WORK PLAN

CUMBERLAND BAY SITE - IRM
Site 5-10-017

Work Assignment No.
D002520-32

Prepared for:

SUPERFUND STANDBY PROGRAM
New York State
Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233

Prepared by:

Rust Environment and Infrastructure
12 Metro Park Road
Albany, New York 12205

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New York State
Department of Environmental Conservation
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1.0 INTRODUCTION

1.1 PURPOSE

This document is the Work Plan for the performance of a number of tasks associated with the implementation of an Interim Remedial Measure (IRM) for the Cumberland Bay Sludge Bed project. This work is being performed under Work Assignment No. D002520-32 of the State Superfund Standby contract between the New York State Department of Environmental Conservation (NYSDEC) and Rust Environment and Infrastructure (Rust) and it's subconsultant TAMS Consultants, Inc. (TAMS).

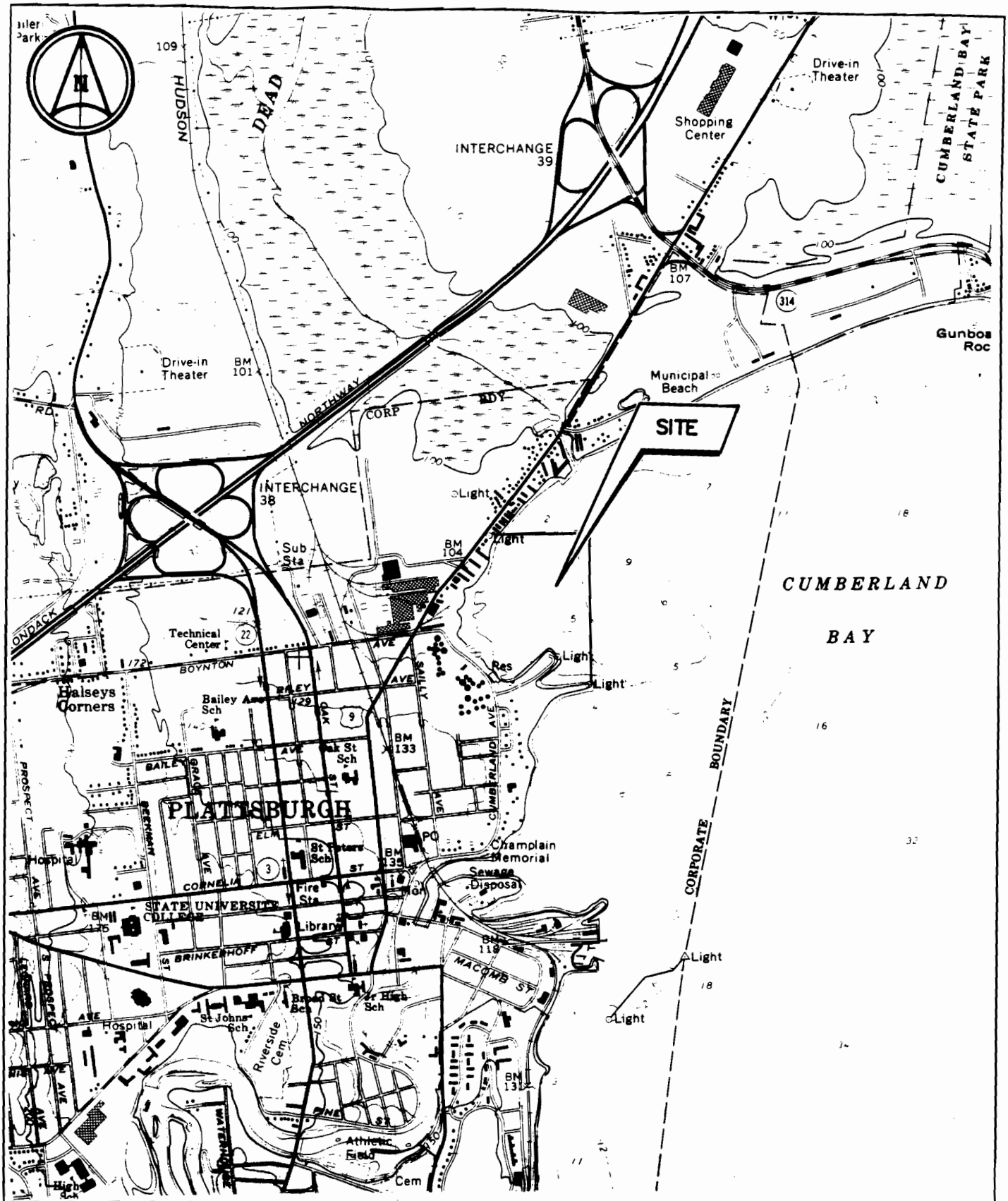
The purpose of this Work Plan is to outline the activities to be undertaken for this Work Assignment and to identify the project team, project schedule, the anticipated utilization of Minority and Women's Business Enterprises (M/WBE), and the anticipated level of effort and budget. Task 1 of the Work Assignment is the preparation of this Work Plan along with a site-specific Health and Safety Plan (HASP) and a Sampling and Analysis Plan (SAP). Task 2 is the performance of a Site Characterization to determine the extent of the sludge bed and the nature and extent of any contaminants within the bed. Tasks 3 and 4 are the development, screening and evaluation of IRM alternatives for the remediation of the sludge bed. The preparation of detailed design documents for the sludge bed IRM is included in Task 5.

A HASP and SAP have also been developed as companion documents to this Work Plan and will be submitted as separate documents. The site-specific HASP has been prepared to ensure the health and safety of workers and the immediate community during performance of field activities. The SAP contains both a Field Sampling Plan (FSP) and a Quality Assurance Project Plan (QAPP). It outlines data quality objectives and details the specific procedures as well as sampling and analytical protocols to ensure the data collected during the Site Characterization are of sufficient quality to support the identification, screening, evaluation and selection of remedial alternatives.

1.2 SITE HISTORY AND DESCRIPTION

The Cumberland Bay Sludge Bed ("sludge bed or the Site") is located within Lake Champlain, east of the City of Plattsburgh (Figure 1). The sludge bed is bordered to the south by Wilcox Dock, to the west by the shore line, extends north to the approximate location of the Chamber of Commerce Building dock, and extends east off-shore approximately 750 feet. The area of the Site is approximately 60 acres. Presently, over 90 percent of the sludge bed is under water.

The sludge bed is composed of wood pulp, wood chips, fine organic matter, and other debris believed to have been directly discharged from industrial wood and paper manufacturers into the bay as process wastes. Direct discharge of process wastes ended in 1973 when the Plattsburgh Sewage Treatment Plant was built to treat municipal sanitary and industrial wastes. Over the years, wave action and water currents wave eroded the sludge bed and transported wood chips and organic debris along the shorelines and beaches to the north as well as into other areas within Cumberland Bay.



SITE LOCATION MAP

CUMBERLAND BAY SITE

RUST ENVIRONMENT & INFRASTRUCTURE

PROJECT No. 39304.001	DATE 7/27/95	DWG. No. 39304-01	SCALE 1"=2000'	FIGURE No. 1

Where present, the sludge and organic material have created strong noxious odors and have hampered boating and public swimming activities. In 1995, the NYSDEC initiated interim remedial measures to remove wood chips and other debris which have washed onto public and private beaches.

1.3 PREVIOUS INVESTIGATIONS

Several physical and chemical analytical sampling studies have been performed by various agencies since the 1970s. The following is a brief summary of the major studies performed to date:

- G.E. Myer and K. W. Loach of the State University of New York (SUNY) at Plattsburgh prepared a report entitled, *Preliminary Report of the Physical Parameters of the Plattsburgh, New York Sludge Bed*, dated March 1974. This report summarizes preliminary testing of the sludge bed depth, thickness and percent solids.

- The NYSDEC has performed PCB analysis of the fish in Lake Champlain since 1979 to the present.

- A report entitled, *Final Report Mudflats Removal Feasibility Study, Plattsburgh, New York* was prepared by Frederic R. Harris, Inc. Consulting Engineers in July, 1979 under contract with the Economic Development Administration. The report summarizes "mudflat deposits" or sludge bed properties. Properties include: composition (wet, dry, and percent organic), chemical oxygen demand (COD); fecal coliform; volume estimates; filtration and leaching trials; and decomposition estimates.

- The NYSDEC Division of Water collected 14 sludge, sediment, and wood debris samples from the sludge bed and adjacent locations near Wilcox Dock for PCB analysis in the summer of 1993. In addition, six (6) core samples were collected on March 17, 1994 from the sludge bed and analyzed for PCBs, percent solids, organic content, and percent of volatile solids. Core depths ranged from approximately 20.5 to 45.5 cm below the sludge surface. Concentrations ranged from below laboratory detection limits to 1,850 parts per million (ppm).

- The New York State Department of Health (NYSDOH) collected a total of 29 water, sediment, sludge and wood debris samples from the beach/shore line north of the sludge bed and the bay water during August, November, and December, 1994. Samples were analyzed for PCBs. Lake water samples ranged from below laboratory detection limits to 310 part per trillion (ppt) for PCBs. Sediment and wood chip analytical sample concentrations ranged from below laboratory detection limits to 210 ppm.

- The NYSDEC Division of Hazardous Waste Remediation collected sludge and sediment samples from the sludge bed and bay areas south of Wilcox Dock and east across the bay on Cumberland Head shoreline on August 9 and 10, 1994. Samples

were collected for PCB, pesticides, metals and cyanide, dioxin, and furans. Core depths ranged from 14 to 136 cm below the top of the sludge/sediment surface. Concentrations of PCBs ranged from below the laboratory detection limits to 550 ppm. Dioxins ranged from below the laboratory detection limit to 330 parts per trillion (ppb) of octachlorodibenzodioxin.

2.0 SITE CHARACTERIZATION (TASK 2)

As discussed in Section 1.1, the purpose of this task is to characterize the site for the purpose of developing, screening and evaluating IRM alternatives for the remediation of the sludge bed adjacent to Wilcox Dock. Since this is an IRM, the development of remedial alternatives will be focused on technologies that can be readily implemented and achieve the remedial action objectives within a reasonable time frame. Such technologies include in-place capping, dredging, dewatering, on-site disposal and off-site treatment and/or disposal. Innovative technologies will not be given serious consideration unless they have been proven and are readily available, and therefore data will not be collected to specifically evaluate these technologies. Table 1 provides a list of the type of data required to evaluate the remedial technologies on which this IRM is focused. The sections below summarize the proposed data collection activities to be conducted during the Site Characterization in order to obtain the information needed for further evaluation of remedial technologies.

2.1 TECHNICAL DATA REVIEW

In order to gain a more thorough understanding of the Site, Rust will perform a review of all available technical data generated during previous investigations. This will include the results of investigations performed by the NYSDEC's divisions of Hazardous Waste Remediation and Water, the NYSDOH, and the SUNY at Plattsburgh. It is anticipated that the information to be reviewed will be coring logs, analytical data, field sampling forms, field notes and historical aerial photographs.

2.2 BASE MAP

Rust will prepare an accurate base map of the Site from existing aerial photogrammetry. The photo to be used will be a May 1991 photo taken by Eastern Topographics, Wolfeboro, New Hampshire, at a scale of 1 inch equals 666 feet. The Site will be mapped at a scale of 1 inch equal 100 feet with a 2 foot contour interval. Ground control for this map will be derived from benchmarks established by the NYSDEC. The map will represent topography and will identify property lines, roadways, buildings and other significant features. Rust will locate and plot each sampling point on this base map.

2.3 EVALUATION OF HYDRAULIC AND ENVIRONMENTAL CONDITIONS

To evaluate the effectiveness and implementability of the remedial technologies being considered for this IRM and their overall effect on human heath and the environment, local hydraulic, meteorologic, geographic and geologic conditions will be characterized. These conditions will also affect decisions regarding the remedial design and site restoration. Conditions that could affect the evaluation of technologies such as in-place capping, dredging, or construction of a containment cell include:

- velocity of water flow within Cumberland Bay, in the vicinity of the site;
- prevalent flow direction of currents and wave patterns;
- variation in water level elevation (high and low);

TABLE 1

Data Required for Evaluation of Remedial Alternatives
Cumberland Bay Sludge Bed IRM

	Capping	Dredging	Local Confined Disposal Facility
Hydraulic and Environmental Conditions			
Water velocity, prevalent flow conditions, water depth	x	x	x
Return frequency of storm events		x	
Surface runoff, location and characteristics of floodplains			x
Sediment deposition/erosion, debris and vegetation	x	x	x
Local geology, confining layers	x	x	x
Aquatic habitat	x	x	x
Sludge/Sediment Characterization			
Thickness, volume, width and length of sediments	x	x	x
Sludge/sediment composition	x	x	x
Sediment grain-size distribution	x	x	x
Sediment bearing capacity	x		x
Bulk density of sediments	x	x	x
Specific gravity		x	
Moisture content	x	x	x
Time rate of consolidation	x		x
Settleability		x	
Response to filter pressing		x	
Process Water Characterization			
Test filtrate and post settling water for PCBs, BOC, COD, TSS, TDS and related compounds.		x	

- depth of water;
- geometry of the sludge beds and shoreline;
- return frequency of storm events;
- sediment deposition/erosion conditions;
- debris and vegetation;
- surface runoff;
- location and characteristics of floodplains;
- local geology (presence of confining layers);
- land use; and
- ecological habitats.

Determination of the geometry of the sludge bed and shoreline is described in Section 2.4. The direction of currents and wave patterns, flow velocity, return frequency of storm events, variation in water level elevation and the location of floodplains will be researched through local, state and federal agencies. The sludge beds and the floor of the bay surrounding the sludge beds will be visually inspected for sediment deposition/erosion conditions, debris and vegetation. The land in the vicinity of the site will be visually inspected to determine surface water runoff conditions and floodplain characteristics. Geotechnical borings are proposed to evaluate the subsurface conditions at the site as described in Section 2.5.2. These borings will provide an indication of the relative permeability and strength of the underlying strata which will aid in the design of sheet piles or berms. Land use and ecological habitats will be evaluated through visual inspection and review of files from local and state agencies.

2.4 DETERMINE EXTENT OF SLUDGE BED

Prior to the collection of sediment cores, Rust will delineate the extent of the sludge bed by placing marker buoys at the approximate edge of the bed. The horizontal and vertical coordinates of several points along the edge of the beds will be determined and plotted on the site base map.

2.5 SLUDGE AND SEDIMENT SAMPLING

Field reconnaissance and sediment sampling and analysis will be conducted to provide information on the physical and chemical characteristics of sludge and sediment that could affect the performance of the various in-situ and ex-situ technologies and removal technologies. This investigation will include sediment probing and collection of numerous sediment cores to determine the extent and thickness of sludge bed deposits. The results of this investigation will facilitate the evaluation of many of the removal, transport, dewatering, treatment, and/or disposal technologies.

2.5.1 Chemical and Physical Sampling

In order to fully characterize the extent of contamination within the Cumberland Bay, north of the Wilcox Dock, sediment samples will be collected for physical and chemical analysis. The purpose of collecting samples from the area defined as the sludge bed and the adjacent locations is to specifically obtain quantifiable concentrations of chemical contaminants necessary to determine the lateral and vertical extent of contamination. Sediment samples will also be physically analyzed to determine the composition and grain size of the material which will be useful in evaluating IRM

remedial alternatives. Sediment samples will also be collected along the beach from the Chamber of Commerce Building north to the inlet of the Dead Creek.

Sediment cores will be collected from the sludge bed and outlying areas utilizing a coring device which is capable of penetrating the material beneath the water surface within the sludge bed (fine organics, silt and wood chips) and the natural sediments underlying the sludge bed (sand, silt, or clay). The expected maximum depth of penetration required based on available data is approximately 6 to 8 feet below the top of the sludge bed.

Inside the corer, a disposable clear plastic tube or liner which will be used to contain the core. The disposable liner will be removed to allow for visual observation and subsequent physical and chemical analysis.

Each core will be visually inspected, characterized and logged in the field by a qualified geologist using the Unified Soil Classification System and the Modified Burmister System. The extent of the corings will be based on the stratigraphic units encountered, with the purpose being to adequately characterize each unit. This information is necessary for the evaluation of remedial technologies such as dredging and dewatering technologies. Representative subsamples will be field screened for volatile organic compounds using a portable photoionization detector. Additionally, representative samples of the natural sand underlying the sludge bed will be collected for grain size analysis using American Society of Testing Materials (ASTM) Method D-422.

ENSYS brand immunoassay field test kits will be utilized to determine whether PCBs are present at a given detection limit (i.e., 2 ppm) within the core samples. Additionally, a portable HNU Model 311D laboratory gas chromatograph (GC) unit will be used for on-site screening of specific sediment samples for PCBs. Approximately ten (10) percent of the samples collected for chemical analyses will be sent to a commercial laboratory for confirmation. The GC analytical results will be used to assist in evaluating the exact number and location of commercial laboratory analytical samples.

Selected cores will be analyzed for the presence of Cesium-137 using an iterative screening to classify sediment depositional chronology and to identify the maximum depth at which Cesium-137 is present in the sediment. In an area of continuous deposition with very little scouring or mixing, Cesium-137 will first appear in a sediment profile in sediment deposited in 1955, the first year of extensive atmospheric nuclear weapons testing. A sudden transition from measurable to low or non-detectable concentrations of Cesium-137 as the sediment depth increases can be interpreted as the approximate 1955 horizon. Furthermore, peak concentrations of Cesium-137 are generally associated with the 1963 peak in atmospheric nuclear weapons testing. In addition, Lead-210 testing will be performed to assist in core sediment/sludge dating.

The specific sampling procedures and sequencing of activities is as follows:

- The exclusion zone will be taped off and labeled to prevent the general public from entering the contaminated area(s). The field laboratory GC unit and immunoassay field test kits will be set-up and calibrated for PCB analysis by the on-site chemist/GC operator outside of the decontamination and exclusion zones.

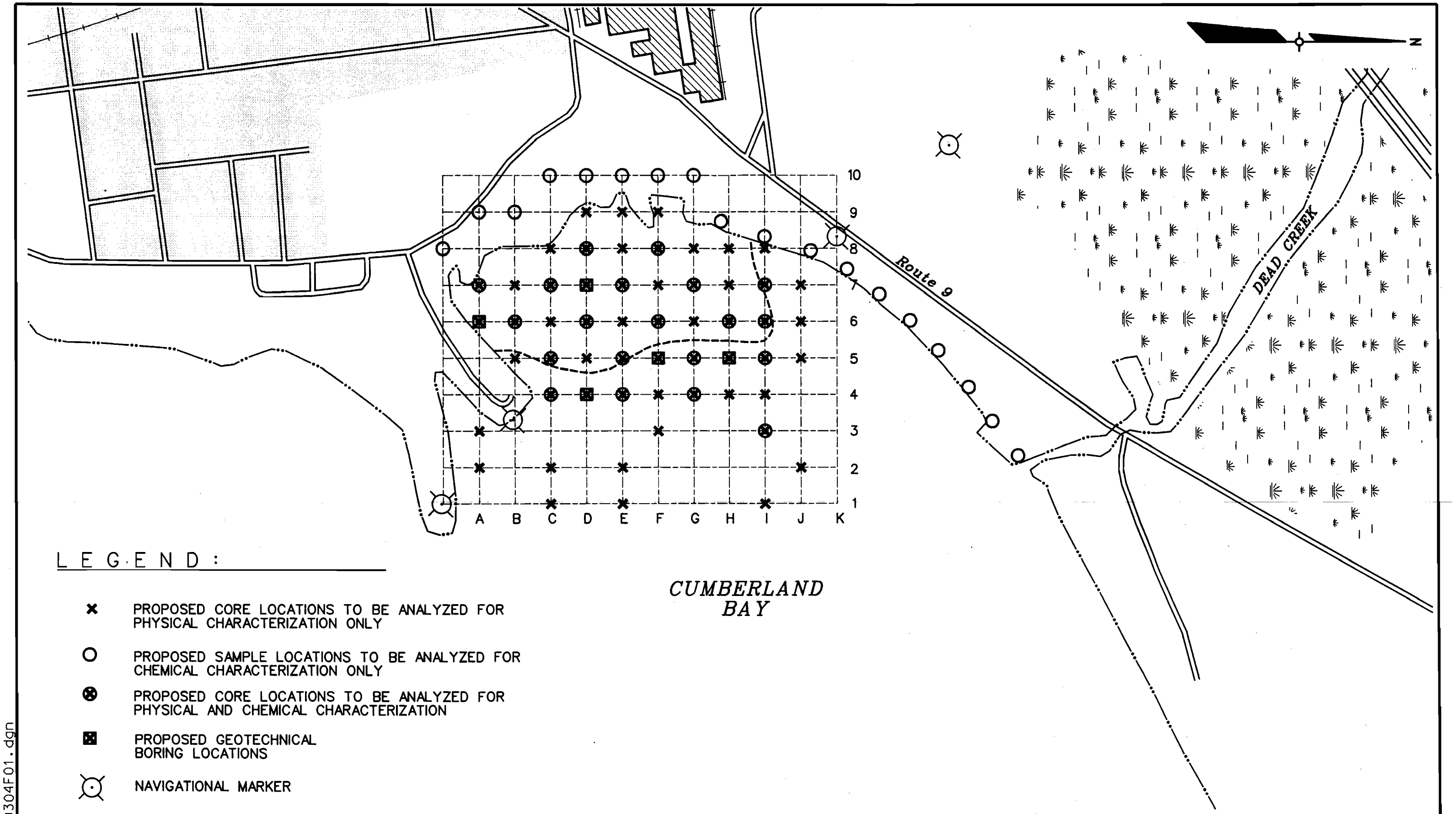
- A two person sampling crew will use a flat-bottomed sampling boat equipped with a corer, dedicated sample tubes, analytical sample containers, and other related sampling equipment. The first task of the sampling crew is to locate and clearly mark out the boundary of the sludge bed as discussed in Section 2.4. A sampling grid will also be delineated by placing stacks, marker buoys or other devices at a spacing of every 200 feet using conventional surveying techniques.

- Once the sampling grid is layed-out, samples will be collected from the sludge bed utilizing a vibratory corer, push corer or piston corer which are capable of penetrating loose organic to tight natural sands, silts and clays encountered below the sludge bed. The specific corer used will depend on the depth of water and the thickness of the sludge bed. The coring device used will penetrate the natural sediment an average of 3.5 ft to 4.0 ft.

- Approximately 56 cores will be collected and transported to the shore by a shuttle boat where they will be visually inspected, characterized and stratigraphically logged. Representative samples will be collected of the natural sediment underlying the sludge, for grain size analysis. Of the 56 core locations, approximately 20 cores will be chemically analyzed on-site. An average of three (3) samples will be collected from each of the 20 cores and analyzed for PCBs. The first sample will be collected from the first 6 inches of natural sediment below the sludge/natural sediment interface and analyzed for PCBs using the immunoassay test kits which will be calibrated to detect PCBs above 2 ppm. If there is more than one interface, the lowest most interface will be sampled. If this analysis is below detection, a sample of the same material will be collected for field GC confirmation. If the test kit sample is above detection for PCBs, a composite sample will be collected of the next 6 inches below the interface for test kit analysis. If this analysis is again above detection, the next 12 inches of sediment will be sampled and tested by the same procedures as above and repeated until the sediment sampled is below detection for PCBs using the test kits. The sample which is determined to be below detection will then be confirmed with the field GC. The anticipated location of these cores are shown on Figure 2.

- Of the 56 cores, five will be collected in the sludge bed using the vibracorer to achieve the maximum depth possible. These cores will receive the visual inspection and logging discussed above. Additionally, samples will be collected from each core at 6 inch intervals beginning from the top of the core to the sludge/natural sediment interface. Discrete samples will be collected of sludge layers, if they appear beneath the interface.

  All samples collected will be analyzed for PCBs using the immunoassay test kits. PCB test kit results will be confirmed by commercial laboratory analysis for all samples starting at the top of the core until and including the first non-detectable level is achieved with the test kit. Samples will also be collected every 2 inches throughout the length of the core to be analyzed for the presence of Cesium-137 and Lead-210.



LEGEND:

- × PROPOSED CORE LOCATIONS TO BE ANALYZED FOR PHYSICAL CHARACTERIZATION ONLY
- ○ PROPOSED SAMPLE LOCATIONS TO BE ANALYZED FOR CHEMICAL CHARACTERIZATION ONLY
- ⊗ PROPOSED CORE LOCATIONS TO BE ANALYZED FOR PHYSICAL AND CHEMICAL CHARACTERIZATION
- ⊠ PROPOSED GEOTECHNICAL BORING LOCATIONS
- NAVIGATIONAL MARKER
- ESTIMATED SLUDGE BED BOUNDARY

SCALE 0' 250' 500' 1000'

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CORING, BORING and SAMPLE LOCATION MAP

CUMBERLAND BAY
NYSDEC SITE No. 510017
CUMBERLAND BAY CLINTON COUNTY, NY

PROJECT No. 39304	DATE July 1995	DWG. No. 39304f01	SCALE AS NOTED	FIGURE No. 2

DRAWING No. 39304F01.dgn

Two samples each from two of these cores will also be analyzed for the presence of dioxins.

- Approximately ten (10) percent of all of the test kit and GC samples will be collected for commercial laboratory analysis for PCBs from the sludge bed and the surrounding areas.

  Samples will be placed in a jar and labeled with the job name and number, sample location (core location number), depth of sample, time date, sampler's names, and the required analysis.

- Approximately ten (10) sediment cores will be collected from the beach between the Chamber of Commerce Building north to the inlet of the Dead Creek. Samples will be collected from the 0 to 6 inch, 6 to 12 inch, 12 to 24 inch and 24 to 36 inch intervals below the surface. All samples will be analyzed for PCBs using the immunoassay test kits. The field GC will be used to confirm each negative test kit result, additionally, ten (10) percent or 4 samples will be sent to the commercial laboratory for confirmation analysis.

  An additional 8 to 11 cores will be collected from shore areas south of the Chamber of Commerce building every 200 feet to Wilcox Dock. These cores will be collected immediately above areas where sludge of wood chips appear. Samples will be collected from these cores at the same depth intervals and using the same analytical plan as the other beach samples.

- All samples for laboratory confirmation will be sent under chain-of custody to a New York State approved commercial laboratory and analyzed for PCBs using NYSDEC ASP Method 91-3 (PCBs only).

Figure 2 depicts the approximate number and location of the cores, while Table 2 provides a summary of the anticipated number of samples.

2.5.2 Geotechnical Sampling

One potential remedial technology to be evaluated is the installation of a cutoff wall along the perimeter of the sludge bed which would be used as a means for containing sediment during removal operations. In order to fully evaluate this technology, the subsurface geologic conditions along the perimeter of the sludge bed must be determined by collecting a series of borings. A total of approximately five (5) deep borings (20 to 30 feet below the natural sediment) will be collected. Figure 2 shows the approximate location of these geotechnical borings.

Each boring will be advanced utilizing a tripod or skid-mounted drilling apparatus fixed to a flat-bottomed boat and continuously sampled to the desired depths. All borings will be logged and classified by a qualified geologist using the Unified Soil Classification System and the Modified Burmister System. Approximately three (3) borings will be installed along the existing perimeter

TABLE 2

Sampling and Analysis Summary
Cumberland Bay

MEDIA	NO. OF SAMPLES	ANALYSIS
Sediment (Bay)		
Sample	56 6	Visual Inspection Grain Size Analysis ASTM D-422
Sample	5	Liquid and Plastic Limit - ASTM D-423/424 Consolidation - ASTM D-2435
	125	PCB-Field Test Kit
	25	PCB-Field GC
	100	Cesium-137 and Lead-210
	20	PCB-ASP 91-3**
	4	Dioxins (SW 846-8290)***
Blind Duplicate	2	PCB-ASP 91-3
MS/MSD*	2 pair	PCB-ASP 91-3
Sediment (Beach)		
Sample	84	PCB - Field Test Kit
	10	PCB-Field GC
	10	PCB-ASP 91-3
Blind Duplicate	1	PCB-ASP 91-3
MS/MSD*	1 pair	PCB-ASP 91-3

* MS/MSD = Matrix Spike/Matrix Spike Duplicate (laboratory duplicate).
** Analysis to be performed by Aquatech Laboratory.
*** Analysis to be performed by Pace Analytical.

of the sludge bed where temporary piling would be driven to prevent migration of contamination during dredging and sludge removal processes. Another two (2) borings will be advanced within the sludge bed approximately 100 feet or more off-shore where permanent pilings or a cofferdam would be installed for containment of the consolidated sludge.

Representative boring samples will be collected from split-spoons and analyzed for grain size by ASTM Method D-422. Blow counts will be obtained and data will be used to calculate soil strength properties. If clay soil is encountered in spoons, shelby tube samples will be collected and tested for liquid and plastic limits by ASTM Methods D-423 and D-424, respectively, as well as consolidation testing using ASTM Method D-2435.

2.6 DECONTAMINATION PROCEDURES

All non-disposable sampling equipment used during the site characterization will be decontaminated prior to each use. The purpose of equipment decontamination is to minimize the potential for compromising data validity by reducing the possibility of cross-contamination. Detailed equipment decontamination procedures to be implemented as part of the site characterization activities are included in Appendix A.

2.7 HANDLING OF INVESTIGATION-DERIVED WASTE

The site characterization will produce investigation-derived waste (IDW) which will require appropriate management. This IDW includes the following:

- Sediment and sludge collected from sediment cores and geotechnical borings;
- Decontamination fluids and sediment which may settle out of such fluids;
- Personnel protective equipment (PPE) and associated debris resulting from the execution of field activities; and
- Sediment and sludge samples returned from the laboratory after performance of geotechnical testing.

The management of these wastes is discussed below.

2.7.1 Sediments and Sludge

Sediment and sludge collected from cores, sediment which settles out of decontamination fluids and returned geotechnical samples will be containerized in the on-site roll-offs being used for the disposal of debris collected during beach cleaning activities.

2.7.2 Decontamination Fluids, PPE and Associated Debris

Decontamination fluids, PPE and other debris associated with the sampling activities will be separately containerized in appropriate 55 - gallon drums, properly labeled, and temporarily stored

on-site. Upon completion of field activities, the disposal of this waste will be determined in consultation with the NYSDEC.

2.8 CONTAMINATED AREA DELINEATION

Using the information gained through the mapping of the sludge bed discussed in Section 2.4, Rust will calculate the area of the bed using AutoCADD version 12.

2.9 VOLUME ESTIMATE OF SLUDGE BED

Based on the estimate of the sludge bed area determined in Section 2.8 and the results of the sediment sampling/coring performed under Section 2.5, Rust will calculate the volume of the sludge bed as well as the volume of the contaminated sludge/sediment.

2.10 SAMPLE ANALYTICAL RESULTS

The results of the analysis of all samples will be carefully reviewed, tabulated and evaluated. As appropriate for reporting purposes, these results will be plotted and charted to facilitate their presentation and analysis.

2.11 SLUDGE BED DATA REPORT

Immediately upon completion of the sampling and analysis of the sludge/sediment samples, the results will be compiled in a Sludge Bed Data Report. This report will contain the results of the field analysis, as well as the unvalidated laboratory analytical results. Also included will be the estimates of the sludge bed area and volume, coring and boring logs, sample data forms, and the results of the sludge dating analyses.

2.12 DATA VALIDATION REPORT

All data from the laboratory analysis of the sludge/sediment samples will be validated by Rust or TAMS chemists, approved by the NYSDEC, to perform data validations. Validation will be in accordance with EPA Region II validation guidelines, modified as appropriate for the NYSDEC Analytical Services Protocols (ASP). The data validation will include review and evaluation of all laboratory deliverables. The basic review will cover sample request forms, chains-of-custody, methodology summaries, laboratory chronicles, and the items listed below:

PCB's

- Case Narrative
- Deliverable Requirements
- Holding Times and Sample Preparation
- Surrogate Recoveries and Summary (Form 2)

- Matrix Spike Blank/MS/MSD Recoveries and Summary (Form 3)
- Instrument and Method Blanks and Summaries (Form 4C)

The results of the validations will be compiled into a summary report.

2.13 REVIEW BEACH CLEANING INFORMATION

Rust and it's subconsultant TAMS will review the results of the beach cleaning performed during 1995. The purpose of this review is to gain insight into means to improve the cleaning procedures, debris disposal and contracting for 1996.

2.14 SLUDGE BED CHARACTERIZATION REPORT

The results of Task 2 - Site Characterization will be compiled and presented in a "Sludge Bed Characterization Report". The characterization report will contain the validated data included in the Sludge Bed Data Report as well as all necessary interpretations, evaluations and conclusions. It is anticipated that five (5) copies of the draft characterization report and ten (10) copies of the final characterization report will be submitted to the NYSDEC for review and approval.

3.0 DEVELOPMENT OF IRM ALTERNATIVES (TASK 3)

A focused study will be preformed to identify potential remedial alternatives for this IRM which will then be screened and further evaluated to the point where the most cost-effective, environmentally sound, remedy is selected. This focused study will be performed in accordance with EPA guidance as well as the National Contingency Plan (NCP).

3.1 SCREENING OF REMEDIAL TECHNOLOGIES

The critical first step in the process of developing remedial alternatives for the sludge bed IRM is the identification and screening of remedial technologies. A prelude to this however, is the development of remedial action objectives (RAO). A concise list of RAOs serves to focus the identification and screening of technologies and ultimately, the identification and screening of remedial alternatives.

The development and screening of remedial technologies will involve the following multi-step process:

- Development of general response actions for the medium of concern, defining containment, treatment, removal, or other general actions which might satisfy the RAOs;
- Identification and screening of technology types applicable to each general response action to eliminate those that are not applicable; and
- Identification and screening of process options in terms of effectiveness, implementability and cost to select a representative process for each technology type.

In the above process, data gathered during the site characterization is used to identify and screen technology types and process options. Technologies that could prove difficult to implement, might not achieve the remedial action objectives within a reasonable time frame, or might not be applicable of feasible based on site-specific conditions, are eliminated from further consideration. Moreover, results can be used to guide additional site characterization work, if necessary.

3.2 SELECTION AND PERFORMANCE OF TREATABILITY STUDIES

3.2.1 Dewatering/Stabilization Treatability Study

A treatability study will be performed to evaluate dewatering and stabilization methods for the remediation of the Cumberland Bay Sludge Bed materials. The results of the treatability study will be used to evaluate remedial alternatives and for preparing remedial design specifications. The following tests are proposed for the purpose of this Work Plan. However, if geotechnical tests or variations on these tests are deemed appropriate as the evaluation of the remedial alternatives progresses, the scope of the treatability study will change as necessary, with NYSDEC concurrence.

Initial Sludge Characterization

An appropriate quantity of sludge (5 to 10 gallons) will be collected by Rust for use in the treatability study. Several core samples will be composited to include vertical and lateral variations in the sludge in an effort to collect a geotechnical sample representative of the sludge bed. Prior to dewatering or altering the sample in any way, a portion of the sample will be analyzed for the following baseline geotechnical characteristics:

- moisture content (ASTM Method D-2216);
- specific gravity (ASTM Method D-854);
- bulk density (ASTM Method D-2937);
- time rate of consolidation (ASTM Method D-2435); and
- pH (EPA Method 9045).

In addition, to further characterize how the sludge may behave in response to technologies such capping, a time rate of consolidation test will be performed.

Filter Press Test

A filter press test will be performed at three different pressures (i.e., 60, 120 and 240 psi) to evaluate dewatering efficiencies. For each test, liquid yield versus time will be reported. Baseline geotechnical analyses (according to methods listed below) will be repeated after the test is complete to evaluate filter press performance.

Pre-Filter Press Conditioning

To evaluate the potential for increasing the efficiency of filter pressing the sludge, several additional filter press test will be run on samples which have been mixed with additives (i.e., ferric chloride, diatomaceous earth or polymers). The filter press tests on the additive mixtures will be performed at the most efficient of the three pressures as stated above.

Stabilization Testing

After completion of the filter press test, the sludge from the most efficient filter press test will be tested for unconfined compressive strength according to ASTM Method D-2166. Portions of the filter cake will be mixed with additives such as cement kiln dust (or other cementatious product), lime or fine-grained aggregate (i.e. sand) to strengthen the dewatered sludge for the purpose of on-site or off-site disposal. The required strength for sludge has been estimated to range between 10 and 20 psi. Stabilized samples will be analyzed for confined compressive strength. Other tests may include leachability testing for PCB's, and paint filter and liquid release testing.

Filtrate Testing

The filtrate resulting from the filter press test will be tested for the following parameters:

- PCBs;
- Biological oxygen demand (BOD);
- Chemical oxygen demand (COD);
- Total settleable solids (TSS);
- Total dissolved solids (TDS); and
- pH.

The results of these analysis will be used to evaluate the treatment requirements prior to discharging process water to a local Publicly Owned Treatment Works or to Cumberland Bay.

3.2.2 Waste Profiling

To evaluate off-site disposal options a representative sample of the sludge bed material will be tested according to the waste profiling requirements of permitted Treatment, Storage and Disposal Facilities (TSDFs). A sample collected by Rust will be analyzed for the full suite of metals using the Toxicity Characteristic Leaching Procedure (TCLP).

3.3 EVALUATION OF TREATABILITY STUDY RESULTS

After completion of the studies summarized above, the results will be evaluated and presented, along with other pertinent data, in the Site Characterization Report.

3.4 DEVELOPMENT OF REMEDIAL ALTERNATIVES

Based on the results of the identification and screening of remedial technologies and the performance of treatability studies, Rust will assemble the technologies and process options into remedial alternatives, preserving a range of treatment, disposal and containment choices. As the intent of this study is to be focused on a select few alternatives, the list of alternatives will not be as all encompassing as is typical for a study of this nature. Rather, Rust will concentrate on alternatives which are the most feasible and implementable.

4.0 SCREENING AND ANALYSIS OF IRM ALTERNATIVES (TASK 4)

This task will entail both the preliminary screening and detailed analysis of the remedial alternatives developed in Task 3.

4.1 PRELIMINARY SCREENING OF REMEDIAL ALTERNATIVES

The remedial alternatives developed in the previous task will undergo an initial screening to reduce the number of alternatives for the detailed analysis. The screening will be accomplished by evaluating alternatives on the basis of effectiveness, implementability (both technical and administrative) and cost. As this is an IRM, innovative technologies will not be given serious consideration unless they have been proven and are readily available.

4.2 DETAILED EVALUATION OF ALTERNATIVES

A detailed evaluation of the remedial alternatives which remain following the preliminary screening will be conducted. This detailed evaluation will follow the process specified in the EPA's "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (interim Final, October 1988) and "Guidance on Superfund Selection of Remedy" (July 1987) as well as NYSDEC Technical and Administrative Guidance Memorandum No. 4030 entitled "Selection of Remedial Actions at Inactive Hazardous Waste Sites", dated September 13, 1989 and revised May 15, 1990. Each alternative will undergo a qualitative evaluation against seven criteria. The seven criteria against which the remedial alternatives will be evaluated are:

- Overall protection of human health and the environment;
- Compliance with applicable New York State Standards Criteria and Guidelines (SCG);
- Short-term impact and effectiveness;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility and volume;
- Implementability (i.e., technical and administrative); and
- Cost (i.e., capital, annual operation and maintenance and present worth).

Following the evaluation of each remedial alternative, a comparative analysis will be performed to determine the relative performance of each remedial alternative, against the seven criteria. The remedial alternative(s) or combination of alternatives which receives the highest evaluation will be recommended as the preferred alternative(s).

4.3 DRAFT IRM EVALUATION REPORT

The results of the development of IRM alternatives (Task 3), as well as the preliminary screening and detailed evaluation of alternatives will be presented in a draft IRM Evaluation Report. The preliminary format for the report is provided in Appendix B. It is anticipated that a total of ten (10) copies of this draft report will be submitted to the NYSDEC for comment.

4.4 FINAL IRM EVALUATION REPORT

Comments received from the NYSDEC and other reviewing agencies will be incorporated into the Final IRM Evaluation Report. For budgeting purposes, it is assumed that only a single round of revisions will be necessary. It is anticipated that a total of twenty (20) copies of the final report will be submitted.

5.0 DESIGN SLUDGE BED IRM (TASK 5)

5.1 PRELIMINARY SLUDGE BED IRM DESIGN

Rust will prepare preliminary plans and specifications for the remedy selected for the sludge bed IRM. This design will contain the necessary documents for bidding the construction of the IRM in accordance with New York State laws, rules, regulations and guidelines. All applicable or relevant standards and criteria identified in the site characterization, development of remedial alternatives, or the preliminary screening and detailed evaluation of alternatives will be incorporated into the design. Rust will submit three (3) copies of the preliminary design when it is 50 percent complete. This submittal will include a design report which will contain supporting data, documentation, assumptions and design calculations.

5.2 FINAL SLUDGE BED IRM DESIGN

Comments received from the NYSDEC on the preliminary design will be incorporated into the final design documents. Contract documents and standard specifications will be provided by the NYSDEC and will be incorporated with the technical specifications prepared by Rust. It is envisioned that the design plans will include the following:

- Site Plan
- Sludge Bed Plan View
- Sludge Bed Cross-Sections
- Sediment Containment Plan
- Sediment Containment Details
- Treatment System Plan
- Treatment System Details
- Piping and Instrumentation Diagram
- Site Restoration Details

Upon completion of the draft final design documents, five (5) copies will be submitted to the NYSDEC for review. After approval of the final design, up to seventy (70) copies of the plans and specifications will be submitted to the NYSDEC for distribution to bidders.

5.3 PROJECT COST ESTIMATE

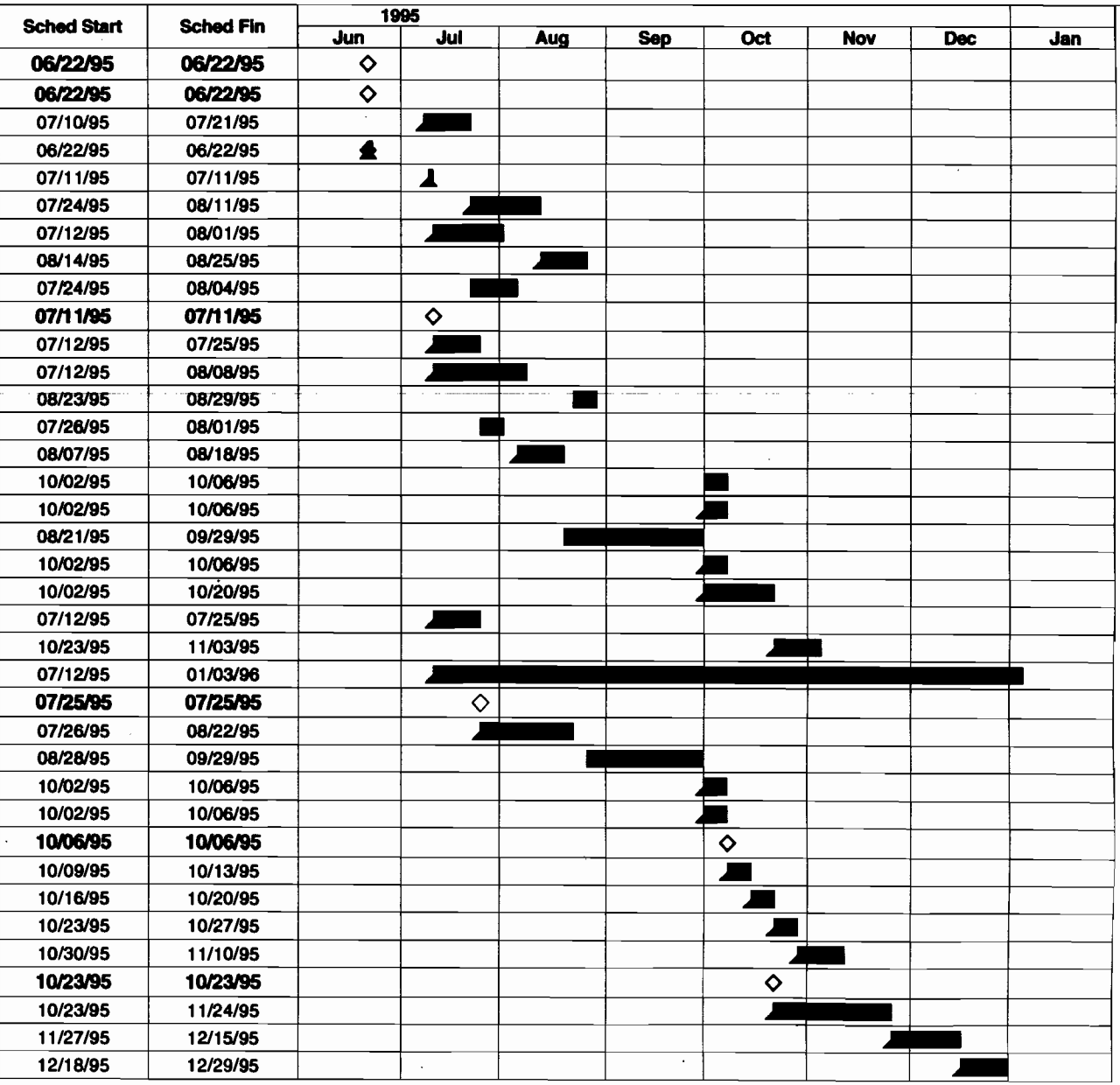
Upon approval of the final design and prior to bidding, a detailed pre-construction cost estimate of the project will be prepared. This estimate will include all necessary documentation, quantity take-offs and calculations to support the cost estimate.

6.0 PROJECT SCHEDULE

Included is Figure 3 which is a project schedule which indicates the scope of activities identified in the previous sections. This schedule was prepared to comply with the schedule presented in the Work Assignment. In order to prepare a schedule which complied with the Work Assignment, minimal time is allowed for NYSDEC review and approval of submittals. Additionally, several activities are required to occur concurrently which will necessitate close communication between the NYSDEC and Rust.

FIGURE 3 - CUMBERLAND BAY SLUDGE BED IRM SCHEDULE

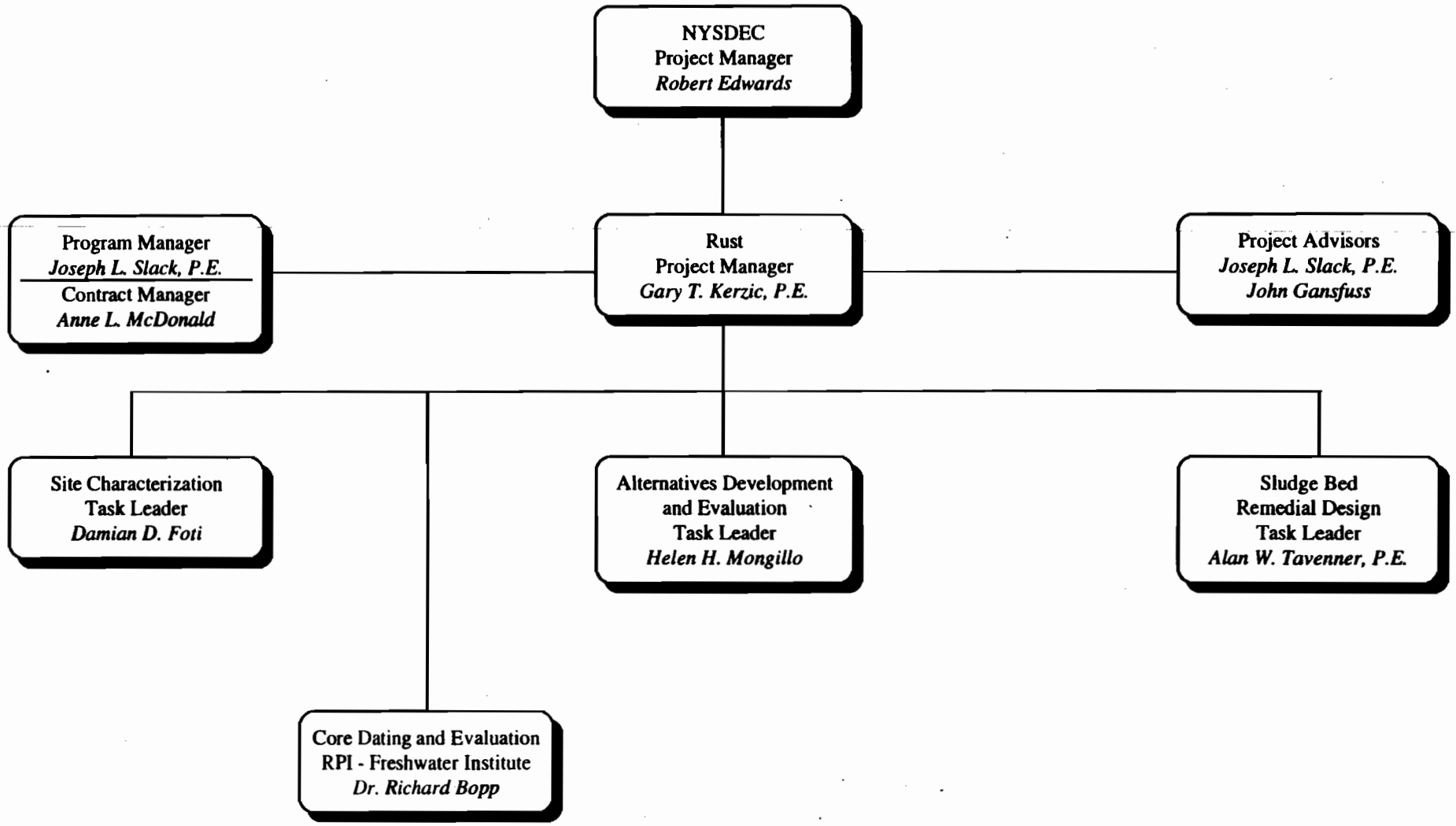
Task Name	Sched Start	Sched Fin
CUMBERLAND BAY SLUDGE BED PROJECT	**06/22/95**	**06/22/95**
TASK 1 - DEVELOPMENT OF WORK PLAN	**06/22/95**	**06/22/95**
Review Existing Data	07/10/95	07/21/95
Site Visit	06/22/95	06/22/95
Scoping Session	07/11/95	07/11/95
Draft Work Plan, LOE and Budget	07/24/95	08/11/95
H&S Plan, QAPP	07/12/95	08/01/95
Final Work Plan	08/14/95	08/25/95
Project Schedule	07/24/95	08/04/95
TASK 2 - SITE CHARACTERIZATION	**07/11/95**	**07/11/95**
Technical Data Review	07/12/95	07/25/95
Base Map	07/12/95	08/08/95
Evaluate Hydraulic and Environmental Conditions	08/23/95	08/29/95
Determine Extent of Sludge Beds	07/26/95	08/01/95
Sludge/Sediment Sampling	08/07/95	08/18/95
Contaminated Area Delineation	10/02/95	10/06/95
Volume Estimate	10/02/95	10/06/95
Sample Analytical Results	08/21/95	09/29/95
Sludge Bed Data Report	10/02/95	10/06/95
Data Validation Report	10/02/95	10/20/95
Review Beach Cleaning Information	07/12/95	07/25/95
Sludge Bed Characterization Report	10/23/95	11/03/95
Program Management	07/12/95	01/03/96
TASK 3 - DEVELOPMENT OF IRM ALTERNATIVES	**07/25/95**	**07/25/95**
Screening of Technologies	07/26/95	08/22/95
Treatability Studies	08/28/95	09/29/95
Evaluation of Treatability Study Results	10/02/95	10/06/95
Development of Alternatives	10/02/95	10/06/95
TASK 4 - SCREENING AND ANALYSIS OF IRM ALTERN	**10/06/95**	**10/06/95**
Preliminary Screening of Alternatives	10/09/95	10/13/95
Detailed Evaluation	10/16/95	10/20/95
Draft IRM Evaluation Report	10/23/95	10/27/95
Final IRM Evaluation Report	10/30/95	11/10/95
TASK 5 - DESIGN OF SLUDGE BED IRM	**10/23/95**	**10/23/95**
Preliminary IRM Design	10/23/95	11/24/95
Final IRM Design	11/27/95	12/15/95
Project Cost Estimate	12/18/95	12/29/95



7.0 PROJECT STAFFING

The attached Figure 4 is an organization chart for this project. This organization includes TAMS who will be performing some of the work under the supervision of the Rust project manager.

FIGURE 4: PROJECT ORGANIZATION
CUMBERLAND BAY SLUDGE BED IRM
Work Assignment No. D002520-32
Site ID No. 5-10-017



8.0 SUBCONTRACTING AND M/WBE UTILIZATION PLAN

Activities covered in this Work Plan will require subcontract services in the following areas:

Site Characterization

- Laboratory Analysis of Samples
- Topographic Mapping
- Geotechnical Borings
- Reproduction of Documents
- Clerical Support

Development of IRM Alternatives

- Treatability Studies

Remedial Design

- Reproduction of Documents
- Clerical Support

Rust will make every effort to subcontract at least 15 percent of the value of the work to a MBE and 5 percent to a WBE.

9.0 PROJECT BUDGET

The following are a series of Schedule 2.11 forms which provide a detailed breakdown of each task of this Work Assignment.

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DUNN ENGINEERING COMPANY
SCHEDULE 2.11(a)
SUMMARY OF WORK ASSIGNMENT PRICE

1.	DIRECT SALARY COSTS (Schedules 2.10(a) and 2.11(b)	$78,278.88
2.	INDIRECT COSTS (Schedule 2.10(g))	$122,428.18
3.	DIRECT NON-SALARY COSTS (Schedules 2.10(d)(e)(f) and 2.11(c)(d)	$20,605.29

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. TAMS Consultants, Inc.	Professional Services	$71,284.19
B. RPI Freshwater Institute	Professional Services	$2,574.95

4.	TOTAL COST-PLUS-FIXED-FEE SUBCONTRACTS	$73,859.14

UNIT PRICE SUBCONTRACTS
(Schedule 2.10(f) and 2.11(f))

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
A. Precision Graphics, Inc.	Report Reproduction/Printing	$250.00
B. Xerox	Reproduction	$6,500.00
C. Eastern Topographic Inc.	Base Map Preparation	$1,965.00
D. Aquatech Laboratory	Sample Analysis	$7,605.00
E. Kiber Environmental	Treatability Studies	$16,725.00
F. RPI Freshwater Institute	Cesium and Lead Analysis	$6,500.00
G. Green Mountain Drilling	Geotechnical Drilling	$5,137.50
H. Pace Analytical	Laboratory Analysis	$6,525.00
I. Galson Laboratory	Laboratory Analysis	$543.32

5.	TOTAL UNIT PRICE SUBCONTRACTS	$51,750.82
6.	TOTAL SUBCONTRACT COSTS (Lines 4 + 5)	$125,609.96
7.	FIXED FEE (Schedule 2.10(h))	$18,465.06
8.	TOTAL WORK ASSIGNMENT PRICE (Lines 1 + 2+ 3+ 6 + 7)	**$365,387.37**

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed

Dunn Engineering Company
TABLE 1.0
SUMMARY OF BUDGETED PROJECT COSTS

TASK	Direct Labor (a)	Indirect Costs 1.564%	Fixed Fee 9.2%	Travel & Subsistence(b)	Other Direct Costs(c)	Fixed Fee (d) Subcontractor	Unit Price (e) Subcontractor	TOTAL COLUMNS (1A-5)
Task 1 - Development of Work Plan	$8,806.96	$13,774.09	$2,077.46	$145.00	$0.00	$0.00	$0.00	$24,803.51
Task 2 - Site Characterization	$21,889.02	$34,234.43	$5,163.36	$5,192.00	$15,268.29	$50,444.52	$28,275.82	$160,467.44
Task 3 - Development of IRM Alternatives	$10,127.22	$15,838.97	$2,388.89	$0.00	$0.00	$0.00	$16,725.00	$45,080.08
Task 4 - Screening and Analysis of IRM Alternatives	$11,730.26	$18,346.13	$2,767.03	$0.00	$0.00	$0.00	$250.00	$33,093.42
Task 5 - Design of Sludge Bed IRM	$25,725.42	$40,234.56	$6,068.32	$0.00	$0.00	$23,414.62	$6,500.00	$101,942.92
TOTALS	**$78,278.88**	**$122,428.18**	**$18,465.06**	**$5,337.00**	**$15,268.29**	**$73,859.14**	**$51,750.82**	**$365,387.37**

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed

Tams Consulting Company
TABLE 1.0
SUMMARY OF BUDGETED PROJECT COSTS

TASK	Direct Labor (a)	Indirect Costs 1.245%	Fixed Fee 12.5%	Travel & Subsistence(b)	Other Direct Costs(c)	Fixed Fee (d) Subcontractor	Unit Price (e) Subcontractor	TOTAL COLUMNS (1A-5)
Task 1 - Development of Work Plan	$0.00	$0.00	$0.00					$0.00
Task 2 - Site Characterization	$17,358.70	$21,611.58	$4,871.29	$3,434.00	$594.00			$47,869.57
Task 3 - Development of IRM Alternatives	$0.00	$0.00	$0.00					$0.00
Task 4 - Screening and Analysis of IRM Alternatives	$0.00	$0.00	$0.00					$0.00
Task 5 - Design of Sludge Bed IRM	$9,175.00	$11,422.88	$2,574.74	$242.00				$23,414.62
TOTALS	**$26,533.70**	**$33,034.46**	**$7,446.03**	**$3,676.00**	**$594.00**	**$0.00**	**$0.00**	**$71,284.19**

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

Dunn Engineering Company

NSPE
SCHEDULE 2.11(b)
DIRECT LABOR HOURS BUDGETED
1995

LABOR CLASSIFICATION AVERAGE RAW LABOR RATE	IX $50.32	VIII $47.88	VII $39.87	VI $32.46	V $28.65	IV $25.41	III $20.48	II $16.63	I $11.97	LABOR HOURS	DIRECT LABOR
Task 1 - Development of Work Plan	8.00	0.00	74.00	0.00	60.00	0.00	32.00	142.00	60.00	376.00	$8,806.96
Task 2 - Site Characterization	16.00	0.00	104.00	40.00	72.00	0.00	216.00	428.00	170.00	1046.00	$21,889.02
Task 3 - Development of IRM Alternatives	0.00	12.00	48.00	0.00	70.00	0.00	240.00	0.00	60.00	430.00	$10,127.22
Task 4 - Screening and Analysis of IRM Alternatives	0.00	20.00	60.00	0.00	50.00	0.00	230.00	100.00	48.00	508.00	$11,730.26
Task 5 - Design of Sludge Bed IRM	0.00	24.00	250.00	0.00	140.00	0.00	320.00	200.00	60.00	994.00	$25,725.42
TOTAL LABOR HOURS	24	56	536	40	392	0	1038	870	398	3,354	
TOTAL LABOR DOLLARS	$1,207.68	$2,681.28	$21,370.32	$1,298.40	$11,230.80	$0.00	$21,258.24	$14,468.10	$4,764.06		$78,278.88

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

1995

SCHEDULE 2.11(b-1)
DIRECT ADMINISTRATIVE LABOR HOURS BUDGETED

LABOR CLASSIFICATION AVERAGE RAW LABOR RATE	IX $50.32	VIII $47.88	VII $39.87	VI $32.46	V $28.65	IV $25.41	III $20.48	II $16.63	I $11.97	LABOR HOURS	DIRECT LABOR
Task 1 - Development of Work Plan Task 2 - Site Characterization Task 3 - Development of IRM Alternatives Task 4 - Screening and Analysis of IRM Alternatives Task 5 - Design of Sludge Bed IRM			18.00				48.00	30.00		96.00	$2,199.60
TOTAL LABOR HOURS	**0**	**0**	**18**	**0**	**0**	**0**	**48**	**30**	**0**	**96**	**$2,199.60**

Subject to contract allowability, project adminsitrative hours would include but not necessarily be limited to the following activites:

1. Work Plan Development
   - Conflict of Interest Check
   - Develop budget schedules and supporting documentation
2. Review work assignment (WA) progress
   - Conduct progress reviews
   - Prepare monthly project report and update WA progess schedule
   - M/WBE Activities
   - Program Management
   - Manage Subcontracts
3. CAP Preparation
   - Prepare monthly cost control report and CAP
   - Oversee CAP preparation
4. Miscellaneous
   - NSPE List Updates
   - Equipment use and inventory
   - Word Processing and Report Preparation

Contract/Project administration hours would not include activities such as:

1. QA/QC reviews
2. Technical oversight by management
3. Develop subcontracts
4. Work plan development (other than COI and budget preparation)
5. Review of deliverables

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DETAILED BREAKDOWN OF

DIRECT ADMINISTRATIVE LABOR HOURS BUDGETED ON SCHEDULE 2.11(b-1)

ADMINISTRATIVE TASKS	Work Plan Development								Review Work Assignment (WA) Progess																			
	Conflict of Interest Checks				Schedules & Supporting Documentation				Conduct Progress Reviews				Prepare Monthy Project Report & Update Progress Schedule				MBE/WBE Activites				Program Management				Manage Subcontracts			
NSPE LEVEL	7	3	2	1	7	3	2	1	7	3	2	1	7	3	2	1	7	3	2	1	7	3	2	1	7	3	2	1
Task 1																												
Task 2	1					30			6				3	3				3			6				2	4		
Task 3																												
Task 4																												
Task 5																												
SUBTOTALS	**1**	**0**	**0**	**0**	**0**	**30**	**0**	**0**	**6**	**0**	**0**	**0**	**3**	**3**	**0**	**0**	**0**	**3**	**0**	**0**	**6**	**0**	**0**	**0**	**2**	**4**	**0**	**0**
TOTAL (ALL NSPE)	**1**				**30**				**6**				**6**				**3**				**6**				**6**			

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DETAILED BREAKDOWN OF

DIRECT ADMINISTRATIVE LABOR HOURS BUDGETED ON SCHEDULE 2.11(b-1)

ADMINISTRATIVE TASKS	CAP Preparation								Miscellaneous															
	Prepare Monthly Cost Control Report and CAP				Oversee CAP Preparation				NSPE List Updates				Equipment Use and Inventory				Work Processing and Report Preparation				Total Direct Administative Labor Hours			
NSPE LEVEL	7	3	2	1	7	3	2	1	7	3	2	1	7	3	2	1	7	3	2	1	7	3	2	1
Task 1																								
Task 2			24			6				2					6						18	48	30	0
Task 3																								
Task 4																								
Task 5																								
SUBTOTALS	**0**	**0**	**24**	**0**	**0**	**6**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**18**	**48**	**30**	**0**
TOTAL (ALL NSPE)	**24**				**6**				**2**				**6**				**0**				**96**			

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

Tams Consultants, Inc.

NSPE
SCHEDULE 2.11(b)
DIRECT LABOR HOURS BUDGETED
TOTAL

LABOR CLASSIFICATION AVERAGE RAW LABOR RATE	IX	VIII	VII	VI	V	IV	III	II	I	LABOR HOURS	DIRECT LABOR
Task 1 - Development of Work Plan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	$0.00
Task 2 - Site Characterization	0.00	0.00	0.00	0.00	32.00	170.00	160.00	150.00	160.00	672.00	$17,358.70
Task 3 - Development of IRM Alternatives	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	$0.00
Task 4 - Screening and Analysis of IRM Alternatives	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	$0.00
Task 5 - Design of Sludge Bed IRM	0.00	0.00	0.00	0.00	40.00	120.00	100.00	40.00	0.00	300.00	$9,175.00
TOTAL LABOR HOURS	**0**	**0**	**0**	**0**	**72**	**290**	**260**	**190**	**160**	**972**	
TOTAL LABOR DOLLARS	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**		**$26,533.70**

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

Tams Consultants, Inc.

NSPE
SCHEDULE 2.11(b)
DIRECT LABOR HOURS BUDGETED
1995

LABOR CLASSIFICATION AVERAGE RAW LABOR RATE	IX $50.32	VIII $48.57	VII $44.65	VI $38.33	V $35.65	IV $33.40	III $28.03	II $23.45	I $15.86	LABOR HOURS	DIRECT LABOR
Task 1 - Development of Work Plan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	$0.00
Task 2 - Site Characterization	0.00	0.00	0.00	0.00	32.00	170.00	160.00	150.00	160.00	672.00	$17,358.70
Task 3 - Development of IRM Alternatives	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	$0.00
Task 4 - Screening and Analysis of IRM Alternatives	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	$0.00
Task 5 - Design of Sludge Bed IRM	0.00	0.00	0.00	0.00	40.00	120.00	100.00	40.00	0.00	300.00	$9,175.00
TOTAL LABOR HOURS	**0**	**0**	**0**	**0**	**72**	**290**	**260**	**190**	**160**	**972**	
TOTAL LABOR DOLLARS	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$2,566.80**	**$9,686.00**	**$7,287.80**	**$4,455.50**	**$2,537.60**		**$26,533.70**

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

Dunn Engineering Company
DUNN ENGINEERING COMPANY
SCHEDULE 2.11(c)
DIRECT NON-SALARY COSTS

ITEM	MAXIMUM REIMBURSEMENT RATE	UNIT	ESTIMATED NUMBER OF UNITS	TOTAL ESTIMATED COST
A. In-House Costs				
Level D. Equipment	$11.00	Day	65	$715.00
Level C Equipment	$40.00	Day		
Level B Equipment	$100.00	Day		
			Subtotal:	**$715.00**
B. Miscellaneous				
Travel Costs				
a. Air Fare				
b1. Auto Rental				
b2. Truck/Van Rental				
c. Personal Mileage	$0.29	Miles	5,500	$1,595.00
d. Per Diem				
County	$77.00	Day	46	$3,542.00
f. Miscellaneous Expenses (Tolls)		Acutal Cost		
			Subtotal:	**$5,137.00**
			Total:	**$5,852.00**

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DUNN ENGINEERING COMPANY
SCHEDULE 2.11(d)1
Equipment Purchased Under the Contract

ITEM		ESTIMATED QUANTITY	UNIT COST	TOTAL BUDGET COST
1	Boat Purchase	1	$679.30	$679.30
2	Vibracore Adaptors	1	$1,036.80	$1,036.80
3	Boat Battery	1	$70.19	$70.19
			Total:	**$1,786.29**

Work Assignment No: D002520-24.0
Site ID No: 5-10-008
Site Name: Philmar RD/RA
DUNN Project No: 35656

DUNN ENGINEERING COMPANY
SCHEDULE 2.11(d)2
MAXIMUM REIMBURSEMENT RATES FOR
CONSULTANT/SUBCONSULTANT-OWNED EQUIPMENT

ITEM		PURCHASE PRICE (x 85%)	USAGE RATE ($/Unit of Time)	ESTIMATED USAGE (Unit of Time)	ESTIMATED USAGE COST
1	EDM		$18.00 Day	20.00	$360.00
2	Portable Generator		$10.00 Day	5.00	$50.00
			Total:		$410.00

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DUNN ENGINEERING COMPANY
SCHEDULE 2.11(d)3
Vendor Rented Equipment

ITEM		ESTIMATED QUANTITY	UNIT COST	TOTAL BUDGET COST
1	RAM (Air Sampling Equipment) Weekly Rental	2	$500.00	$1,000.00
2	Generator Rental	1	$300.00	$300.00
			Total:	**$1,300.00**

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DUNN ENGINEERING COMPANY
SCHEDULE 2.11(d)5
CONSUMABLE SUPPLIES

	ITEM	ESTIMATED QUANTITY	UNIT COST	TOTAL BUDGET COST
1	Geotechnical Testing	Lump Sum	$400.00	$400.00
2	Cellular Phone Use	Actual Usage Cost		$300.00
3	Gasoline for Generator	Actual Usage Cost		$200.00
4	Miscellaneous Field Supplies	Actual Usage Cost		$1,150.00
5	Core Liners	Actual Purchase Price		
	a. 2.5 " dia. liners	210 feet	$5.00/per foot	$1,050.00
	b. 2.5" liner caps	100 caps	$0.45/each	$45.00
	c. 3.5" dia. liners	220 feet	$4.00	$880.00
	d. 3.5" dia. liner caps	100 caps	$0.25/each	$25.00
6	PCB Test Kits	37 Kits	$161.00/each	$5,957.00
7	Shipping (Federal Express)			$1,250.00
			Total:	**$11,257.00**

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DUNN ENGINEERING CO.

COST-PLUS-FRINGE BENEFIT SUBCONTRACTS

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
RPI Freshwater Institute	**Professional Services**	**$2,574.95**

A. Direct Salary Costs 1995

Professional Responsibility Level	Employee Name	1995 Average Reimbursement Rate ($/Hr)		1995 Estimated No. of Hours	Total Estimated Direct Salary Cost
	Richard Bopp	$48.00		24.00	$1,152.00
Total Direct Salary Costs				**24.00**	**$1,152.00**

B. Fringe Benefits (33%)

The fixed fee is **$380.16**

C. Overhead Cost

Overhead costs shall be paid based on a percentage of direct salary costs incurred which shall not exceed a maximum of 55% or the actual rate calculated in accordance with 48 CFR Federal Acquisition Regulation, whichever is lower.

Budget for indirect costs is **$842.69**

D. Maximum Reimbursement Rates for Direct Non-Salary Costs

Item	Maximum Reimbursement Rate (Specify Unit)	Estimated No. of Units	Total Estimated Costs
1. Travel			
Mileage	$0.29 per mile	690	$200.10
Total Direct Non-Salary Costs			**$200.10**

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DUNN ENGINEERING CO.
SCHEDULE 2.11(e)
COST-PLUS-FIXED-FEE SUBCONTRACTS

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
TAMS	Professional Services	$71,284.19

A. Direct Salary Costs 1995

Professional Responsibility Level	Labor Classification	1995 Average Reimbursement Rate ($/Hr)	1995 Maximum Reimbursement Rate ($/Hr)	1995 Estimated No. of Hours	Total Estimated Direct Salary Cost
NSPE VII		$44.65	$48.67	0.00	$0.00
NSPE VI		$38.33	$40.63	0.00	$0.00
NSPE V		$35.65	$39.22	72.00	$2,566.80
NSPE IV		$33.40	$36.74	290.00	$9,686.00
NSPE III		$28.03	$31.11	260.00	$7,287.80
NSPE II		$23.45	$26.26	190.00	$4,455.50
NSPE I		$15.86	$17.99	160.00	$2,537.60
Total Direct Salary Costs				**972.00**	**$26,533.70**

B. Indirect Costs

Indirect costs shall be paid based on a percentage of direct salary costs incurred which shall not exceed a maximum of 124.5% or the actual rate calculated in accordance with 48 CFR Federal Acquisition Regulation, whichever is lower.

Budget for indirect costs is **$33,034.46**

C. Maximum Reimbursement Rates for Direct Non-Salary Costs

Item		Maximum Reimbursement Rate (Specify Unit)	Estimated No. of Units	Total Estimated Costs
1. Travel				
	Mileage	$0.29 per mile	3,500	$1,015.00
	Per Diem - Clinton County	$77.00 per diem	33	$2,541.00
	Miscellaneous - Tolls, etc.	$1.00	120	$120.00
2. Other Non-Salary Costs				
	Level D Equipment	$18.00 per day	33	$594.00
	Reproduction Subcontractor			
Total Direct Non-Salary Costs				**$4,270.00**

D. Fixed Fee (12.5%)

The fixed fee is **$7,446.03**

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DUNN ENGINEERING COMPANY
SCHEDULE 2.11(f)
UNIT PRICE SUBCONTRACTS

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
Precision Graphics, Inc.	Report Reproduction/Printing	$250.00

Item	Maximum Reimbursement Rate (Specify Unit)	Estimated No. of Units	Total Estimated Costs
1. Photocopy	$0.05 per page	5,000	$250.00

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DUNN ENGINEERING COMPANY
SCHEDULE 2.11(f)
UNIT PRICE SUBCONTRACTS

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
Xerox	Reproduction	$6,500.00

Item	Maximum Reimbursement Rate (Specify Unit)	Estimated No. of Units	Total Estimated Costs
1. Photocopy	$0.05 per page	130,000	$6,500.00

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DUNN ENGINEERING COMPANY
SCHEDULE 2.11(f)
UNIT PRICE SUBCONTRACTS

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
Eastern Topographic Inc.	Base Map Preparation	$1,965.00

Item	Maximum Reimbursement Rate (Specify Unit)	Estimated No. of Units	Total Estimated Costs
1. Mapping	Lump Sum		$1,965.00

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DUNN ENGINEERING COMPANY
SCHEDULE 2.11(f)
UNIT PRICE SUBCONTRACTS

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
Aquatech Laboratory	Sample Analysis	$7,605.00

Item	Maximum Reimbursement Rate (Specify Unit)	Estimated No. of Units	Total Estimated Costs
1. PCB Analysis	$195.00 per sample	39	$7,605.00

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DUNN ENGINEERING COMPANY
SCHEDULE 2.11(f)
UNIT PRICE SUBCONTRACTS

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
Kiber Environmental	Treatability Studies	$16,725.00

Item	Maximum Reimbursement Rate (Specify Unit)	Estimated No. of Units	Total Estimated Costs
Untreated Sludge Characterization			
Material pH	$15.00	1	$15.00
Moisture Content	$5.00	1	$5.00
Bulk Density and Specific Gravity	$25.00	1	$25.00
Solid Specific Gravity	$15.00	1	$15.00
Paint Filter	$15.00	1	$15.00
Liquid Release Test	$50.00	1	$50.00
Consolidation	$375.00	1	$375.00
Total for Untreated Sludge Characterization			**$500.00**
Sludge Dewatering Treatment Evaluations			
Gravity Drainage	$175.00	1	$175.00
Buchner Funnel	$150.00	1	$150.00
Filter Press	$125.00	6	$750.00
Moisture Content (Dewatered Sediment)	$5.00	8	$40.00
Liquid Release Test	$50.00	8	$400.00
Consolidation	$375.00	2	$750.00
Total for Sludge Dewatering Treatment Evaluations			**$2,265.00**
Bulk Dewatering of Sludge			
Dewatering	$500.00	1	$500.00
Overnight Delivery of Filtrate and Sludge	$100.00	1	$100.00
Total for Bulk Dewatering of Sludge			**$600.00**

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DUNN ENGINEERING COMPANY
SCHEDULE 2.11(f)
UNIT PRICE SUBCONTRACTS

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
Kiber Environmental	Treatability Studies	See Page 1 for Total

Item	Maximum Reimbursement Rate (Specify Unit)		Estimated No. of Units	Total Estimated Costs
Immobilization Treatment Evaluations				
Moisture Content	$5.00		1	$5.00
Bulk Density and Specific Gravity	$25.00		1	$25.00
Solid Specific Gravity	$15.00		1	$15.00
Mixture Preparation	$125.00		4	$500.00
Unconfined Compressive Strength	$95.00		5	$475.00
Total of Immobilization Treatment Evaluations				**$1,020.00**
Report Preparation/Consulting Unit Cost		Lump Sum		**$750.00**
Return of Residuals		Lump Sum		**$350.00**
Pilot-Scale Dewatering Evaluation				
(Approximately 20 gallons of sludge required per test)				
Pilot Test	$1,500.00	per test	1	**$1,500.00**
Literature Search for Potential Contintioners to Assist Dewatering of Sediments				
Environmental Engineer	$65.00	per hour	5	**$325.00**
Leachability Testing on Treated or Untreated Sludge				
TCLP Extraction	$100.00		4	$400.00
Total PCBs on TCLP Extracts	$165.00		4	$660.00
Total for TCLP Leachability Testing on Treated or Untreated Sludge				**$1,060.00**

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DUNN ENGINEERING COMPANY
SCHEDULE 2.11(f)
UNIT PRICE SUBCONTRACTS

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
Kiber Environmental	Treatability Studies	See Page 1 for Total

Item	Maximum Reimbursement Rate (Specify Unit)	Estimated No. of Units	Total Estimated Costs
Analysis of Filtrate Before and After Water Treatment Evaluations			
Biochemical Oxygen Demand (BOD)	$40.00	11	$440.00
Chemical Oxygen Demand (COD)	$40.00	11	$440.00
Total Suspended Solids/Total Dissolved Solids	$15.00	11	$165.00
Total PCBs	$165.00	6	$990.00
Total Phosphate	$35.00	11	$385.00
Total Ammonium Nitrogen	$30.00	11	$330.00
Total Nitrate	$30.00	11	$330.00
Total for Analysis of Filtrate Before and After Water Treatment Evaluations			**$3,080.00**
Potential Water Treatment Evaluations on Filtrate			
Bulk Material Dewatering for Water Treatment	$500.00	1	$500.00
Filtration Testing	$50.00	3	$150.00
Jar-Testing	$125.00	5	$625.00
Activated Sludge Batch Reactors	$150.00	5	$750.00
Carbon Isotherm Development	$125.00	5	$625.00
Total for Potential Water Treatment Evaluations on Filtrate			**$2,650.00**

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DUNN ENGINEERING COMPANY
SCHEDULE 2.11(f)
UNIT PRICE SUBCONTRACTS

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
Kiber Environmental	Treatability Studies	See Page 1 for Total

Item	Maximum Reimbursement Rate (Specify Unit)	Estimated No. of Units	Total Estimated Costs
Column Settling Analysis			
Sludge Preparation	$500.00	1	$500.00
Column Setup	$500.00	1	$500.00
Column Monitoring	$50.00	5	$250.00
Total Suspended Solids	$10.00	30	$300.00
Total for Column Settling Analysis			**$1,550.00**
Additional Reporting Costs			**$1,000.00**
Return of Residuals (Additional of approximately 35 gallons)			**$75.00**

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DUNN ENGINEERING COMPANY
SCHEDULE 2.11(f)
UNIT PRICE SUBCONTRACTS

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
RPI Freshwater Institute	Cesium and Lead Analysis	$6,500.00

Item	Maximum Reimbursement Rate (Specify Unit)	Estimated No. of Units	Total Estimated Costs
1. Cesium and Lead Analysis	$65.00 per sample	100	$6,500.00

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DUNN ENGINEERING COMPANY
SCHEDULE 2.11(f)
UNIT PRICE SUBCONTRACTS

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
Green Mountain Drilling	Geotechnical Drilling	$5,137.50

Item	Maximum Reimbursement Rate (Specify Unit)		Estimated No. of Units	Total Estimated Costs
1. Mobilization/Demobilization	$815.00	Lump Sum	1	$815.00
2. Deep soil borings - split spoon 20-30 feet below natural sediment boring depths greater than 15'	$27.15	per foot	150	$4,072.50
3. Shelby tubes	$50.00	each	5	$250.00

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DUNN ENGINEERING COMPANY
SCHEDULE 2.11(f)
UNIT PRICE SUBCONTRACTS

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
Pace Analytical	Laboratory Analysis	$6,525.00

Item	Maximum Reimbursement Rate (Specify Unit)	Estimated No. of Units	Total Estimated Costs
1. Dioxin Analysis	$925.00 per sample	7	$6,475.00
2. Shipping			$50.00

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

DUNN ENGINEERING COMPANY
SCHEDULE 2.11(f)
UNIT PRICE SUBCONTRACTS

NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
Galson Laboratory	Laboratory Analysis	$543.32

Item	Maximum Reimbursement Rate (Specify Unit)	Estimated No. of Units	Total Estimated Costs
1. Air Analysis	$65.00 per sample	4	$260.00
2. Rapid Turnaround surcharge			$260.00
3. New York State Certification fee (5%)			$13.00
4. Sampling media			$10.32

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304
Task No./Name: Total Assignment

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

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							$78,278.88	
2 Indirect Costs (156.4%)							$122,428.18	
3 Subtotal Direct Salary Costs and Indirect Costs							$200,707.06	
4 Travel							$5,337.00	
5 Other Non-Salary Costs							$15,268.29	
6 Subtotal Direct Non-Salary Costs							$20,605.29	
7 Subcontractors							$125,609.96	
8 Total Work Assignment Cost							$346,922.31	
9 Fixed Fee							$18,465.06	
10 Total Work Assignment Price							**$365,387.37**	

Project Manager (Engineer) _____ Date _____

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304
Task No./Name: Task 1 - Development of Work Plan

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

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							$8,806.96	
2 Indirect Costs (156.4%)							$13,774.09	
3 Subtotal Direct Salary Costs and Indirect Costs							$22,581.05	
4 Travel							$145.00	
5 Other Non-Salary Costs							$0.00	
6 Subtotal Direct Non-Salary Costs							$145.00	
7 Subcontractors							$0.00	
8 Total Work Assignment Cost							$22,726.05	
9 Fixed Fee							$2,077.46	
10 Total Work Assignment Price							$24,803.51	

Project Manager (Engineer) _____ Date _____

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304
Task No./Name: Task 2 - Site Characterization

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

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							$21,889.02	
2 Indirect Costs (156.4%)							$34,234.43	
3 Subtotal Direct Salary Costs and Indirect Costs							$56,123.45	
4 Travel							$5,192.00	
5 Other Non-Salary Costs							$15,268.29	
6 Subtotal Direct Non-Salary Costs							$20,460.29	
7 Subcontractors							$78,720.34	
8 Total Work Assignment Cost							$155,304.08	
9 Fixed Fee							$5,163.36	
10 Total Work Assignment Price							$160,467.44	

Project Manager (Engineer) _____ Date _____

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304
Task No./Name: Task 3 - Development of IRM Alternatives

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

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							$10,127.22	
2 Indirect Costs (156.4%)							$15,838.97	
3 Subtotal Direct Salary Costs and Indirect Costs							$25,966.19	
4 Travel							$0.00	
5 Other Non-Salary Costs							$0.00	
6 Subtotal Direct Non-Salary Costs							$0.00	
7 Subcontractors							$16,725.00	
8 Total Work Assignment Cost							$42,691.19	
9 Fixed Fee							$2,388.89	
10 Total Work Assignment Price							$45,080.08	

Project Manager (Engineer) _____ Date _____

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304
Task No./Name: Task 4 - Screening and Analysis of IRM Alternatives

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

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							$11,730.26	
2 Indirect Costs (156.4%)							$18,346.13	
3 Subtotal Direct Salary Costs and Indirect Costs							$30,076.39	
4 Travel							$0.00	
5 Other Non-Salary Costs							$0.00	
6 Subtotal Direct Non-Salary Costs							$0.00	
7 Subcontractors							$250.00	
8 Total Work Assignment Cost							$30,326.39	
9 Fixed Fee							$2,767.03	
10 Total Work Assignment Price							**$33,093.42**	

Project Manager (Engineer) _____ Date _____

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304
Task No./Name: Task 5 - Design of Sludge Bed IRM

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

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							$25,725.42	
2 Indirect Costs (156.4%)							$40,234.56	
3 Subtotal Direct Salary Costs and Indirect Costs							$65,959.98	
4 Travel							$0.00	
5 Other Non-Salary Costs							$0.00	
6 Subtotal Direct Non-Salary Costs							$0.00	
7 Subcontractors							$29,914.62	
8 Total Work Assignment Cost							$95,874.60	
9 Fixed Fee							$6,068.32	
10 Total Work Assignment Price							$101,942.92	

Project Manager (Engineer) _____ Date _____

Work Assignment No: D002520-32.0
Engineer: Dunn Engineering Company
Site ID No: 5-10-017
Site Name: Cumberland Bay Sludge Bed
DUNN Project No: 39304

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 CLASS	IX		VIII		VII		VI		V		IV		III		II		I		TOTAL NO. OF DIRECT LABOR HOURS	
TASK NO.	Exp	Est.	Exp	Est.	Exp	Est.	Exp	Est.	Exp	Est.	Exp	Est.	Exp	Est.	Exp	Est.	Exp	Est.	Exp	Est.
1		8.0		0.0		74.0		0.0		60.0		0.0		32.0		142.0		60.0		376.0
2		16.0		0.0		104.0		40.0		72.0		0.0		216.0		428.0		170.0		1046.0
3		0.0		12.0		48.0		0.0		70.0		0.0		240.0		0.0		60.0		430.0
4		0.0		20.0		60.0		0.0		50.0		0.0		230.0		100.0		48.0		508.0
5		0.0		24.0		250.0		0.0		140.0		0.0		320.0		200.0		60.0		994.0
6		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
7		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0
TOTAL		24.0		56.0		536.0		40.0		392.0		0.0		1038.0		870.0		398.0		3354.0