CONTRACTOR DRAWINGS & INFORMATION SUBMITTAL
EFANENAVFACENGCOM 4335/3 (Rev. 6/80)

Prepare in quintuplicate (original and 4 copies)
CONTROL NO. 13

CONTRACT NO.	CONTRACT TASK ORDER NO.	ACTIVITY LOCATION
N62472-99-D-0032	0096	Naval Weapons Industrial Reserve Plant – Bethpage, NY

PROJECT TITLE:
Development of Implementation Plan for Construction of a Pump & Treat System Located at the GM-38 Off-Site Area

FROM:	DATE
Tetra Tech EC, Inc.: Program QC Manager George Sze	May 8, 2006
TO:	DATE
J. Colter (3 CD-Copies)	May 8, 2006

1. THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
(a) APPLY APPROPRIATE STAMP IMPRINT TO EACH SUBMITTAL AND INDICATE REVIEW COMMENTS, AS REQUIRED.
(b) RETAIN ONE (1) COPY OF THIS TRANSMITTAL FORM AND RETURN REMAINING COPIES WITH REVIEWED SUBMITTALS TO ROICC.
2. THESE SUBMITTALS SHOULD BE RETURNED TO THIS OFFICE BY _____

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	NG:	J. Cofman, L. Leskovjan
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	BWD:	A. Musgrave
	MWD:	F. Flood
	NYWS:	M. Snyder
	SFWD:	E. Licci
	RAB:	C. Bevilacqua, M. Grello, E. Mangano, J. McBride, E. Resch, R. Styne, R. Tringali

☐ ROICC ☐ RPM ☐ CSO

SIGNATURE AND DATE — MAY 8, 2006

FROM: DESIGNER	DATE
TO: ROICC	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.

COPY TO:
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SIGNATURE AND DATE

FROM: ROICC	DATE
TO: CONTRACTOR	DATE

1. THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE APPROVED/DISAPPROVED AS SHOWN BELOW AND ON EACH STAMP IMPRINT.

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FOR COMMANDING OFFICER, ENGINEERING FIELD ACTIVITY NORTHEAST - NAVAL FACILITIES ENGINEERING COMMAND — DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-08, Statements; Waste Management Plan for Construction Tasks GM-38 Area Groundwater Remediation	Helene Ropars			
2	SD-08, Statements; Construction Quality Control Plan for Construction Tasks GM-38 Area Groundwater Remediation	Helene Ropars			
3	SD-08, Statements; Site-Specific Health and Safety Plan for Construction Tasks GM-38 Area Groundwater Remediation	Helene Ropars			
4	SD-08, Statements; Soil Erosion and Sediment Control Plan for Construction Tasks GM-38 Area Groundwater Remediation	Helene Ropars			
5	SD-08, Statements; Traffic Control Plan for Construction Tasks GM-38 Area Groundwater Remediation	Helene Ropars			

FINAL SOIL EROSION AND SEDIMENT CONTROL PLAN
FOR
CONSTRUCTION TASKS
GM-38 AREA GROUNDWATER REMEDIATION
AT
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
BETHPAGE, NEW YORK

Issued:

May 8, 2006

Prepared for:

Engineering Field Activity, Northeast
Naval Facilities Engineering Command
10 Industrial Highway, Mail Stop #82
Lester, Pennsylvania 19113-2090

Remedial Action Contract No. N62472-99-D-0032
Contract Task Order No. 96

Prepared by:

Tetra Tech EC, Inc.
Bucks Town Corporate Campus
820 Town Center Drive, Suite 100
Langhorne, PA 19047-1748

Revision	Date	Prepared By	Approved By	Pages Affected
0	5/8/06	Joseph Gray	Stavros Patselas	All

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ABBREVIATIONS AND ACRONYMS

µg/L	micrograms per liter
bgs	below ground surface
NGC	Northrop Grumman Corporation
NWIRP	Naval Weapons Industrial Reserve Plant
PQCM	Project Quality Control Manager
TtEC	Tetra Tech EC, Inc.
VOC	Volatile Organic Compounds

1.0 OBJECTIVE

Tetra Tech EC Inc. (TtEC) has prepared this Soil Erosion and Sediment Control Plan to satisfy the requirements of Remedial Action Contract Number N62472-99-D-0032, Contract Task Order Number 96. This Soil Erosion and Sediment Control Plan identifies the applicable soil erosion and sediment control concerns relevant to the construction activities at the GM-38 Area at the Bethpage Naval Weapons Industrial Reserve Plant (NWIRP) located in Bethpage, NY. Refer to Appendix A Drawing C-7 for Soil Erosion and Sediment Control Details and Notes. The Project Manager, Mr.Starvos Patselas, will be responsible for verifying that all project personnel are aware of the requirements outlined in this Soil Erosion and Sediment Control Plan.

1.1 Regulatory Drivers

The United States Environmental Protection Agency delegated responsibility for the National Pollutant Discharge Elimination System Permit to New York on October 1, 1992. New York Sate issued its State Pollutant Discharge Elimination System, General Permit GP-93-06 on August 1, 1993. This was issued pursuant to Article 17, Titles 7, 8 and Article 70 of the Environmental Conservation Law. The permit requires a stormwater pollution prevention plan be prepared for any construction activity that disturbs five or more acres. This Soil Erosion and Sediment Control Plan must address soil erosion and sediment control and stormwater management. The New York Guidelines for Urban Erosion and Sediment Control have been adopted by the New York State Department of Environmental Conservation as criteria for the soil erosion and sediment control component of this plan.

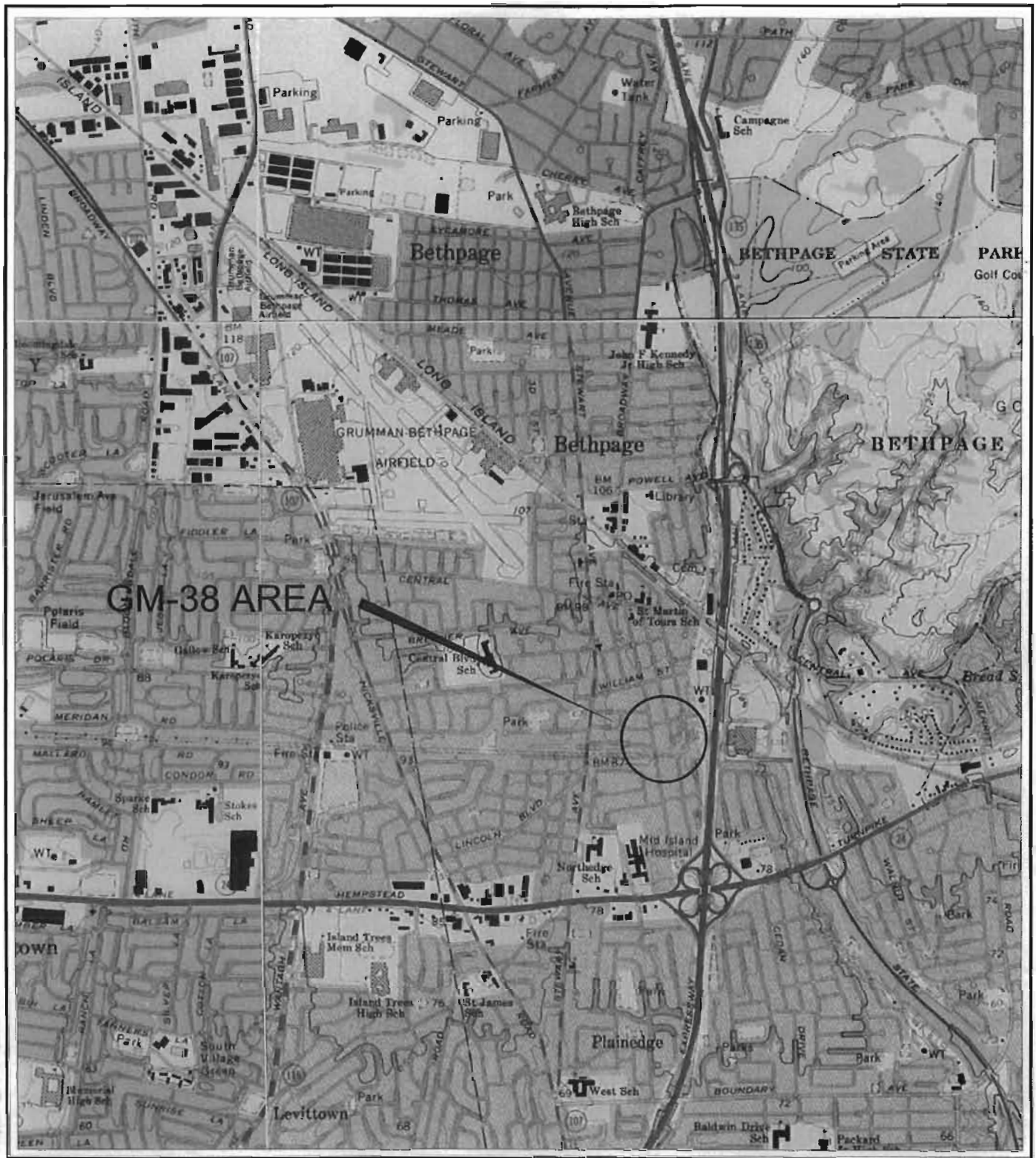
The construction activities at GM-38 will be conducted pursuant to the requirements, policies, and procedures set forth in the New York Guidelines for Urban Erosion and Sediment Control.

2.0 PROJECT DESCRIPTION

NWIRP Bethpage is located in east central Nassau County, Long Island, New York, approximately 30 miles east of New York City (Figure 1 Site Location Map). The Navy's property totaled approximately 109.5 acres and was formerly a Government Owned Contractor-Operated facility that was operated by the Northrop Grumman Corporation (NGC) until September 1998. NWIRP Bethpage is bordered on the north, west, and south by property owned, or formerly owned, by NGC that covered approximately 605 acres, and, on the east, by a residential neighborhood.

The GM-38 Area is approximately 8,500 feet south-southeast and hydraulically downgradient of NWIRP Bethpage. Specifically, the center of the project area is a utility easement that is located east of Broadway Avenue, west of the Seaford – Oyster Bay Expressway, and between the north and south dead ends of Windhorst and Herman Streets.

The GM-38 Area refers to a cluster of monitoring wells that were installed in the 1990s by NGC and that first identified an isolated groundwater contaminant plume in this area. Chlorinated volatile organic compounds (VOCs) were identified in moderately deep groundwater (220 to 470 feet below ground surface [bgs]) at concentrations greater than 500 micrograms per liter (µg/L).



Source: U.S.G.S. Topographic Maps (7.5 Minute)
Amityville, Freeport, Hicksville, Huntington, NY Quadrangles

U.S. Navy RAC
Engineering Field Activity, Northeast

GM-38 Area (Offsite)
NWIRP Bethpage
Bethpage, NY

Figure 1
Site Location Map

TETRA TECH EC, INC.

P:\Bethpage\CAD - GIS\Site Location Map.dwg, 04/28/2004 03:22:20 PM

The contaminated groundwater in the area represents a relatively large mass of chlorinated VOCs that would remain for extended periods and could adversely affect public water supplies in the area, as well as other downgradient water supplies. Two public water supply systems are present in the general area and extract groundwater at depths ranging from 540 to 740 feet bgs.

The Navy's selected remedy in the vicinity of the GM-38 Area is construction of a groundwater extraction and treatment system near the GM-38 monitoring well cluster to facilitate the mass removal of contaminants in the groundwater.

3.0 SOILS

The sites are underlain by five geologic/hydrogeologic formations (descending from ground surface):

- Pleistocene deposits (Upper Glacial Aquifer) consisting of various sands and gravels intermixed with discontinuous low permeability clay lenses, approximately 100 feet thick.
- Magothy Formation (Magothy Aquifer) consisting of various sands and gravels varying in thickness interlaced with low permeability confining layers.
- Raritan Clay Formation.
- Lloyd Sand Formation (Lloyd Aquifer).
- Bedrock.

The Upper Glacial Formation (commonly referred to as glacial deposits) forms the surface deposits across the entire NWIRP Bethpage facility. The glacial deposits beneath the site consist of coarse sands and gravels. These deposits are generally about 30 to 45 feet thick; local variations in thickness are common due to the irregular and undulating interface of the glacial deposits with the underlying Magothy Formation. The interface between the two formations was defined in the field as the horizon where gravel becomes very rare to absent, and finer sands, silts, and clays predominate. The generally coarse nature of both formations near their interface, however, may make this differentiation either difficult or rather subjective.

The Upper Glacial Formation and the Magothy Formation comprise the aquifer of concern at NWIRP Bethpage. Regionally, these formations are generally considered to form a common, interconnected aquifer as the coarse nature of each unit near their interface and the lack of any regionally confining clay unit allow for the unrestricted flow of groundwater between these two formations.

Although the water table beneath NWIRP Bethpage occurs below the glacial deposits, these deposits are hydrogeologically important because their high permeability allows for the rapid recharge of precipitation to the underlying Magothy Formation. In addition, the large quantity of groundwater withdrawn daily from the Magothy passes back through part of the glacial deposits via the recharge basins to the Magothy Formation.

The Magothy aquifer is the major source of public water in Nassau County. The most productive water-bearing zones are the discontinuous lenses of sand and gravel that occur within the generally siltier matrix. The major water-bearing zone is the base gravel.

4.0 SEQUENCE OF OPERATIONS

The following is a list of the proposed construction activities and the sequence in which they will be conducted:

- Site Preparation
    - Clearing and grubbing of vegetation and site grading as required.
    - Installation and maintenance of access road(s) and construction entrance as required.
    - Installation of impermeable spill containment around any storage tanks, and any other systems.
    - Construction of all necessary temporary structures or services.
    - Installation and maintenance of site drainage improvements and soil erosion and sediment control measures during implementation of the work.
    - Construction and maintenance of decontamination pad as necessary.
- Access Road Construction
    - Construction of permanent and temporary access roads to the treatment building and drainage facilities/structures as indicated on the Drawings.
- Treatment Building Construction
    - Construction of a pre-fabricated metal building, including all foundations, slabs, equipment pads, doors, vents, internal rooms, and furnishings. This work will include all utility connection work including but not limited; to electrical supply, potable water supply, sanitary sewer connections, and telephone connections; and all building systems including heating/ventilation/air systems, security systems, and fire protection systems.
- Groundwater/Vapor Extraction System Installation
    - Installation of all groundwater extraction materials and equipment from the 2 recovery wells. The groundwater extraction system will include extraction wellhead manholes and covers; submersible well pumps; instrumentation including level and flow controls; well vault piping, fitting and valves; well vault

cable, all electrical conduit and wiring for power and instrumentation; extraction line piping from the well vaults to the treatment building; and vapor piping from the well vaults to the treatment building.

- Treated Water Discharge System Installation
    - Installation of the treated water discharge system which will include piping from the treatment system building to groundwater via a minimum of 4 re-injection wells located approximately 1,000 feet south of the treatment plant building. The treated water discharge system will include all piping, fittings, valves, and controls.
- Fencing and Landscaping
    - Installation of site fencing, and landscaping.
- Site Restoration
    - Repair of any areas damaged by construction activities, which will include re-grading of affected areas, provision and placement of topsoil, seeding, and provision and installation of landscaping materials. In addition, any private or municipal roads or parking areas disturbed by construction activities will be restored to original or better conditions.

5.0 SOIL EROSION AND SEDIMENT CONTROLS

The soil erosion and sediment control measures discussed in this Soil Erosion and Sediment Control Plan are also presented in Appendix A on Drawing C-7. Prior to any removal activities, soil erosion and sediment controls will be installed and maintained in each area. This will include filter geotextile and woven wire fencing (silt fencing) installed in and around all work areas. Soil erosion and sediment control measures employed will be subject to approval and inspection by governing agencies having jurisdiction over such work.

Some details for these soil erosion and sediment control measures follow are as follows:

- Filter geotextile cloth: Filter X, Mirafi 100X, Stablelink T140N or approved equal.
- Fence: Woven wire, 14.5 gauge, 6 inch maximum mesh opening.
- Posts: Steel, either "T" or "U" type or 2 inch hardwood.
- Prefabricated unit: Geofab, Envirofence or approved equal.

5.1 Site Fencing

TtEC will use standard silt fence fabric. A 4-inch trench will be excavated and the silt fence will be installed and the trench will be backfilled. Refer to Appendix A Detail 1 on Drawing C-7 for Silt Fence Detail.

5.2 Stabilized Construction Entrance

A stabilized construction entrance will be installed at the temporary Broadway Avenue entrance and at the permanent Sophia Street entrance to prevent tracking of soil from vehicles and equipment leaving the Site onto public streets. The stabilized construction entrance will be maintained in a condition that will prevent tracking or flowing of sediment onto the public roads. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto the site access road or public right-of-way will be removed by TtEC or subcontractors.

The stabilized construction entrance will be constructed of two-inch crushed stone. The stabilized construction entrance will be constructed so that it is not less than 12 inches thick and it will be as wide as the width at all points of ingress or egress, but not less than 16 feet.

When necessary, wheels will be cleaned to remove sediment prior to entrance onto public roads. When washing is required, it will be conducted on the temporary decontamination pad.

5.3 Dust Control

Dust control and suppression measures will also be employed during the entire construction process. These measures will include reducing speeds of vehicles traveling in and out of the site, and using water as dust suppression on access roads. Dust control will be accomplished by the sprinkling of water or a dilute solution (less then 0.05%) of water plus bio-degradable surfactant. Sprinkling, where used, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times. Dust control will be performed as the work proceeds and whenever a dust nuisance or hazard occurs.

Water for dust control purposes shall be from fire hydrants in proximity to the construction area. A fire hydrant use permit shall be obtained from the local water district. It is anticipated that fire hydrants located at the dead ends of North and South Windhorst Avenue and North and South Herman Avenue shall be identified for use in the fire hydrant use permit application.

5.4 Temporary Decontamination Pad

A temporary decontamination pad will be constructed outside of the construction zones. The decontamination pad will consist of a framed enclosure constructed from wood and polyethylene sheeting (30 mil). It will be constructed to contain all decontamination fluids and solids, and sloped to make the liquid portion flow to a low point to facilitate collection and disposal. All equipment coming into contact with any contaminated soil or groundwater will be decontaminated using a pressure washer prior to leaving the site. Decontamination water will be collected in 55-gallon 1A1 drums for disposal.

For vehicles and equipment not coming into contact with contaminated materials (i.e. the exclusion zones), care will be taken to minimize contact with soils in order to prevent tracking

soil onto roadways. During muddy conditions, vehicles and equipment will be required to wash visible soil from their wheels before entering the roadway

5.5 Site Restoration

Disturbed areas will be restored to its original conditions (both grade and cover type).

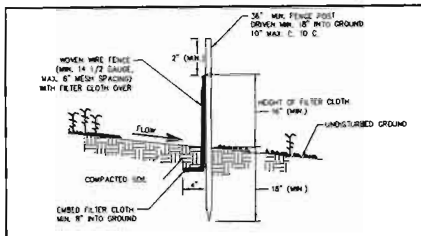
6.0 QUALITY CONTROL

Soil erosion and sediment control measures will be established at the beginning of construction and maintained during the entire period of construction. All land-disturbing activities will be planned and conducted to minimize the size of the area to be exposed at any one time and the length of the time of exposure and minimize off-site sedimentation damage. Surface water run-off originating upgrade of exposed areas will be controlled to reduce soil erosion and sediment loss during the period of exposure.

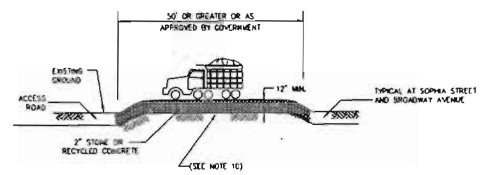
The Project Quality Control Manager (PQCM) will be on-site full-time during the removal activity. The PQCM will be responsible for ensuring that soil erosion and sediment controls are in-place and properly functioning. The PQCM will conduct inspections of soil erosion and sediment controls daily and before and after significant rain events. The condition of the soil erosion and sediment controls will be recorded in the site logbook and the daily Construction Quality Control Report.

Appendix A

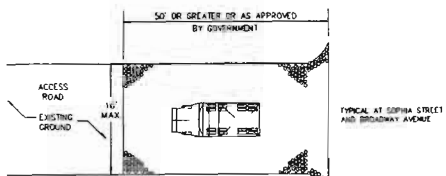
Drawing C-7 Soil Erosion and Sediment Control Details and Notes



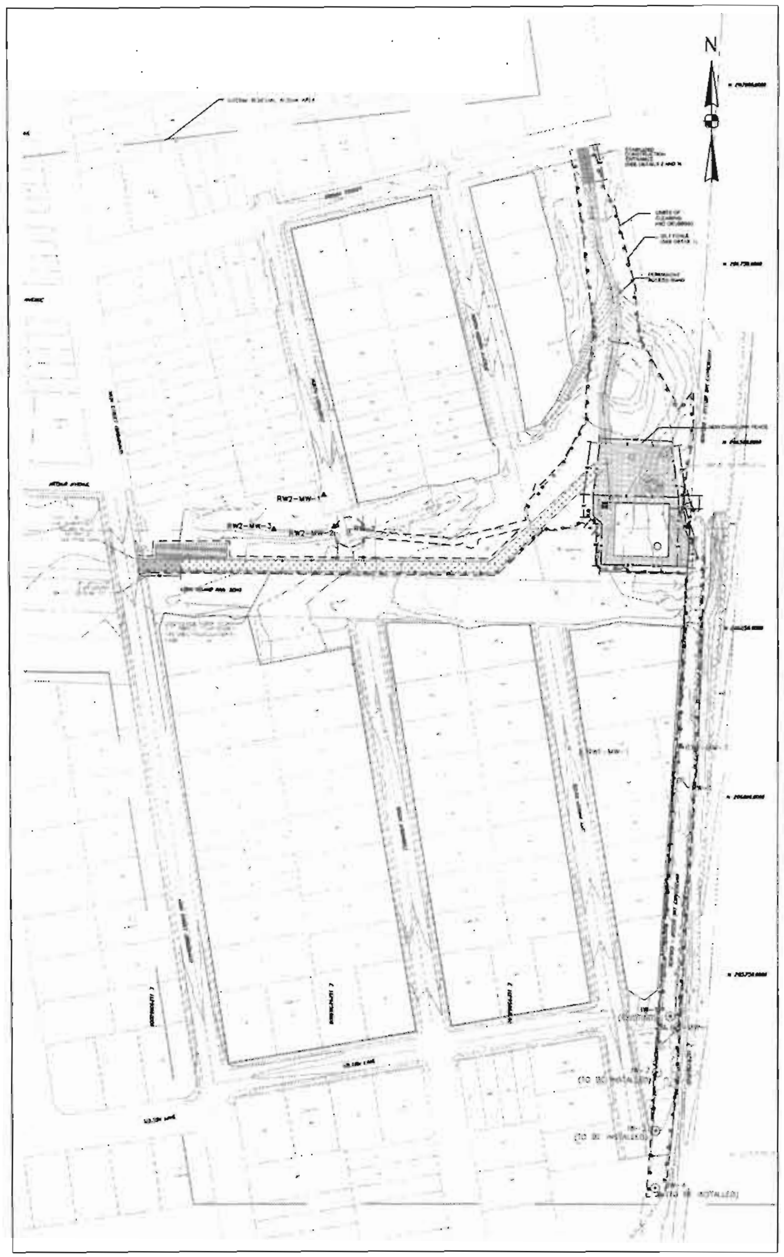
DETAIL 1 / C-7 SILT FENCE (TYP.)
(N.T.S.)



DETAIL 2 / C-7 STABILIZED CONSTRUCTION ENTRANCE
(N.T.S.)



DETAIL 3 / C-7 STABILIZED CONSTRUCTION ENTRANCE - PLAN VIEW
(N.T.S.)



SILT FENCE NOTES:

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24 INCHES AT TOP AND MID SECTION
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 6 INCHES AND FOLDED
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE
5. MATERIALS:
   POSTS: STEEL EITHER "T" OR "U" TYPE OR 2 INCH HARDWOOD
   FENCE: WOVEN WIRE, 14 1/2 GA., 6 INCH MAXIMUM MESH OPENING
   FILTER CLOTH: FILTER X, MIRAFI 100X, STABILENKA T140N, OR APPROVED EQUAL.
   PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL.

CONSTRUCTION ENTRANCE NOTES:

1. STONE SIZE - USE 2 INCH STONE OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET.
3. THICKNESS - NOT LESS THAN (12) INCHES
4. WIDTH - SIXTEEN (16) FEET MINIMUM BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.
10. FOR THE STABILIZED CONSTRUCTION ENTRANCE, PERMANENT ACCESS ROAD, AND PARKING AREAS, USE HEAVY DUTY ROAD FILTER CLOTH SUCH AS TREVIRA SPUNBOND 1135, MIRAFI 600X, OR EQUIVALENT, WITH THE FOLLOWING PROPERTIES.

FABRIC PROPERTIES	HEAVY DUTY HAUL ROADS ROUGH GRADED	TEST METHOD
GRAB TENSILE STRENGTH (LBS)	220	ASTM D1682
ELONGATION AT FAILURE (%)	60	ASTM D1682
MULLEN BURST STRENGTH (LBS)	430	ASTM D3786
PUNCTURE STRENGTH (LBS)	125	ASTM D751 MODIFIED
EQUIVALENT	40-80	US STD SIEVE
OPENING SIZE	---	CW-02215
AGGREGATE DEPTH (IN)	10	---

LEGEND:

- EXISTING GRADE-MAJOR CONTOUR
- EXISTING GRADE-MINOR CONTOUR
- PROPOSED GRADE
- TAX LOT LINE
- OVERHEAD ELECTRIC WIRES
- UNDERGROUND ELECTRIC WIRES
- WATER MAIN
- GAS MAIN
- DRAINAGE LINES (STORM SEWER)
- SANITARY SEWER MAIN
- WOODED AREA
- CHAIN-LINK OR BOARD FENCE
- DIRT TRAIL
- LIMITS OF CLEARING
- SILT FENCE
- NEW UNDERGROUND ELECTRIC WIRES
- NEW WATER LINE
- NEW SANITARY SEWER MAIN
- HDPE PIPE AND ELECTRICAL CONDUIT
- TAX LOT NUMBER
- WATER VALVE
- GAS VALVE
- RW1-MW-1 MONITORING WELL
- RW-1 RECOVERY WELL
- INJECTION WELL
- PB PULL BOX
- LEAK DETECTION ACCESS PORT
- EXISTING DECIDUOUS TREE
- EXISTING CONIFEROUS TREE
- WHITE PINE TREE LOCATION
- SIGN
- MANHOLE
- GRAVEL
- TEMPORARY ACCESS ROAD
- PUBLIC WATER SUPPLY WELL

GRAPHIC SCALE
(IN FEET)
1 inch = 80 ft.

REV	DESCRIPTION	PREP BY	DATE	APPRVD

TETRA TECH EC, INC.

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
ENGINEERING FIELD ACTIVITY - NORTHEAST
PENNSYLVANIA
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT — BETHPAGE, NEW YORK
GM-38 AREA
GROUNDWATER TREATMENT PLANT
SOIL EROSION AND SEDIMENT CONTROL DETAILS AND NOTES
APPROVED — DATE — FOR COMMANDER, NAVFAC

C.Y. Chiou, P.E.

SAT NO	DATE
CODE I.D. NO.	80091
SCALE : AS SHOWN	
SPEC NO	
CONSTR. CONTR. NO.	N62472-99-D-0032
NAVFAC DRAWING NO	
SHEET	OF
SIZE: D	DRS. SH. NO C-7