.

6.0 REFERENCES

BNI 1995. *Technical Memorandum: Tonawanda Landfill Field Sampling Results*, Bechtel National, Inc., Oak Ridge, Tennessee. December 1990

ORNL 1990. *Results of Mobile Gamma Scanning Activities in Tonawanda in Tonawanda, New York*, Oak Ridge National Laboratory, Oak Ridge, Tennessee. December 1990.

ORNL 1992. *Results of the Radiological Survey at the Town of Tonawanda Landfill, Tonawanda, New York*, Oak Ridge National Laboratory, Oak Ridge, Tennessee. October 1992.

USACE 1993. *Engineering and Design Quality Management, ER 1110-1-12*. U.S. Army Corps of Engineers.

USACE 1998. *Engineering and Design Chemical Data Quality Management for Hazardous, Toxic, Radioactive Waste Remedial Activities, ER 1110-1-263*. U.S. Army Corps of Engineers.

USACE 1999a. *Scope of Work for Remedial Investigation/Feasibility Study, Linde Site – Tonawanda, NY, Tonawanda Landfill Vicinity Property*. U.S. Army Corps of Engineers. December 1999.

USACE 1999b. *Technical Memorandum: Radiological Human Health Assessment for the Town of Tonawanda Landfill, Tonawanda, New York*, U.S. Army Corps of Engineers. February 1999.