UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
EPA NEW ENGLAND
1 CONGRESS STREET, SUITE 1100 (HBO)
BOSTON, MA 02114

Superfund Records Center
SITE: Beede Waste Oil
BREAK: 6.4
OTHER: SDMS # 237449

POLLUTION REPORT

I. HEADING

Date:	September 16, 2005
Subject:	POLREP 1 - NTCRA
Site:	Beede Waste Oil Superfund Site, Plaistow, New Hampshire
From:	James Chow, RPM, US EPA, New England Region
To:	See Attached List
POLREP No.:	1
Response Authority:	CERCLA
NPL Status:	NPL
CERCLIS ID No.:	NHD018958140
Action Memorandum:	September 30, 1998
Completion Date:	NA

SDMS DocID 237449

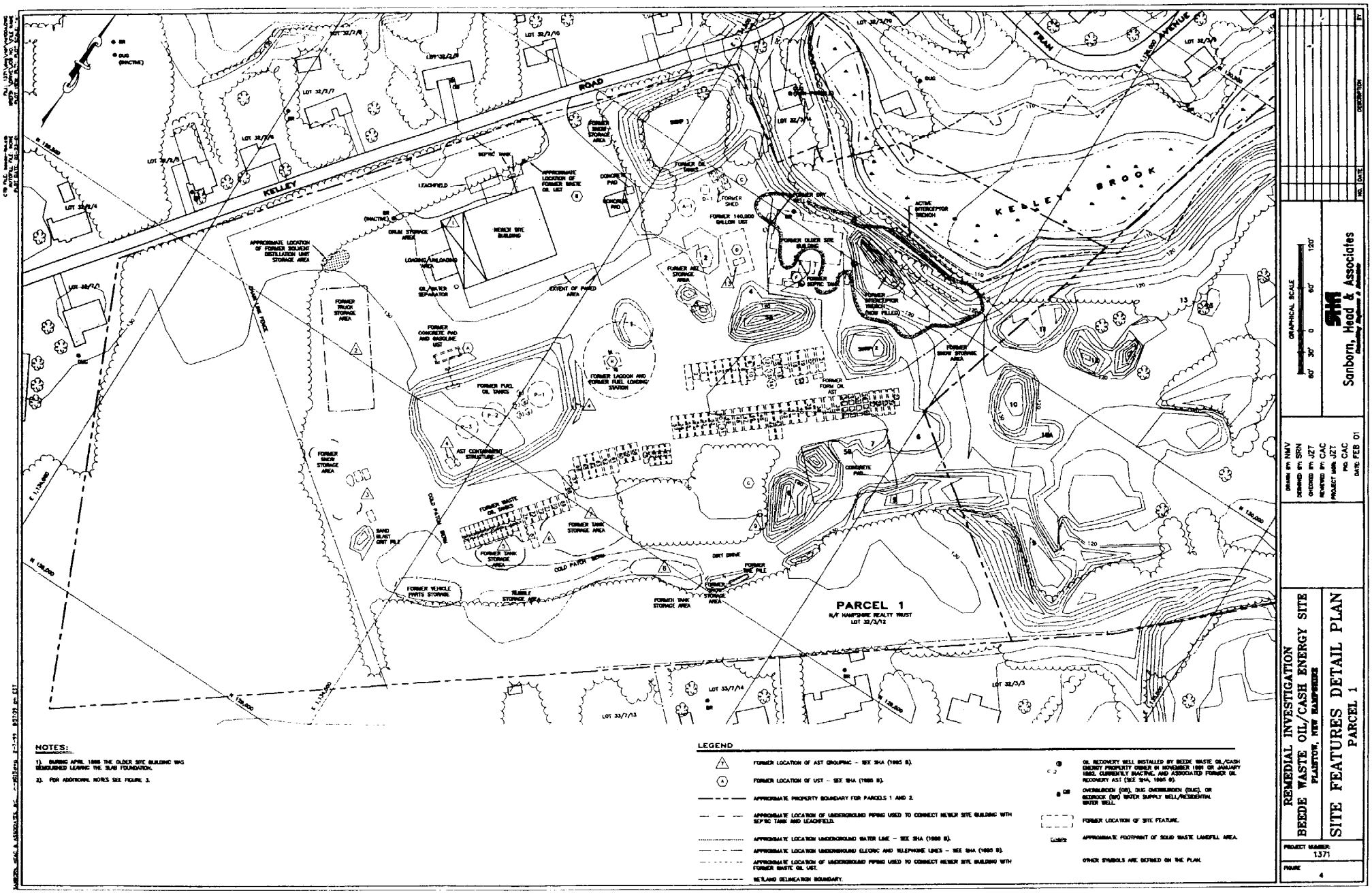
II. BACKGROUND

The Beede Waste Oil Superfund Site (the "Site") is located at 7 Kelley Road in Plaistow, New Hampshire. The Site occupies approximately 40.6 acres and is comprised of two parcels. Parcel 1 (21.6 acres) has been the location of petroleum and waste oil storage/handling/recycling since the 1920's. Parcel 2 (19 acres) has been used largely for commercial sand and gravel operations. Access to Parcel 1 is restricted by a chain link fence which surrounds the former operations area, except for a portion of the boundary with Parcel 2. Access to Parcel 2 is restricted by a chain link fence along the eastern boundary and Kelley Brook to the north and west. The Site has frontage on Kelley Road and Old County Road. All access to the Site is from Kelley Road since access to Old County Road is restricted by Kelley Brook. Figures 1 depicts the Site and important features.

The abutting properties in the vicinity of the Site are primarily residential. Most of the Site is unpaved, except for a parking area and a vacant 10,000 square-foot operations building.

Commercial operations including recycling of used oil, and storage and distribution of virgin fuel oil reportedly started in 1926. Modern operations at the Site began in the 1950's with the installation of a 140,000 gallon underground storage tank (UST) and several above ground storage tanks (ASTs). Additional USTs and ASTs were added throughout the 60's, 70's and 80's. A one-acre unlined lagoon was observed during the mid to late 1960's. Nearly 100 ASTs were observed on-Site following closure of the facility in 1994. The ASTS were of various kinds, some were ordinary vertical tanks, some were USTs or even railroad tanker cars (without trucks), all sitting directly on the ground (unlined) and used for waste oil storage. Most ASTs were

FIGURE 1


KELLEY ROAD
KEALEY BROOK
PARCEL 1
N/F HAMPSHIRE REALTY TRUST
LOT 32/3/12
NOTES:
1). DURING APRIL 1988 THE OLDER SITE BUILDING WAS DEMOLISHED LEAVING THE SLAB FOUNDATION.
2). FOR ADDITIONAL NOTES SEE FIGURE 3.
LEGEND
FORMER LOCATION OF AST GROUPING - SEE SHA (1985 B).
FORMER LOCATION OF UST - SEE SHA (1985 B).
APPROXIMATE PROPERTY BOUNDARY FOR PARCELS 1 AND 2.
APPROXIMATE LOCATION OF UNDERGROUND PIPING USED TO CONNECT REMOTE SITE BUILDING WITH SEPTIC TANK AND LEACHFIELD.
APPROXIMATE LOCATION UNDERGROUND WATER LINE - SEE SHA (1988 B).
APPROXIMATE LOCATION UNDERGROUND ELCTRIC AND TELEPHONE LINES - SEE SHA (1985 B).
APPROXIMATE LOCATION OF UNDERGROUND PIPING USED TO CONNECT REMOTE SITE BUILDING WITH FORMER WASTE OIL UST.
WETLAND DELINEATION BOUNDARY.
OIL RECOVERY WELL INSTALLED BY BEEDE WASTE OIL/CASH ENERGY PROPERTY OWNER IN NOVEMBER 1989 OR JANUARY 1992. CURRENTLY INACTIVE, AND ASSOCIATED FORMER OIL RECOVERY AST (SEE SHA, 1995 B).
OVERBURDEN (OB), DUG OVERBURDEN (DUG), OR BEDROCK (BR) WATER SUPPLY WELL/RESIDENTIAL WATER WELL.
FORMER LOCATION OF SITE FEATURE.
APPROXIMATE FOOTPRINT OF SOLID WASTE LANDFILL AREA.
OTHER SYMBOLS ARE DEFINED ON THE PLAN.
GRAPHICAL SCALE
60' 30' 0 60' 120'
Sanborn, Head & Associates
REMEDIAL INVESTIGATION
BEEDE WASTE OIL/CASH ENERGY SITE
PLAISTOW, NEW HAMPSHIRE
SITE FEATURES DETAIL PLAN
PARCEL 1
PROJECT NUMBER: 1371
FIGURE 4

connected by subsurface piping, reportedly for waste oil blending. A few ASTs were used for virgin fuel oil and gasoline storage. Over 800 drums were also observed in 1994. The tanks and drums had a combined storage capacity of about 3 million gallons. Seventeen large soil piles were also abandoned on-Site. Most of these soil piles reportedly originated from off-Site petroleum UST removals and were intended for use in an on-Site asphalt batching process which operated for a short time in the early 1990's.

Contamination on the Site originated from poor storage and handling of waste oil and other products as well as the unlined and uncovered storage of large contaminated soil piles. Elevated concentrations of polychlorinated biphenyls (PCBs) were first detected by the New Hampshire Department of Environmental Services (NHDES) in waste oil found in several ASTs following complaints of odors received in 1979. Numerous notices and a court order to cease operations and perform investigation and remedial activities were issued from 1980 to 1992.

III. ACTIONS TO DATE

History of Removal Actions

Between July 1996 and August 1997, EPA and NHDES coordinated a time-critical removal action to remove all abandoned liquid waste from the ASTs and drums at the Site. NHDES completed a subsequent action to physically remove the tanks and drums from the Site. In addition, several large soil piles containing varying levels of contaminants were covered with tarpaulins and a fence was erected to keep out trespassers. NHDES minimized oil from seeping into nearby Kelley Brook by using booms and sorbent pads. These joint removal efforts eliminated immediate threats and stabilized the Site conditions. The time-critical removal action was closed out in October 1997 and the administrative record for it is available through EPA's Superfund Records Center.

The Site was listed on the National Priorities List (NPL) in December 1996.

On August 30, 1996, EPA prepared an Approval Memorandum to conduct an Engineering Evaluation/Cost Analysis (EE/CA) to evaluate and compare alternatives to mitigate risks to human health and the environment posed by the presence of LNAPL at the Site. The EE/CA, dated June 1, 1998, compared two options and recommended that a vacuum-enhanced LNAPL recovery system be constructed to extract mobile LNAPL. As part of the EE/CA, EPA installed a passive LNAPL interceptor trench to evaluate its effectiveness in capturing floating oil product from the groundwater, and the EE/CA also recommended keeping and extending the trench to further prevent the migration of LNAPL to downgradient areas, specifically Kelley Brook.

An Action Memorandum, dated September 30, 1998, selected the above recommendations, authorized $3.48 million for the NTCRA, and approved an exemption of the 12 month/$2 million statutory limit for the NTCRA. The vacuum-enhanced LNAPL recovery system and the LNAPL interceptor trench extension were subsequently built and have operated since February 2000.

EPA and NHDES completed field investigations and finalized a Remedial Investigation (RI) report in February 2001. It concluded that an estimated 57.6 million gallon plume of contaminants is dispersed over an area of approximately 26 acres and extends off-site to the north-east, impacting 14 adjacent residential wells. In October 1996, NHDES installed point-of-use treatment on the well-heads of three of these residential wells. The treatment systems continue to be maintained by NHDES to ensure safe potable water until completion of the remedy.

A Feasibility Study (FS) report, which evaluated several cleanup options, was completed in January 2002. In June 2002, EPA released a proposed cleanup plan to address soil and groundwater contamination. The public comment period for the proposed plan closed on August 18, 2002. A Record of Decision (ROD), which documents the final cleanup plan selected for the entire Site, was finalized on January 9, 2004.

Status of On-going Non-Time Critical Removal Action

To date, the vacuum-enhanced LNAPL extraction system has recovered over 90,000 gallons of free product in the five years that it has operated. The system continues to operate 5 days of week, during normal business hours. Operation of the extraction system has resulted in the significant reduction in the thickness of the LNAPL. Although it is difficult to determine the total volume of LNAPL remaining, recovery has recently dropped-off significantly, as described further below.

Prior to start up of the extraction system, LNAPL was found at a maximum thickness of approximately 6 feet. Recently, the maximum thickness found for the LNAPL layer has been no more than 3 feet, with the majority of the LNAPL now found at a thickness of less than 0.25 feet. Also, the number of extraction wells with no detectable LNAPL layer has increased since 2000. The table on the following page provides a summary of the change in LNAPL thickness from May 2000 to May 2005.

Number of Wells within Thickness Range

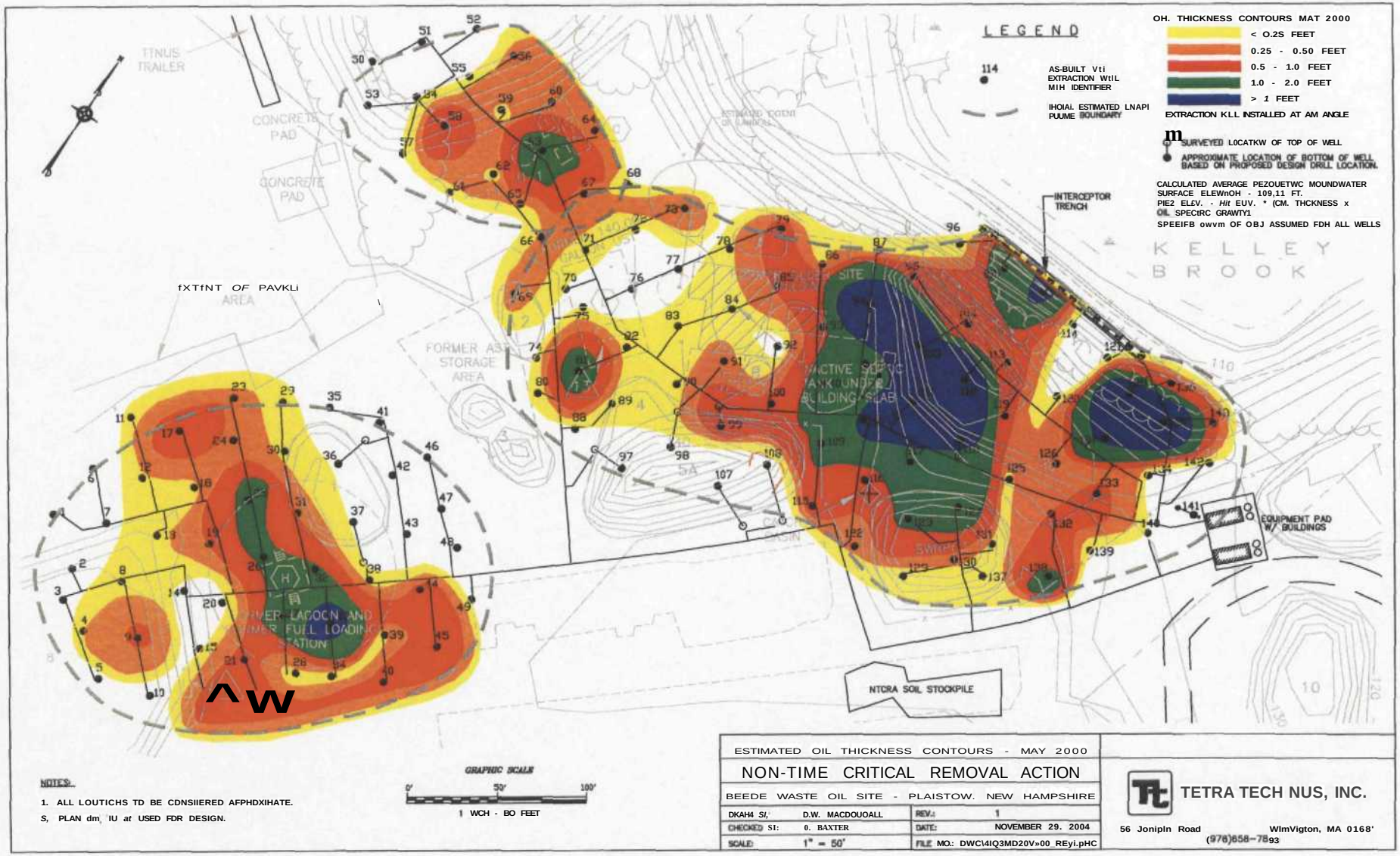
Oil Thickness	May-00	May-05
>= 6 ft	0	0
>= 5 ft < 6 ft	1	0
>= 4 ft < 5 ft	1	0
>= 3 ft < 4 ft	3	1
>= 2 ft < 3 ft	6	2
>= 1.5 ft < 2 ft	5	3
>= 1 ft < 1.5 ft	9	3
>=0.5 ft < 1 ft	24	9
>=0.25 ft < .5 ft	17	12
> 0 ft <0.25 ft	27	49
Total > 0 ft	93	79
No detectable oil	50	64
Total no. of wells	143	143

In areas where the thickness of the LNAPL is less than 0.25 feet, the ability of the vacuum-enhanced system to effectively extract LNAPL has become more difficult, while the volume of incidental water extracted has increased. As the layer of LNAPL in a given extraction well becomes thinner and thinner, the ability of the system to remove oil without also removing a significant volume of water becomes difficult. Figures 2 and 3 depict the thickness and extent of the LNAPL on the Site from May 2000 and May 2005. Figure 4 shows the average daily volume of oil removed and the average water-to-oil volume ratio by month.

The 1998 Action Memorandum estimated that the LNAPL extraction system would operate for a period of approximately 12 months. After the first 12 months of operation, EPA decided to continue operating the system as it was effectively removing LNAPL at a better than expected rate of removal. However, since the Spring of 2003, the rate of LNAPL removal has declined significantly. From February 2000 through February 2003, the extraction system removed approximately 72,000 gallons of oil (1,945 gallons/month over 37 months). From March 2003 through June 2005, the system removed an estimated 18,000 gallons of oil (643 gallons/month over 28 months). Figure 5 summarizes the monthly amount of oil removed from the Site using the LNAPL extraction system.

As a result of this decrease in extraction recovery, combined with the reduced LNAPL found at the Site, EPA has decided to discontinue the primary extraction system, but to continue to operate the interceptor trench as described below.

FIGURE 2



NOTES:

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ESTIMATED OIL THICKNESS CONTOURS - MAY 2000

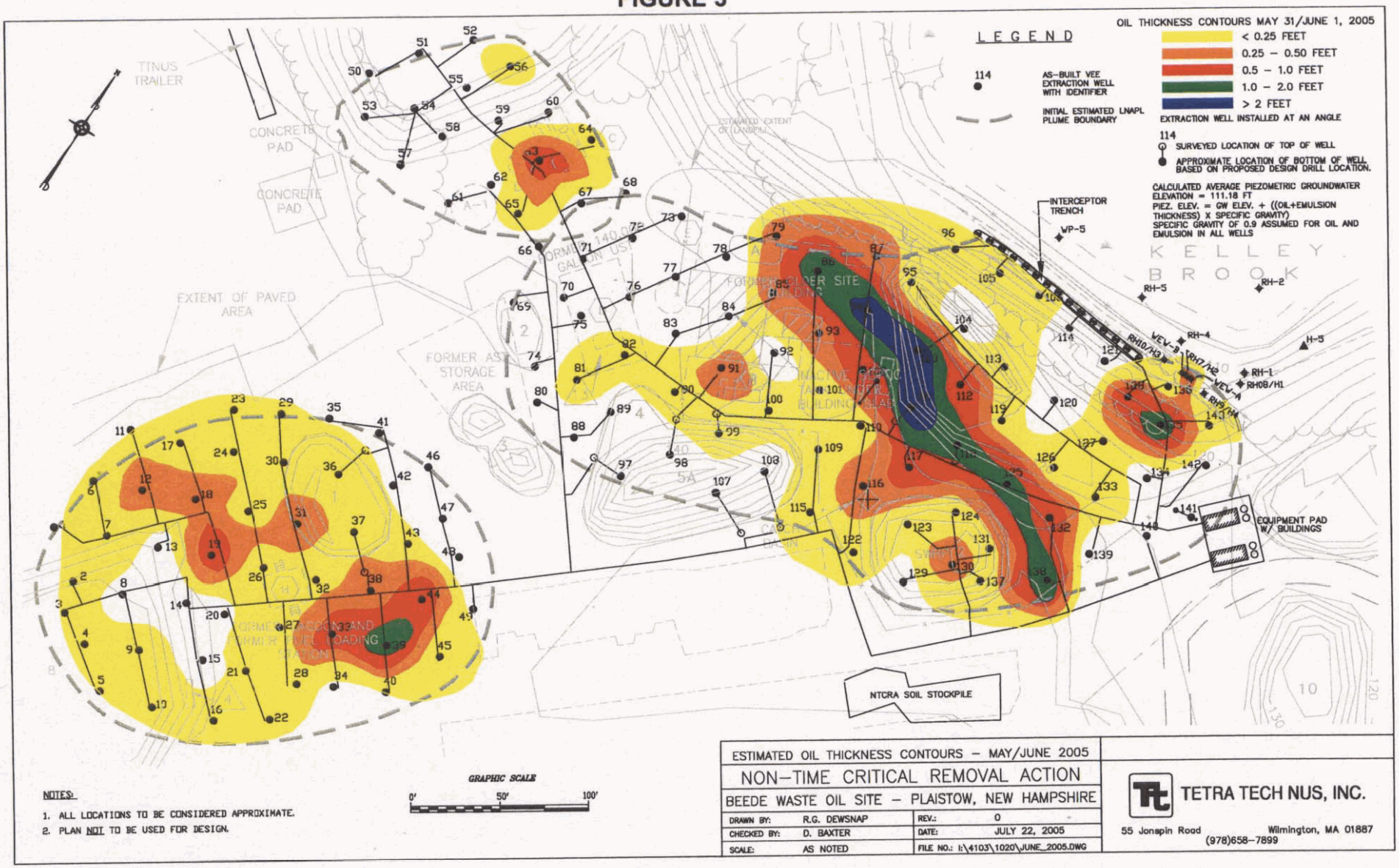
NON-TIME CRITICAL REMOVAL ACTION

BEEDE WASTE OIL SITE - PLAISTOW. NEW HAMPSHIRE

DKAH4 SI,	D.W. MACDOUOALL	REV.:	1
CHECKED SI:	0. BAXTER	DATE:	NOVEMBER 29. 2004
SCALE:	1" = 50'	FILE MO.:	DWCI4IQ3MD20V»00_REyi.pHC

TETRA TECH NUS, INC.
56 Jonipln Road WlmVigton, MA 0168'
(978)658-7893

FIGURE 3



NOTES:

1. ALL LOCATIONS TO BE CONSIDERED APPROXIMATE.
2. PLAN NOT TO BE USED FOR DESIGN.

ESTIMATED OIL THICKNESS CONTOURS – MAY/JUNE 2005			
NON–TIME CRITICAL REMOVAL ACTION			
BEEDE WASTE OIL SITE – PLAISTOW, NEW HAMPSHIRE			
DRAWN BY:	R.G. DEWSNAP	REV.:	0
CHECKED BY:	D. BAXTER	DATE:	JULY 22, 2005
SCALE:	AS NOTED	FILE NO.:	I:\4103\1020\JUNE_2005.DWG

TETRA TECH NUS, INC.
55 Jonspin Road Wilmington, MA 01887
(978)658-7899

FIGURE 4
AVERAGE DAILY OIL VOLUME VS AVERAGE WATER/OIL VOLUME RATIO - BY MONTH
BEEDE WASTE OIL SITE NTCRA

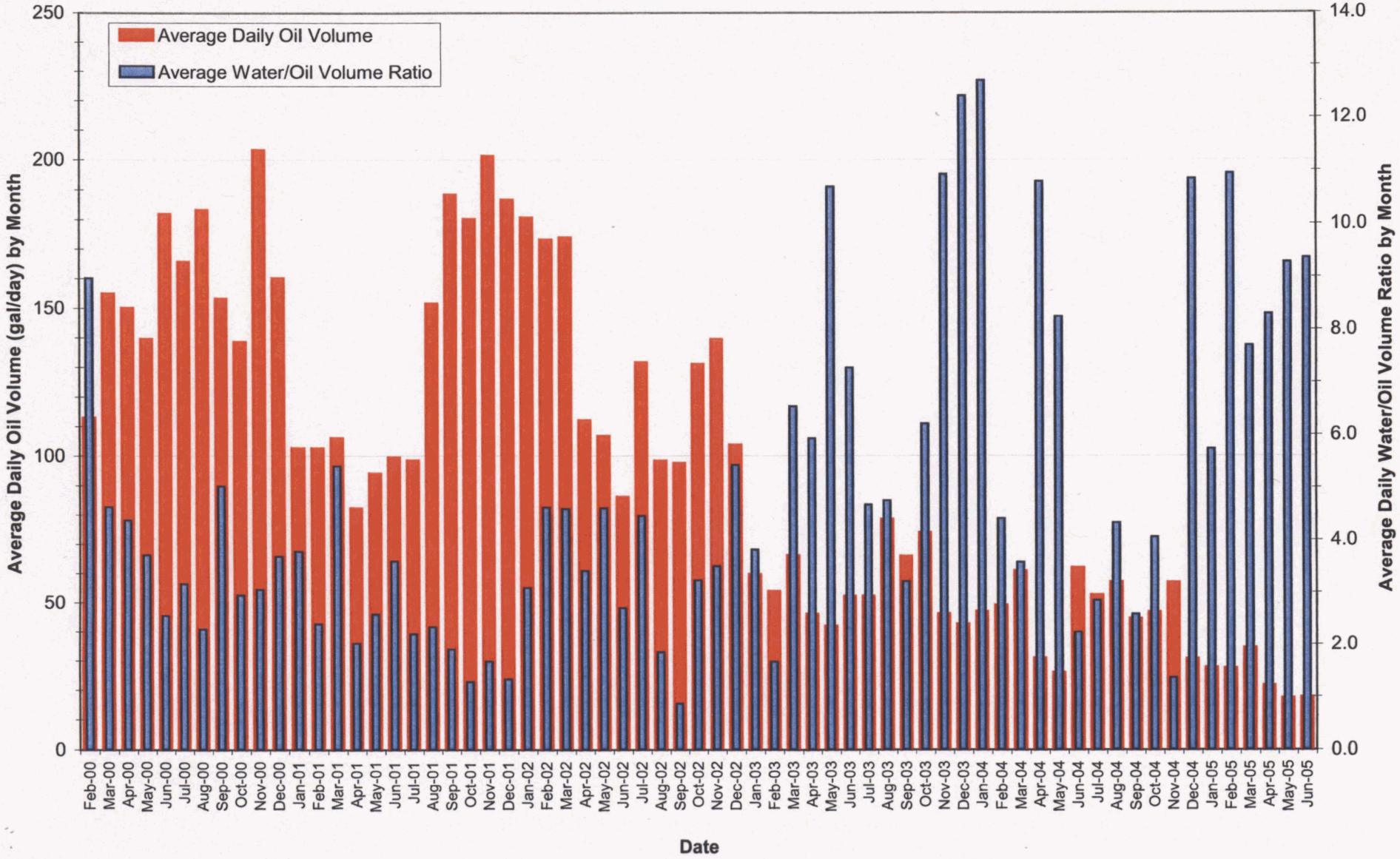
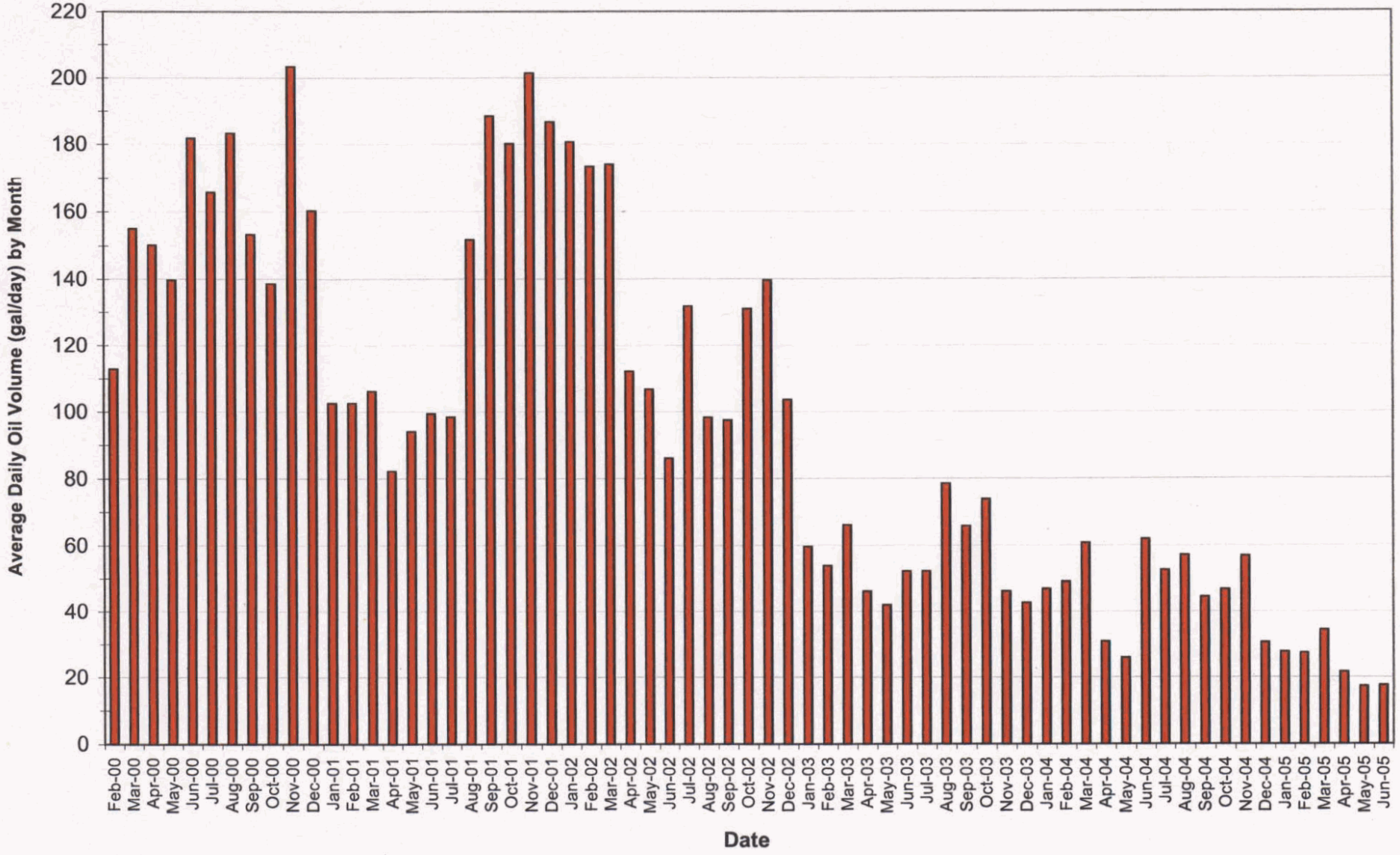


FIGURE 5
AVERAGE OIL VOLUME EXTRACTED DAILY - BY MONTH
BEEDE WASTE OIL SITE NTCRA



IV. PLANNED REMOVAL ACTIVITIES

Discontinuation of the Vacuum-Enhanced LNAPL Extraction System

EPA plans to discontinue operation of the vacuum-enhanced LNAPL recovery system by September 30, 2005. The system has successfully removed a significant volume of oil, but its effectiveness and performance has seen a recent decline. In addition, it appears that the LNAPL has been stabilized and its mobility contained.

Although EPA will discontinue operating the LNAPL extraction system, EPA plans to leave the system and its components in place. The system will be "mothballed" and routine maintenance will be performed periodically. As such, the system could be restarted in the event that it is needed.

Continued Maintenance of the LNAPL Interceptor Trench

To ensure that LNAPL does not migrate from the site to downgradient areas such as Kelley Brook, EPA plans to continue to maintain and extend the LNAPL interceptor trench eastward by 80 feet, bringing the length of the trench to 180 feet. Although the LNAPL appears to be stable and relatively immobile, the downgradient (northern) limit is at the edge of the Kelley Brook wetlands. The interceptor trench provides a mechanism to capture any LNAPL that may migrate from upgradient areas. EPA expects that the interceptor trench will require regular inspection and periodic extraction of any LNAPL that collects within it. Figure 6 depicts the proposed interceptor trench extension.

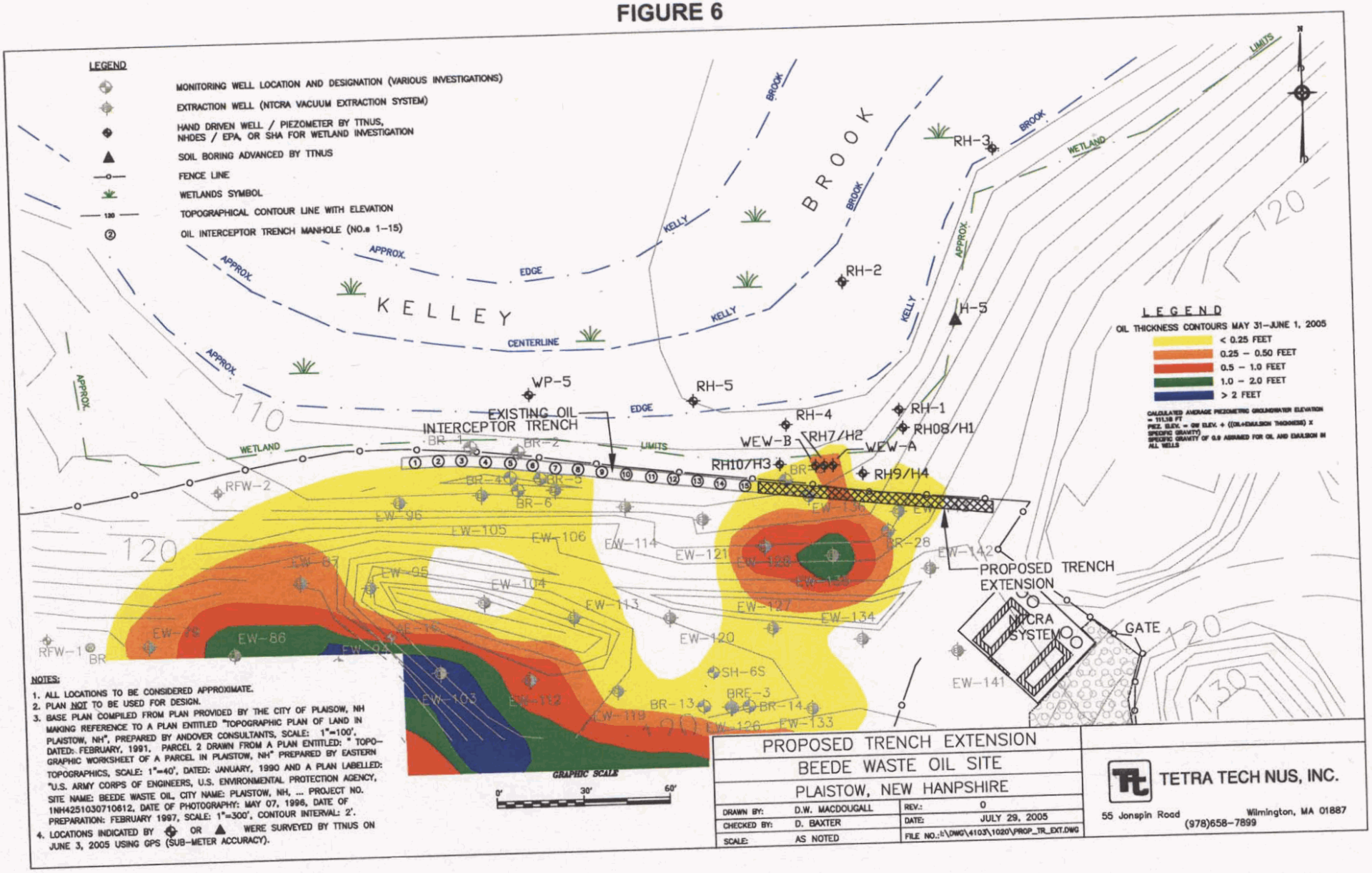
EPA expects that the LNAPL interceptor trench will be maintained under the NTCRA until the comprehensive cleanup plan outlined in the ROD can be implemented.

IV. COST INFORMATION

The total extramural costs for the non-time critical removal action to date are as follows:

- EE/CA = $658,000
- Design/Construction = $1,392,507
- Operation (total since February 2000) = $2,101,249 (estimated)
- Operation (future estimate through September 2006) = $200,000

FIGURE 6



NOTES:

1. ALL LOCATIONS TO BE CONSIDERED APPROXIMATE.
2. PLAN NOT TO BE USED FOR DESIGN.
3. BASE PLAN COMPILED FROM PLAN PROVIDED BY THE CITY OF PLAISOW, NH MAKING REFERENCE TO A PLAN ENTITLED "TOPOGRAPHIC PLAN OF LAND IN PLAISTOW, NH", PREPARED BY ANDOVER CONSULTANTS, SCALE: 1"=100', DATED: FEBRUARY, 1991. PARCEL 2 DRAWN FROM A PLAN ENTITLED: " TOPOGRAPHIC WORKSHEET OF A PARCEL IN PLAISTOW, NH" PREPARED BY EASTERN TOPOGRAPHICS, SCALE: 1"=40', DATED: JANUARY, 1990 AND A PLAN LABELLED: "U.S. ARMY CORPS OF ENGINEERS, U.S. ENVIRONMENTAL PROTECTION AGENCY, SITE NAME: BEEDE WASTE OIL, CITY NAME: PLAISTOW, NH, ... PROJECT NO. 1NH4251030710612, DATE OF PHOTOGRAPHY: MAY 07, 1996, DATE OF PREPARATION: FEBRUARY 1997, SCALE: 1"=300', CONTOUR INTERVAL: 2'.
4. LOCATIONS INDICATED BY ◆ OR ▲ WERE SURVEYED BY TTNUS ON JUNE 3, 2005 USING GPS (SUB-METER ACCURACY).

PROPOSED TRENCH EXTENSION			
BEEDE WASTE OIL SITE			
PLAISTOW, NEW HANPSHIRE			
DRAWN BY:	D.W. MACDOUGALL	REV.:	0
CHECKED BY:	D. BAXTER	DATE:	JULY 29, 2005
SCALE:	AS NOTED	FILE NO.:	E:\DWG\4103\1020\PROP_TR_EXT.DWG

TETRA TECH NUS, INC.
55 Jonspin Road Wilmington, MA 01887
(978)658-7899

POLREP DISTRIBUTION LIST

Date and POLREP No. **September 16, 2005, POLREP No. 1**
Site: **Beede Waste Oil Superfund Site**

US EPA
Mike Hurd
Ariel Rios Building
1200 Pennsylvania Avenue, N. W. (5204G)
Washington, DC 20460

Susan Studlien, HIO, EPA Region I

Larry Brill, HBO, EPA Region I

Mike Jasinski, HBO, EPA Region I

James Chow, HBO, EPA Region I

Cindy Lewis, SES, EPA Region I

Rudy Brown, RAA, EPA Region I

NHDES
Richard Pease
NHDES
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Natural Resource Trustees
Mr. Andrew Raddant
U.S. Department of the Interior
408 Atlantic Avenue, Rm. 142
Boston, MA 02210

Mr. Kenneth Finkelstein
NOAA
c/o EPA Region I
1 Congress Street (HIO)
Boston, MA 02214

Town of Plaistow, New Hampshire
Mr. John Scruton, Town Manager
145 Main Street
Plaistow, NH 03865