Five Year Review Report

for

Naval Station Newport
(Formerly NETC Newport)

Newport, Rhode Island

Naval Facilities Engineering Command
Mid-Atlantic

Contract Number N62472-03-D-0057
Contract Task Order 143

December 2009

W5209583F

FIVE YEAR REVIEW REPORT

FOR

NAVAL STATION NEWPORT
(FORMERLY NETC NEWPORT)

NEWPORT, RHODE ISLAND

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Naval Facilities Engineering Command Mid-Atlantic
9742 Maryland Avenue
Norfolk, Virginia 23511-3095

Submitted by:
Tetra Tech NUS, Inc.
234 Mall Boulevard, Suite 260
King of Prussia, Pennsylvania 19406-1433

CONTRACT NUMBER N62472-03-D-0057
CONTRACT TASK ORDER 143

December 2009

PREPARED UNDER THE DIRECTION OF:

STEPHEN S. PARKER, LSP
PROJECT MANAGER
TETRA TECH NUS, INC.
WILMINGTON, MASSACHUSETTS

APPROVED FOR SUBMISSION BY:

JOHN J. TREPANOWSKI, P.E.
PROGRAM MANAGER
TETRA TECH NUS, INC.
KING OF PRUSSIA, PENNSYLVANIA

W5209583F

FIVE YEAR REVIEW REPORT

FOR

NAVAL STATION NEWPORT
(FORMERLY NETC NEWPORT)

NEWPORT, RHODE ISLAND

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Naval Facilities Engineering Command Mid-Atlantic
9742 Maryland Avenue
Norfolk, Virginia 23511-3095

Submitted by:
Tetra Tech NUS, Inc.
234 Mall Boulevard, Suite 260
King of Prussia, Pennsylvania 19406-1433

CONTRACT NUMBER N62472-03-D-0057
CONTRACT TASK ORDER 143

DECEMBER, 2009

APPROVED BY:

CAPT Joseph P. Voboril

CO, Naval Station Newport

17 Dec 09
Date

TABLE OF CONTENTS

TABLE OF CONTENTS (cont.)

TABLES

FIGURES

APPENDICES

ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
AWQC	Ambient Water Quality Criteria
bgs	below ground surface
COC	Contaminant of Concern
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-Term Environmental Action Navy
CS	Confirmation Study
CTO	Contract Task Order
DESC	Defense Energy Support Center
DFSP	Defense Fuel Support Point
DL	Detection Limit
EPA	Environmental Protection Agency
ERA	ecological risk assessment
FFA	Federal Interagency Facilities Agreement
HASP	Health and Safety Plan
IAS	Initial Assessment Study
IR	Installation Restoration
LTMP	Long-Term Monitoring Program
MC	munitions constituents
MCL	Maximum Contaminant Level
MEC	Munitions and Explosives of Concern
mg/kg	milligrams per kilogram
MRP	Munitions Response Program
MSG	Monitoring Station Group
MSL	mean sea level
MW	monitoring well
NAVSTA	Naval Station
ND	non detect
NETC	Naval Education and Training Center
NFA	No Further Action
NPL	National Priorities List
NUSC	Naval Undersea Systems Center
NUWC	Naval Undersea Warfare Center
OFFTA	Old Fire Fighting Training Area
O&M	Operations and Maintenance
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
PCB	polychlorinated biphenyl
ppb	parts per billion
ppbv	parts per billion by volume

ACRONYMS (cont.)

ppm	parts per million
ppmv	parts per million by volume
POTW	publicly-owned treatment works
PRGs	preliminary remediation goals
QA/QC	Quality Assurance/Quality Control
RAB	Restoration Advisory Board
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RGs	Remediation Goals
RIDEM	Rhode Island Department of Environmental Management
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SASE	Study Area Screening Evaluation
SDWA	Safe Drinking Water Act
SED	sediment
SI	Site Investigation
SVOC	Semi-volatile organic compound
SWOS	Surface Warfare Officers School
SW	surface water
TBC	To be Considered
TCL	Target Compound List
TPH	total petroleum hydrocarbon
TSCA	Toxic Substances Control Act
TtFW	Tetra Tech FW, Inc.
TtNUS	Tetra Tech NUS, Inc.
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
UST	underground storage tank
µg/L	micrograms per liter
UXO	unexploded ordnance
VOC	Volatile organic compound
WAMS	Water Area Munitions Study

Navy Five-Year Review Key Information

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: Naval Station Newport Superfund Site (formerly Newport Naval Education & Training Center)		
EPA ID *(from WasteLAN)*: RI6170085470		
Region: 1	**State: RI**	**City/County: Newport, Middletown, Portsmouth, Jamestown/Newport County**
SITE STATUS		
NPL status: Final		
Remediation status (choose all that apply): Operating, Remedy in Place, Remedy Complete		
Multiple OUs?* Yes	**Construction completion date:** December 31, 2010	
Has site been put into reuse? No		
REVIEW STATUS		
Lead agency: U.S. Department of the Navy, NAVFAC MID-LANT		
Author name: Stephen S. Parker, Tetra Tech NUS, on behalf of Ms. Winoma Johnson, PE, NAVFAC		
Author title: Senior Project Manager	**Author affiliation:** Tetra Tech NUS, Inc. **Under Contract to:** US Navy Mid-Atlantic, Naval Facilities Engineering Command, Norfolk VA.	
Review period: December 2004 to December 2009		
Date(s) of site inspection: May 4, 2009		
Type of review: Post-SARA		
Review number: 3 (third)**		
Triggering action: Second Five-Year Review – Final: December 2004		
Triggering action date *(from WasteLAN)*: December 2004		
Due date *(five years after triggering action date)*: December 2009		

* "OU" refers to Operable Unit.- Defined by U.S. EPA
** First Five-Year Review was completed in 1999, Second Five-Year Review was completed in 2004.

Key Information, cont'd.

Issues:

OU1, OU4: McAllister Point Landfill:

No new issues identified.

It is noted that a *previous* issue regarding deed restrictions and possible future changes in property ownership was resolved in 2007 with the implementation of Base Instruction 5090.15B and the Explanation of Significant Difference, which documents this modification to the Record of Decision (ROD).

OU2:Tank Farm 5, Tanks 53 and 56:

No issues were identified during the five-year review for Tanks 53 and 56 at NAVSTA Newport Tank Farm 5. The report of the fifth round of monitoring recommended that the extraction and treatment system remain shut down and be abandoned (demolished). The plant was decommissioned in 2009.

Recommendations and Follow-up Actions:

OU1, OU4: McAllister Point Landfill: All monitoring associated with OU1 should continue at a reduced level: Monitoring the groundwater should exclude upgradient wells, but be conducted annually. Landfill gas screening for methane should be conducted quarterly in accordance with RIDEM regulations. Landfill gas sampling and analysis (for Non-Methane Organic Compounds (NMOCs) is not needed and should be discontinued.

Monitoring in accordance with the OU4 marine sediment/ management of migration ROD should continue at a reduced level. Sediment, porewater, toxicity and biota sampling and analysis should continue at all Monitoring Station Groups (MSGs) on a schedule of once every 5 years.

Long term monitoring work plans should be updated to describe these reduced efforts.

OU2: Tank Farm 5, Tanks 53 and 56: Based on the results of the site inspection and review, the site remedy is now complete. RAOs have been met and currently remain protective of human health and the environment. It is recommended that a ROD revision for No Further Action be implemented. In addition, it is recommended that no further groundwater monitoring or five-year reviews be conducted. Existing groundwater monitoring wells should be properly abandoned in accordance with RIDEM regulations.

Key Information, cont'd.

Protectiveness Statement(s):

OU1, OU4: McAllister Point Landfill: The remedies at the McAllister Point Landfill are protective of human health and the environment and exposure pathways that could result in unacceptable risks are being controlled. The source control remedy is complete and groundwater, vent gas, and ambient air monitoring is on-going. The most recent groundwater monitoring annual results show few detections of VOCs and SVOCs; minor exceedances of the MCLs for organic compounds and some metals have been observed. The groundwater and vent gas monitoring data have shown consistent and stable results and show no indications of any issues with the protectiveness of the remedy. The dredging and backfilling activities for the near shore and off-shore marine sediment remedial action (OU4) are complete. The sediment monitoring program has shown contaminant concentrations and associated effects tests (toxicity tests on sediment) to be within expected limits, as compared to reference stations. The planned habitat mitigation activities have been completed; ecological restoration monitoring and eel grass monitoring have been discontinued.

OU2: Tank Farm 5, Tanks 53 and 56: The remedy at Tank Farm 5, Tanks 53 and 56 is protective of human health and the environment and exposure pathways that could result in unacceptable risks have been eliminated. The source of contamination has been removed, and the groundwater treatment system has been demolished due to attainment of RAOs. A comparison of the monitoring data to RIDEM and federal groundwater standards indicates concentrations of potential contaminants of concern have attenuated following the source removal action.

Next Review:

The next five-year review of the NAVSTA Newport sites will be completed in December 2014.

1.0 INTRODUCTION

This document presents the third five-year review of the Naval Station (NAVSTA) Newport, formerly the Naval Education and Training Center (NETC), Superfund Site in Newport, Rhode Island. Tetra Tech NUS, Inc. (TtNUS) has conducted this five-year review under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract No. N62472-03-D-0057, Task Order (CTO) 143, as requested by the Navy. This five-year review addresses the operable units at the two NAVSTA Newport sites which have had remedial actions implemented and were evaluated in the first and second five-year reviews issued in December 1999 and December 2004, respectively (TtNUS, 1999c and 2004d, respectively):

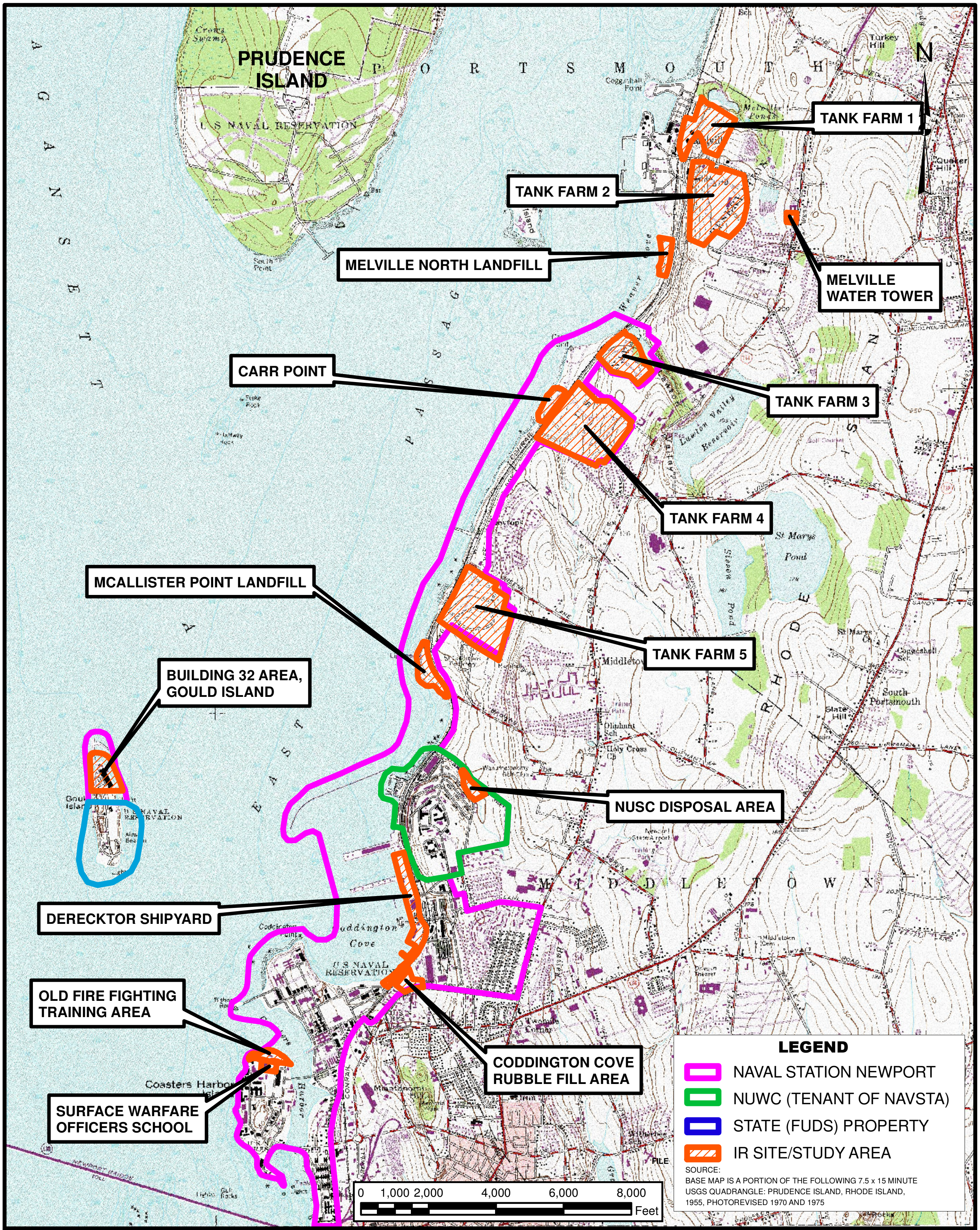
- Site 01 - McAllister Point Landfill, Source Control Operable Unit (NETC OU1) and Management of Migration Operable Unit (NETC OU4), and
- Site 13 - Tank Farm 5, Interim Remedial Action for Tanks 53 and 56 (NETC OU2).

1.1 PURPOSE

The purpose of this five-year review is to determine if the remedies selected for and implemented at the McAllister Point Landfill and Tank Farm 5 – Tanks 53 and 56, are protective of human health and the environment. This report summarizes the five-year review process, investigations and remedial actions undertaken at each Site; evaluates the monitoring data collected; reviews the Applicable or Relevant and Appropriate Requirements (ARARs) specified in each site's Record of Decision(s) (ROD) for changes; discusses any issues identified during the review; and presents recommendations to address these issues.

These two sites (see Figure 1-1) were included in the first and second five-year reviews of NAVSTA Newport, as appropriate for their progress in remediation, pursuant to the U.S. Environmental Protection Agency's (USEPA) five-year review guidance. The other NAVSTA Newport sites and study areas (defined in the Federal Interagency Facility Agreement 1992, FFA), are in various stages of pre-remedial investigation and are therefore not included in detail in this five-year review. The locations of the sites and study areas listed below are shown on Figure 1-1. Each of the listed sites is briefly discussed in Section 4 of this document along with the progress of the various investigations underway. These sites and study areas include:

I:\01636\0210\5YrRev_Locus.MXD DWM 04/23/09



Tetra Tech NUS, Inc.

SITE LOCUS (SITE STUDY AREAS)
FIVE-YEAR REVIEW REPORT
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

SCALE	AS NOTED
FILE	\..\5YrRev_LOCUS.MXD
REV 0	DATE 04/23/09
FIGURE NUMBER	FIGURE NO. 1-1

- Munitions Response Program (MRP) Site 01 – Carr Point
- Study Area 04 – Coddington Cove Rubble Fill Area
- Study Area 07 – Tank Farm No. 1
- Study Area 08 – Naval Undersea Systems Center (NUSC) Disposal Area
- Site 09 – Old Fire Fighting Training Area (OFFTA)
- Study Area 10 – Tank Farm No. 2
- Study Area 11 - Tank Farm No. 3
- Site 12 – Tank Farm No. 4
- Site 13 – Tank Farm No. 5
- Site 17 – Building 32, Gould Island
- Site 19 – Derecktor Shipyard
- Site 20 – Surface Warfare Officers School
- Site 21 – Former Melville Water Tower Site

The Navy must implement five-year reviews consistent with the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) §121 and the National Contingency Plan. CERCLA §121 states:

> "If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews."

The National Contingency Plan 40 CFR §300.430(f)(4)(ii) states:

> "If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action."

This is the third five-year review for NAVSTA Newport. The first five-year review was completed in December 1999 and the second was completed in December 2004 as a post-SARA statutory review. This statutory five-year review is required since hazardous contamination remains at McAllister Point Landfill above levels that allow for unlimited use and unrestricted exposure. The triggering action for the initial statutory review was initiation of the remedial actions at Tank Farm 5, Tanks 53 and 56, and the

McAllister Point Landfill. The reviews were completed in accordance with USEPA Comprehensive Five-Year Review Guidance, OSWER No. 9355.7-03B-P (USEPA, 2001).

1.2 OVERVIEW OF NAVAL STATION NEWPORT

The NAVSTA Newport area has been used by the U.S. Navy since the Civil War era. Activities have increased during war times and later decreased as Naval forces were reorganized. Between 1900, and the mid 1970s, the facility has been used as a refueling depot. The Shore Establishment Realignment Program reorganization in April 1973 resulted in reductions in personnel and the Navy excessed a large portion of the acreage of the original facility. The Naval Education Training Center (NETC) was subsequently established. In the mid-1990's several new laboratories at the Naval Undersea Warfare Center (formerly NUSC) were constructed to provide research, development, testing, evaluation, engineering and fleet support for submarines and underwater systems. In October 1998, NAVSTA Newport was established as the primary host command, taking over base operating support responsibilities from NETC.

1.2.1 Site Information

NAVSTA Newport (formerly NETC) (the Base) encompasses 1,063 acres on the west shore of Aquidneck Island facing the east passage of Narragansett Bay, and is located in the towns of Portsmouth, Middletown, and Newport, Rhode Island (Figure 1-1). NAVSTA Newport also encompasses the northern third of Gould Island, which is part of the Town of Jamestown, Rhode Island. The site includes multiple areas of contamination, including one landfill, a fire fighting training area, a shooting range, an old shipyard, a water tower, an officer's school, five tank farms, and varying degrees of groundwater contamination. The Navy is the lead agency for site investigation and cleanup, with formal oversight provided by USEPA via a Federal Interagency Facilities Agreement (FFA) and the Rhode Island Department of Environmental Management (RIDEM).

1.2.2 History and Chronology

An Initial Assessment Study (IAS), completed in 1983, identified 18 sites where contamination was suspected to pose a threat to human health and the environment. Six of the 18 sites were investigated further in a Confirmation Study (CS), completed in 1986. A Phase I RI/FS was completed in 1992. This RI/FS covered: McAllister Point Landfill (Site 01), Melville North Landfill (Site 02), Old Fire Fighting Training Area (Site 09), Tank Farm 4 (Site 12), and Tank Farm 5 (Site 13). The McAllister Point Landfill, Melville North Landfill, and Tank Farm 4 had been previously investigated in both the IAS and CS; and

Tank Farm 5 in the IAS. The Old Fire Fighting Training Area (OFFTA) had not been investigated as part of either the IAS or CS.

Investigations at four of the five sites have continued under the Department of Defense Installation Restoration (IR) Program following the listing of NAVSTA Newport (then NETC) on the NPL in 1989.

These investigations have led to decision documents in the forms of RODs for the McAllister Point Landfill and Tank Farm 5 - Tanks 53 and 56. Thirteen additional sites (Tank Farm One, Tank Farm Two, Tank Farm Three, Coddington Cove Rubble Fill Area, NUSC Disposal Area, OFFTA, Tank Farms Four and Five, Derecktor Shipyard, Building 32, Gould Island, Carr Point, Melville Water Tower, and Surface Warfare Officer's School) are also being investigated under the IR Program. The Melville North Landfill has been investigated under RIDEM regulations, rather than under the IR program, since it was not owned by the Navy at the time of the NPL listing. Since the Melville North Landfill is not considered a CERCLA site, it is not discussed further in this five-year review.

A chronology of the major activities at the NAVSTA Newport CERCLA sites and IR Program investigations completed at the sites mentioned above is shown in the table below. Detailed information concerning the McAllister Point Landfill and Tank Farm 5 – Tanks 53 and 56 is included in Sections 2.1 and 3.1, respectively, of this document.

EVENT	DATE
Initial Assessment Study (IAS) completed. IAS identified 18 potentially contaminated sites.	March 1983
Confirmation Study (CS) completed for: Site 01, Site 02, Site 07, Site 12, Site 14, and Site 17.	May 1986
NETC Newport listed on the NPL.	November 21, 1989
Draft Phase I RI and Human Health Risk Assessment Report completed for Sites 01, 02, 09, 12, and 13.	January 1992
Federal Interagency Facilities Agreement between EPA, RIDEM and U.S. Navy signed.	March 23, 1992
Restoration Advisory Board (RAB) established.	1996
First Five-Year Review Report completed.	December 1, 1999
Second Five-Year Review Report completed.	December 1, 2004

EVENT	DATE
Draft Base Wide Background Study Report completed.	October 1, 2007
McAllister Point Landfill	
Confirmation Study (CS) completed.	May 1986
Draft Phase I RI and Human Health Risk Assessment Report completed.	January 1992
Remedial Design Work Plan completed.	August 1, 1993
Record of Decision (source control action) issued.	September 27, 1993
Remedial Investigation Report and Human Health Risk Assessment completed.	July 1, 1994
Ecological Risk Assessment and Feasibility Study Report completed.	October 1, 1994
Explanation of Significant Difference issued.	August 1, 1996
Marine Ecological Risk Assessment Report completed.	March 1997
Draft Final Phase II RI Report, Revision 1 completed.	April 1997
Operations and Maintenance Manual completed.	May 1, 1997
Technical Memorandum – Landfill Gas Monitoring Approach completed.	August 1, 1997
Annual Monitoring Report Operations and Maintenance Activities, 1 January to 31 December 1997 completed.	September 1, 1998
Final Feasibility Study completed (management of migration and marine sediment).	May 3, 1999
Annual Monitoring Report Operations and Maintenance Activities, 1 January to 31 December 1998 completed.	July 1, 1999
Record of Decision (marine sediment/management of migration) issued.	March 1, 2000
Annual Monitoring Report Operations and Maintenance Activities, 1 January to 31 December 1999 completed.	March 20, 2000
Annual Monitoring Report Operations and Maintenance Activities, 1 January to 31 December 2000 completed.	April 2001

EVENT	DATE
Annual Monitoring Report Operations and Maintenance Activities, 1 January to 31 December 2001 completed.	July 2002
Final Spring 2002 Monitoring Report for McAllister Point Eelgrass Monitoring completed.	September 2002
Work Plan for Ambient Air Worker Exposure Monitoring completed.	April 2003
Final Work Plan for McAllister Point Post Dredging Habitat Survey 2003 completed.	April 2003
Annual Monitoring Report Operations and Maintenance Activities, 1 January to 31 December 2002 completed.	May 7, 2003
Work Plan for Artificial Reef Evaluation completed.	November 18, 2003
Landfill Gas Monitoring Results for Ambient Air Worker Exposure Monitoring completed.	December 1, 2003
Final McAllister Point Post Dredging Habitat and Artificial Reef Surveys 2003 completed.	April 2004
Annual Monitoring Report Operations and Maintenance Activities, 1 January to 31 December 2003 completed.	May 2004
Final Interim Remedial Action Report completed.	September 28, 2004
Semi-annual Landfill Inspection Report July 2004 completed.	September 2004
Final McAllister Point Post Dredging Eelgrass Monitoring Report 2005 completed.	March 2005
Annual Monitoring Report Operations and Maintenance Activities 2004 completed.	July 2005
Work Plan for Long Term Monitoring Program completed.	December 2005
Round 1: December 2004 Long-Term Monitoring Report completed (Marine Sediments).	March 2006
Final Annual Monitoring Report Operations and Maintenance Activities 2005 completed.	February 2006
Final Supplemental Eelgrass Mitigation Work Plan completed	April 2006

EVENT	DATE
Round 2: October-November 2005 Long-Term Monitoring Report completed (Marine Sediments).	April 2006
Final Supplmental Eelgrass Mitigation Effort completed, McAllister Point Landfill	November 2006
Explanation of Significant Difference (ESD) Report completed.	September 2007
Final Annual Monitoring Report Operations and Maintenance Activities 2006 completed.	December 2007
Final Marine Sediments Monitoring Report Sampling Round 3: October 2006 completed.	December 2007
Final Annual Monitoring Report Operations and Maintenance Activities 2007 completed.	November 2008
Final Marine Sediments Monitoring Report Sampling Round 4: October 2007 completed.	December 2008
Draft Marine Sediments Monitoring Report Sampling Round 5: October 2008 completed.	March 2009
Tank Farm 5, Tanks 53 and 56	
Draft Phase I RI and Human Health Risk Assessment Report completed.	January 1992
Record of Decision (interim groundwater pump and treat remedy) issued.	September 29, 1992
Groundwater Monitoring Completed (Five Rounds)	1- December 1996 2 - March 1997 3 - August 1997 4 - May 2001 5 - May 2004
Basis of Design Report for Demolition and Disposal of Groundwater Operable Unit Treatment System completed.	January 1, 2008
Demolition of the groundwater extraction and treatment system.	October 2008
Carr Point	
Water Area Munitions Study (WAMS) conducted.	October 1, 2005
Work Plan/ QAPP for Site Investigations completed.	April 2009

Coddington Cove Rubble Fill Area	
Phase II Environmental Site Assessment Report completed.	October 15, 2004
NUSC Disposal Area	
Final Study Area Screening Evaluation Report completed.	January 1, 2005
Draft Remedial Action Completion Report completed – removal of drums and paint cans.	April 1, 2006
Background Soil Investigation Report completed.	September 1, 2006
Final Interim Remedial Action Report (limited soil removal action) completed.	December 1, 2006
Draft Remedial Investigation Report completed.	April 2009
OFFTA	
Draft Phase I RI and Human Health Risk Assessment Report completed.	January 1992
Marine Ecological Risk Assessment Report completed.	November 1999
Final RI Report completed.	July 1, 2001
Feasibility Study for Soil, Groundwater and Marine Sediment (submitted as final).	September 1, 2002
Final Action Memorandum, Soil Management and Removal completed.	June 1, 2004
Sediment and Groundwater Monitoring Work Plan completed.	November 1, 2004
Soil Pre-design Investigation Report completed.	April 2005
Soil Pre-design Investigation Report Addendum completed.	November 1, 2005
Final Project Close-Out Report (removal of soil mounds) completed.	December 1, 2005
Draft Revised Feasibility Study completed.	December 1, 2007
Soil Removal Action (removal of hot spots, oil water separator) completed	April 2008
Design for Replacement Stone Revetment Completed (Revision 1 to the 100% Design	August 10, 2009
Tank Farm One	
Confirmation Study (CS) completed.	May 1986
Defense Fuel Support Point begins investigations.	August 1992

Tank Farm Two	
Defense Fuel Support Point begins investigations.	August 1992
Draft Site Investigation and Remedial Action Report completed (Petroluem).	July, 2006
Tank Farm Three	
Defense Fuel Support Point begins investigations.	August 1992
Work Plan for Site Closure completed.	August 2002
Draft Site Investigation and Remedial Action Report completed (Petroleum).	May, 2005
Tank Farm 4	
Final Closeout Report (sludge disposal trenches) completed.	June 19, 2007
Tank Farm 5	
Final Closeout Report (sludge disposal trenches) completed.	June 19, 2007
Gould Island, Building 32	
Confirmation Study (CS) completed.	May 1986
Draft Final Study Area Screening Evaluation Report completed.	December 28, 2000
Final Project Closeout Report for Phase 2 PCB Contaminated Soils and Concrete Remediation completed.	October 29, 2004
Phase 1 Remedial Investigation and HHRA completed.	December 29, 2006
Phase 2 Remedial Investigation and BERA Work Plan completed.	Ongoing
Derecktor Shipyard	
Preliminary Site Assessment Report completed.	May 1, 1993
Marine Ecological Risk Assessment Report completed.	May 1997
Draft Final Study Area Screening Evaluation Report completed.	June 1, 1997
Final Human Health Risk Assessment completed.	September 29, 1998
Final Feasibility Study (marine portions, offshore contamination) completed.	July 29, 1999
Final Remedial Action Report for Various Removal Actions completed.	July 25, 2002

Draft Sediment Investigation Work Plan completed.	July 1, 2004
Final Sediment Sampling Report completed	September, 2005
Final Closeout Report for Sand Blast Grit Removal completed.	June 17, 2005
Final Action Memorandum completed.	November 10, 2006
Feasibility Study Revision 1 (Revised Draft Final) completed.	March 1, 2007
Final Removal Action Completion Report for Sandblast Grit Removal at the Firing Point completed.	March 6, 2008
Surface Warfare Officers School	
Occupational Exposure Assessment for Construction Workers completed.	March 12, 2004
Draft Final Focused Site Inspection completed.	March 1, 2006
Former Melville Water Tower	
Final Removal Action Completion Report (Soil Removal Actions) completed.	June 2008
Final Study Area Screening Evaluation completed.	September 2009

1.2.3 Land Use

NAVSTA Newport has been used by the Navy as a refueling depot between 1900 and the mid 1970s. An 11-acre portion of the site along the shore of Narragansett Bay, known as the McAllister Point Landfill, accepted wastes consisting primarily of domestic refuse, acids, solvents, paint, waste oil, and oil contaminated with polychlorinated biphenyls (PCBs) from 1955 to the mid-1970s. Five tank farms are located in the Melville area; one is located in Midway. Sludge from nearby tank farms was reportedly disposed of on the ground or burned in chambers. Other contaminated areas, such as the Melville North Landfill, are classified as Formerly Used Defense sites and are being addressed separately. Surface water and groundwater flows toward the bay, which is used for boating and fishing. One of the tank farms is located 300 feet from a coastal wetland. Other areas of concern include OFFTA (Site 09), Tank Farm 4 (Site 12), Tank Farm 5 (Site 13), Gould Island, Derecktor Shipyard, Carr Point, Former Melville Water Tower, and The Surface Warfare Officer's School (SWOS). Private wells located within 3 miles of the site provide drinking water to an estimated 4,800 people and irrigation water for 220 acres of land. Approximately 10,000 people live within 3 miles of the NAVSTA Newport.

1.2.4 Physical Characteristics of NAVSTA Newport

Elevations at NAVSTA Newport range from near mean sea level (MSL) to approximately 170 feet above MSL in the Melville North area (TtNUS, 1999). Areas at low elevations are susceptible to flooding during storm surges. NAVSTA Newport is located at the southeastern end of the Narragansett Basin, which consists of non-marine sedimentary rock of the Pennsylvanian age. The bedrock is primarily of the Rhode Island Formation. Glacially-derived unconsolidated deposits overlie the bedrock. These surficial deposits consist of till, sand, gravel, and silt and range in thickness from 1 to 150 feet (TtNUS, 1999a). Till, which overlies bedrock, is the most extensive glacial deposit found in Rhode Island. NAVSTA Newport is located on the Narragansett till plain. Stratified drift, or outwash deposits, overlie the till and are composed of sorted sand, silt, and gravel.

Groundwater supply wells are located throughout Aquidneck Island. The wells are used primarily for domestic supply; small industries and businesses also make use of groundwater. No wells have been identified on NAVSTA Newport except on Gould Island. The average depth of groundwater is 14 feet below ground surface (bgs) on Aquidneck Island. Over-pumping of groundwater wells located near the shoreline has resulted in salt water intrusion in some wells. The groundwater is less than 10 feet bgs in most portions of NAVSTA Newport. Groundwater flows east to west across NAVSTA Newport toward Narragansett Bay. The groundwater has been classified by RIDEM as GB at OFFTA and Carr Point, i.e. not suitable for public or private drinking water use (TtNUS, 2001b and TtNUS, 2009, respectively), and at the McAllister Point Landfill, Tank Farm 4 and Tank Farm 5, as Class GA Non-Attainment (GA-NA), i.e. groundwater suitable for drinking water without treatment, but not in compliance with that classification (TRC, 1994). The Navy recognizes that RIDEM does not have an EPA-approved Comprehensive State Groundwater Protection Program (CSGWPP), and therefore, EPA does not recognize RIDEM's classification system and expects that all groundwater is to be remediated to its beneficial use. However, these groundwater cleanup standards do not have to be achieved under a “waste in place” unit.

NAVSTA Newport is located in the Narragansett Bay drainage basin. All surface water flows toward and empties into Narragansett Bay. Two streams, Gomes Brook and Normans Brook, are located on NAVSTA property and are classified as Class B surface waters by RIDEM. Surface runoff is discharged to Narragansett Bay through storm water collection systems.

1.2.5 Public Input

On April 9, 2009, a questionnaire was mailed to RAB members and community leaders of the municipalities where the sites described in this five-year review report are located. A total of 29 questionnaires were mailed and 13 were returned as of May 8, 2009. A public notice was posted in the

Newport Daily news on April 28, 2009 soliciting additional input. The Newport Daily News has daily circulation to all four communities where the sites are located.

The responses on the questionnaires noted the continuing improvements of the environmental conditions at the closed sites, as well as sites where work is still ongoing. Most respondents felt that they were well informed, although this is probably because they are regular attendees of the RAB meetings. Two respondents from Jamestown felt that they were not well informed of the progress at the sites. One respondent noted that reaching out with cleanup information to the general citizenship has been difficult, and public interest appears to be declining as time goes on.

Nearly all respondents felt that the cleanup process from investigations to ROD completions is moving too slowly, and two cited concerns over bureaucracy and burdensome paperwork. Two respondents noted concerns for public safety as fences around some of the sites have been compromised. One respondent noted that prioritization of cleanups is not clear and may be influenced by political pressures. Other concerns on future use and future construction/demolition activities were cited.

1.3 FIVE-YEAR REVIEW PROCESS

This is the third five-year review for the NAVSTA Newport. The first two five-year reviews, completed by the Navy in 1999 and 2004, concluded that the source control remedy for McAllister Point Landfill had been successfully implemented and remains protective of human health and the environment. Similarly, the groundwater remedy selected for Tank Farm 5, Tanks 53 and 56, was determined to have been successfully implemented and groundwater monitoring data indicated that contaminants do not remain at levels that pose an unacceptable risk to human health of the environment. The second five-year review recommended that a ROD revision be implemented for No Further Action at Tank Farm 5, Tanks 53 and 56, if monitoring data from May 2004 showed contaminant concentrations below RIDEM GA Groundwater Objectives and federal MCLs.

The third five-year review for NAVSTA Newport was led by Winoma Johnson, the NAVFAC Remedial Project Manager. The following team members assisted in the review:

- Kymberlee Keckler, USEPA Region I Remedial Project Manager
- Robert Lim, USEPA Region I Remedial Project Manager
- Ginny Lombardo, USEPA Region I Remedial Project Manager
- Paul Kulpa, RIDEM Remedial Project Manager
- Cornelia Mueller, NAVSTA Newport IR Program Manager
- Stephen S. Parker, TtNUS Project Manager

- Lori Anderson, TtNUS Project Scientist
- Peter Seward, TtNUS Project Scientist

The five-year review included the following activities: a review of relevant documents, including decision documents and monitoring reports (see Appendix A); a site inspection; and limited interviews. A summary of relevant data regarding the components of the site remedies is presented in Sections 2 and 3 for the McAllister Point Landfill and Tank Farm 5, Tanks 53 and 56, respectively. A site inspection was completed on May 4, 2009; attendees included members of the TtNUS project team. After completion of the inspection of the Tank Farm 5 and McAllister Point Landfill areas, the project team met with NAVSTA Newport environmental staff.

Notice of the preparation of the five-year review for NAVSTA Newport was provided to community representatives via a mailing to the Restoration Advisory Board (RAB) members and community leaders on April 9, 2009. In addition, a public notice was placed in the Newport Daily News, a daily publication that has circulation in all four communities. This notice was run on April 28, 2009. The notice and the mailing encouraged public participation in the five-year review process through contact with the Navy, through the RAB, and via a mailed questionnaire. Copies of the final five-year review report will be made available for review in the information repositories listed below.

- Newport Public Library, Aquidneck Park, Newport, RI 02840
- Middletown Free Library, Middletown, RI 02842
- Portsmouth Free Library Association, Portsmouth, RI 02871

1.4 REPORT ORGANIZATION

This report has been organized to address the various components and general format requirements specified in the Comprehensive Five-Year Review Guidance, OSWER No. 9355.7-03B-P (USEPA, 2001). Section 1 provides an overview of NAVSTA Newport, including history, chronology, and the five-year review process. Section 2 provides information in accordance with the USEPA guidance for the McAllister Point Landfill. Section 3 provides information in accordance with the USEPA guidance for Tank Farm 5 – Tanks 53 and 56. Section 4 includes a brief summary of the history, investigations performed, and current activities underway at each of the remaining 13 sites at NAVSTA Newport that are included in the FFA. The following appendices are included in the report: Appendix A is a list of documents reviewed and referenced in this report; Appendix B includes a site inspection summary with photographs; Appendix C is a list of individuals who were contacted for input; Appendix D includes a summary of ARARs applicable to McAllister Point Landfill and Tank Farm 5 – Tanks 53 and 56; and Appendix E is a copy of "Installation Restoration (IR) Site Access and Use," NAVSTA Newport/Local Area

Rhode Island Coordinator Instruction 5090.15A. Appendix F provides support information on the data assessments conducted as a part of this five year review.

2.0 SITE 01 - MCALLISTER POINT LANDFILL

2.1 HISTORY AND SITE CHRONOLOGY

The McAllister Point Landfill at NAVSTA Newport was operated as a sanitary landfill over a 20-year period. From 1955 until the mid-1970's the landfill accepted all the wastes generated at the Naval complex, including waste from all operational areas (machine shops, ship repair, etc.), Navy housing areas (domestic refuse), and from the 55 ships home ported at Newport prior to 1973 (approximately 14 40-cubic yard containers each day). The materials disposed of at the landfill reportedly included spent acids, paints, solvents, waste oils (diesel, lubrication, and fuel), polychlorinated biphenyl (PCB)-contaminated transformer oil; domestic refuse; and construction debris.

During the period from 1955 through 1964, wastes were trucked to the landfill, spread out with a bulldozer, and covered. In the late 1950's or early 1960's, an incinerator was built at the landfill. From that time through about 1970, approximately 98 percent of the wastes were burned in the incinerator; the ash and unburned materials were disposed of in the landfill. The incinerator was closed around 1970 due to the resultant air emissions. During the remaining years that the site was operational, all wastes were again disposed of directly into the landfill. Based on a review of aerial photographs of the site covering the period from 1965 through 1975, a change in the shape of the shoreline in the central portion of the site is evident, indicating filling of Narragansett Bay in this area. After disposal activities ceased in 1973, a three-foot thick covering of clay/silt was reportedly placed over the central portion of the landfill, and the site remained inactive.

In November 1989, NAVSTA Newport (then NETC), including the landfill, was listed on the EPA's NPL of abandoned or uncontrolled hazardous waste sites subject to requirements of CERCLA and the Superfund Amendments and Reauthorization Act of 1986 (SARA). Following completion of the Phase I Remedial Investigation, a ROD was signed by EPA and the Navy in September 1993. The ROD selected a multi-media, low permeability cap as a source control measure for the landfill, as discussed in Section 2.2. Construction of the landfill cap commenced in 1995, and was completed in 1996, when the landfill was formally closed in compliance with a Consent Decree Agreement between the Navy and EPA.

Additional information on site use and history can be found in the Draft Final Remedial Investigation Report, Revision 1 (B&RE, 1997a). A chronology of important events regarding the operation and remedies for the McAllister Point Landfill is shown in the table that follows.

EVENT	DATE
Landfill operations commenced.	1955
Incinerator built.	1965
Ceased operation of incinerator due to air emission issues.	Approx. 1970
Landfill disposal activities ceased.	1973
NETC Newport listed on NPL	November 21, 1989
Record of Decision (source control, landfill cap) issued – OU1.	September 27, 1993
Remedial Investigation Report and Human Health Risk Assessment completed.	July 1, 1994
Ecological Risk Assessment completed.	October 1, 1994
Feasibility Study Report completed.	October 1, 1994
RCRA Subtitle C cap design completed.	1994
Landfill cap construction activities.	March 1995 – October 1996
30-year operations and maintenance (O&M) period began.	1997
Marine Ecological Risk Assessment completed.	March 1997
Draft Final Phase II RI Report, Revision 1 completed.	April 1997
Annual Monitoring Report Operations and Maintenance Activities for 1997 completed.	September 1, 1998
Final Feasibility Study (management of migration and marine sediment) completed.	May 3, 1999
Annual Monitoring Report Operations and Maintenance Activities for 1998 completed.	July 1, 1999
First Five-Year Review completed (OU1 only).	December 1, 1999
Phase I Predesign Investigation for Offshore Areas of the McAllister Point Landfill completed.	February 2000

EVENT	DATE
Record of Decision (management of migration, contaminated marine sediments) issued (OU4).	March 1, 2000
Annual Monitoring Report Operations and Maintenance Activities for 1999 completed.	March 20, 2000
Annual Monitoring Report Operations and Maintenance Activities for 2000 completed.	April 2001
Eel grass restoration performed.	May 2001 – October 2001
Dredging completed.	October 2001
Marine sediment remedial construction work completed.	November 15, 2001
Restoration of onshore areas used during the remedial action completed.	May 2002
Long-term monitoring and O&M.	On-going
Annual Monitoring Report Operations and Maintenance Activities for 2001 completed.	July 2002
Annual Monitoring Report Operations and Maintenance Activities for 2002 completed.	May 7, 2003
Post Dredging Habitat and Artificial Reef Surveys	2003
Annual Monitoring Report Operations and Maintenance Activities for 2003 completed.	May 2004
Second Five-Year Review completed.	December 2004
Final McAllister Point Post Dredging Eelgrass Monitoring Report 2005 completed.	March 2005
Annual Monitoring Report Operations and Maintenance Activities for 2004 completed.	July 2005
Work Plan for Long Term Monitoring completed.	October 2005
Round 1: December 2004 Long-Term Monitoring Report completed (Marine Sediments).	March 2006
Final Annual Monitoring Report Operations and Maintenance Activities 2005 completed.	February 2006
Final Supplemental Eelgrass Mitigation Work Plan completed	April 2006
Round 2: October-November 2005 Long-Term Monitoring Report completed (Marine Sediments).	April 2006
Explanation of Significant Difference (ESD) Report completed.	September 2007

EVENT	DATE
Final Annual Monitoring Report Operations and Maintenance Activities for 2006 completed.	December 2007
Final Marine Sediments Monitoring Report Sampling Round 3: October 2006 completed.	December 2007
Final Annual Monitoring Report Operations and Maintenance Activities for 2007 completed.	November 2008
Final Marine Sediments Monitoring Report Sampling Round 4: October 2007 completed.	December 2008
Draft Annual Monitoring Report for Operations and Maintenance Activities for 2008 completed.	March 2009
Draft Marine Sediments Monitoring Report, Sampling Round 5: October 2008 completed.	March 2009

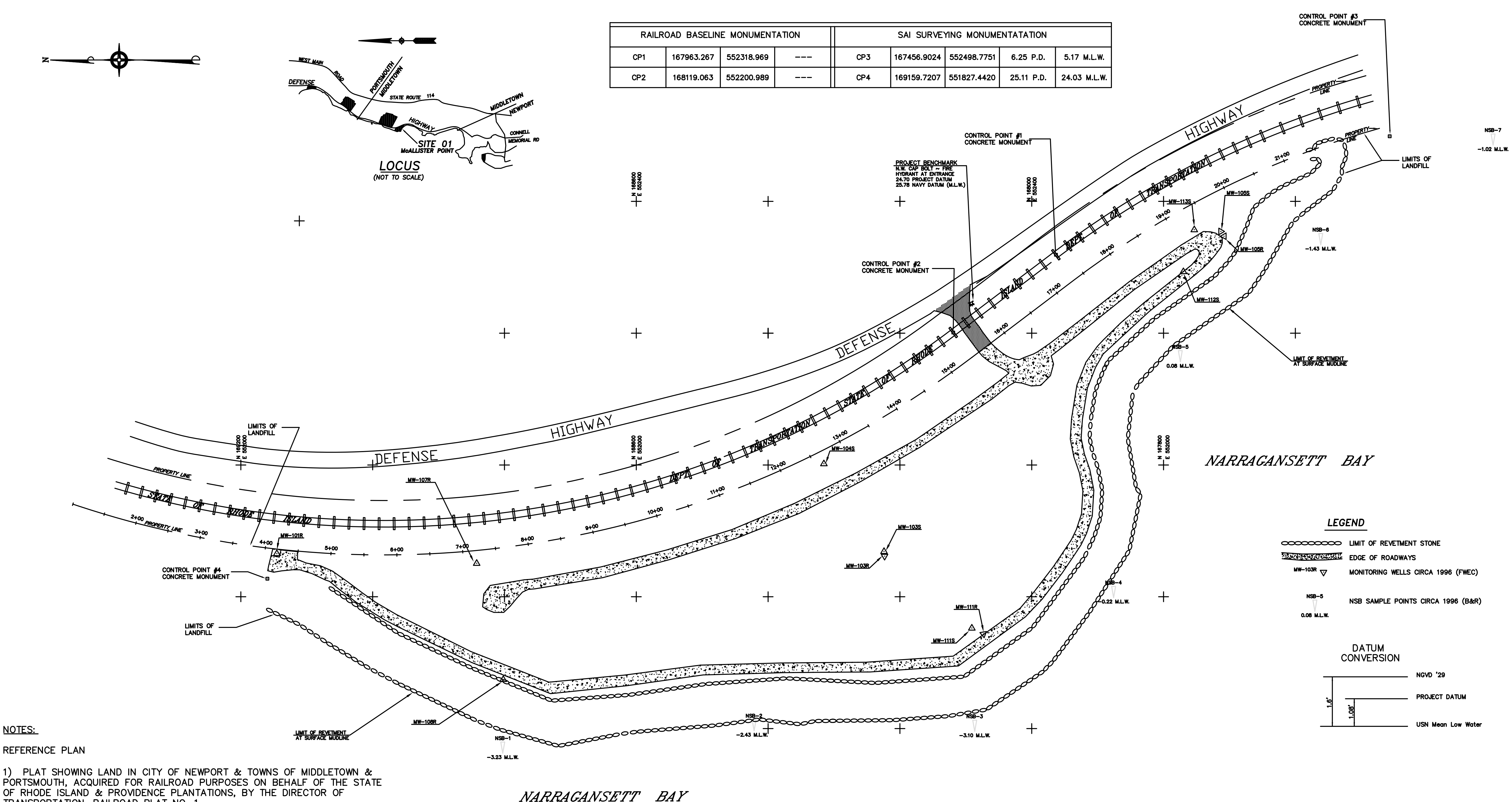
2.2 BACKGROUND

The McAllister Point Landfill (Site 01), covers approximately 11.5 acres in the central portion of NAVSTA Newport, and is situated between the Defense Highway (to the east) and Narragansett Bay (to the north, south, and west) (Figure 2-1). Railroad tracks along a right-of-way for the Rhode Island Department of Transportation run in a north-south direction along the eastern side of the site, parallel to the Defense Highway. A locked chain-link fence surrounds the site. Access to the site is via an access road off of Defense Highway, through a gate in the east-central portion of the site.

Physical Characteristics

Approximately 6 acres of the 11.5 - acre site were used for the landfill operations. The central to north-central portion of the site was a mounded area; the northern and southern areas were flat, but have been graded to landfill slopes. Ground elevations were approximately 15 to 35 feet above mean low water level across the site; the grade dropped steeply to the shoreline along the western edge of the site (TRC, 1994). There were wooded areas north of the mounded area and in the northeast portion of the site between the railroad tracks and the Defense Highway (TRC, 1994).

RAILROAD BASELINE MONUMENTATION				SAI SURVEYING MONUMENTATATION				
CP1	167963.267	552318.969	---	CP3	167456.9024	552498.7751	6.25 P.D.	5.17 M.L.W.
CP2	168119.063	552200.989	---	CP4	169159.7207	551827.4420	25.11 P.D.	24.03 M.L.W.



NOTES:

REFERENCE PLAN

1) PLAT SHOWING LAND IN CITY OF NEWPORT & TOWNS OF MIDDLETOWN & PORTSMOUTH, ACQUIRED FOR RAILROAD PURPOSES ON BEHALF OF THE STATE OF RHODE ISLAND & PROVIDENCE PLANTATIONS, BY THE DIRECTOR OF TRANSPORTATION, RAILROAD PLAT NO. 1.

2) SAI SURVEYING CO. INC. 5-22-97 SITE PLAN, MCALLISTER POINT LANDFILL, NAVAL EDUCATION AND TRAINING CENTER, MIDDLETOWN, RHODE ISLAND FOR BROWN AND ROOT ENVIRONMENTAL

GENERAL NOTE

1) NSB SAMPLE POINTS ELEVATIONS ARE LISTED AS NAVY MEAN LOW WATER.

2) DATUM USED FOR PLAN = PROJECT DATUM, HORIZONTAL COORDINATES BASED ON REFERENCE PLAN NO. 1, NOTED ABOVE.

MCALLISTER POINT LANDFILL

NAVSTA NEWPORT – FIVE-YEAR REVIEW

NEWPORT, RHODE ISLAND

DRAWN BY:	D.W. MACDOUGALL	REV.:	0
CHECKED BY:	S. PARKER	DATE:	APRIL 20, 2009
SCALE:	AS NOTED	FILE NO.:	\01636\0210\FIG_2-1.DWG

FIGURE 2–1

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

The overburden materials included: a silt, clay, and shale fragment layer; a silt and sand layer; domestic and construction debris (e.g. fill); and glacial till deposits. The two layers overlying the fill were discontinuous and were assumed to be cover placed on the fill material in 1973. The fill material ranged from 3 to 8 feet thick in the northern and eastern portions of the site to 25 to 28 feet thick in the western portion of the site, along the shoreline. Bedrock underlies the glacial till deposits at depths of 3 feet in the north portions of the site and is found at depths of 28 feet in the central portion of the site (B&RE, 1997a).

Shallow and deep groundwater flows from east to west toward Narragansett Bay. Depth to groundwater varies a great deal across the site due to site topography and location; seasonal variations in depth to groundwater have also been observed. Depth to groundwater ranges from approximately 7 to 9 feet below ground surface (bgs) in the southern portion of the site; and from 14 to 28 feet bgs in the central portion of the site. The greatest depth to groundwater was observed along the western edge of the site (TRC, 1994).

Currently, the landfill is covered by a multi-media low-permeability cap that prevents direct exposure to and further erosion of landfill materials. This cap was constructed in 1995 and 1996 as part of the remedial action described in Section 2.3. The surface of the cap is vegetated and graded to promote runoff of precipitation, thus minimizing potential infiltration that could cause further leaching of landfill contaminants. The toe of the landfill slope facing Narragansett Bay is covered with a stone revetment to protect the cap from wave erosion. The capped area, excluding the revetment, is fenced. Access to the shoreline adjacent to the landfill is not completely restricted, but signs are present warning against landing and trespass. In addition, the periphery on the east side is protected by bollards and chains to prevent trespass in the area near the fence.

There are no surface water bodies on the site. Surface water run-off flows from the landfill area down the western slope of the site into Narragansett Bay and from the eastern portion of the site into drainage swales constructed on the landfill cap and then into culverts that discharge into the bay. Rainfall generally infiltrates into the ground surface before being deflected by the cap materials under the vegetated layer. Rain water does not directly discharge to Narragansett Bay (Foster Wheeler, 2002).

A passive gas vent system was installed during construction of the cap to dissipate potential off gas buildup that could disturb the capping materials. A network of groundwater monitoring wells on site is used as part of the long-term monitoring program.

Land and Resource Use

The site is located near the center of the 6-mile-long NAVSTA Newport base on Aquidneck Island and is surrounded by other portions of the Base and by Narragansett Bay. As of 1994, the site was zoned by the Navy as “open space” (TRC, 1994). Institutional controls established under the 1993 ROD include the a restriction on future use of the site to use as a landfill and site access controls, including a locked, perimeter chain-link fence (U.S. Navy, 1993).

Site access is restricted under the June 2003 NAVSTA Newport Instruction - “Installation Restoration (IR) Site Access and Use,” NAVSTA Newport/Local Area Rhode Island Coordinator Instruction 5090.15A (U.S. Navy, 2003b). Another NAVSTA Newport Instruction was issued on September 27, 2007, “Installation Restoration (IR) Site Use Restrictions,” NAVSTA Newport/Local Area Rhode Island Coordinator Instruction 5090.15B (U.S. Navy, 2007a), to address issues that were noted in the second five-year review (TtNUS, 2004d). These issues included consideration of deed restrictions as institutional controls if ownership of the property should change in the future, and possible changes in future land use of the site property (possible “inhabited buildings”). In September 2007, an associated “explanation of significant difference” (ESD) (U.S. Navy, 2007b) was issued to document the additional protection site use restrictions for Site 1 (i.e., the issues that were resolved under Instruction 5090.15B). The ESD was signed by the Navy and EPA in October 2007.

While the ROD required fencing and institutional controls (deed restrictions) to control site access and future site use, it was noted in the second five-year review that there was no formal mechanism to enforce these requirements. The addition of the Instruction 5090.15B and the ESD ensure: that while the property remains under the control of the Navy, the cap integrity will be maintained and the perimeter fence will remain secure at all times, and the institutional controls will be monitored at least annually to confirm compliance; and that if the property is ever excessed or otherwise conveyed in the future, deed restrictions that will run with the land and that will meet State and local recording standards for restrictions will be established to put applicable land use restrictions on the property. The cap integrity restrictions prevent alteration of the ground surface in any way and prevent interaction with or use of the groundwater at the site. The issuance of the Base Instruction and the ESD do not fundamentally alter the remedy and will better ensure that the remedy remains protective of human health and the environment.

The RIDEM Office of Water Resources continues to prohibit shellfishing (bivalves only) along the entire NAVSTA Newport shoreline of Narragansett Bay, including the shoreline and offshore area of McAllister Point Landfill, due to known or potential sewage discharges (U.S. Navy, 2000 and RIDEM, 2009). Use of the area for shellfishing may be a potential future use (U.S. Navy, 2000). (Additional discussion is presented in Section 2.5.2). As previously discussed in Section 1.2.4, RIDEM has classified groundwater at the McAllister Point Landfill as GA Non-Attainment (GA-NA). The GA classification indicates that the groundwater is known or expected to be suitable for drinking water use without treatment and NA indicates that the area is not in compliance with the classification. The goal for a non-attainment area is to restore the groundwater resource to its quality classification. However, this goal may not be achieveable due to the landfilled materials that remain on the site and potential salt water intrusion due to the site's location immediately adjacent to Narragansett Bay (U.S. Navy, 2000). As stated in Section 1.2.4, RIDEM does not have an EPA-approved Comprehensive State Groundwater Protection Program (CSGWPP) and therefore, EPA does not recognize RIDEM's classification system. EPA expects that all groundwater will be remediated to its beneficial use. However, groundwater cleanup standards do not have to be achieved under a waste in place unit.

2.3 REMEDIAL ACTIONS

There have been two separate remedial actions implemented at the McAllister Point Landfill. A source control remedy, referred to as Operable Unit 1 (OU1), was selected following completion of investigations and a feasibility study in the early 1990s and issuance of a ROD in 1993. In addition to the source control remedy, the 1993 ROD also required the studies described in Section 2.3.1. In April 1996, during construction of the source control remedy, landfill debris was discovered in the intertidal zone following a winter construction hiatus. This discovery led to investigations of the extent of landfill debris in Narragansett Bay and completion of a feasibility study for marine sediment/management of migration. A second ROD that addressed marine sediments/management of migration, referred to as OU4, included a remedy for marine sediment contamination, and was issued in March 2000.

The basis for the selection of the remedies for each operable unit described in the 1993 and 2000 RODs and implementation of the selected remedies are described below in Sections 2.3.1 and 2.3.2, respectively.

2.3.1 Remedy Selection

The basis for the selection of the source control and marine sediment/management of migration remedies in the 1993 and 2000 RODs, respectively, is described below.

Source Control

Remedial action objectives (RAOs) were developed for the site to aid in the development and screening of response alternatives, and to mitigate existing and future potential threats to human health and the environment. As summarized in the 1993 ROD, these RAOs are:

- To minimize potential environmental impacts by minimizing off-site migration of potentially contaminated surface soils, and by limiting the infiltration of precipitation to the underlying waste within the landfill area, thereby minimizing leachate generation; and

- To minimize potential risk to human health associated with exposure to the landfill area.

As stated in the 1993 ROD, the selected “source control” remedy is comprised of the following components:

- Capping of the site with a RCRA Subtitle C multi-layer cap;
- Establishing landfill gas controls to manage landfill gas migration;
- Constructing surface controls to minimize erosion and manage runoff;
- Fencing and institutional controls (deed restrictions) to control site access and future site use;
- Operation and maintenance and site monitoring; and
- Five-year review.

In addition, the 1993 ROD contains provisions for undertaking additional studies which include:

- Determining if additional measures, beyond capping, must be taken to reduce the amount of groundwater in contact with the contaminated materials of the landfill;

- Determining the nature and extent of groundwater contamination and whether additional measures, beyond capping, are necessary to meet federal or state groundwater standards and to reduce to acceptable levels any unacceptable risks to human health or the environment from groundwater contamination;

- Determining whether “hot spots” (isolated areas of higher concentrations of contaminants) within the landfill materials, if present, will need to be addressed by a separate remedial action or can be addressed by the landfill cap; and

- Determining the nature and extent of any near-shore sediments that have been affected by site-related contamination, and whether they will need to be addressed by a separate remedial action or whether they can be addressed through consolidation under the landfill cap.

Marine Sediment/Management of Migration

As described above, the 1993 ROD required investigations of sediments offshore of the landfill, in addition to the implementation of the source control remedy. Those investigations, as well as the investigations completed following the April 1996 discovery of landfill debris in the intertidal zone, determined the presence of landfill material and sediment contamination in both nearshore and offshore areas. The remedy selected in the 2000 ROD covers nearshore and elevated-risk offshore areas and offshore areas with low risk. RAOs for the nearshore and elevated-risk offshore areas include:

- Prevent human ingestion of shellfish impacted by sediments with contaminant of concern (COC) concentrations exceeding the selected Remediation Goals (RGs);

- Prevent exposure of aquatic organisms to sediments with COC concentrations exceeding the selected RGs;

- Prevent avian predator ingestion of shellfish impacted by sediments with COC concentrations exceeding the selected RGs;

- Minimize migration of sediments with COC concentrations exceeding the selected RGs to offshore areas and previously unaffected areas of Narragansett Bay; and

- Prevent washout of landfill debris into the marine environment.

The RAOs for the offshore areas with low risk include:

- Prevent exposure of aquatic organisms to sediments with COC concentrations exceeding the selected RGs; and

- Minimize migration of sediments with COC concentrations exceeding the selected RGs to previously unaffected areas of Narragansett Bay.

Sediment RGs were developed for six COCs to achieve a risk reduction for all identified receptors (aquatic organisms, avian predators, and human health) and all sediment areas. These RGs are shown in the table below. The ROD anticipated that remediating the sediments to the RGs for the six COCs would also reduce concentrations of other co-located COCs.

Contaminant of Concern	Selected RG
Copper	52.9 (ppb in porewater)
Nickel	33.7 (ppb in porewater)
Anthracene	513 (ppb in sediment)
Fluorene	203 (ppb in sediment)
Pyrene	2,992 (ppb in sediment)
Total PCBs	3,634 (ppb in sediment)

Source: U.S. Navy, 2000

The nearshore/elevated-risk offshore area remedial action included dredging of an estimated 34,000 cubic yards of contaminated sediment and debris, screening and separating materials by size, dewatering the sediment and debris, treatment of the dewatering liquids and discharge to Narragansett Bay, disposal of contaminated sediment/debris under the McAllister Point Landfill cap or other off-site facility, and backfilling the dredged area with clean material. Following completion of the dredging and backfill operations, the ROD required monitoring to assess the success of site restoration and reestablishment of aquatic habitats. The ROD assumed that monitoring would be required for 5 years and one five-year review would be conducted since the remedy was intended to completely remove all contaminated sediment exceeding the selected RGs (U.S. Navy, 2000).

The 2000 ROD included a removal action for “nearshore” sediments and “elevated risk-offshore” sediments, as well as limited action for the “offshore areas with low risk”. The ROD did not include institutional controls or access restrictions and did not recommend any cleanup actions for groundwater or landfill gas (U.S. Navy, 2000). The limited action alternative did include long-term monitoring (30 years) of sediment and biota and five-year reviews. Annual monitoring was required until the Navy and regulatory agencies determined that the frequency could be reduced from annual to once every 5 years (U.S. Navy, 2000).

2.3.2 Remedy Implementation

Implementation of the source control remedy is described below. As previously mentioned, during construction of the landfill cap, landfill debris was discovered in the intertidal area beyond the landfill boundary. This discovery lead to further investigations, culminating in a second ROD in March 2000, as described above. Implementation of the marine sediment remedy described in the 2000 ROD is also described below.

Source Control

The remedial activities for the McAllister Point Landfill (Source Control) were completed in 1996, and consisted of the following elements:

- Constructing a heavy armor stone revetment to protect the western slope of the landfill from wave erosion;
- Re-grading and reconsolidating waste material;
- Cleaning up exposed debris within close proximity to the shoreline;
- Covering the fill area with a RCRA Subtitle C multi-layer cap;
- Installing a passive gas collection venting system;
- Installing surface controls to minimize erosion and collect runoff;
- Installing a perimeter chain-link fence and implementing procedures to control site access and use;
- Revegetation planting of upland habitat; and
- Installing groundwater monitoring wells to replace the wells that were destroyed during capping of the landfill.

A final "Certification Report for Remedial Action" (Halliburton NUS Corp., 1997) was submitted to the Navy, EPA, and RIDEM in February 1997. The report documented and certified that the methods, procedures, and inspection and testing activities conducted to close the landfill were performed in accordance with the EPA-approved 100 percent design project specifications and drawings, and the Material Quality Assurance/Construction Quality Assurance Plan. The data collected during the project were used as the basis to certify that the landfill was closed in accordance with the project specifications and drawings. As part of the remedy, institutional controls were implemented including fencing, access controls, and restrictions of the area to future use as a landfill. An operation and maintenance (O&M) plan was prepared in March 1997 (Foster Wheeler, 1997). The 30-year O&M period is now underway, in accordance with the May 1997 Operations and Maintenance Manual (see Section 2.3.3).

Marine Sediment/Management of Migration

Following the issuance of the 2000 ROD, a number of studies were completed during the remedial design phase of work. The Pre-Design Investigation evaluated the use of the McAllister Point Landfill for disposal of contaminated marine sediments. A baseline marine habitat survey was completed, followed by completion of a habitat mitigation plan. The remedial design reflected the decision to dispose of contaminated sediment and landfill debris at licensed off-site facilities, rather than under the McAllister Point Landfill cap.

Mobilization activities commenced in late February 2001. Site preparation activities included: construction of haul roads to and around the material handling area staged at Tank Farm 5; installation of silt and chain link fencing; and construction of the material handling area. The material handling area and a water collection pond at Tank Farm 5 were constructed in accordance with the agency-approved design documents; the pond included a geotextile membrane liner, sand and gravel layers. Turbidity curtains were installed at the perimeter of the nearshore and elevated risk offshore areas to minimize the migration of sediments during the dredging activities. Turbidity curtains were also used as the dredging progressed to separate confirmed clean areas from active dredging areas.

The thickness of the landfill debris layer in the nearshore area generally ranged from 1 to 10 feet thick. Dredging was performed from a haul road constructed along the shore line. The debris dredged from this area included bricks, scrap metal, glass, submarine netting, automobile tires, a safe, ash, sandblast grit, and a decayed metal storage tank; no drums were found (Foster Wheeler, 2003a). Once the landfill debris layer had been removed and the bottom of contaminated sediment reached, based on visual inspection of the material, confirmation samples were collected. After an area was confirmed clean, the area was backfilled with materials appropriate to the area and graded.

Dredging of the sediment from the “elevated risk offshore” area was performed from a barge. Once the bottom extent of the landfill debris material was reached and the material in the clamshell bucket was visually clean, confirmation samples were collected (Foster Wheeler, 2003a). After an area was confirmed clean, the area was backfilled with materials appropriate to the area and graded.

The confirmation samples from both the nearshore and elevated risk offshore areas were analyzed for total anthracene, pyrene, fluorene, and PCBs. Porewater copper and nickel samples were collected from every 2,000 square foot area, or every other sample grid (Foster Wheeler, 2003a). Once the confirmation sample results met the RGs (see table in Section 2.3.1) the area was considered clean. Areas that did not initially meet the RGs were excavated further and the sampling process repeated until the area was determined to be clean (Foster Wheeler, 2003a). The confirmation sampling program included collection of field duplicates, equipment rinsates, and other QA/QC samples.

The dredged materials were staged in the material handling area and stockpiled in 500 cubic yard piles. Samples were taken from each stockpile for waste characterization; based on the analytical results an appropriate off-site disposal facility was selected. Dredged sediment and landfill debris were disposed as follows: non-hazardous materials were taken to two RCRA Subtitle D facilities in Massachusetts; non-TSCA PCB material was disposed of in New Hampshire; and non-hazardous material with lead concentrations greater than 2000 ppm and non-TSCA PCB material were disposed of in South Carolina. Approximately 46,263 tons of contaminated sediment, 86 tons of scrap metal, and 18.5 tons of steel submarine netting were removed during the remedial action (Foster Wheeler, 2003a). A small amount of material was found that emitted low level radioactivity identified by standard screening processes. This material was containerized into three 55-gallon steel drums, which were removed and properly disposed of by Navy personnel.

Approximately 895,540 gallons of water from the water collection pond were treated and discharged to the Newport publicly-owned treatment works (POTW) under an industrial user wastewater discharge permit. The treatment system installed to treat contaminated groundwater from the Tank 53 area was modified to treat the water from the collection pond. The treatment system included pH adjustment, bag filter units, and carbon units. The treated water was sampled to confirm that the water discharged to the POTW met the RGs.

Prior to the removal of contaminated sediment, a habitat mitigation plan was developed to restore habitat destroyed during the dredging operations to the conditions documented during the baseline habitat survey. The mitigation plan included replacement of dredged sediments with clean backfill, construction of fish habitat structures, and off-site eelgrass restoration (including transplanted and seeded eelgrass). The work was completed in 2001; monitoring in July 2002 found poor survival of the planted eelgrass (SAIC, 2004). Habitat monitoring and eelgrass monitoring was discontinued after the events in 2003 and 2004.

A site inspection completed in November 2001 identified an area along the shoreline containing miscellaneous metal debris. This material was removed in December 2001. Demobilization, including removal of all temporary facilities and equipment, was completed on December 14, 2001. Additional areas with vitrified landfill debris were observed in January and March 2002. These materials were removed in March 2002 (Foster Wheeler, 2003a). Confirmation samples were collected, and after the area was determined to be clean, the area was backfilled. A final inspection conducted on March 28, 2002, verified that all debris had been removed (Foster Wheeler, 2003a).

2.3.3 Operations and Maintenance

Source Control

In 1997 Foster Wheeler Environmental Corporation (FWENC) completed an O&M plan which outlined site monitoring activities for the on-shore portions of the landfill, as described in the ROD for OU1. In October 2005, Tetra Tech NUS, Inc. completed a Long Term Monitoring (LTM) work plan, for marine sediment under OU 4. The new work plan incorporated the original source control work plan elements and the marine sediment LTM work plan for the site. Section 4.1 of the 2005 work plan describes the source control monitoring efforts (for OU 1) and section 4.2 of the 2005 work plan addresses the marine sediment LTM effort (OU4). Based on the 1997 O&M plan as incorporated into the 2005 LTM work plan, the O&M program for the site includes the following activities.

- Annual collection and analysis of groundwater and landfill gas samples;
- Quarterly and semi-annual inspection and repair of the landfill cap system, as necessary;
- Annual survey of the stone revetment and settling platform; and
- Annual mowing of the landfill cover.

The O&M plan (Foster Wheeler, 1997) specified quarterly groundwater monitoring of all wells for 3 years (1997 – 1999). After 3 years the frequency of monitoring was to be reduced to annual events along with a reduction in the number of monitoring wells sampled. At the direction of the Navy, all wells were sampled annually in 2000, 2001, and 2002 (often some of the wells were dry or there was too little water to collect a sample).

The O&M plan (Foster Wheeler, 1997) also specified screening landfill gasses at all vents and gas monitoring points quarterly, and sampling (with laboratory analysis) vents and ambient air once per year (summer).

Landfill inspections were to be conducted on a quarterly basis for the first 5 years, and then semiannually after that. Landfill inspections are also required after any storm event with wind speeds greater than 50 mph or 5 inches of rain. The landfill inspections included: cap, storm water drainage system, revetment, gas monitoring wells and vents, access road, perimeter fence, vegetation, and groundwater monitoring wells.

The actual and planned monitoring and maintenance activities and frequencies for the landfill are summarized in Table 2-1. Groundwater and landfill gas monitoring results and landfill inspection observations are discussed in Section 2.4.2.

Marine Sediment/Management of Migration

Following implementation of the restoration components of the mitigation plan (clean backfill, construction of artificial reefs placed offshore in 2001, and eelgrass restoration), followup habitat monitoring was conducted in the spring, summer, and fall of 2003. Post-dredging habitat monitoring included assessments of: the aquatic habitat in the backfilled and restored area; the expansion of eel grass into the dredged area; and monitoring of two seeded areas and one transplant area (SAIC, 2004). Additional habitat monitoring has not been conducted since that time.

A separate long term monitoring program (LTMP) is required for the marine environment under the Marine Sediment/Management of Migration ROD (Operable Unit 4). The OU4 LTMP has two elements, one for the dredged area (nearshore and elevated-risk offshore) and one for the non-remediated offshore area. In the dredged area, porewater chemistry, biota, and toxicity are to be evaluated for the first 5 years (ROD assumed years 1, 2, and 5) after completion of the remedial action. In the non-remediated area, sediment chemistry, biota, and toxicity are to be evaluated in the long term (up to 30 years). The Final Long-Term Monitoring Work Plan was completed in October 2005, although the first round of off-shore monitoring was conducted in late 2004 under the associated Draft Work Plan (TtNUS, 2004d). The planned monitoring events and frequencies for the marine sediments under OU4 are summarized in Table 2-2. Marine sediment and associated monitoring results are discussed in Section 2.4.2.

TABLE 2-1
LONG-TERM MONITORING AND MAINTENANCE ACTIVITIES AT McALLISTER POINT LANDFILL
ROD FOR OU 1
FIVE-YEAR REVIEW
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

ACTIVITY	FREQUENCY
Monitoring Events*	
Groundwater Monitoring Well Sampling (including water level measurements)	Years 1 – 3 (1997 – 1999), quarterly (all wells) Years 4 – 30 (2000 – 2026), annually or as needed (all wells)
Gas Monitoring Well/Vents Sampling	Year 1 (1997), field screening annually. Years 2 – 30 (1998 – 2026), field screening quarterly annual gas sampling and analysis.
Inspections/Maintenance Events*	
Landfill Cap	Years 1-5 (1997 – 2001), quarterly Years 6 – 30 (2002 – 2026), semiannually
Revetment	
Access road/ramp	
Perimeter fence	
Groundwater monitoring wells	
Gas monitoring wells/vents	
Vegetation	Semiannually – for 30 years
Mowing	Annually – for 30 years
Storm drainage system	Semiannually – for 30 years
Settlement survey	Annually – for 30 years

* O&M monitoring and maintenance projected for a 30 - year period per the 1993 ROD for OU1: Year 1 = 1997.

TABLE 2-2
MARINE SEDIMENT LONG-TERM MONITORING AT McALLISTER POINT LANDFILL
ROD FOR OU 4
FIVE-YEAR REVIEW
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

ACTIVITY	FREQUENCY
Monitoring Events**	
Sediment Porewater toxicity and biota at MSGs 1 and 4 (Dredged Areas)	Years 1, 2, and 5 (2004, 2005 and 2009)
Sediment Chemistry, toxicity, and porewater at MSGs 2, 3 and 5 (Non-Dredged Areas)	Annually for years 1-5 (2004 – 2008); if acceptable conditions are then evident, every 5 years thereafter, until year 30 (2034).

** Monitoring projected for a 30 year period per the year 2000 ROD for OU4: Year 1 = 2004.

2.4 FIVE-YEAR REVIEW FINDINGS

2.4.1 Site Inspection

The latest semi-annual site inspections within this five-year review evaluation period were completed in May and November 2008. The landfill cover was well vegetated, with some vegetation observed growing in the swales and the revetment; however, the revetment appeared to be in good condition. There was some vegetation growing within the stones on the revetment. The vehicle entrance ramp appeared to be in good condition. The access road was lightly vegetated and no erosion was noted. The groundwater monitoring well casings were rusted but appeared operational, concrete pads were observed to be in good condition. The perimeter fence and gates were observed to be in good condition with all gates locked and secured. The accessway on the east side of the site outside the fence was blocked with bollards and chains to prevent trespass along the outside edge of the landfill. There was no evidence of vandalism or dumping near the site. Photographs taken during the site inspection are included in Appendix B.

The 1993 ROD noted that, historically, community concern and involvement had been low. A community relations plan was prepared by the Navy in July 1990. The NAVSTA Newport environmental staff indicated that community involvement has continued to be minimal. Individuals and local officials contacted through a mailed questionaire indicated a general satisfaction with the actions taken to date at the landfill and felt well-informed about cleanup activities and progress. They were not aware of any citizen complaints.

2.4.2 Document and Analytical Data Review

This five-year review included a review of relevant McAllister Point Landfill documents, including decision documents and monitoring reports (see Appendix A). Included below are summaries of relevant inspection observations and O&M data collected under OU1, as well as sediment, porewater and biota data collected under OU4. This five-year review period also included one event of eelgrass monitoring, which was part of the habitat restoration efforts conducted under OU4. The results of this monitoring are also summarized below.

2.4.2.1 Groundwater

Groundwater monitoring results for the last 5 years (2004 – 2008) are summarized in each of the annual reports “Annual Monitoring Report – Operation and Maintenance Activities” (each report title includes the associated year, from 2004 through 2008, as applicable). With the exception of the first annual report which was prepared by TtNUS (2004 annual results), the other four annual reports were prepared by

ECC and were submitted from 2006 through 2009 (for each of the sampling rounds 2 through 5, years 2005 through 2008, respectively). Summary tables in each report show groundwater results compared to EPA MCLs and RIDEM GA aquifer standards. A new Figure 2-4 was added for the 2007 and 2008 annual monitoring resports which presents a map of the monitoring well locations and the corresponding concentrations of COCs that exceeded criteria in groundwater from 1993 through the year of the report (up through 2008 for the latest annual report). The latest Figure 2-4 from the 2008 annual report is included in Appendix F-1 of this five-year review.

Contaminants found in groundwater that exceeded criteria were further evaluated. Two PAHs, naphthalene and benzo(a)pyrene, were the only organic compounds with concentrations that exceeded a criterion, either MCLs or RIDEM GA standards. Benzo(a)pyrene concentrations exceeded criteria in only one area, in the well cluster MW-103S and -103R (and only in 2006 at MW-103R). Naphthalene concentrations exceeded criteria in only one location, MW-103S, which is screened in a shallow overburden interval within landfill material containing creosote wood wastes. Contaminant concentrations in groundwater samples from MW-103S have consistently exceeded these two criteria in the past, naphthalene since 1993, and benzo(a)pyrene during five sampling events. PAHs are relatively immobile in groundwater and neither compound is present in downgradient groundwater locations. Additional figures provided in Appendix F-1 are graphs of concentration vs. time for the organic compounds and metals that were found to exceed MCLs at any time during the monitoring program.

Concentrations of two total (unfiltered) metals, lead and nickel, also exceeded criteria, nickel at MW-103S only and lead at MW-103S and slightly at MW-104S. The exceedances, primarily at MW-103S, are generally attributable to the high turbidity and silt content of this shallow overburden groundwater sample; the corresponding dissolved metals concentrations did not exceed criteria. Arsenic, occuring primarily as dissolved arsenic, was the only dissolved inorganic COC that exceeded a criterion. ”High-level arsenic exceedances (391 ug/L at MW-107R) are associated with regions under the cap with active methane generation, and as that groundwater flows out of those regions, the arsenic levels drop (55.9 ug/L at MW-108R). Dissolved arsenic levels in monitoring wells near the shore range from 55.9 ug/L to 125 ug/L. Off-shore porewater metals sampling by ECC in 2005 and 2008, conducted as part of the marine sediment sampling event, yielded arsenic porewater levels of nondetected to 34 ug/L, which are below the dissolved arsenic levels of the northern region of the site associated with arsenic mobilization. Arsenic porewater levels of the marine sediment reference area (ranging from 23.2 J µg/L to 39.3 J µg/L) were comparable to the arsenic levels in porewater samples collected off-shore of the site. The site does not appear to be contributing to off-shore arsenic porewater levels” (ECOR, 2009b).

The evaluation presented in the report shows that natural attenuation remains effective at the site in reducing COC levels and limiting migration, and the use prevention of groundwater at this site remains protective of human health.

In summary, the detailed evaluation/description of groundwater monitoring results for the last 5 years and the detailed trend analysis conducted by ECC show that grounddwater contaminant concentrations are stable or decreasing over time, and migration that would impact the downgradient marine sediment and porewater does not appear to be occurring. The Draft 2008 monitoring report recommended revising the groundwater monitoring program to reduce the number of monitored wells to the western perimeter wells to assure no contaminant migration. However, EPA commented that this approach did not provide an indicator of contaminant movement downgradient from the landfill, a concern exacerbated by the lack of downgradient monitoring wells. Navy and EPA thus agreed that monitoring of both interior wells and the wells at the western edge of the landfill would continue: annual groundwater monitoring will continue for wells 103S, 103R, 105R, 107R, 108R, 111D, 111R and 112S and monitoring of the other wells can be discontinued. A work plan modification will be needed to document this change before implementation.

2.4.2.2 Landfill Gas

A passive landfill gas venting system is currently in operation at the site. During each of the years in this five-year review period (2004 through 2008), one event for landfill gas sampling and analysis and three to four quarterly events for gas vent field-screening were conducted (3 in 2006, 4 in other years). Landfill gas sampling and analysis and gas vent field-screening results were summarized in each of the annual reports. Also, in the most recent annual report (Draft Annual Monitoring Report – Operation and Maintenance Activities – 2008 ECC, (2009a)), landfill gas concentrations were compared to three sets of criteria: OSHA PELs, to determine onsite worker safety; RIDEM ambient air levels (AALs), used for comparison of data from perimeter ambient air to determine the need for active landfill gas collection and treatment; and National Emission Standards for Hazardous Air Pollutants (NESHAP). At the landfill cap, surface worker exposure levels are all below criteria. Hazardous Air Pollutant (HAP) landfill gas emissions are considerably less than the 10 tons per year or 25 tons cumulative HAP per year criteria, therefore the Site would not be considered a major source. VOCs and SVOCs were below PELs at all ambient air sample locations and gas vent locations. Also, VOC and SVOC emissions do not exceed RIDEM AALs.

Up to 50 VOCs and 9 SVOCs were detected above laboratory method detection limits in landfill gas samples. It appears that VOCs and SVOCs are generally entrained with methane and are being vented in the central portion of the site and by the northeast perimeter vents. Higher concentrations of both methane and total hydrocarbons in landfill gas vents were located in the central and northern portions of the landfill, with generally lower levels at the perimeter vents, these results indicate that landfill gas is being vented, preventing subsurface lateral migration. Ambient air monitoring results downwind and upwind are comparable, indicating landfill gas is not impacting the surrounding area which support the conclusion that the remedy remains protective.

The evaluations conducted by ECC show that landfill gas emissions continue to remain below the regulatory criteria that would indicate a need for continued sampling and analysis, and that an active gas collection system is not required. Therefore, it was recommended in the report that the frequency of gas emissions screening for methane be reduced to an annual event and that the event be conducted during the peak methane generation period in the summer. Further, the report recommended that sampling and laboratory analysis of landfill gases including NMOCs be reduced to once every 5 years.

However, the RIDEM Office of Waste Management, Solid Waste Regulation No. 2 (Solid Waste Landfills), post-closure requirements for landfills state that the minimum frequency for methane gas monitoring is quarterly (only monitoring for methane gas is required). Therefore, the current quarterly frequency of gas screening should be continued throughout the post-closure period. There does not appear to be a regulatory requirement for sampling and analysis landfill gases and perimeter ambient air for NMOCs, and consideration should be given to discontinue this effort. The 2004 five year review stated that if the monitoring data remained below applicable standards, then a decrease in the frequency of monitoring could be considered.

A generalized summary of landfill gas data is provided in Appendix F-2 of this five-year review report.

2.4.2.3 Sediment, Porewater and Biota

Sediment, porewater and biota monitoring was initiated in 2004 in accordance with the Management of Migration ROD (OU4). Sediment and porewater contaminant concentrations are compared to remediation goals (RGs) established in the ROD. At MSGs 1 and 4, collection of monitoring data was planned for years 1, 2, and 5. Based on the findings of those three events, a recommendation would be made regarding the need to continue monitoring. The non-dredged areas would be monitored annually for years 1-5, and then every five years, based on the monitoring results. The decision tree for evaluating monitoring data is provided as Figures 3-2 and 3-3 of the LTM Work Plan (TtNUS, 2005d). This decision tree provides for comparison of data to baseline PRGs as an indicator of possible concern, and also for comparison to the RG as an indication that the remedy may not be protective.

Summaries of the annual monitoring results have been presented in annual reports for each of the five years (2004 through 2008). The most recent summary of the sediment, porewater and biota monitoring is presented in the Draft Marine Sediments Monitoring Report - Sampling Round 5 - October 2008 (ECC, 2009b), which also includes comparisons of data from previous years. In accordance with the long term monitoring program, sediment and porewater data from each monitoring station group would be compared to the RGs to determine if the ROD is protective: if net Indicator COC (ICOC) concentrations (concentrations above reference concentrations) exceed the RG for any monitoring station group as shown on Figure 2-2, then the goals of the ROD would have to be re-evaluated (TtNUS, 2005d). In addition, data would be evaluated after five rounds to determine if there is sufficient data to establish a predictive trend (either increasing concentrations or decreasing concentrations). Trend analysis was also conducted by ECC in the fifth year annual report, which provided the following conclusions (ECC, 2009b):

- Trend analysis for the sediment concentrations shows a decreasing trend for PAHs and a slightly increasing trend for PCBs in MSGs 1 and 3, though the PCB concentrations are well below the baseline PRGs at these areas. The analysis shows a decreasing trend for all ICOC concentrations in MSG 2 and an increasing trend at MSGs 4 and 5 for all ICOCs.

- The trend analysis indicates that porewater metals concentrations do not show an increasing trend at MSGs 2, 3, 4 and 5. In MSG 1, a possible increasing trend is indicated for nickel, although measured concentrations are below the baseline PRG, and well below the RG.

Toxicity and contaminant concentrations in biota were also monitored as part of the OU4 long term monitoring program. These data are considered secondary, since there are no remediation goals for sediment toxicity, porewater toxicity, or biota tissue. However, secondary data were intended to be used to assist in determining whether the ROD was protective and whether to continue monitoring if ICOCs indicate acceptable conditions (Figures 3-2 and 3-3 of the LTM Work Plan, TtNUS, 2005d).

The fifth year (2008) annual report (ECOR, 2009) included evaluations of sediment and porewater toxicity as well as biota tissue sample results. The report found that toxicity from the porewater was acceptable and/or decreasing at all MSGs. The sediment toxicity data showed a decreasing toxicity trend, with the exception of round 5, conducted in 2008; overall, the sediment toxicity test results "indicate an overall acceptable condition of the sediment pertaining to toxicity of the sediments to benthic invertebrates." Regarding biota tissue analysis, the report determined that metals and PCB congeners in sediments and metals in porewater were not impacting site biota. PAH concentrations in biota were found to be less than the project action limits.

Overall, trend analysis shows possible increasing PCB concentrations at MSGs 1, 3, and 4 in sediment, and an increase in PAH concentrations at MSGs 4 and 5 in sediment. The analysis also shows a possible increase in nickel concentrations at MSG 1. Because of the increases at MSG 5 (reference stations), the increase in PAHs is likely a regional condition. In addition, all ICOC concentrations measured are well below the baseline RGs and RGs. Finally, toxicitiy and biota tissue analysis indicates acceptable conditions. Therefore, the following is concluded:

- The ROD remains protective.
- Because ICOCs appear to be increasing at MSG 1 and 4, monitoring should continue. However, because the baseline PRGs are not exceeded, monitoring on a 5- year cycle will be adequate.
- Because ICOCs are either below baseline PRGs or decreasing in concentration at MSGs 2 and 3, the monitoring frequency can be reduced to once every 5 years.
- Because other MSGs will be monitored once every 5 years, MSG 5 (reference area) will need to be monitored once every 5 years.

2.4.2.4 Habitat Restoration: Eelgrass and Artificial Reef

In this five-year review evaluation period, one eelgrass monitoring event was conducted as part of the habitat restoration efforts under the OU4 Marine Sediment/Management of Migration ROD. This event took place in August 2004 and was conducted by Eyak Environmental Science (Eyak) under contract to TtNUS. The results of the eelgrass survey indicated that the habitat mitigation efforts yielded some new growth of eelgrass. As summarized in the March 2005 McAllister Point Post-Dredging Eelgrass Monitoring Report, Final - Revision 1 (Eyak, 2005), prior to dredging, the eelgrass beds at McAllister were measured at a coverage of approximately 0.9 acres (SAIC, 2001). After dredging, in 2002, the McAllister Point eelgrass beds measured 0.57 acres, and by August 2004 this coverage had increased to an area of approximately 0.65 acres, as reported by Eyak. The eelgrass stands were reported to be healthy, and the new growth was reported as more evident in the northern portion of the impacted beds.

In 2006, a final effort was intiated for eelgrass restoration, this time south of the site. A work plan for eelgrass mitigation (Battelle, 2006) was prepared as a supplement to the previous mitigation work plan (SAIC 2001). A total area of 2700 m^2 was replanted with eelgrass using two different methods. The work was completed in the summer months of 2006; a draft and final technical memorandum was prepared to describe the work. No follow-up mapping of the replanting has been conducted since 2006. As stated in the response to comments on the draft work plan for eelgrass mitigation, it was decided that this supplemental mitigation effort would serve as a final, good faith effort to restore eelgrass at the site. Monitoring to determine success of the mitigation is not required (Frye, 2006).

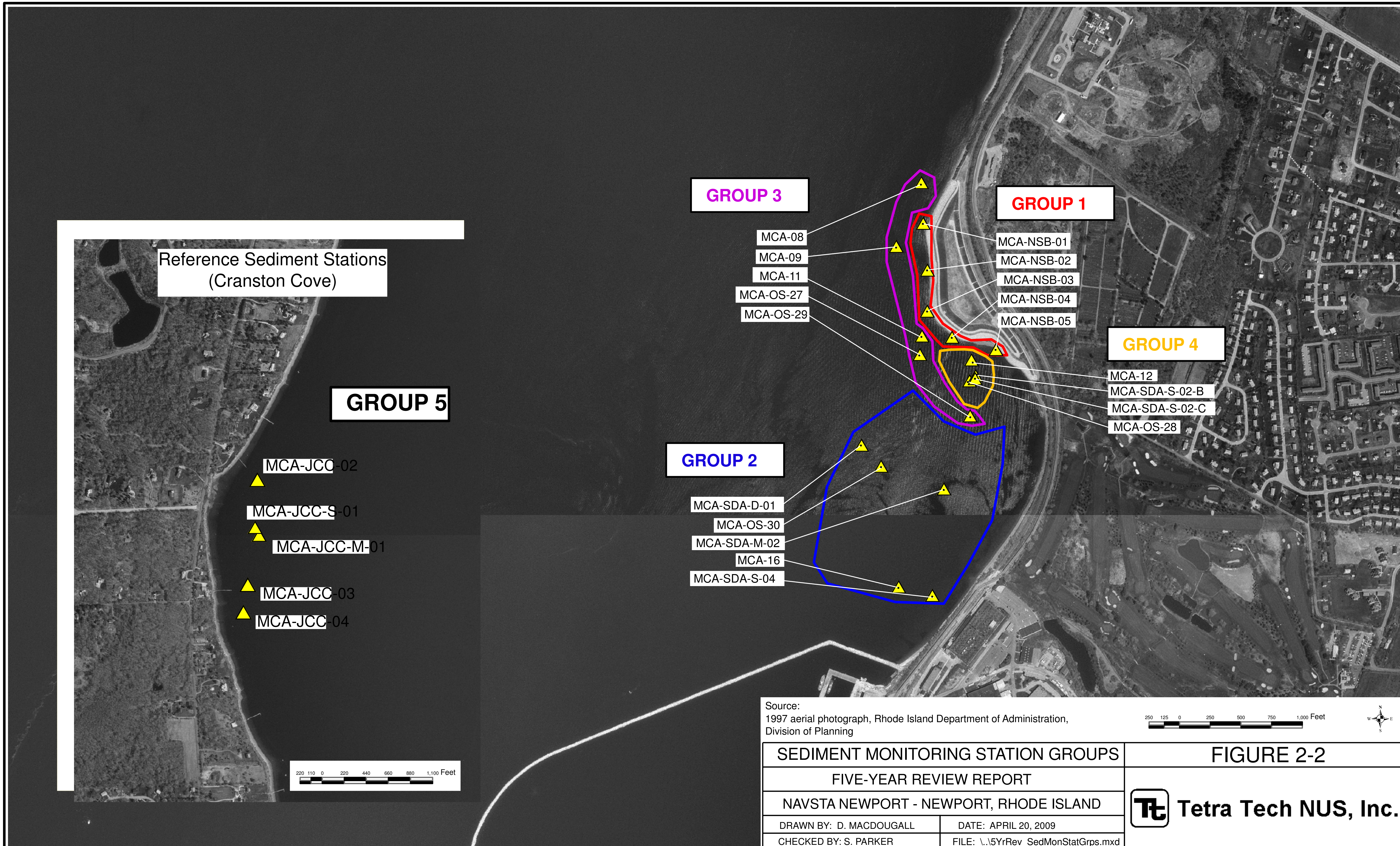
2.4.3 ARAR and Site-Specific Action Level Changes

The ARARs listed in the decision documents for this site are shown in Appendix D, Tables D-1 through D-3. While there have been several changes to the ARARs noted in the RODs and previous five-year reviews, as listed in Appendix D, none of the changes affect the protectiveness of the remedies.

Revisions to the RIDEM Remediation Regulations were issued in 1996 and again in 2004. Detailed reviews of these updates to the Regulations have been conducted as part of this five-year review: the remedial goals selected in the ROD remain consistent with the Regulations, and the revisions do not affect the protectiveness of the remedy.

No other new ARARs have been promulgated that would call into question the protectiveness of the remedy.

Action levels for sediment and porewater are risk-based and have not been revised since the previous five-year review in 2004.



Source:
1997 aerial photograph, Rhode Island Department of Administration, Division of Planning

SEDIMENT MONITORING STATION GROUPS	FIGURE 2-2
FIVE-YEAR REVIEW REPORT	Tetra Tech NUS, Inc.
NAVSTA NEWPORT - NEWPORT, RHODE ISLAND	
DRAWN BY: D. MACDOUGALL	DATE: APRIL 20, 2009
CHECKED BY: S. PARKER	FILE: \..\5YrRev_SedMonStatGrps.mxd

2.4.4 Progress Since Last Five-Year Review

The second five-year review report was entitled "Five-Year Review for Naval Station Newport, Newport, Rhode Island" and was prepared by TtNUS in December 2004. This review concluded that the remedies at the McAllister Point Landfill are protective of human health and the environment and that exposure pathways that could result in unacceptable risks are being controlled. The review recommended that all scheduled monitoring associated with OU1 and OU4 continue, and that if monitoring data are consistently below applicable standards, a decrease in frequency should be considered to optimize cost-effectiveness (TtNUS, 2004d).

One issue that was noted in the second five-year review but did not affect the protectiveness of the remedy, but could impact the remedy in the future, was that deed restrictions as institutional controls be considered for the future if ownership of the property changes. As detailed in Section 2.2 of this 2009 five-year review, on September 27, 2007 the NAVSTA Newport Instruction 5090.15B was issued and in October 2007 the associated ESD was issued to document the modification/augmentation of the ROD to address this issue.

The implementation of the ESD and the Instruction 5090.15B ensure that while the property remains under the control of the Navy, the cap integrity will be maintained and the perimeter fence will remain secure at all times, and the institutional controls will be monitored at least annually to confirm compliance; and that if the property is ever excessed or otherwise conveyed in the future, deed restrictions that will run with the land and that will meet State and local recording standards for restrictions will be established on the property. The cap integrity restrictions prevent alteration of the ground surface in any way and prevent interaction with or use of the groundwater at the site. The issuance of the Base Instruction and ESD does not fundamentally alter the remedy and will better ensure that the remedy remains protective of human health and the environment.

As also recommended in the second five-year review, monitoring in accordance with the OU4 Marine Sediment/Management of Migration ROD has continued. Monitoring for habitat restoration (eelgrass) ceased after the survey event conducted in August 2004, as discussed in Section 2.4.2.4.

Landfill monitoring and maintenance have continued. The landfill vent gas and ambient air monitoring results have not indicated a need for active gas collection and treatment. The status of the monitoring and institutional controls is discussed in Section 2.5 of this document.

2.5 TECHNICAL ASSESSMENT

The following conclusions support the determination that the remedy at the McAllister Point Landfill remains protective of human health and the environment.

2.5.1 Question A: Is the Remedy Functioning as Intended by the Decision Documents?

- **Remedial Action Performance and Monitoring Results:** There are no areas of non-compliance with any of the remedial objectives for McAllister Point Landfill. The long term monitoring program is on-going and should continue based on the results evaluated to date. At the next five-year review, the need for continuation of monitoring shall be reviewed again to identify trends (increasing or decreasing) and to assure that ICOCs are within acceptable conditions established in the ROD.

- **System Operations/O&M:** Based on a review of the system operations/O&M and related sampling and analytical data, the remedy is functioning as intended. In groundwater, dissolved arsenic does not appear to be impacting the downgradient marine sediment and porewater. Natural attenuation remains effective in reducing ICOCs levels and in limiting migration, and prevention of groundwater use at the site remains protective of human health.

  As indicated in the 2008 landfill gas data comparison to criteria, and as detailed in Section 2.4.2, landfill gas emissions are below regulatory criteria and downwind ambient air samples continue to be comparable to upwind air samples, indicating landfill gas is not impacting the surrounding area and supporting the conclusion that the remedy remains protective.

  Mowing at the landfill should continue as currently scheduled, along with the groundwater sampling, and vent gas screening. The condition of the wells, vents, fences and all locks, as well as settling and revetment condition should continue to be noted in order to properly fulfill the goals of the ROD.

- **Costs of System Operations/O&M:** There have been no cost issues associated with the remedy.

- **Opportunities for Optimization:** Under the Source Control O&M monitoring conducted under OU1, landfill gas results for the period 2002 through 2008 have shown non-detected or low concentrations of non-methane organic compounds (NMOCs) in landfill gas emissions. It is unclear from the record that monitoring air and landfill gas for NMOCs is required under current landfill regulations. RI Clean Air Act RIGL Title 23 Chapter 23 is noted in the ROD as an ARAR, but not defined as “applicable” or “relevant and appropriate”. While further evaluation was conducted in 1997, the question was not completely resolved (Brown and Root, 1997). Currently, NMOC monitoring is being conducted at the request of RIDEM. Data evaluated to date show no state AALs or Federal NESHAPs limits are being exceeded; monitoring of NMOCs does not need to be continued under current regulations. A request for elimination of monitoring for NMOCs has been provided to RIDEM. At the RPM meeting held in November 2004, RIDEM requested that an air modeling study of the landfill gas generated at the landfill be conducted prior to making this change to the O&M plan (reference also RIDEM 8/24/05). It is anticipated that such a modeling effort would help justify elimination of NMOC monitoring currently conducted as part of the long-term monitoring program. However, apart from the RIDEM request, no requirement mandating NMOC modeling exists and, landfill gas monitoring can be discontinued at any time, even before the conclusion of landfill gas modeling.

Under the O&M Monitoring OU1, detailed trend analysis of groundwater data conducted by ECC shows that contaminant concentrations are stable or decreasing over time within the groundwater, and migration that would impact the downgradient marine sediment and porewater does not appear to be occurring. Monitoring of groundwater in wells on the upgradient side of the landfill can be discontinued without jeopardizing the protectiveness of the monitoring program.

Under the Management of Migration (sediment) monitoring conducted under OU4, five years of marine sediment data (2004 through 2008) indicate acceptable conditions, and while monitoring should continue, it can be reduced in frequency. Additionally, as more data are generated, if monitoring indicates that groundwater, vent gas and sediment sampling results continue to remain below site RAOs, or if concentrations show a decreasing trend, then additional decreases in monitoring frequency can be considered. A revision to the Long Term Monitoring Work Plan should be prepared to direct future monitoring at the reduced rates.

- **Early Indicators of Potential Remedy Problems:** The Navy is not authorized to implement deed restrictions, so it is not possible for the deed to be modified. However, with the issuance of Base Instruction 5090.15B (September 27, 2007), the Navy implemented a formal mechanism whereby the institutional controls can be enforced. These controls restrict the disturbance of the capped area, restrict change in land use, and limit activities to those necessary to maintain and monitor the cap, including a restriction preventing alteration of the ground surface and preventing interaction with or use of the groundwater. This ensures that if the property is ever excessed or otherwise conveyed, deed restrictions meeting State and local recording standards will be established that will run with the land and which will put applicable land use restrictions on the property. In 2007, the associated ESD was issued to document this modification to the ROD. If there is a future change in land use that includes construction of buildings that meet the definition of “inhabited building” in EPA’s Subsurface Vapor Intrusion Guidance, an evaluation of vapor intrusion to indoor air will be completed in accordance with EPA guidance. If the property were to change hands in the future, the language of the ESD can be used to implement a deed restriction on the property.

- **Implementation of Institutional Controls and Other Measures:** Institutional controls consisting of access controls via a locked gate and surrounding fencing have been maintained appropriately, in accordance with the NAVSTA Newport Instruction, “Installation Restoration (IR) Site Access and Use,” NAVSTA Newport/Local Area Rhode Island Coordinator Instruction 5090.15A and 5090.15B (included as Appendix E).

  Public access to the site is restricted and is controlled by the Navy. In addition, the Navy has provided guidance and restrications for disturbance of the ground surface and for subsurface disturbance of the soil, sediment and extraction of the groundwater, which was added as an ESD in 2007. The basis for the ESD was an issue cited in the 2004 Five-Year Review Report, which noted that if the ownership of the property changed, a deed restriction would be needed to document controls necessary to maintain protectiveness at the site. At this time, only the institutional controls can only be implemented by the Navy, since a deed restriction can not be placed on the property. However, if there is a change in property ownership in the future, deed notation will be established to place applicable land use restrictions on the property, and will also meet state and local recording standards for land use restrictions.

  The institutional control, provided as a “Base Instruction” (included in Appendix E) states that alteration of structures, access for heavy equipment, extraction of groundwater, disturbance of the ground surface, and in general, work within the site boundary cannot be conducted without proper permissions and plan reviews.

2.5.2 Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives (RAOs) Used at the Time of the Remedy Selection Still Valid?

- **Changes in Exposure Pathways:** There have been no changes in exposure pathways since the implementation of the remedies associated with the 1993 and 2000 RODs. The marine sediment/management of migration remedy completed in 2003 removed the contaminated sediments from both the near shore and elevated risk off-shore areas through dredging, thereby eliminating the previously existing exposure point, the contaminated sediments.

The RIDEM Office of Water Resources continues to prohibit shellfishing (does not prohibit collection of lobster or finfish) in the area of Narragansett Bay along the entire NAVSTA Newport shoreline, due to known or potential sewage discharges (U.S. Navy, 2000 and RIDEM, 2009). Whether or not the area remains closed to shellfishing in the future, the sediments in which site-related contaminants were present have been removed, eliminating any exposure pathway that would have existed due to the former contaminated sediments, such as uptake of the contaminants by shellfish.

Even if the shellfish ban in the area were lifted in the future, shellfish can no longer be impacted by the former contaminated sediments; therefore, human health would not be impacted by ingesting shellfish contaminated with site-related COCs. This condition will continue to be ensured through long-term monitoring which periodically measures potential contaminant concentrations in the designated sampling areas of the remaining marine sediments.

If the shellfish ban in the area were to be lifted in the future, AND if the long-term monitoring data were to indicate COCs in sediments present at concentrations exceeding RGs, this combination of events could result in an exposure. This is a possible future issue which would need to be addressed at the time, if both of these events were to occur simultaneously.

- **Changes in Land Use:** There have been no changes in land use since the remedy selection of the 1993 and 2000 RODs and there is no anticipated change in land use.

- **New Contaminants and/or Contaminant Sources:** There have been no new contaminants or contaminant sources observed since the remedy selection of the 1993 and 2000 RODs.

- **Remedy Byproducts:** There are no byproducts generated as a result of the remedies of the 1993 and 2000 RODs.

- **Changes in Standards, Newly Promulgated Standards, and TBCs:** As part of this five-year review, ARARs and TBC guidance presented in the ROD were reviewed, and current ARARs were also reviewed. No new standards have been promulgated that would affect the protectiveness of the cap or the off-shore actions.

- **Changes in Toxicity and Other Contaminant Characteristics:** There have been no changes in toxicity or other contaminant characteristics that would call into question the protectiveness of the remedy. Some increased levels of PCBs and/or PAHs at some MSGs in sediment were noted. However, the data were compared to the RGs set forth in the ROD and used in the LTMP to ensure that any observed increased concentrations do not result in a risk to human health or the environment. The remedy remains protective.

- **Expected Progress Towards Meeting RAOs:** The RAOs for both OU1 and OU4 have been met. The remedies continue to remain protective of human health and the environment

- **Risk Recalculation/Assessment (as applicable):** There have been no changes to risk assessment methods that would affect the protectiveness of the remedy. Monitoring should continue to ensure that contaminant concentrations remain below standards so that any potential risk can be properly calculated.

2.5.3 Question C: Has any Other Information Come to Light That Could Call Into Question the Protectiveness of the Remedy?

No additional information has been identified that would call into question the protectiveness of the remedy under existing conditions.

2.5.4 Summary of the Technical Assessment

The following conclusions support the determination that the remedies for OU1 and OU4 at the McAllister Point Landfill remain protective of human health and the environment.

The remedy is functioning as the decision documents intended. There are no areas of non-compliance with remedial objectives, long-term monitoring results, system operations/O&M or related sampling results. Neither landfill gas nor groundwater from the landfill are impacting downgradient areas at levels above regulatory criteria, and there have been no cost issues associated with the remedy. Detailed trend analysis of groundwater data conducted by ECC shows that groundwater contaminant concentrations are stable or decreasing over time, and migration that would impact the downgradient marine sediment and porewater does not appear to be occurring. Five years of marine sediment data indicate acceptable conditions, and while sediment monitoring should continue, it can be reduced in frequency. Landfill gas results have shown only non-detected or low concentrations of NMOCs in landfill gas emissions.

A potential problem indicated in the previous five-year review regarding deed restrictions and change in property ownership was addressed. With the issuance of Base Instruction 5090.15B (September 27, 2007), the Navy implemented a formal mechanism whereby the institutional controls associated with the landfill can be enforced. These controls restrict the disturbance of the capped area, restrict change in land use, and limit activities to those necessary to maintain and monitor the cap, including a restriction preventing alteration of the ground surface and preventing interaction with or use of the groundwater. This ensures that if the property is ever excessed or otherwise conveyed, deed restrictions meeting State and local recording standards will be established that will run with the land and which will put applicable land use restrictions on the property. In 2007, the associated ESD was issued to document this modification to the ROD.

Institutional controls consisting of access controls via a locked gate and surrounding fencing have been maintained appropriately, in accordance with the NAVSTA Newport Instruction, “Installation Restoration (IR) Site Access and Use,” NAVSTA Newport/Local Area Rhode Island Coordinator Instruction 5090.15A and 5090.15B (included as Appendix E).

The exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy selection of the 1993 and 2000 RODs are still valid. Since the remedy selection: there have been no changes in land use and there is no anticipated change in land use; there have been no new contaminants or contaminant sources observed; there are no byproducts generated as a result of the remedies; and there have been no changes in exposure pathways since the implementation of the remedies. This five-year review summarized a *possible future* exposure-related issue that would be contingent upon the following: if the ongoing shellfish ban in the area were to be lifted in the future, AND, if the long-term monitoring data were to indicate COCs present in sediments at concentrations exceeding RGs, this combination of events could result in an exposure. This is a possible future issue which would need to be addressed at the time, if both of these events were to occur simultaneously.

No new standards have been promulgated that would affect the protectiveness of the cap or the off-shore actions, and there have been no changes in toxicity or other contaminant characteristics that would call into question the protectiveness of the remedy. The RAOs for both OU1 and OU4 have been met. There have been no changes to risk assessment methods that would affect the protectiveness of the remedy. Monitoring should continue to ensure that contaminant concentrations remain below standards so that any potential risk can be properly calculated.

No additional information has been identified that would call into question the protectiveness of the remedy under existing conditions.

2.6 ISSUES

No new or ongoing issues have been identified during the technical assessment or other five-year review activities. No unresolved concerns or items raised by support agencies or the commumnity have been identified.

It is noted that the *previous* issue identified during the 2004 five-year review regarding deed restrictions as institutional controls in case the property changes ownership in the future was resolved in 2007 with the implementation of Base Instruction 5090.15B dated September 27, 2007 and the associated October 2007 ESD. These items represent a formal mechanism whereby the institutional controls can be enforced and ensure that if the property is ever excessed or otherwise conveyed, deed restrictions meeting State and local recording standards will be established that will run with the land and which will put applicable land use restrictions on the property. The controls restrict the disturbance of the capped area, restrict change in land use, and limit activities to those necessary to maintain and monitor the cap, including a restriction preventing alteration of the ground surface and preventing interaction with or use of the groundwater.

For the sediment monitoring program, it is noted that ICOCs appear to be increasing at MSGs 1 and 4. The LTM program specified that these MSGs be monitored only during years 1, 2 and 5 and then be discontinued. However, because ICOCs appear to be increasing at these two MSGs, and because they do not exceed applicable baseline PRGs, sediment monitoring should continue. A five-year monitoring cycle will be adequate. This *potential future* issue does not affect the protectiveness of the remedy, but could impact the remedy in the future. If the long-term monitoring data indicated COCs in sediments at concentrations exceeding RGs, this could result in the possibility of an exposure that may pose an adverse effect on the receptors. This is a possible future issue which would need to be addressed if exceedences of RGs are identified.

For the groundwater monitoring program, Navy and EPA agreed that scope of groundwater LTM would be reduced by sampling 8 of the 12 previously sampled monitoring wells. These wells are located at the interior and along the western (downgradient) edge of the landfill. Groundwater sampling as part of the LTMP would continue to be conducted on an annual basis.

The following table presents a summary of the *potential* issues that could, at some future date, affect the protectiveness remedy for the site under specific conditions.

Issues	Affects Protectiveness (Y/N)	
	Current (Y/N)	Future (Y/N)
1. Reduction in the number of wells sampled annually during LTM at the site.	N	N
2. Increasing concentration trends for sediment ICOCs at MSGs 1 and 4.	N	Y

2.7 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Long term monitoring associated with OU1 should continue. If monitoring data are consistently below applicable standards, a decrease in monitoring frequency should be considered to optimize the cost-effectiveness of the monitoring.

The long term monitoring being conducted in accordance with the OU4 marine sediment/management of migration ROD should be continued at all Monitoring Station Groups (MSGs) but the frequency can be reduced to once every 5 years. A revision to the long term monitoring work plan will be required to reflect this change.

The long term monitoring being conducted for groundwater should continue on an annual basis at 8 monitoring wells. A revision to the long term monitoring work plan will be required to reflect this change.

Recommendations/Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Follow-up Actions: Affects Protectiveness (Y/N)	
				Current	Future
Prepare revisions to the sediment sampling and groundwater sampling portions of the Long Term Monitoring Work Plan	Navy	U.S. EPA	2/19/2010	N	N

2.8 PROTECTIVENESS STATEMENT

The remedies at McAllister Point are protective of human health and the environment, and exposure pathways that could result in unacceptable risks are being controlled.

The source control remedy (OU1) is complete and functioning as intended. Groundwater, vent gas, and ambient air monitoring are on-going to assure emissions are within acceptable parameters. The most recent annual groundwater monitoring results show few detections of VOCs and SVOCs and infrequent exceedances of the MCLs by these chemicals and by metals, with the few exceedances observed only within the footprint of the landfill. The groundwater and vent gas monitoring have shown generally consistent results with no indications of any issues with the protectiveness of the remedy. Groundwater migration does not appear to be providing contaminants above RGs to the bay. Continued monitoring at wells within the landfill and on the western edge will assure protectiveness by comparing contaminant concentrations measured in the sampled media to RGs and ensure that there is no increased risk to human health or the environment.

The dredging and backfilling activities for the near shore and elevated risk off-shore marine sediment remedial action (OU4) are complete. The sediment and porewater monitoring results show ICOCs below remediation goals (RGs) for sediment, and most are below baseline PRGs. Continued monitoring and comparison to baseline PRGs will assure no RGs are exceeded, though a decreased frequency is appropriate. The planned habitat mitigation activities have been implemented and discontinued based on observed positive results for the biological habitats of the dredged and restored areas and the constructed artificial reef.

2.9 NEXT REVIEW

The next five-year review of NAVSTA Newport will be completed in December 2014. The review will again include all NAVSTA Newport sites and operable units as defined in the 1992 Federal Interagency Facility Agreement which have had remedial actions implemented. The review will be conducted for the purpose of determining if the selected remedies are or continue to be protective of human health and the environment, and will be conducted pursuant to the U.S. EPA’s Comprehensive Five-Year Review Guidance and all applicable supplements or updates.

3.0 SITE 13 – TANK FARM 5, TANKS 53 AND 56

3.1 HISTORY AND SITE CHRONOLOGY

Tanks 53 and 56 were constructed in 1942 of reinforced concrete and had a capacity of approximately 2.52 million gallons. The tanks were constructed in blasted bedrock sockets and were approximately 116 feet in diameter and 33 feet deep. Approximately 4 feet of soil covered the tanks, and they were surrounded by a 4-foot wide, crushed-rock ring drain system. The ring drain system was installed to remove groundwater from around the tank and to prevent tank damage caused by hydraulic stresses and tank flotation.

Fuel oils were stored in the tanks from approximately World War II through 1974. In 1975, as part of an oil recovery program, the Navy began using the two tanks to store used oil for alternate use as a heating fuel oil (TRC, 1993). The waste became regulated by the federal Resource Conservation and Recovery Act (RCRA), in 1980. In 1982, RIDEM adopted hazardous waste regulations that were applicable to the waste oils stored in Tanks 53 and 56. Subsequent sampling of the waste oils in 1983 indicated that the oil and sludge layers were considered hazardous due to elevated concentrations of lead. Also, the water phase was found to contain dissolved hydrocarbon compounds.

In 1984, the Navy decided to discontinue use of the tanks. In 1985, results of a groundwater sampling round using monitoring wells located within the Tank 53 ring drain indicated the presence of chlorinated and aromatic hydrocarbon compounds. In September 1985, RIDEM issued NAVSTA Newport a Hazardous Waste Facility Permit for Tanks 53 and 56, which included a stipulation to remove the contents and close the tanks in accordance with federal hazardous waste regulations and RIDEM requirements applicable for USTs used for oil and hazardous substance storage.

Further investigations conducted in 1986 confirmed the presence of VOCs in the Tank 53 ring drain. Lower concentrations of VOCs were detected in groundwater up to 150 feet downgradient of Tank 53. In January 1990, oil was observed overflowing from the tank gauging chamber and onto the ground as a result of surface water entering the tank through cracks in the tank roof. The Navy took immediate action to lower the level in the tank to prevent further overflow. RIDEM issued an Immediate Compliance Order, which required that the Navy remove the contents of the tank, begin remediation of contaminated groundwater and soils surrounding the tank, and initiate an investigation to determine the extent of oil contamination in the vicinity of Tank 53.

In 1992, pursuant to the Immediate Compliance Order, the Navy completed the removal of sludge, oil, and water from the tank, and cleaned the interior surfaces of the tank. Also in 1992, an Interim Action ROD was signed by EPA and the Navy that selected a management of migration alternative consisting of groundwater extraction, treatment, and discharge as an interim remedial action for the Tanks 53 and 56 site. Additional pertinent site activity since implementation of the Interim Action ROD is included below in Section 3.2.

Additional information on site use and history can be found in the Remedial Investigation Report (TRC, 1992) and the Soil Investigation Report – Tank Farm 5 – Tanks 53 and 56 (TRC, 1993a). A chronology of important events regarding the operation and remedy for Tanks 53 and 56 at Tank Farm 5 is shown in the table below.

EVENT	DATE
Tank Farm 5 constructed.	Early 1940s
Tank Farm 5 used for fuel storage.	World War II to 1974
Began using Tanks 53 and 56 for waste oil storage.	1975
Ceased using Tanks 53 and 56 for waste oil storage.	1984
Tank Closure Plan for Tanks 53 and 56 was completed.	September 1987
NETC Newport listed on NPL.	November 21, 1989
Groundwater investigation conducted as part of Tanks 53 and 56 closure investigation.	June 1991
Contents of Tanks 53 and 56 were removed and the tank interiors were cleaned.	Summer 1992
Interim Action Record of Decision (interim groundwater pump and treat remedy).	September 29, 1992
Soils investigation conducted as part of Tanks 53 and 56 closure investigation.	October 1992
Design for a groundwater extraction and treatment/ containment system completed.	1993
Construction of system completed.	December 1994
Operation of the groundwater extraction and treatment system.	December 1994 – December 1996
Tank 53 source removal action contaminated soil surrounding the tank removed.	1995 - 1996

EVENT	DATE
Final Tank Closure Certification Report, Tanks 53 and 56 completed.	September 6, 1996
First post-remedial action groundwater sampling round.	December 1996
Second post-remedial action groundwater sampling round.	March 1997
Third post-remedial action groundwater sampling round.	August 1997
Demolition of the tanks.	1998 -1999
Installation of two bedrock monitoring wells, per RIDEM request.	Late 1999
First Five-Year Review completed.	December 1, 1999
System used for treatment of water drained from McAllister Point dredged sediment.	2001
Fourth post-remedial action groundwater sampling round.	May 2001
Repairs to monitoring well network and redevelopment of all wells.	May 2004
Fifth post-remedial action groundwater sampling round.	May 2004
Second Five-Year Review completed.	December 1, 2004
Basis of Design Report for Demolition and Disposal of Groundwater Operable Unit Treatment System completed.	January 1, 2008
Demolition of the groundwater extraction and treatment system.	October 2008

3.2 BACKGROUND

Tank Farm 5, Tanks 53 and 56, is located in the central portion of the NAVSTA Newport facilities, in Middletown, Rhode Island (Figure 3-1). The 85-acre tank farm is the site of 11 underground storage tanks (USTs), numbered 49 through 59. Tanks 53 and 56 are located in the western portion of the Tank Farm 5 site. Tank Farm 5 is bordered to the northwest by Defense Highway, to the southwest by a cemetery, to the east by residences, and to the northeast by Greene's Lane.

Physical Characteristics

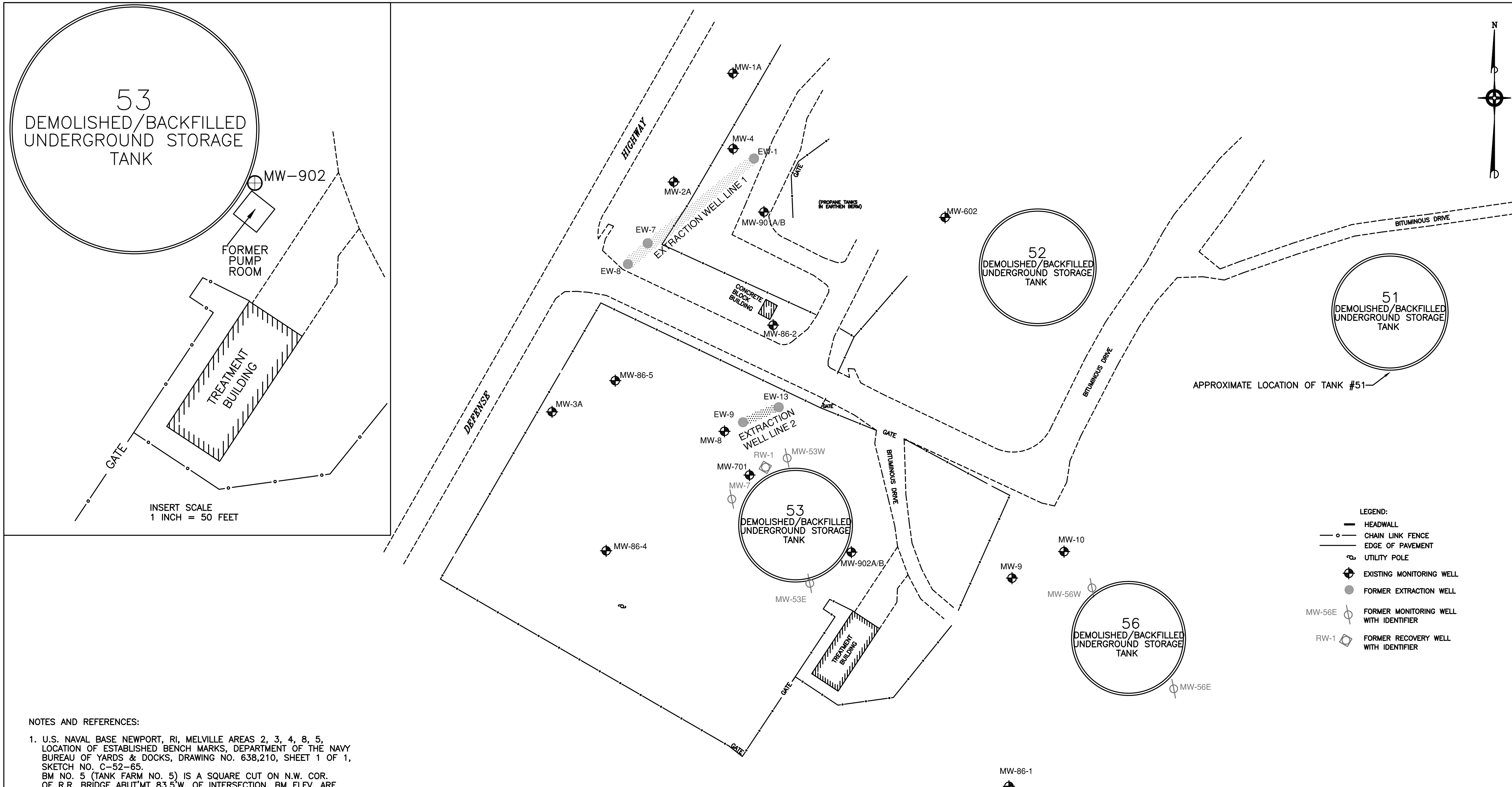
A paved road provides access to the site, passing between the tank locations in a loop. Site topography generally slopes to the north. Gomes Brook is located approximately 1,200 feet north of Tanks 53 and 56, passing through the northeastern portion of the site and draining toward the west into Narragansett Bay. The tanks are located in the gradually sloping central portion of the site.

Overburden materials include fill around the tanks underlain by native sand and silt and glacial till layers. The till layer ranges from 1 to 21 feet in depth and overlies highly weathered bedrock. The zone of weathered bedrock, up to 22 feet in depth, overlies competent bedrock.

Groundwater in the southern portion of the site, where Tanks 53 and 56 are located, flows generally west-northwest toward Narragansett Bay. Groundwater in the northern portion of the site flows toward Gomes Brook. Groundwater near the site is classified by EPA as Class II B groundwater and classified by RIDEM as GA/NA – not attainable due to local degradation (defined in Section 1.2.4). However, groundwater under a waste management unit does not have to be cleaned up to the above classification.

3.3 REMEDIAL ACTIONS

A ROD for the Interim Remedial Action – Groundwater Operable Unit – Tank Farm 5, Tanks 53 and 56, (Site 13) was signed by the NAVSTA Newport Commanding Officer and the Regional Administrator of EPA Region I in September 1992, with RIDEM concurrence. The objective of the interim remedial action ROD was to remediate contaminated groundwater around Tanks 53 and 56. At the time it was anticipated that a final ROD including both groundwater and source control components would be issued within 5 years. Since the other nine tanks in Tank Farm 5 were used for storage of fuels only, they are being investigated under the RIDEM UST program (see Section 4.8).



NOTES AND REFERENCES:

1. U.S. NAVAL BASE NEWPORT, RI, MELVILLE AREAS 2, 3, 4, 8, 5, LOCATION OF ESTABLISHED BENCH MARKS, DEPARTMENT OF THE NAVY BUREAU OF YARDS & DOCKS, DRAWING NO. 638,210, SHEET 1 OF 1, SKETCH NO. C-52-65.
   BM NO. 5 (TANK FARM NO. 5) IS A SQUARE CUT ON N.W. COR. OF R.R. BRIDGE ABUT'MT 83.5'W. OF INTERSECTION. BM ELEV. ARE REFERRED TO THE DATUM OF M.L.W.=0.00.
2. VERTICAL DATUM IS BASED ON LOCAL MEAN LOW WATER (SEE NOTE #2).
3. HORIZONTAL DATUM IS BASED ON THE STATE OF RHODE ISLAND GRID COORDINATE SYSTEM (NAD 1983).
4. PLAN NOT TO BE USED FOR DESIGN.
5. ALL LOCATIONS TO BE CONSIDERED APPROXIMATE.

GRAPHIC SCALE

0' 100' 200'

FORMER TANKS 53 AND 56 – TANK FARM 5			
NAVSTA NEWPORT – FIVE-YEAR REVIEW			
NEWPORT, RHODE ISLAND			
DRAWN BY:	D.W. MACDOUGALL	REV.:	0
CHECKED BY:	S. PARKER	DATE:	APRIL 22, 2009
SCALE:	AS NOTED	FILE NO.:	\01636\0210\5YrRev_TF5.DWG

FIGURE 3-1

TETRA TECH NUS, INC.

55 Jonspin Road Wilmington, MA 01887
(978)658-7899

3.3.1 <u>Remedy Selection</u>

Remedial action objectives were developed based on information obtained from various investigations regarding contaminants and potential exposure pathways. The following four RAOs were used to develop and screen alternatives to mitigate existing and future potential threats to human health and the environment.

- Minimize further migration of the contaminated groundwater;
- Minimize any future negative impact to Gomes Brook and Narragansett Bay resulting from the discharge of contaminated groundwater;
- Reduce the potential risk associated with the future ingestion of contaminated ground water; and
- Reduce the time required for restoration of the aquifer.

The selected remedy was an interim remedial action for groundwater only. Soil contamination was evaluated separately and was envisioned as part of a final ROD for groundwater and soils. The components of the interim remedy as described in the 1992 ROD included:

- Groundwater extraction to contain contaminated groundwater and prevent its migration and potential discharge to surface water bodies;

- Groundwater treatment using coagulation/filtration and UV oxidation to treat organic and inorganic contaminants;

- Discharge of treated groundwater to the local wastewater treatment facility; and

- Continued groundwater monitoring to confirm the capture of contaminated groundwater.

3.3.2 <u>Remedy Implementation</u>

In 1993, the design for the groundwater extraction and treatment/containment system was completed. Construction of the system was completed in December 1994. The system was designed to contain groundwater in the vicinity of Tank 53 and to prevent it from migrating further toward Narragansett Bay. The system consisted of two sets of extraction wells, a treatment system, and groundwater monitoring wells.

The groundwater extraction and treatment system operated during the period from December 1994 to December 1996, when the system was shut down. The system was demolished in October 2008 because analytical results for influent samples were below the cleanup levels established in the Interim Action ROD. Also within this time period (1995 to 1996) the Navy conducted a source removal action at Tank 53, as discussed below, which likely contributed to meeting the established cleanup levels in groundwater.

While the selected interim remedial action for the Tanks 53 and 56 site is a groundwater management of migration remedy, and does not have a “source control” component as part of the Interim Action ROD implemented under CERCLA, the Navy elected to also implement a separate source removal action. This action involved removal of soil surrounding Tank 53. As stated in the Interim Action ROD, the soil contamination in the vicinity of Tanks 53 and 56, and soil cleanup strategies were to be evaluated separately, with a separate ROD determining action required to address soil contamination. The investigation and remediation of groundwater contamination is addressed under CERCLA, and by the Interim Action ROD signed by EPA and the Navy in September 1992. A final ROD is still needed for Tank Farm 5, and will note the completion of the Management of Migration remedy under the interim ROD for Tanks 53 and 56.

Soil conditions at the tanks were investigated and reported separately, as summarized in “Soil Investigation, Tank Farm 5, Tanks 53 and 56” (TRC, 1993a). The report presented the Navy’s selected remedial alternative for soil at Tanks 53 and 56, and from 1995 through 1996, contaminated soils surrounding Tank 53 were removed and disposed of off site under a RCRA action. Remediation of soil near Tank 56 was determined not necessary, based on sampling and analytical data. The ring drain at Tank 53 was re-constructed with clean stone/soils. However, the ring drain pumping system was not placed back into operation, rather, the tank was ballasted with clean water to address concerns about flotation.

Three post-remedial action groundwater sampling events were conducted in December 1996, March 1997, and August 1997. EPA MCLs and RIDEM GA objectives were not exceeded except for total metals in the unfiltered groundwater samples collected using bailer methods (B&RE, 1997b). The results of the three groundwater sampling events were summarized in a Technical Memorandum (B&RE, 1997b) which recommended that the groundwater extraction and treatment system, shut down in December 1996, remains shut down.

RIDEM’s February 17, 1998 approval for the demolition of tanks at Tank Farm 5 also requested the installation of two additional bedrock wells downgradient of Tank 53 in conjunction with the Tanks 53 and 56 groundwater investigation operable unit. RIDEM also requested performance of a soil gas survey to assist in locating the two bedrock wells in optimal locations. The survey was completed and the “Passive Soil Gas Investigation Report, Tanks 53 and 56, Tank Farm 5” (TtNUS, 1999b) presented the results of the soil gas investigation and recommended proposed locations for two bedrock monitoring wells downgradient of Tank 53, per RIDEM's request. Tanks 53 and 56 were demolished along with the other nine tanks in Tank Farm 5 from late 1998 through early 1999 as part of UST closure activities performed by the Navy in accordance with RIDEM regulations. Further details are provided in Section 4.8.

The two bedrock wells were installed in late 1999 and sampled in January 2000. Groundwater sampling round number four was conducted in May 2001. Due to damaged wells, it was recommended that the monitoring network be repaired, redeveloped, surveyed, and resampled. Well repair occurred in May 2004 and a fifth round of groundwater sampling was conducted later that same month. The analytical results for round 5 of sampling indicated that detected concentrations did not exceed federal MCLs or RIDEMs GA standards, except for arsenic in the unfiltered sample collected from MW-4 (TtNUS, 2005b). This exceedance and additional groundwater sampling results are further explained in Section 3.4.2. Based on the results of that sampling round it was determined that detections did not exceed MCLs or RIDEM GA standards, that the remedial action was successful, and that no additional sampling was required. The groundwater extraction and treatment system was demolished in October 2008. The extraction wells were abandoned in accordance with RIDEM regulations.

3.4 FIVE-YEAR REVIEW FINDINGS

3.4.1 Site Inspection

A site inspection was completed on May 4, 2009 by the TtNUS project team. The area of former Tanks 53 and 56 was vegetated, some monitoring wells were observed and those accessible and inspected closely were generally secured but were in poor condition.

The area where the former groundwater treatment plant building was located was graded after demolition and vegetation is growing back in this area, South east of the former Tank 53. Similarly the ground surface where the extraction wells had once been located was regraded and grass is starting to re-cover this area. A chain-link fence is still present around the perimeter of the area of the former building and Tank 53. Gates, secured with locks, restrict access to the entire area. The utility poles and the utiility manholes are still present at the site, though it appears that they are disconnected from electrical service. Photographs taken during the site inspection are included in Appendix B.

Three vessels remaining from the treatment plant demolition are present at the site, laying on polyethylene sheeting. These vessels include two sand filters, and one other stainless steel vessel containing activated carbon. The sheeting is loose and does not cover the vessels. Further research indicated that these items were set aside from the building demolition to be recovered by the DRMO.

The NAVSTA Newport environmental staff indicated that community involvement for this site has generally been minimal. Individuals and public officials contacted through mailed questionaires indicated a general satisfaction with the actions taken to date at this site and felt well informed about cleanup activities and progress for this site. They did not report any problems, incidents, or citizen complaints regarding the activities associated with the Tanks 53 and 56 portion of Tank Farm 5.

3.4.2 Document and Analytical Data Review

Following the shut down of the groundwater extraction and treatment system in 1996, three of four planned rounds of quarterly sampling were conducted to confirm whether the operation of the system should be terminated or whether additional operation and sampling was necessary.

Analytical results from 11 wells (monitoring and extraction wells) sampled during the three events conducted between December 1996 and August 1997, following implementation of the interim remedial action, are summarized in the "Technical Memorandum – Summary of Analytical Results – Sample Round 3 for Tank 53 – Tank Farm 5" (B&RE, 1997b). Groundwater samples were analyzed for VOCs, SVOCs, metals, pesticides/PCBs, and petroleum hydrocarbons. The 1997 report stated that results for potential contaminants of concern did not exceed current (as of August 1996) RIDEM Class GA groundwater quality standards. The report concluded that based on the analytical results from these events and from previous investigations "it appears that the removal action that the Navy conducted in the ring drain has effectively removed the source of contamination and concentrations of potential contaminants of concern have attenuated. Consequently, the extraction and treatment system should remain shut down" (B&RE, 1997b).

A bedrock groundwater investigation was completed in 1999 in response to a request from RIDEM. Two locations were selected and two bedrock wells were installed in each location in late 1999 and sampled in early 2000. The groundwater sample results showed no contaminants detected above GA standards and no detections of gasoline- or diesel-range organics (TtNUS, 2000).

A fourth groundwater sampling round was conducted in May 2001. Samples were again collected using bailers. Two wells were open and damaged; the analytical results were not considered valid (TtNUS, 2002). Exceedances of the RIDEM GA groundwater objectives and federal MCLs for bis(2-ethylhexyl)phthalate were noted in four wells. The fourth sampling round report recommended that the surface seals and protective casings on the two wells be repaired or replaced, and that all the wells in the monitoring network be repaired, redeveloped, surveyed, and resampled (TtNUS, 2002). These recommendations were implemented in May 2004, followed by completion of the fifth sampling round.

The fifth sampling round used the EPA low-flow sampling protocol, which is not only the current groundwater sampling standard, but also avoids the turbidity impacts seen in the unfiltered results from the prior four sampling rounds (TtNUS, 2005b). The analytical results for Round 5 indicated detected concentrations did not exceed EPA's drinking water standards and RIDEM's GA drinking water objectives except for arsenic in the unfiltered sample collected from MW-04 (40.3 μg/L). No filtered samples exceeded the EPA arsenic MCL of 10 μg/L. Monitoring well MW-04 was sampled using the "bailer method" because there was insufficient head above the pump intake to force sufficient water into the bladder pump. The arsenic exceedence at MW-04 may be due to turbidity from using a bailer to sample this well. Based on analytical results from Rounds 1 through 5, the Technical Memorandum for Sample Round 5 (TtNUS, 2005b) concluded that the removal action conducted in the ring drain had effectively removed the source of contamination and concentrations of potential contaminants of concern had attenuated. The Round 5 Technical Memorandum recommended that the extraction and treatment system be abandoned and demolished, and a No-Further-Action Record of Decision be prepared as a final ROD for environmental closure of the Tank 53/56 site. The treatment system was demolished in October 2008.

The results of the fifth sampling round met RIDEM and federal MCL groundwater standards, so the Navy recommended a ROD revision to No Further Action.

3.4.3 ARAR and Site-Specific Action Level Changes

The ARARs listed in the decision documents for this site are shown in Appendix D, Tables D-4 through D-6. New and existing RIDEM remediation regulations were reviewed in detail for this Five Year Review. Revisions to the state remediation regulations provided in 1996 and 2004 do not affect the protectiveness of the remedy, as such no new ARARs have been promulgated that would call into question the protectiveness of the remedy. Site RAOs have been met, and the groundwater treatment system remains shut down and demolished in 2008 based on the results of monitoring on the site. Site documents state that the source of contamination was sucessfully removed with the demolition of the tanks on-site, so there is no direct exposure pathway currently existing at the site.

3.4.4 Progress Since Last Five-Year Review

The first five-year review conducted in 1999 concluded that the groundwater remedy selected for Tanks 53 and 56 was successfully implemented and that groundwater monitoring data indicate that contaminants do not remain at levels that pose an unacceptable risk to human health or the environment (TtNUS, 1999c). The groundwater extraction and treatment system was shut down in December 1996 after 2 years of operation since groundwater cleanup levels had been attained. The review recommended that no further response actions were required. The review also noted that groundwater data would be evaluated following the installation of the bedrock monitoring wells and sampling round requested by RIDEM.

The second five-year review, conducted in 2004 concluded that the remedies were complete, RAOs had been met, and there were no required actions to be taken at the site. This review recommended a ROD revision of No Further Action if the results from the fifth round of sampling (May 2004) showed contaminant concentrations below RIDEM GA groundwater objectives and federal MCLs. The second five-year review also indicated that the continuation of groundwater monitoring and further five-year reviews would depend on the sampling results from the fifth monitoring round.

Based on the fifth round of sampling and historical analytical results, it appeared that the source of the contamination had been removed and concentrations of potential contaminants of concern had attenuated. As a result of these findings, groundwater monitoring ceased and the extraction and treatment system was abandoned following the completion of the second five-year review. The Technical Memorandum for the fifth round of sampling recommended the preparation of a No Further Action ROD and environmental closure of the Tank 53/56 site.

Abandonment of the treatment system included dismantling the treatment building, abandonment of the extraction wells in accordance with RIDEM regulations, and removal of the foundations, accessways for the extraction wells and regrading the affected area.

3.5 ASSESSMENT

The following conclusions support the determination that the remedy at Tanks 53 and 56, and Tank Farm 5 remains protective of human health at the environment.

Question A. Is the remedy functioning as intended by the decision documents?

- **Remedial Action Performance and Monitoring Results:** Contaminant concentrations have been consistently below applicable state and federal standards if metals results for samples collected by bailer are discounted due to turbidity levels in the samples. As a result, monitoring has been discontinued at this site.

  The first and second five-year reviews noted that there were no areas of non-compliance with any of the remedial objectives for Tank Farm 5, Tanks 53 and 56. Previous five-year reviews also noted that the groundwater remedy for Tank Farm 5, Tanks 53 and 56 had been successfully implemented and that monitoring data in general indicate that contaminants do not remain on site at levels that pose an unacceptable risk to human health or the environment. As discussed in Section 3.4.2, the results from monitoring round five, completed in May 2004, were used to determine that no further groundwater monitoring was needed. Based on the analytical results from the five rounds of sampling, the removal action effectively removed the source of contamination and concentrations of potential contaminants of concern have attenuated. EPA MCLs and RIDEM GA objectives were not exceeded during the most recent sampling event, with the exception of the previously discussed arsenic in the unfiltered sample collected using a bailer (TtNUS, 2005b). There have been no changes at this site to alter the protectiveness of the remedy at Tank Farm 5, and the monitoring data continues to indicate that the remedy is protective of human health and the environment.

- **Implementation of Institutional Controls and Other Measures:** The site is currently fenced-off and locked. Access by the public is restricted in accordance with the NAVSTA Newport instruction, "Installation Restoration (IR) Site Access and Use," NAVSTA Newport/Local Area Rhode Island Coordinator Instruction 5090.15A (included as Appendix E). Since the tanks and contaminated soils have been removed, there is no need for any further institutional controls beyond those already in place.

- **System Operations/O&M:** The groundwater treatment system was shut down in December 1996 and was demolished in October 2008. No operations and maintenance are required. The monitoring wells were last redeveloped and sampled in May 2004, but are still in place.

- **Cost of Operations/O&M:** There were no issues associated with cost for this remedy.

- **Opportunities for Optimization:** Groundwater met the RIDEM and federal groundwater standards so monitoring was discontinued at this site.

- **Indicators of Remedy Problems:** Since the treatment system has been shut down due to the attainment of remedial goals, and no contaminants have been consistently detected above GA groundwater standards in overburden or bedrock groundwater samples, the remedy at this site remains protective.

Question B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

- **Changes in Exposure Pathways:** The source of groundwater contamination has been removed, and site RAOs have been met. Groundwater monitoring results from the May 2004 fifth monitoring round indicate that any site contaminants detected are below RIDEM standards and federal MCLs, with the exception of one arsenic result which may be biased high due to the sample collection method. There are no current human or ecological receptor exposure pathways.

- **Changes in Land Use:** Currently the areas around Tanks 53 and 56 is fenced and locked. The site is part of a larger property that will have a permanent ROD to supplement the interim ROD selected for this site.

- **New Contaminants and /or Contaminant Sources:** No new contaminants or contaminant sources are identified for the Tanks 53 and 56 site.

- **Remedy By-Products:** There are no by products generated as a result of the remedies in place for this site during the five year review period because the treatment system was not in operation.

- **Changes in Standards Newly Promulgated Standards and TBCs:** As part of this five-year review, ARARs and TBC guidance for the Site presented in the ROD were reviewed, and a review of current ARARs was conducted. There have been no changes in any ARARs that would affect the protectiveness of the remedy at Tank Farm 5, Tanks 53 and 56. No new standards have been promulgated that would affect the protectiveness of the now-discontinued treatment system.

- **Changes in Toxicity and Other Contaminant Characteristics:** There have been no changes in toxicity or other contaminant characteristics that would call into question the protectiveness of the remedy. The remedy remains protective.

- **Expected Progress toward Meeting RAOs:** The RAO for the interim ROD has been met. The remedy continues to remain protective of human health and the environment.

- **Changes in Risk Assessment Methodologies:** There have been no changes in risk assessment methods that would call into question the protectiveness of the remedy. The remedy remains protective.

Question C. Has any other information come to light that could call into question the protectiveness of the remedy?

No additional information has been identified that would call into question the protectiveness of the remedy.

3.6 ISSUES

No issues were identified during the five-year review for Tanks 53 and 56 at Tank Farm 5 at NAVSTA Newport.

3.7 RECOMMENDATIONS AND REQUIRED ACTIONS

Based on the results of the site inspection and document and data review for Tanks 53 and 56 at Tank Farm 5, there are no major recommendations or required actions to be taken at the site. The remedies for the interim ROD are complete; RAOs have been met and the remedy continues to remain protective of human health and the environment. No significant concentrations of contaminants of concern (COC) were detected during the five rounds of groundwater monitoring if metals results for samples collected by bailer are discounted due to turbidity levels in the samples. Additionally, the site is not downgradient of any active sites with known groundwater contamination and is not in danger of becoming recontaminated from such. Therefore, the site should be considered as “Remedy Complete” and no further groundwater monitoring need be conducted. Therefore, existing monitoring wells should be abandoned in accordance with RIDEM regulations. Remaining filter vessels should be removed by DRMO.

A final ROD is required for the Tank Farm 5 site (Site 13) to document remediation goals for affected media and the remedy that will be selected for this site (see Section 4.9).

3.8 PROTECTIVENESS STATEMENT

The remedy at Tanks 53 and 56 at Tank Farm 5 is protective of human health and the environment and exposure pathways that could result in unacceptable risks are being controlled. The source of contamination has been removed, and the groundwater treatment system has been demolished due to attainment of RAOs. Groundwater monitoring results do not indicate a groundwater problem. The results of the most recent monitoring round are consistent with the results from the first four rounds.

4.0 OTHER SITES AND STUDY AREAS

4.1 MUNITIONS RESPONSE PROGRAM (MRP) SITE 01 – CARR POINT

Carr Point is located in the Melville South portion of Portsmouth, Rhode Island, approximately four miles north of the main portion of the installation. The Site is bounded on the west by the Narragansett Bay, on the north by picnic grounds, on the east by railroad tracks, and on the south by Gomes Brook. To the east of the railroad tracks are Defense Highway and the former Tank Farm 4, which is located upgradient of the Site.

Carr Point was formerly a recreational skeet-shooting range. From 1967 to 1973 the former Carr Point Shooting Range was used by Navy personnel and from 1975 to 1989 the facility was used by the Aquidneck Island Military Rod and Gun Club (Malcolm Pirinie, 2005). Small arms (i.e., shotguns) were discharged at moving targets (i.e., clay pigeons) over Narragansett Bay (Malcolm Pirinie, 2005). Prior to being used as a shooting range, the southwest area of Carr Point was reportedly used for materials and drum storage (TtNUS, 2009). In addition, two drain pits and an oil-water separator were historically present at the Site (TtNUS, 2009). Portions of the site have also been used as parking areas and fill areas. Since 1995 Carr Point has been used as an RV camping park and gated storage area for Navy and Department of Defense personnel (Malcolm Pirinie, 2005). Buildings that historically exsisted at the Site included Building 187 (Fire House), Building 212 (Storage), Building 213 (Fire Auxiliary Headquarters), and Building 233 (Club House). Only Building 233 remains on the site today and has been converted to office and storage space for the RV park (Malcolm Pirinie, 2005).

A Water Area Munitions Study (WAMS) was conducted for the former Carr Point Shooting Range by Malcolm Pirnie, Inc. in 2005, and included the review of historical records, personal interviews, and a visual site survey. The WAMS concluded that there are no known or suspected areas with Munitions and Explosives of Concern (MEC), although munitions constituents (MC) are likely to be present at the Site (Malcolm Pirinie, 2005). While used as a shooting range, lead shot was fired toward the water from three firing points located along the west side of the Site – one firing point at the northern end of the range, a second at the southern end, and a third in between. According to the WAMS report, MC associated with skeet shooting could potentially include “lead, lead styphnate/lead azide, antimony, arsenic, copper, tin zinc, iron, and polycyclic aromatic hydrocarbons (PAHs) associated with clay targets (Interstate Technology and Regulatory Council, 2003)” (Malcolm Pirnie, 2005).

In January 2007, five surface soil samples were collected at the Site by NAVSTA Newport and were analyzed for TPH, pesticides, PCBs, VOCs, SVOCs, RCRA metals, and total cyanide. TPH and metals were detected at all locations, and PAHs were found at all locations except the northeast corner. Aroclor-1260 was detected at the northwest corner and central locations (TtNUS, 2009).

An unexploded ordnance (UXO) Site Investigation (SI) is currently being conducted for Munitions Response program (MRP) Site 1 (TtNUS, 2009). The investigation area includes over 5 acres of coastal land and approximately 17 acres of water. The SI is designed to identify contaminants that may have been released to the soil, fill, groundwater, and marine sediments. If possible, the data will be used to determine if contamination could have been spread to other media (offsite soil, groundwater, and surface water). This task is scheduled to be completed in late 2009.

If a remedial action is selected for Carr Point under CERCLA § 121 in the future, the protectiveness of the selected remedy will be reviewed in subsequent five-year reviews for NAVSTA Newport.

4.2 STUDY AREA 04 – CODDINGTON COVE RUBBLE FILL AREA

The Coddington Cove Rubble Fill (CCRF) Area is a small area (less than 8 acres) that was used from 1978 to 1982 as an area for general fill. The area is unoccupied and completed surrounded by fencing. Records researched for the IAS indicated that the area was used for the disposal of rubble, concrete, asphalt, slate, wood, brush, and possibly small quantities of ash (U.S. Navy, 2002). The area lies on the shoreward side of Coddington Highway, between the highway and the rail spur, south of the former Derecktor Shipyard area (see Figure 1-1). A secure, fenced storage area is located directly north of the site and the Defense Automated Printing Service/Supply Department (Building 47) is to the east. A Navy housing development abuts the south and west boundary of the CCRF Area. Records indicated that the area was fenced, although there were openings in the fence on the southwest side. However, during a November 2009 site walk TtNUS personnel observed that new fencing had been erected and the site was completely enclosed.

A record review and field sampling plan was issued in May 2004. The record review, including historical aerial photographs, was used to develop the field sampling plan to gather preliminary information through a focused field investigation (TtNUS, 2004). The field sampling plan included excavation of test pits in areas of suspected fill and collection of soil and groundwater samples to characterize the waste materials in the fill areas.

In May and July 2004 soil samples and standing water samples were collected from test pit locations and surface soil samples were collected from surrounding soil sample locations. Groundwater analytical data indicated the presence of two metals (arsenic and lead) at concentrations greater than MCLs in non-filtered samples. In addition, two VOCs (tetrachloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane) were detected at levels below MCLs in groundwater. Soil analytical data indicated the presence of five PAHs, one pesticide, one PCB, and three metals at concentrations greater than their respective Region IX

PRGs. In addition, VOCs, SVOCs (excluding PAHs), DRO and GRO were detected at levels below applicable Region IX PRGs in soil.

Soil boring and groundwater samples were collected in September 2004 as part of a Phase II Environmental Site Assessment. Elevated concentrations of arsenic were found in soil throughout the site. Areas with arsenic levels higher than background values may be due to pesticide or herbicide applications. Lead in only one soil sample exceeded the Rhode Island Residential Direct Exposure Criteria. No VOCs or SVOCs were detected in groundwater at levels above the RIDEM Groundwater Quality Standards. The Phase II Environmental Site Assessment recommended additional sampling around boring B-20 due to high arsenic levels. In addition, it was recommended that areas of bare soil be limited, especially in areas that children frequent (Land America, 2004).

The findings of the PA and the recommendations made during the Phase II Environmental Site Assessment are currently being addressed through development of a work plan and QAPP for SASE at the CCRF Site. The information will be further evaluated in a SASE report that is scheduled to be completed in April 2011. The results of this report will be used to determine if further field investigations are required. If a remedial action is selected for the CCRF Area under CERCLA § 121 in the future, the protectiveness of the selected remedy will be reviewed in subsequent five-year reviews for NAVSTA Newport.

4.3 STUDY AREA 07 – TANK FARM NO. 1

Tank Farm No. 1 was constructed in the early 1940s and was in operation by the Navy between World War II and 1970. There are six 60,000-barrel USTs that were used for storage of diesel oil, fuel oil, jet fuel, 100-octane gasoline, and aviation fuel. According to previous investigation reports, tank bottom sludges were placed in pits on the site. Approximately 6,000 gallons of these sludges were reportedly disposed of in this manner on the site (U.S. Navy, 2002c). The site was included in the 1983 IAS and the 1986 CS. A fence around the tank farm area restricts access to the site.

The Defense Energy Support Center (DESC) was licensed by the Navy to use the tank farm as part of Defense Fuel Support Point (DFSP) Melville for petroleum fuel storage and distribution between 1974 and 1998. The tanks were cleaned and ballasted between 1996 and 1997 and the site was administratively closed by DESC in 1998. (TtNUS, 2001b). Further investigations are being planned by DESC to fully characterize and remediate, under the RIDEM UST regulations, any petroleum contamination that occurred as a result of DESC operations. The UST program is mandated by the federal Resource Conservation and Recovery Act. Following DESC's efforts, other investigations and environmental cleanup actions may be undertaken as appropriate for the applicable regulatory programs.

Additional field investigations are currently scheduled to take place in 2010 and 2011. If needed, work under CERCLA (RI and FS work) is planned to be completed by 2011 and 2012, respectively. A ROD is currently scheduled to be completed by 2013. If a remedial action is selected for Tank Farm No. 1 under CERCLA § 121 in the future, the protectiveness of the selected remedy will be reviewed in subsequent five-year reviews for NAVSTA Newport.

4.4 STUDY AREA 08 – NAVAL UNDERSEA SYSTEMS CENTER (NUSC) DISPOSAL AREA

This disposal area, located in Middletown, Rhode Island was reportedly used for disposal of rubble and inert materials, including scrap lumber, tires, wire, cable, and empty paint cans. The site was included in the 1983 IAS with a recommendation for no further action (NFA). Further investigations have been performed under a SASE (TtNUS, 2005a). A Remedial Investigation (RI) for the NUSC Disposal Area is currently ongoing (TtNUS, 2007a).

The NUSC disposal area consists of approximately 8 acres of land adjacent to two streams, associated wetlands, and a small pond. The upland portions have been used as fill and storage areas since the Navy developed the site in the early 1950s. Currently there is a secured storage area and open storage area (both paved – approximately 2.3 acres) as well as open fields (1.6 acres) and brush covered areas (4.2 acres).

The SASE was conducted in June through November 2003, and included a passive soil gas investigation, and collection of soil, sediment, surface water, and groundwater samples. The passive soil gas analysis indicated some areas where elevated VOCs were present, and these, along with other target areas identified in the work plan were investigated with a series of test pits, soil borings, and groundwater monitoring wells. Chlorinated solvents (trichloroethene (TCE) and tetrachloroethene (PCE)) were found in groundwater at the north (downgradient) end of the site. The SASE concluded that limited removal actions may be necessary and that additional efforts will be required to complete a remedial investigation, including a baseline human health and ecological risk assessment, for the site (TtNUS, 2005a).

In response to the conclusions of the SASE, some limited removal actions have occurred at the Site. A removal action was conducted in 2005 and 2006 to remove drums in various states of decay containing a tar-like substance from the center of the South Meadow. In addition, an area adjacent to the Deerfield Creek was excavated in 2005 to remove deposited paint cans and metal debris. A final closure report (TN & Associates, June 2006) provides details on this action.

An RI was conducted in late 2008 – early 2009, and a draft report was prepared and reviewed by EPA and RIDEM. As of the date of this document, the comments to the draft document have not been fully resolved. The Draft RI found that unacceptable risks were present at the site due to PAHs and arsenic in soil, and due to VOCs and metals present in groundwater. It also found that ecological risks were present due to organic compounds in the sediment of the pond and from metals in surface soil. The draft RI will be revised to include an area upgradient (south) which is suspected to be a source of chlorinated organic compounds in groundwater at the site. FS activities are scheduled to be completed by late 2009.

A remedial action decision is scheduled to be completed by 2010. If a remedial action is selected for the NUSC Disposal Area under CERCLA § 121 in the future, the protectiveness of the selected remedy will be reviewed in subsequent five-year reviews for NAVSTA Newport.

4.5 SITE 09 – OLD FIRE FIGHTING TRAINING AREA

The 8-acre site, located on Coaster's Harbor Island, adjacent to Narragansett Bay, was constructed in 1944 to train Navy personnel in fighting ship-board fires. Waste oils were used to train personnel in fire fighting operations (TRC, 1992). Several buildings were present to simulate ship compartments; these buildings, with several burning pits and paved areas, served as the principal areas of activity. The fire fighting training facility was closed in 1972. Upon closure, the training structures were reportedly demolished and buried in three mounds on the site, and then the entire area was covered with topsoil. The three soil mounds were the primary site features before they were removed in 2005. One, approximately 20 feet high was located in the center of the site; the other two, approximately 5 - 6 feet high, were located on the western side of the site. Access to the site is restricted on the east, south and west sides by a chain-link fence and rope barriers.

The site was converted to a recreational area with a playground, a picnic area with an open pavilion and barbecue grills, and a baseball field following the demolition activities in the early 1970s. The area was used for a variety of recreational activities between 1976 and 1998. A child day care center was also in operation at the site until 1994 when it was relocated to a larger facility on base (TtNUS, 2001b). The site, referred to as Katy Field, is partially being used for staging construction materials.

An Initial Assessment Study was conducted in 1983 that concluded that the site did not pose any threat. However, oil was found in the subsurface soil in 1987 during work to expand the child day-care center. In 1992, the Navy initiated an RI that included this area. The Phase I RI reported in 1994 that VOCs, pesticides, and fuel components were present in soils and groundwater. It was determined at that time that the contaminant concentrations did not pose an immediate threat to humans. In 1996, the Navy initiated a study as a follow up to the Phase I RI to attempt to define possible continuing sources of oil contamination to the property (U.S. Navy, 2003).

In 1998 the EPA requested that Katy Field and the recreational area around it be closed due to concerns about the adequacy of the characterization of site contaminants and exposure scenarios. The Navy immediately performed a human health risk assessment at Katy Field to determine the possible health effects to adults and children from recreational use of the site. This study concluded that risks to site users were negligible. The Navy decided to keep the site closed until all investigations under CERCLA had been competed (U.S. Navy, 2003).

An ecological risk assessment was conducted in the harbor adjacent to the site in 1998. This study found some potential for risk to ecological receptors in the near shore areas from contaminants related to old fuel releases. Follow-up sediment studies have confirmed the presence of some contaminants and also the presence of sensitive species such as eelgrass and shellfish in this area (U.S. Navy, 2003).

An RI Report, based on the Phase I and II investigations conducted in the early 1990s was completed in July 2001 (TtNUS, 2001b). This report incorporated the offshore ecological investigation (1998), a marine ecological risk assessment (2000) and three supplemental investigations (1997 – 2000). A Feasibility Study (FS) was completed in September 2002 that evaluated remedial action alternatives to restore the site for unlimited use. In 2004, a series of pre-design steps were conducted to support a draft proposed plan for remedial action at the site. Based on additional site data developed during the pre-design steps, the Final FS was revised in December 2007 (TtNUS, 2007c).

During investigations conducted in 2004, it was determined that contaminants present at OFFTA are contiguous with, and similar to those found at the newly constructed parking area at the Surface Warfare Officers School (SWOS), located south of the site and Taylor Drive (see Section 4.12). With the addition of the SWOS area, the site currently encompasses over 8 acres. The contaminants present at OFFTA and SWOS and in the area of Taylor Drive, which separates the two properties, were addressed together in the Revised FS. Another change incorporated into the Revised FS was the 2005 change in anticipated future site use from residential use to parking, roadways, and open space for recreational use (Dorocz, 2005). Petroleum, PAHs, and metals have been found in soil, groundwater, and sediment at concentrations that exceed state regulatory criteria and risk based benchmarks. Concentrations of metals and PAHs have been found to pose cancer and non-cancer risks to potential human receptors at the site, including residential, recreational, and industrial/commercial users.

In summer 2003, the Navy announced plans for a removal action to excavate and remove contaminated soil at the site. The Navy documented the decision to conduct a non-time-critical-removal-action to remove the three mounds of contaminated soil and debris in an Action Memorandum, dated August 13, 2004 (U.S. Navy, 2004). The soil was removed in two phases (TtNUS, 2005c). The first phase, conducted September 2004 to March 2005, removed soil and debris in the three mounds (TtNUS, 2005c). The second removal action resulted in excavation of hot spot contamination in the subsurface, as well as former drainage piping, a large oil-water separator, and exploratory excavations around remaining building foundations (TtNUS, 2008).

A remedial action decision is currently scheduled to be completed by 2010. If a remedial action is selected for OFFTA under CERCLA § 121 in the future, the protectiveness of the selected remedy will be reviewed in subsequent five-year reviews for NAVSTA Newport.

4.6 STUDY AREA 10 – TANK FARM NO. 2

This tank farm, located in Melville, was constructed in the early 1940s and used by the Navy between World War II and 1970. Eleven 60,000-barrel USTs were used for storage of fuel. According to previous investigation reports, approximately 100,000-175,000 gallons of tank bottom sludges were disposed in pits on site (U.S. Navy, 2002c). The site was part of the 1983 IAS. A fence around the tank farm area restricts access to the site.

The Defense Energy Support Center (DESC) was licensed by the Navy to use the tank farm as part of Defense Fuel Support Point (DFSP) Melville for petroleum fuel storage and distribution between 1974 and 1998. The tanks were cleaned and ballasted between 1996 and 1997 and the site was administratively closed by DESC in 1998 (TtNUS, 2001b). Further investigations are being planned by DESC to fully characterize and remediate, under the RIDEM UST regulations, any petroleum contamination that occurred as a result of DESC operations. The UST program is mandated by the federal Resource Conservation and Recovery Act. Following DESC's efforts, other investigations and environmental cleanup actions may be undertaken as appropriate for the the applicable regulatory programs.

Additional field investigations are currently scheduled to take place in 2010 and 2011, with RI and FS work scheduled to be completed by 2011 and 2012, respectively. If needed, a ROD is currently scheduled to be completed by 2013. If a remedial action is selected for Tank Farm No. 2 under CERCLA § 121 in the future, the protectiveness of the selected remedy will be reviewed in subsequent five-year reviews for NAVSTA Newport.

4.7 STUDY AREA 11 - TANK FARM NO. 3

This tank farm, located in Melville, was constructed in the early 1940s and was used by the Navy between World War II and 1970. Seven 60,000-barrel USTs were used for storage of fuel. According to previous investigation reports, tank bottom sludges were disposed in burning chambers, which were constructed of steel sides and sand bottoms (U.S. Navy, 2002c). The site was part of the 1983 IAS. A fence around the tank farm area restricts access to the site.

The Defense Energy Support Center (DESC) was licensed by the Navy to use the tank farm as part of Defense Fuel Support Point (DFSP) Melville for petroleum fuel storage and distribution between 1974 and 1998. The tanks were cleaned and ballasted between 1996 and 1997 and the site was administratively closed by DESC in 1998 (TtNUS, 2001b). Further investigations by DESC commenced in June 2004 to fully characterize and remediate, under the RIDEM UST regulations, any petroleum contamination that occurred as a result of DESC operations. The UST program is mandated by the federal Resource Conservation and Recovery Act. Contamination attributed to DESC operations were determined by research of historical practices, aerial photography analysis and sampling programs. These investigations were completed in April 2005 and a summary of the data can be found in the Draft Site Investigation and Remedial Action Report for Tank Farm 3 (TtEC, 2006). Several areas of concern (AOC) were addressed, with excavations taking place at AOC-001, -004, -005, -016, -017, and -018 in an effort to remediate soil to levels below RIDEM Industrial/Commercial Direct Exposure Criteria (ICDEC) and, if possible, below Residential Direct Exposure Criteria (RDEC). Contaminated soil remaining above ICDEC and RDEC levels was determined to be caused by activities other than DESC operations. To that extent, this effort remediated contamination caused by the DESC activities from 1974 to 1998. Soil where samples were taken that exceeded either ICDEC or RDEC levels remain in place at AOC-001, -004, -005, -009. -010, -012, -017, -018, -028 and -029, and under the vent for Tank 32. (Specific coordinates of these samples can be found in the Draft Site Investigation and Remedial Action Report for Tank Farm 3 [TtEC, 2006]).

Additional field investigations are currently scheduled to take place in 2010 and 2011, with RI and FS work scheduled to be completed by 2011 and 2012, respectively. A remedial action decision is currently scheduled to be completed by 2013. If a remedial action is selected for Tank Farm No. 3 under CERCLA § 121 in the future, the protectiveness of the selected remedy will be reviewed in subsequent five-year reviews for NAVSTA Newport.

4.8 SITE 12 – TANK FARM NO. 4

Tank Farm 4 is approximately 80 acres, located in Portsmouth. The site is bordered by Narragansett Bay to the east, Defense Highway to the west, and wooded, undeveloped areas to the north and south (TRC, 1992). The topography slopes to the west; the ground elevation falls to mean sea level on the west corner where Normans Brook crosses the site. The brook flows off the site and into Narragansett Bay. The tanks were located in the central portion of the site (TRC, 1992).

The tank farm was constructed in the early 1940s and was used between World War II and 1970. Twelve 60,000-barrel USTs were used for storage of fuel (U.S. Navy, 2002b). It was speculated in the IAS that tank bottom sludges may have been disposed of on site. The site was part of the 1983 IAS and the CS in 1986.

All tanks in Tank Farm 4 were cleaned and ballasted between 1994 and 1997 and were demolished between 1997 and 1998 as part of UST closure activities conducted by the Navy under RIDEM UST regulations. Test pits were dug around the perimeter of each tank and a composite soil sample analyzed to ensure no contamination was present. A 15-foot layer of sand was placed into the bottom of each tank and each tank roof was imploded individually. The demolition objective was to collapse and separate the tank roof from the tank walls while maintaining the basic structural integrity of the tank floor and side walls. Following tank demolition, each tank site was backfilled with clean borrow material (Foster Wheeler, 1999).

In October 2004, the Navy began field work on a Site Investigation (SI) to fully characterize the entire site under the IR Program. Review Areas are areas targeted for investigation during the SI. These were selected as areas where residual contaminants may be present based on regulatory review of historical records. The work included investigating for possible former sludge pits, assessing piping not previously assessed, demolishing two structures known as Ruin #1 (a former oil water separator/burn pit) and Ruin #2 (a former oil-water separator), and sampling other Review Areas including fence lines and transformer vaults. No evidence of former sludge pits was found. The results of the Site Investigation are summarized in the Final Closeout Report for Sludge Disposal Trenches and Review Areas at Tank Farms 4 and 5 (TtEC, 2007). The areas investigated and results are summarized below:

- Transformer vault: Samples collected and analyzed for PCBs and chlorinated benzenes. Non-detects in soil; PCBs present in concrete at 4.3 ppm. Considered resolved with the possibility that a risk evaluation may need to be completed.
- Switching substation: Samples collected and analyzed for PCBs and chlorinated benzenes. Non-detects in both soil and concrete samples. Lead was detected in the soil above RIDEM criteria which required a removal of a combined 183 tons of soil at Tank Farms 4 and 5.
- Ruin 1 Former Oil/Water Separator (OWS): Soil samples were collected and analyzed for SVOCs, TPH and dioxins/furans. SVOCs were non-detect but dioxin-like compounds were detected up to 12.6 ng/kg, above the EPA Region IX PRG of 3.9 ng/kg. Despite such presence of dioxin-like compounds, the area required no further action though meeting notes suggested that a risk assessment may be necessary in the future. Soil located around the straight line discharge pipe outfall contained TPH above RIDEM criteria. As a result, approximately 2,293 tons of soil were excavated. The extent of contamination was not determined and petroleum - contaminated soil may still exist.
- Ruin 2 OWS: Soil was collected and analyzed for TPH, SVOCs after approximately 216 tons of sediment and soil were removed. Confirmatory samples indicated SVOCs present in soil above applicable criteria. No further action is likely required at this site dependent on a risk assessment to be completed. Samples were collected at the discharge outfall for this site with SVOCs not

detected and detected TPH concentrations below criteria. Soil samples surrounding this area that were suspect of TPH contamination were collected but never analyzed.

- Drainage swale: Soil was collected and analyzed for TPH; detections were below the RIDEM criteria so no further action was required.
- Storage Sheds: Soil samples were collected and analyzed for lead. Detections were below RIDEM criteria; therefore, no further action was warranted.
- Groundwater: Groundwater from MW-10 was collected and sampled for TPH and lead. TPH was not detected and lead was detected below groundwater criteria.
- Fenceline: Soil samples were collected and analyzed for TPH, PCBs, lead and SVOCs. PCBs and SVOCs were not detected, while TPH was detected below regulatory criteria. Lead concentrations exceeded the RIDEM 150 ppm criteria. Due to an inability to determine if this was caused by a release defined under CERCLA, it has remained an unresolved issue.

Data gaps from the initial SI are currently being addressed and this effort should be completed in 2010. A FS is scheduled to be completed in 2011, with a remedial action decision completed by 2012. If a remedial action is selected for Tank Farm No. 4 under CERCLA § 121 in the future, the protectiveness of the selected remedy will be reviewed in subsequent five-year reviews for NAVSTA Newport.

4.9 SITE 13 – TANK FARM NO. 5

Activities associated with Tanks 53 and 56 are discussed in Section 3. These two tanks were used for storage of waste oils used in an oil recovery program. The other tanks in Tank Farm 5 were used exclusively for storage of virgin fuel oils. At Tank Farm 5, soil, groundwater and sediment not associated with Tanks 53 and 56 are still under investigation.

Tank Farm 5 is approximately 80 acres and is located in the north-central part of NAVSTA Newport, in Middletown. The site is bordered by Narragansett Bay to the east, Defense Highway to the west, a wooded area and cemetery to the south, and Green Lane to the northeast. The site topography slopes to the north. Ground elevation falls to mean low water level in the northeastern part of the site, where Gomes Brook crosses the site. The brook flows off site and into Narragansett Bay (TRC, 1992).

This tank farm, located in the mid-portion of NAVSTA Newport, was constructed in the early 1940s and was used between World War II and 1970. Eleven 60,000-barrel USTs were used for storage of fuel. Tank bottom sludges were burned on the site. Approximately 10,000-175,000 gallons of oily sludges were disposed on site. The site was part of the 1983 IAS. The tanks were cleaned and ballasted between 1994 and 1997 (TtNUS, 2001b).

All tanks in Tank Farm 5, including Tanks 53 and 56, were demolished from late 1998 through early 1999 as part of UST closure activities conducted by the Navy under Rhode Island regulations. The tanks were imploded individually, with the demolition objective being to collapse and separate the tank roof from the tank walls while maintaining the basic structural integrity of the tank floor and side walls. A 15-foot layer of sand was placed into the tank to absorb the shock from the collapsing tank roof and to avoid formation of void spaces between the tank floor and collapsed roof. The ballast water was removed from the tanks and pump rooms prior to sand placement. Following tank demolition, each tank site was backfilled with certified clean fill (TtNUS, 2000).

In October 2004, the Navy began field work on a Site Investigation to fully characterize the entire site under the IR Program. The work included investigating for possible former sludge pits, assessing piping not previously assessed, demolishing a former oil-water separator/burn pit, and sampling other Review Areas including fence lines and transformer vaults. No evidence of former sludge pits was found. The results of the Site Investigation are summarized in the Final Closeout Report for Sludge Disposal Trenches and Review Areas at Tank Farms 4 and 5 (TtEC, 2007). The areas investigated and results are summarized below:

- Transformer vault: Samples collected and analyzed for PCBs and chlorinated benzenes. Non-detects in soil; PCBs present in concrete below 1 ppm. No further action is warranted.
- Switching substation: Samples collected and analyzed for PCBs and chlorinated benzenes. Non-detects in both soil and concrete samples. Lead was detected in the soil above RIDEM criteria of 150 mg/kg in soil which required a removal of a combined 183 tons of soil.
- Former OWS: Soil samples were collected and analyzed for VOCs, SVOCs, metals and PCBs with two samples analyzed for dioxins/furans in addition to the compounds listed above. Exceedances were detected in one sample for PCBs, in two samples for dioxin and arsenic, and in one sample for manganese. Despite exceedances the area was backfilled with no removal. The report noted that this portion of the site may require a risk analysis in the future. Samples collected at the discharge outfall exceeded state criteria for SVOCs, metals and dioxin criteria (Region IX PRG). The Navy believes these concentrations pose no significant risk. Additional samples were collected in the surrounding area, but never analyzed due to budgetary concerns.
- Corrugated Shed: Soil samples were collected and analyzed for PAHs and metals. One sample contained PAHs above state criteria and four samples exceeded metals state criteria. No further action was taken; however a risk assessment may be necessary.
- Fenceline: Soil samples were collected and analyzed for TPH, PCBs, lead and SVOCs. PCBs and SVOCs were not detected, while TPH was detected below state criteria. Lead concentrations exceeded the RIDEM 150 ppm criteria. Due to an inability to determine if this was caused by a release defined under CERCLA, it has remained an unresolved issue.

Data gaps that were not addressed in the SI are currently being investigated; this report is scheduled to be completed by early 2010.

At the RAB meeting held March 18, 2009, two RAB members expressed concern that the government fence on the east side of Tank Farm 5 had been compromised, and trespass was likely to be taking place. Follow up action is not currently scheduled.

An FS is scheduled to be completed in 2011, with a follow up remedial action decision anticipated by 2012. If a remedial action is selected for Tank Farm No. 5 under CERCLA § 121 in the future, the protectiveness of the selected remedy will be reviewed in subsequent five-year reviews for NAVSTA Newport.

4.10 SITE 17 – BUILDING 32, GOULD ISLAND

The FFA initially identified Study Area 17 as Building 32 at the northeast end of Gould Island. Gould Island lies between Aquidneck and Conanicut Islands, about 1.5 miles from the NAVSTA Newport shoreline. Electroplating and degreasing operations were performed in Building 32 during the mid-1940s, when it was used to service and store torpedoes. Wastes generated from the electroplating and degreasing operations included muriatic acid, chromic acid, copper cyanide, sodium cyanide, sodium hydroxide, nickel sulfate, Anodex cleaner, and degreasing solvents (TtNUS, 2004b).

Study Area 17 was included in the IAS (1983). The report suggested that rinse water from the operations was disposed directly into the bay and that contaminated sediments might be present off shore. The CS (1986) reported that sediment samples revealed slightly elevated concentrations of cyanide and copper. Mussels collected from the area of the rinse water out-fall contained elevated levels of copper (U.S. Navy, 2002a).

A waste inventory and sampling report characterized waste materials present in Building 32. Liquid samples were collected in 1992 from the Electroplating Shop area, revealing elevated levels of cadmium and organic chemicals. As a result, in 1992, the Navy initiated a removal action to dispose of liquid and semi-liquid wastes from the plating shop area (U.S. Navy, 2002a).

In 1997, the Navy performed UST removal and closure actions near Building 32. In an agreement with the EPA and RIDEM, the Navy conducted the first phase of the SASE on all of Building 32. This study found low concentrations of degreasing and fuel-related contaminants in the soils under the building. Based on the findings of the Phase I SASE, the Navy designated the former Building 32 area as Site 17 in April 2000 (TtNUS, 2004b). Site 17 encompasses all of former Building 32 and any contamination emanating from it.

Building 32 was demolished in 2001 to the slab elevation, along with other unused buildings at Gould Island due to the deteriorated condition of the structure and the potential safety threat it caused. PCB contamination was found in some of the concrete floors and soils of the transformer vaults and the switch house following the demolition. Remedial activities to remove PCB-contaminated soil and concrete were completed in 2002. Based on sampling results, materials were disposed off-site as TSCA-regulated waste. Confirmatory samples were collected and the remediation activities were completed in September 2003 (U.S. Navy, 2002a).

An RI was conducted between May and September 2005 to determine the nature and extent of contamination associated with the past use and disposal of chemicals and chemical wastes at the site. RI field efforts included the collection of the following samples: soil samples from borings and test pits, groundwater samples from monitoring wells and bedrock fracture zones, sediment samples from intertidal and subtidal areas, biota samples (clams and mussels), aquatic samples from standing water in test pits and underground utilities, soil and sludge samples from underground utilities, and concrete samples. Elevated concentrations of various contaminants, including petroleum, metals, SVOCs, PAHs, pesticides, and PCBs, were detected at the site (TtNUS, 2006b).

A Baseline Human Health Risk Assessment was conducted to evaluate exposure to surface soil, subsurface soil, groundwater, sediment, and shellfish. PAHs, PCBs, and metals are present in the intertidal sediment and subtidal shellfish that are predicted to pose risk to humans from future recreational use of the site, as well as current recreational collection and ingestion of shellfish. A screening ecological risk assessment was conducted to identify contaminants of potential concern to ecological receptors and to determine the necessity for a baseline ecological risk assessment. SVOCs, PAHs, pesticides, PCBs, and metals were present in the intertidal and subtidal sediments that may pose risks to ecological receptors (TtNUS, 2006b).

Based on the findings of the Phase I RI, the Navy has initiated development of a work plan and QAPP for a Phase II RI to provide a baseline ecological risk assessment. The Phase II RI will include chronic toxicity testing for sediment effects to marine benthic invertebrates, determination of the extent of PCB contamination in sediments of the Stillwater Basin area to the north of the site. After the Phase II RI is completed (scheduled completion 2010), the site will move forward to the FS and ROD phases, in accordance with CERCLA (TtNUS, 2006b), with each scheduled to be completed in 2011 and 2012, respectively. Cleanup is likely to be completed by 2015.

If a remedial action is selected for the Building 32 area on Gould Island under CERCLA § 121 in the future, the protectiveness of the selected remedy will be reviewed in subsequent five-year reviews for NAVSTA Newport.

4.11 SITE 19 – DERECKTOR SHIPYARD

The Navy used the site along Narragansett Bay until the military realignment program was implemented in 1973. At that time, the Navy determined that the area was no longer necessary to support military activities. In 1979, the Navy leased the 41-acre site to the Rhode Island Port Authority and Economic Development Corporation, which issued a concurrent sublease to Robert E. Derecktor of Rhode Island, Inc. From 1979 to 1992, the site was used to repair, maintain, and construct private and military ships. These operations generated sand blast grit, paint, and other ship manufacturing wastes.

Based on the findings of a Preliminary Assessment completed by the Navy in May 1993, the Derecktor Shipyard was added to the FFA list of sites (TtNUS, 2004c) as a study area. The Navy undertook a series of short-term actions to significantly reduce the potential for contamination to pose a health or environmental risk and migrate beyond its current location. These actions included: removing contaminant-filled drums and containers and sandblast grit; excavating and removing above ground and underground storage tanks; locating storm drain systems; and cleaning interiors of remaining buildings to ensure the safety of personnel conducting additional studies (U.S. Navy, 2002b).

An SASE was completed in June 1997. The SASE report concluded that the site contained small pockets of soil contamination but that overall human health and ecological risks were not substantial as long as the property remained industrial. Concurrent with the SASE, NAVSTA Newport conducted a marine ecological risk assessment (ERA) and human health risk assessment to quantify how contaminants present in bay sediments might be affecting plants and marine life, as well as fishermen collecting lobster and shellfish from the site (U.S. Navy, 2002b). Based on the SASE, the status was changed from a "Study Area" to a "Site". The Navy implemented the recommendations for on shore restorations, including removal of soil hot spots, removal of an under ground septic vault, and demolition of some of the deteriorating buildings.

Supplemental sediment sampling was conducted in August 2004 to better understand the nature and extent of contamination in the offshore marine sediments. Samples were collected to confirm the presence, concentration, and distribution of contaminants previously found in this area, and to identify the source of the hydrocarbon contaminants. The investigation results indicated that concentrations of contaminants in surface sediments had decreased from the values reported in the marine ERA, possibly due to new sedimentation on top of previously sampled substrate. The highest concentrations of contaminants were still primarily located along the shoreline and near the piers, with a decrease in contamination further from shore. A feasibility study was conducted in 1999 for the marine areas near the site and revised in 2007 to incorporate the additional marine sediment data collected in 2004 (TtNUS, 2007b). The revised FS is currently in the comment-resolution phase. The offshore remedy is currently planned to be selected in 2010, with cleanup likely to be completed by 2013. The FS for the onshore area is scheduled to be completed in 2011. An onshore remedy is currently planned to be selected in 2013, with cleanup likely to be completed by 2016.

If a remedial action is selected for the Derecktor Shipyard under CERCLA § 121 in the future, the protectiveness of the selected remedy will be reviewed in subsequent five-year reviews for NAVSTA Newport.

4.12 SITE 20 – SURFACE WARFARE OFFICERS SCHOOL

The Surface Warfare Officers School (SWOS) is located in Middletown just south of Taylor Drive and the Old Fire Fighting Training Area Site (OFFTA). West of the site is Warfare Road, several buildings that make up the Surface Warfare Officers School campus, and Narragansett Bay. South of the site is an asphalt parking lot and a number of buildings which comprise the Naval War College. Tennis courts and a gymnasium (Building 109) are located east of the site.

The SWOS site is the location of the former Brig facility which served as the Correctional Center from its construction in 1951 until its demolition in 1996. Prior to 1951, the site was undeveloped. The majority of the site is currently covered either by the SWOS Applied Instruction Building (Building 1248) or an asphalt paved parking area. A Phase I Environmental Site Assessment for the SWOS Building Site was performed prior to the construction of the SWOS Applied Instruction Building (TtNUS, 2001a). No releases of oil or hazardous materials were reported to have occurred at the SWOS site nor were disposal areas present at any time.

Oily soils were encountered at the north and east portions of the site during the 2003 construction of the SWOS Applied Instruction Building. Tetra Tech FW, Inc. (TtFW) conducted testpitting, soil sampling, and a risk assessment to determine the risk to site construction workers (TtFW, 2004). Occupational exposure risks were found to be acceptable for construction workers installing utility lines and constructing parking lots. TtFW summarized their findings in an Occupational Exposure Assessment for Construction Workers at the SWOS Site report in March 2004 (TtFW, 2004).

A Focused Site Inspection was performed by TtNUS in March 2006 to determine the source of the soil contamination and identify any other contaminants harmful to human health (TtNUS, 2006a). COPCs at the site exceeded risk-based criteria in samples collected mostly from the northern portion of the site, which borders Site 09, OFFTA (Section 4.5). The petroleum at the SWOS site is contiguous with that present at the adjacent OFFTA site. Elevated concentrations of PAHs were found in surface soil (believed to be associated with fill and old pavement debris) and in subsurface soil (believed to be associated with either fill or co-located petroleum). Lead is present at the SWOS site above screening criteria in five discrete locations, also associated with fill material (TtNUS, 2006a).

Due to the similarities in the types of contaminants at the SWOS and OFFTA sites (petroleum, PAHs, and lead associated with fill), the Focused Site Inspection recommended that the two sites be considered as one. As such, Site 20 is no longer considered its own site. Instead, contamination in the SWOS area is considered to be an extension of OFFTA and the FS revision for OFFTA dated 2007 addresses the SWOS portion (TtNUS 2007c). Additionally, all future investigations and remedial actions for the SWOS area will be addressed under OFFTA, Site 09 (see Section 4.5). The PRAP and ROD, as well as five year reviews, if they are needed for SWOS, will be prepared as part of that site.

4.13 SITE 21 – FORMER MELVILLE WATER TOWER

The Former Melville Water Tower Site is located in an open field adjacent to the Melville Elementary School on West Main Road in Portsmouth. The water tower was installed in the late 1930s to service the fueling piers and fuel storage facilities located at the Melville Patrol-Torpedo Squadron Training Station. The tower's 8-inch water line provided a sanitary and potable water supply as well as an emergency fire fighting water supply for the permanent station structures.

From the 1940s to the 1990s, lead-based paint was applied and intentionally removed from the structure. In September 2005, paint chips were found on the ground in the vicinity of the water tower. Two soil investigations have been conducted at the site. In December 2005, RIDEM conducted a screening study and found high concentrations of lead and other paint constituents in surface soil. A fence was erected around the area to restrict access and eliminate the exposure of students to site contaminants. The water tower was determined to be structurally unsound, so it was demolished in July 2006. After the demolition, the Navy conducted a detailed soil investigation in August 2006 to delineate the vertical and horizontal extent of contamination. Based on the results of this investigation, surface and subsurface soils were excavated during the summer of 2007, when school was not in session. The objective of the removal action was to remove and dispose of subsurface structures and soil contaminated with lead-based paint. Confirmation soil samples were collected to ensure that cleanup goals had been met. The final Removal Action Completion Report was submitted in June 2008 (TtNUS, 2008).

A SASE report prepared for the site documented the remaining concentrations of metals in the soil and provided detailed risk calculations using the post-removal conditions. The SASE concluded that the there is no anticipated risk to ecological receptors, and no human health risk remaining from lead at the site. Arsenic was present in soil above state standards, however, these concentrations were determined to be within ranges of background concentrations measured in soils on Aquidneck Island. Therefore, no further action was recommended at this site. The SASE report was finalized September 2009.

APPENDIX A

DOCUMENT REVIEW LIST/REFERENCES

DOCUMENT REVIEW LIST/REFERENCES

B&RE, 1997. Certification Report for Remedial Action, McAllister Point Landfill Cap Construction, Naval Education and Training Center, Newport, Rhode Island. Brown & Root Environmental. February 1997.

B&RE, 1997a. Draft Final Remedial Investigation Report, McAllister Point Landfill, Volume 1 – Technical Report, Naval Education and Training Center, Newport, Rhode Island. Brown & Root Environmental. April 1997.

B&RE, 1997b. Technical Memorandum, Summary of Analytical Results – Sample Round 3 for Tank 53, Tank Farm 5, Naval Education and Training Center, Newport, Rhode Island. Brown & Root Environmental. October 1997.

B&RE, 1997c. Technical Memorandum, Landfill Gas Monitoring Approach for McAllister Point Landfill Site 01. Naval Education and Training Center, Newport, Rhode Island. Brown & Root Environmental. August 1997.

Battelle, 2006. Final Suplemental Eelgrass Mitigation Work Plan for McAllister Point Landfill, Naval Station Newport, Newport RI. Prepared for NAVFAC under Contract No. N62472-00-D-1300. April.

ECC, 2005a. Annual Monitoring Report, Operation and Maintenance Activities 2004, Site 01 – McAllister Point Landfill, Naval Station Newport (NAVSTA), Newport, Rhode Island. Environmental Chemical Corporation. July.

ECC, 2005b. Annual Monitoring Report, Operation and Maintenance Activities 2005, Site 01 – McAllister Point Landfill, Naval Station Newport (NAVSTA), Newport, Rhode Island. Environmental Chemical Corporation. December.

ECOR 2009a. Final Annual Monitoring Report, Operation and Maintenance Activities 2008, Site 01 – McAllister Point Landfill, Naval Station Newport (NAVSTA), Newport, Rhode Island. ECOR Solutions, Inc. Westchester PA. September.

ECOR, 2009b. Final, Marine Sediments Monitoring Report, Sampling Round 5: October 2008, McAllister Point Landfill, Naval Station Newport (NAVSTA), Newport, Rhode Island. ECOR Solutions, Inc. Westchester PA. September.

Foster Wheeler, 1997. Operations and Maintenance User Manual -McAllister Point Landfill, Naval Education and Training Center, Newport, Rhode Island. Foster Wheeler Environmental Corporation. May 1997.

Foster Wheeler, 1999. Final Tank 46 Closure Assessment Report, Tank Farm 4, Naval Education and

Training Center, Newport, Rhode Island. Foster Wheeler Environmental Corporation. January 1999.

Foster Wheeler, 2002. Annual Monitoring Report, Operation and Maintenance Activities, January 1, 2001 to December 31, 2001, Site 01 – McAllister Point Landfill, Naval Station (NAVSTA) Newport, Newport, Rhode Island. Foster Wheeler Environmental Corporation. June 7, 2002.

Foster Wheeler, 2003. *Annual Monitoring Report, Operation and Maintenance Activities, January 1, 2002 to December 31, 2002, Site 01 – McAllister Point Landfill, Naval Station (NAVSTA) Newport, Newport, Rhode Island*. Foster Wheeler Environmental Corporation. May 7, 2003.

Foster Wheeler, 2003a. Final Interim Remedial Action Report for Site 1 – McAllister Point Landfill, Operable Unit 4 – Marine Sediment/Management of Migration, Naval Station Newport, Middletown, Rhode Island. Foster Wheeler Environmental Corporation. June 23, 2003.

Frye, 2006. Letter from Curtis Frye (NAVFAC) to Kymberlee Keckler, (USEPA) Paul Kulpa (RIDEM), and Ken Finkelstein (NOAA), Response to Comments on the Draft Supplemental Eelgrass Mitigation Work Plan For McAllister Point Landfill Site 001, Letter Dated April 12, 2006.

Halliburton NUS Corporation, 1997. *Certification Report for Remedial Action – McAllister Point Landfill Cap Construction, Naval Education and Training Center, Newport, Rhode Island*. Halliburton NUS Corporation. February 1997.

Land America Commercial Services, 2004. Phase II Environmental Site Assessment Report, Newport Naval Station, Melville and Rainbow Heights, Newport, Rhode Island. Land America Commercial Services. October 15, 2004.

Malcolm Pirnie, 2005. “Final Water Area Munitions Study, NAVSTA Newport Carr Point Shooting Range, Newport, Rhode Island.” Prepared for Naval Facilities Engineering Command Engineering Field Activity, Northeast, Lester, Pennsylvania. October 2005.

SAIC, 2001. Habitat Mitigation Work Plan for McAllister Point Dredging at Naval Station Newport, Midddletown RI. Final Report. Science Applications International Corporation. January 2001.

SAIC, 2004. *Draft McAllister Point Post Dredging Habitat and Artificial Reef Surveys - 2003.* Science Applications International Corporation. January 2004.

TN & Associates, Inc., 2006. *Draft Remedial Action Completion Report – Installation Restoration (IR) Site 08 – NUSC Disposal Area Soil Removal Action*. Prepared for Naval Facilities Engineering Command, EFA Northeast. April 2006.

TRC, 1992. Final Report - Remedial Investigation Technical Report, Volume 1, Naval Education and Training Center, Newport, Rhode Island, Contract No. N62472-86-C-1282. TRC Environmental Corporation. January 1992.

TRC, 1993. Remedial Design Work Plan, Ground Water Treatment Interim Remedial Action near Tanks 53 and 56 at Tank Farm 5, Naval Education and Training Center, Newport, Rhode Island. TRC Environmental Corporation. January 1993.

TRC, 1993a. Soil Investigation, Tank Farm 5 – Tanks 53 and 56, Naval Education and Training Center, Newport, Rhode Island, TRC Environmental Corporation. December 1993.

TRC, 1994. Draft Final Remedial Investigation Report, McAllister Point Landfill, Volume 1, Naval Education and Training Center, Newport, Rhode Island, Contract No. N62472-86-C-1282. TRC Environmental Corporation. July 1994.

TtEC, 2006. Draft Site Investigation and Remedial Action Report for Tank Farm 3, Defense Fuel Support Point – Melville, Portsmouth, Rhode Island. Tetra Tech EC, Inc. January 2006.

TtEC, 2007. Final Closeout Report for Sludge Disposal Trenches and Review Areas at Tank Farms 4 and 5. Tetra Tech EC, Inc. June 19, 2007.

TtFW, 2004. Occupational Exposure Assessment for Construction Workers at the SWOS Site, Naval Station Newport, Portsmouth, Rhode Island. Tetra Tech FW, Inc. March 12, 2004.

TtNUS, 1999a. Feasibility Study for Former Robert E. Derecktor Shipyard, Naval Station Newport, Newport, Rhode Island. Tetra Tech NUS, Inc. July 1999.

TtNUS, 1999b. Passive Soil Gas Investigation Report, Tanks 53 and 56, Tank Farm 5,Naval Education and Training Center, Newport, Rhode Island. Tetra Tech NUS, Inc. August 1999.

TtNUS, 1999c. Final Five-Year Review Report for Naval Station Newport, Newport, Rhode Island. Tetra Tech NUS, Inc. December 1999.

TtNUS, 2000. Bedrock Groundwater Investigation Report for Former Tanks 53 and 56, Tank Farm 5, Naval Station Newport, Newport, Rhode Island. Tetra Tech NUS, Inc. July 2000.

TtNUS, 2001a. Phase I Environmental Site Assessment for SWOS Building Site, Naval Station Newport, Newport Rhode Island. Oak Point Associates, Biddeford, Maine. July 2001.

TtNUS, 2001b. *Remedial Investigation Report, Old Fire Fighting Training Area, Volume 1, Naval Station Newport, Newport, Rhode Island*. Tetra Tech NUS, Inc. July 2001.

TtNUS, 2002. *Technical Memorandum, Summary of Analytical Results, Sample Round 4 for Tank 53 – Tank Farm 5, Naval Station Newport, Newport, Rhode Island*. Tetra Tech NUS, Inc. January 2002.

TtNUS, 2004. *Technical Memorandum, Record Review and Field Sampling Plan for Coddington Cove Rubble Fill Area, Naval Station Newport, Newport, Rhode Island*. Tetra Tech NUS, Inc. May 2004.

TtNUS, 2004a. Work Plan for Sediment and Groundwater Monitoring, Old Fire Fighting Training Area, Naval Station Newport, Newport, Rhode Island. Tetra Tech NUS, Inc. June 2004.

TtNUS, 2004b. Work Plan for Remedial Investigation, Site 17, Building 32, Gould Island, Naval Station Newport, Newport, Rhode Island. Tetra Tech NUS, Inc. July 2004.

TtNUS, 2004c. Draft Work Plan for Marine Sediment Sampling for Former Derecktor Shipyard, Naval Station Newport, Newport, Rhode Island. Tetra Tech NUS, Inc. July 2004.

TtNUS, 2004d. Draft Work Plan for Long Term Monitoring Program, McAllister Point Landfill, Naval Station Newport, Newport, Rhode Island. Tetra Tech NUS, Inc. December 2004.

TtNUS, 2005a. Study Area Screening Evaluation for NUSC Disposal Area, Naval Undersea Warfare Center, Middletown, Rhode Island. Tetra Tech NUS, Inc. January 2005.

TtNUS, 2005b. Technical Memorandum, Summary of Analytical Results, Sample Round 5 for Former Tanks 53 and 56 – Tank Farm 5, Naval Station Newport, Newport, Rhode Island. Tetra Tech NUS, Inc. March 2005.

TtNUS, 2005c. Soil Pre-Design Investigation Report for Old Fire Fighting Training Area, Naval Station Newport, Newport, Rhode Island. Tetra Tech NUS, Inc. April 2005.

TtNUS, 2005d. Final Work Plan for Long Term Monitoring Program, McAllister Point Landfill, Naval Station Newport, Newport, Rhode Island. Tetra Tech NUS, Inc. October 2005.

TtNUS, 2006a. Focused Site Inspection for Surface Warfare Officers School, Naval Station Newport, Newport, Rhode Island. Tetra Tech NUS, Inc. March 2006.

TtNUS, 2006b. Remedial Investigation for Site 17: Building 32, Gould Island, Naval Station Newport, Newport, Rhode Island. Tetra Tech NUS, Inc. December 29, 2006.

TtNUS, 2007a. Work Plan for Remedial Investigation Revision 2, Site 08 – NUSC Disposal Area, Naval Station Newport, Middletown, Rhode Island. Tetra Tech NUS, Inc. January 2007.

TtNUS, 2007b. Feasibility Study Revision 1 for Former Robert E. Derecktor Shipyard, Naval Station Newport, Newport, Rhode Island. Tetra Tech NUS, Inc. March 1, 2007.

TtNUS, 2007c. Draft Revised Feasibility Study for Old Fire Fighting Training Area, Naval Station Newport, Newport, Rhode Island. Tetra Tech NUS, Inc. December 1, 2007.

TtNUS, 2008. Removal Action Completion Report, Soil Removal Actions for Melville Water Tower, NAVSTA, Newport, Rhode Island. Tetra Tech NUS, Inc. June 2008.

TtNUS, 2009. Draft Final Work Plan and Quality Assurance Project Plan for MRP Site 1, Carr Point, Naval Station Newport, Portsmouth, Rhode Island. Tetra Tech NUS, Inc. January 2009.

Universe Technologies, 2005. Final Project Close-Out Report – Excavation, Transportation and Disposal Services at Installation Restoration Site 09 – Old Fire Fighting Training Area, Naval Station Newport, Newport, Rhode Island. Universe Technologies, Inc. December 2005.

EPA, 2001. Comprehensive Five-Year Review Guidance. U.S. Environmental Protection Agency, Office of Emergency and Remedial Response. OSWER Directive 9355.7-03B-P. June 2001.

Navy, 1992. Record of Decision for an Interim Remedial Action at Tank Farm 5, Tanks 53 and 56, Groundwater Operable Unit, Naval Education and Training Center, Newport, Rhode Island. September 29, 1992.

Navy, 1993. Record of Decision – Source Control Operable Unit – Site 01 – McAllister Point Landfill, Naval Education and Training Center, Newport, Rhode Island. September 27, 1993.

Navy, 2000. Record of Decision - Marine Sediment/Management of Migration Operable Unit, McAllister Point Landfill Site, Naval Station Newport, Newport, Rhode Island. March 1, 2000.

Navy, 2002. Coddington Cove Rubble Fill Area, Fact Sheet Update. Naval Station Newport, Newport, Rhode Island. January 2002.

Navy, 2002a. Gould Island Building 32, Fact Sheet Update. Naval Station Newport, Newport, Rhode Island. January 2002.

Navy, 2002b. Derecktor Shipyard, Fact Sheet Update. Naval Station Newport, Newport, Rhode Island. January 2002.

Navy, 2002b. Tank Farms 4 and 5, Fact Sheet Update. Naval Station Newport, Newport, Rhode Island. August 2002.

Navy, 2002c. Tank Farms 1 - 3, Fact Sheet Update. Naval Station Newport, Newport, Rhode Island. August 2002.

Navy, 2003. Old Fire Fighting Training Area, Fact Sheet Update. Naval Station Newport, Newport, Rhode Island. May 2003.

Navy, 2003a. Old Fire Fighting Training Area, Fact Sheet Update. Naval Station Newport, Newport, Rhode Island. May 2003.

Navy, 2003b. Installation Restoration (IR) Site Access and Use, NAVSTA Newport/Local Area Rhode Island Coordinator Instruction 5090.15A. June 2003.

Navy, 2004. Action Memorandum, Non-Time Critical Removal Action, Soil and Debris Mound Removal, Old Fire Fighting Training Area (Site 09), Naval Station Newport, Newport, Rhode Island. August 13, 2004.

Navy, 2007a. Installation Restoration (IR) Site Use Restrictions, NAVSTA Newport/Local Area Rhode Island Coordinator Instruction 5090.15B. September 27, 2007.

Navy, 2007b. Explanation of Significant Difference for McAllister Point Landfill, Naval Station Newport, Newport, Rhode Island. September 2007 (signed October 18, 2007 by Navy, and October 31, 2007 by EPA).

APPENDIX B

SITE INSPECTION REPORT

NAVSTA Newport Site Inspection – May 4, 2009

Introduction

The site inspection commenced at approximately 9:45 AM and concluded approximately 1:15 PM. The weather was overcast, with no perceptible winds and the temperature was approximately 60 degrees. Observations made by the contractor are noted below.

Site Inspection Notes:

- Initially drove the entire length of NAVSTA Newport to observe the locations of all sites and study areas covered in this five-year review. The only extensive walkovers, inspections, and photo documentation were completed at Tank Farm Five and the McAllister Point Landfill.

- The inspection team walked the entire perimeter of the McAllister Point Landfill to check the condition of the landfill cap, fence line, and revetment. The landfill cover was well vegetated, and well mown to control overgrowth. No obvious issues with the cap were observed. The groundwater monitoring and gas vents were observed and appeared to be in good condition; the monitoring wells were secured with locks, the casings were rusted. The revetment also appeared to be in good condition. There are some areas where small bushes are growing within the stones of the revetment, but these have been pruned back in the past. There was no evidence of vandalism on the site. The perimeter fence was well secured and in good condition. Signs are posted on the fence warning from trespass and from landing. The gates and accessways are in good condition, bollards and chains have been added since the last five year review to prevent access along the east side of the site.

- The area of former Tanks 53 and 56 was lightly vegetated, having been disturbed during the demolition of the treatment plant and the extraction wells. Some monitoring wells were observed and those accessible and inspected closely were generally poorly secured and were in poor condition. Some wells were not found. Electric utility poles and utility manholes are still present in this area, and in the area of the former extraction well line downgradient of Tank 53. However, it appeared to the inspection team that the electric lines were disconnected at the poles and at ground. A chain-link fence was observed around the perimeter of the area encompassing the former treatment plant and Tank 53. The area is open to the east to the remainder of the tank Farm, which is not completely fenced, although vehicle accessways are gated and locked. The remainder of the tank farm was not inspected in detail, although it was noted that the area near Tank 56 is being used for holding soil fill material or excavated soils, likely from other construction projects.

- The 1993 ROD noted that historically community concern and involvement had been low. A community relations plan was prepared by the Navy in July 1990. The NAVSTA Newport environmental staff indicated that community involvement has continued to be minimal.

- Site photographs taken during the site inspection follow.

Five Year Review Site Inspection
Naval Station Newport, Newport RI
May 4, 2009
McAllister Point Landfill

Photo 1 – Entrance Gate to McAllister Point Landfill. Bollards and chains in the foreground. View is to the west.

Photo 2 – Fence on East Side of Landfill, with gas vent and warning sign. Vegetation well controlled.

Five Year Review Site Inspection
Naval Station Newport, Newport RI
May 4, 2009
McAllister Point Landfill

Photo 3 – Monitoring well on East Side of Landfill, with runoff channel.

Photo 4 – Monitoring well at north end of landfill. Drum of purge water standing nearby.

Five Year Review Site Inspection
Naval Station Newport, Newport RI
May 4, 2009
McAllister Point Landfill

Photo 5 – Revetment north end of site. View is to the south.

Photo 6 – Revetment on south side of site. View is to the south-east.

Five Year Review Site Inspection
Naval Station Newport, Newport RI
May 4, 2009
McAllister Point Landfill

Photo 6 – Fence and drainage control structure, south end of site. View is to the north.

Photo 7 – Toe of revetment with stony substrate to the west. View is to the southwest.

Five Year Review Site Inspection
Naval Station Newport, Newport RI
May 4, 2009
Tank Farm 5 – Tanks 53 and 56 Area

Photo 8 – Former Tank 53 Area and entrance
View is to the north-west.

Photo 9 – Former Tank 53 Area and area of former treatment plant.
View is to the west.

Five Year Review Site Inspection
Naval Station Newport, Newport RI
May 4, 2009
Tank Farm 5 – Tanks 53 and 56 Area

Photo 10 – Area of the former treatment plant.

View is to the south-west.

Photo 11 – Monitoring well (believed to MW8) and protective bollards, near of former extraction well line 2.
View is to the north-west.

Five Year Review Site Inspection
Naval Station Newport, Newport RI
May 4, 2009
Tank Farm 5 – Tanks 53 and 56 Area

Photo 12 – Utility manholes north of former extraction well line 2
View is to the north-west.

Photo 13 – Former Tank 53 area – Remaining equipment from building demolition. View is to the south.

APPENDIX C

INDIVIDUALS POLLED FOR THE NAVSTA NEWPORT FIVE-YEAR REVIEW

Mailing list for NAVSTA Newport (Formerly NETC - Newport)
Five Year Review
May 2009

Name		City, State Zip
Dr. D. K. Abbass	Community Member	Newport, RI 02840
Ms. Lucy Bond	Community Member	Middletown, RI 02842
Ms. Sally Brown	Community Member	Middletown, RI 02842
Mr. David W. Brown	Community Member	Newport, RI 02840-6944
Mr. Christopher Burnett	Community Member	Portsmouth, RI 02871
Ms. Dorothy Carpenter	Community Member	Middletown, RI 02842
Mr. Charles Flippo	Community Member	Newport, RI 02840
Mr. Thurston Gray	Community Member	Portsmouth, RI 02871-1006
Mr. Thomas McGrath	Community Member	Middletown, RI 02842
Mr. Manuel Marques, Jr.	Community Member	Providence, RI 02903
Mr. Howard Porter	Community Member	Middletown, RI 02842
Mr. Emmet Turley	Community Member	Jamestown, RI 02835
Mr. James Myers	Community Member	Jamestown, RI 02835
Mr. Michael Simmons	Community Member	Newport, RI 02840
Mr. Daniel Sullivan	Community Member	Middletown, RI 02842
Mr. John Vitkevich	Community Member	Portsmouth, RI 02871
Mrs. Claudette Weissinger	Community Member	Portsmouth, RI 02871
Ms. Ginny Lombardo	USEPA	Boston MA, 02114
Ms. Kymberlee Keckler	USEPA	Boston MA, 02114
Mr. Bob Lim	USEPA	Boston MA, 02114
Mr. Paul Kulpa	RIDEM	Providence, RI 02908
Ms. Jeanne-Marie Napolitano	Mayor	Newport, RI 02840
Mr. Harry Hallgring	Fire Chief	Newport, Rhode Island 02840
Mr. Robert G. Driscoll	Town Administrator	Portsmouth, RI 02871
Mr. Jeffrey P. Lynch, Chief	Fire Chief	Portsmouth, RI 02871
Mr. Shawn J. Brown	Town Administrator	Middletown, RI 02842
Mr. Ronald Doire	Fire Chief	Middletown, RI 02842
Julio J. DiGiando	President, Town Council	Jamestown, RI 02835
James R. Bryer Jr.	Chief, Jamestown Fire Dept	Jamestown, RI 02835

APPENDIX D

ARARS AND TBCS

TABLE D-1
CHEMICAL-SPECIFIC APPLICABLE OR RELEVANT AND APPOPRIATE REQUIREMENTS, ADVISORIES AND GUIDANCE - McALLISTER POINT LANDFILL
FIVE-YEAR REVIEW
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
FEDERAL			
EPA Risk Reference Doses (RfDs)	None	Toxicity values for evaluating noncarcinogenic effects resulting from exposures to contamination.	Applicable- EPA RfDs were used to characterize risks due to noncarcinogens in groundwater.
EPA Human Health Assessment Group Cancer Slope Factors (CSFs)	None	A slope factor is used to estimate an upper-bound probability of an individual developing cancer as a result of a lifetime of exposure to a particular level of a potential carcinogen.	Applicable- EPA CSFs were used to compute the individual incremental cancer risk resulting from exposure to certain compounds.
Clean Water Act, Ambient Water Quality Criteria (AWQC)	40 CFR 131, Section 304	Non-enforceable guidelines established for the protection of human health and/or aquatic organisms	Relevant and appropriate- Sediment PRGs were derived using these water quality criteria. Sediments exceeding PRGs had to be addressed to meet standards.

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
STATE			
Remediation regulations- Risk Management Section	DEM-DSR-01-93 Section 8	This section of the remediation regulations sets forth remediation requirements for impacted media at contaminated sites.	Relevant and Appropriate- PRGs were developed to minimize the risk to affected media.
RI Water Pollution Control Act. RI Water Quality Regulations	RIGL 46-12 et seq.	Establishes general requirements and effluent limits for discharge to area waters.	Relevant and appropriate- Sediment PRGs were derived using these water quality criteria. Sediments exceeding PRGs had to be addressed to meet standards.

TABLE D-2
LOCATION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS, ADVISORIES AND GUIDANCE - McALLISTER POINT LANDFILL
FIVE-YEAR REVIEW
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
FEDERAL			
Wetlands Executive Order 11990	40 CFR 6, Appendix A	Regulates activities conducted in a wetland area to minimize the destruction, loss, or degradation of the wetlands.	Applicable if the implementation of the cap or associated shoreline protection impacts coastal or on-shore wetlands.
Clean Water Act, Section 404	33 USC 1344; 40 CFR Part 230 and 33 CFR Parts 320-323	Regulates the discharge of dredge and fill materials into waters of the United States, including special aquatic sites. Such discharges are not allowed if practicable alternatives are available.	Applicable- Refilling of the excavated/dredged aquatic habitats will only satisfy this requirement if no practicable alternative that has less effect is available.
Rivers and Harbors Act, Section 10	33 USC 403; 33 CFR Parts 320-323	Sets forth criteria for obstructions or alterations of navigable waters	Applicable- Excavation/dredging and habitat restoration will comply with the Act's environmental standards.
Executive Order 11988- Floodplain Management	40 CFR Part 6, Appendix A	The Order requires Federal agencies to evaluate the potential effects of actions it may take within a designated 100-year flood plain of a waterway to avoid adversely impacting floodplains wherever possible.	Applicable- The potential for restoring and preserving floodplains so that their natural and beneficial values can be realized will be considered and incorporated into any plan or action wherever feasible.
Fish and Wildlife Coordination Act of 1958- Protection of Wildlife Habitats	16 USC 661	Requires consultation with federal and state conservation agencies during planning and decision-making process which may impact water bodies including wetlands. Measures to prevent, mitigate or compensate for losses of fish and wildlife will be given due consideration whenever a modification of a water body is proposed.	Applicable- If the remedial action impacts a water body, consultation with the USFWS, RIDEM and other federal and state agencies involved in fish and wildlife matters is required.

TABLE D-2
LOCATION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS, ADVISORIES AND GUIDANCE - McALLISTER POINT LANDFILL
FIVE-YEAR REVIEW
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
FEDERAL (cont.)			
Endangered Species Act-Protection of Endangered Species	16 USC 1531	Restricts activities in areas inhabited by registered endangered species.	Applicable- Federally endangered loggerhead turtles and federally endangered Kemp's ridley turtles occur in the waters of Narragansett Bay. Appropriate agencies will be consults to fine ways to minimize adverse effects to the listed species from the removals and restoration remedy.
Coastal Zone Management Act	16 USC Parts 1451 et seq.	Requires that any actions must be conducted in a manner consistent with state approved management programs.	Applicable- the entire site is located in a coastal zone management area, therefore, applicable coastal zone management requirements need to be addressed.
National Historic Preservation Act	16 USC 470 et seq., 26 CFR Part 800	Requires action to take into account effects on properties included on or eligible for the National Register of Historic Places and minimizes harm to National Historic Landmarks.	Applicable- Historic vessels may be sunken in the area. Excavation/dredging and restoration activities will be carried out to minimize potential harm to historic sites.

TABLE D-2
LOCATION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS, ADVISORIES AND GUIDANCE - McALLISTER POINT LANDFILL
FIVE-YEAR REVIEW
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
STATE			
Rhode Island Wetlands Laws	RIGL 2-1-18 et seq.	Defines and establishes provisions for the protection of swamps, marshes and other freshwater wetlands in the state.	Regulation applicable if implementation of the remedial action impacts wetland areas.
Rhode Island Coastal Resources Management Law	RIGL, Title 46, Chapter 23	Creates Coastal Resources Management Council and sets standards and authorizes promulgation of regulations for management and protection of coastal resources.	Applicable- McAllister Point Landfill is located in a coastal area, the lead agency must coordinate with the RI Coastal Management Council and ensure that all actions are consistent with the Coastal Zone Management Plan.
Endangered Species Act	RIGL 20-37-1, et seq.	Regulates activities affecting state-listed endangered or threatened species or their critical habitat.	Applicable- The state listed endangered loggerhead turtles and federally endangered Kemp's ridley turtles occur in the waters of Narragansett Bay. Appropriate agencies will be consults to fine ways to minimize adverse effects to the listed species from the removals and restoration.
Hazardous Waste Management-Location Standards for Hazardous Waste Facilities	RIGL 23-19.1-7; CRIR 12-030-003 (10.00)	RI is delegated to administer the federal RCRA statute through its state regulations. A facility located in a 100 year floodplain must be maintained to prevent washout of any hazardous waste by a 100-year flood.	Relevant and appropriate- Some of the landfill wastes in the nearshore area maybe classified as hazardous waste. The removal of these materials permanently eliminates the risk of washout.

TABLE D-3
ACTION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS, ADVISORIES AND GUIDANCE - McALLISTER POINT LANDFILL
FIVE-YEAR REVIEW
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
FEDERAL			
RCRA Subtitle C Requirements	40 CFR 264	Outlines specifications and standards for design, operation, closure and monitoring of performance for hazardous waste storage, disposal, and treatment facilities.	Substantive requirements will be met and adhered to onsite.
RCRA Subpart B- General Facility Standards	40 CFR 264.10-264.18	General requirements regarding waste analysis, security, training, inspections, and location applicable to a facility which stores, treats or dispose of hazardous wastes (a TSDF facility).	Relevant and Appropriate- NETC was issued a Hazardous Waste Facility Permit by RIDEM in 1985, RCRA General Facilities Standards are relevant to interim remedial actions conducted at the facility.
RCRA Subpart C- Preparedness and Prevention	40 CFR 264.30-264.37	Requirements applicable to the design and operation, equipment and communications associated with a TSDF facility, and to arrangements with local response departments.	Relevant and Appropriate- NETC was issued a Hazardous Waste Facility Permit by RIDEM in 1985, RCRA General Facilities Standards are relevant to interim remedial actions conducted at the facility.
RCRA Subpart D- Contingency Plan and Emergency Procedures	40 CFR 264.50-264.569	Emergency planning procedures applicable to a TSDF facility	Relevant and Appropriate- NETC was issued a Hazardous Waste Facility Permit by RIDEM in 1985, RCRA General Facilities Standards are relevant to interim remedial actions conducted at the facility.
RCRA Subtitle F- Groundwater Protection	40 CFR 264.90-264.56	Groundwater monitoring/corrective action requirements; dictates adherence to MCLs and establishes points of compliance.	Relevant and appropriate- Studies conducted will include groundwater monitoring program. Standards will be met.
RCRA Subpart G- Closure/Post-Closure Requirements	40 CFR 264.110-118	Establishes requirements for the closure and long-term management of a hazardous disposal facility	Substantive standards and requirements will be met.

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
FEDERAL (cont.)			
RCRA Subpart N- Landfill Requirements	40 CFR 264.301-.310	Placement of a cap over hazardous waste requires a cover designed and constructed to comply with regulations.	Relevant and Appropriate- Cap design will meet regulatory requirements. Cap maintenance will be attended to, closure and post closure substantive requirements will be complied with.
Clean Water Act- National Pollutant Discharge Elimination System (NPDES) Permit Requirements	40 CFR 122-125	Permits contain applicable effluent standards (i.e. technology-based and/or water quality-based) monitoring requirements, and standards and special conditions for discharge.	Any drainage off the temporary debris/sediment storage area and any dewatering discharge will be treated by an on-site treatment plant and discharged to Narragansett Bay.
Clean Air Act (CAA), National Emission Standards for Hazardous Air Pollutants (NESHAPS)	42 USC 7411, 7412; 40 CFR Part 61	NESHAPS are emission standards for specific chemicals. Certain activities are regulated including site remediation.	Applicable- Monitoring of air emissions from the dewatering facility will be used to assess compliance with these standards if threshold levels are reached. O&M will minimize potential air releases.
RCRA Proposed Rule- Proposed Amendments for Landfill Closures	52 CFR 8712	Provides an option for the application of alternate closure and post closure requirements based on a consideration of site-specific conditions including exposure pathways of concern.	To be Considered- Cap and post-closure monitoring will be designed taking into account exposure pathways of concern.
EPA Guidance: Final Covers on Hazardous Waste Landfills and Surface Impoundments	EPA 530-SW-89-047	EPA Technical Guidance for landfill covers. Presents recommended technical specifications for multilayer landfill cover design.	To be Considered- Cap construction will consider these standards.

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
FEDERAL (cont.)			
Migratory Bird Treaty Act	16 USC 703-712	Prohibits hunting, possessing, killing or capturing of migratory birds, birds in danger of extinction and those birds' eggs or nests.	Since construction activities during the breeding season may "take" birds or their nests, actions must be taken to avoid destroying nests during breeding season.
Clean Water Act, Section 404, Requirements for Discharge of Dredged Fill or Material	40 CFR Part 230.10	Regulates the discharge of dredge and fill materials into waters of the United States, including special aquatic sites. Such discharges are not allowed if practicable alternatives are available.	Applicable- Refilling of the excavated/dredged aquatic habitats will only satisfy this requirement if no practicable alternative that has less effect is available.

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
STATE			
RI Hazardous Waste Management Act of 1978: Rules and Regulations and Proposed Amendments:	RIGL 23-19.1 et seq.	Rules and regulations for hazardous waste generation, transportation, treatment storage and disposal.	Relevant and Appropriate- Substantive requirements applicable to closure will be met and adhered to onsite.
- Section 7	RIGL 23-19.1 et seq.	Restricts location, design, construction and operation of landfills from endangering groundwater, wetlands or floodplains	Relevant and Appropriate- Landfill cap will be constructed so as to prevent contamination of groundwater, wetlands or floodplains
-Section 8	RIGL 23-19.1 et seq.	Outlines requirements for groundwater protection, general waste analysis, security procedures, inspections and safety.	Relevant and Appropriate- Remedial actions will comply with substantive portions of this section applicable to landfill closure.

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
STATE (cont.)			
-Section 9	RIGL 23-19.1 et seq.	Outlines operational requirements for treatment storage and disposal facilities	Relevant and Appropriate- Remedial actions will comply with substantive portions of this section applicable to landfill closure.
-Section 10	RIGL 23-19.1 et seq.	Outlines design and operation requirements for land disposal facilities, including landfills	Relevant and Appropriate- Remedial actions will meet all non-location specific requirements of this section applicable to landfill closure.
RI Solid Waste Management Facilities Rules and Regulations: -Section 14.12	RIGL 23-19.1 et seq.	Sets performance standards for landfill covers of maximum remolded permeability coefficient of 1E-7 cm/sec	Relevant and Appropriate- Design of landfill cover will meet this requirement
RI Clean Air Act- General Air Quality and Air Emissions Requirements	RIGL, Title 23, Chapter 23		
-RI Air Pollution Control Regulations: -Regulation 1- Visible Emissions	RIGL, Title 23, Chapter 23	No air contaminant emissions will be allowed for more than 3 mins in any one hour which are > or equal to 20% opacity	Applicable- Air emissions from remedial actions will meet emission regulations.
-Regulation 5- Fugitive Dust	RIGL, Title 23, Chapter 23	Requires that reasonable precaution be taken to prevent particulate matter from becoming airborne.	Applicable- On-site remedial actions will use good industrial practices to prevent particulate matter from becoming airborne.
-Regulation 7- Emissions Detrimental to Person or Property	RIGL, Title 23, Chapter 23	Prohibits emissions of contaminants which may be injurious to human, plant or animal life or cause damage to property or which reasonably interfere with the enjoyment of life and property.	Applicable- All emissions from landfill vents will meet this requirement or gas treatment will be required.

TABLE D-3
ACTION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE
REQUIREMENTS, ADVISORIES AND GUIDANCE - McALLISTER POINT LANDFILL
FIVE-YEAR REVIEW
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
STATE (cont.)			
-Regulation 15- Control of Organic Solvent Emissions	RIGL, Title 23, Chapter 23	Limits the amount of organic solvents emitted to the atmosphere.	Applicable- If emissions from landfill gas vents exceed limits in this regulation, emissions controls will be designed and implemented to meet these requirements.
-Regulation 17- Odors	RIGL, Title 23, Chapter 23	Prohibits the release of objectionable odors across property lines.	Applicable- No remedial action or air emissions will emit objectionable odors beyond the facility boundary, as practicable.
-Regulation 22- Air Toxics	RIGL, Title 23, Chapter 23	Prohibits the emissions of specified contaminants at rates which would result in ground level concentrations greater than acceptable ambient levels or acceptable ambient levels with LAER, as set in the regulation.	Applicable if necessary to meet these standards, air emissions controls equipment will be designed for landfill gas emissions control.
Clean Air Act- Air Pollution Control	RIGL 23-23 et seq, CRIR 12-31-09	Establishes guidelines for the construction, installation or operation of potential air emission units. Establishes permissible emission rates for some contaminants.	Applicable- Site processing of debris and sediment and treatment of dewatering liquid will meet the substantive provisions of the standards if threshold levels are reached.
RI Water Pollution Control Act- Water Quality Regulations for Water Pollution Control	RIGL, 46-12, et seq.	Establishes general requirements and effluent limits for discharge to area waters.	Applicable- RIPDES requirements pertaining to storm water discharges will be met.
RI Water Pollution Control Act- RI Regulations for the Pollutant Discharge Elimination System (RIPDES)	RIGL, 46-12, et seq.	Permits contain applicable effluent standards, monitoring requirements, and standards and special conditions for discharge, including storm water discharges from land disposal facilities which have received industrial wastes.	Applicable- Storm water discharge improvements would be designed to provide compliance with these regulations and drainage would be monitored in compliance with these regulations.

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
STATE (cont.)			
Hazardous Waste Management-Identification and Listing of Hazardous Wastes	RIGL 23-19.1; CRIR 12-030-003 (3.25)	RI is delegated to administer the federal RCRA statute through its state regulations. A facility located in a 100 year floodplain must be maintained to prevent washout of any hazardous waste by a 100-year flood.	Relevant and Appropriate- Landfill debris and sediments that may be hazardous waste will be removed, monitoring will assess whether hazardous materials are released during excavation/dredging.
Hazardous Waste Management-Standards for Treatment, Storage, Disposal Facilities	RIGL 23-19.1; CRIR 12-030-003 (3.25)	Outlines specifications and standards for design, operation, closure, and monitoring of performance for hazardous waste storage, treatment and disposal facilities. The standards for 40 CFR 264 are incorporated by reference.	Applicable- Landfill debris and sediments that may be hazardous waste will be removed. Removal, dewatering and treatment dewatering fluids will satisfy these provisions for any hazardous waste excavated.
Hazardous Waste Management-Solid Waste Management Facilities	RIGL 23-19.1; CRIR 12-030-003 (3.25)	Rules and regulations are more stringent than the federal standards under 40 CFR 258. The standards require minimization of environmental hazards associated with the operation of solid waste facilities.	Applicable- Removal of all debris will satisfy the substantive requirements of these provisions. Removal of non-hazardous sediments and using waste piles for dewatering prior to disposal in a RCRA D facility will satisfy the substantive requirements of these provisions

TABLE D-4
CHEMICAL-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS, ADVISORIES AND GUIDANCE – TANK FARM 5, TANKS 53 AND 56
FIVE-YEAR REVIEW
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
FEDERAL			
Safe Drinking Water Act- Maximum Contaminant Levels (MCLs)	40 CFR 141.11 -.16	MCLs directly apply to "public water systems", defined as systems with at least 15 connections which service a minimum of 25 persons	Relevant and Appropriate- MCLs were used to assess risk associated with the ingestion of site groundwater.
Safe Drinking Water Act- Maximum Contaminant Level Goals (MCLGs)	40 CFR 141.50 -.51	Non-enforceable health goals for public water supply systems, set at levels which result in no known or anticipated adverse health effects.	Relevant and Appropriate- Non-zero MCLGs are to be used as remedial goals, per the NCP (40 CFR 300). Contaminant concentrations were compared to MCLGs to assess potential risks associated with ingestion of groundwater.
Resource Conservation and Recovery Act, Subpart F: Groundwater Protection Standards, Alternate Concentration Limits	40 CFR 264.94	Sets groundwater protection standards or allows for the development of alternate concentration limits for facilities which treat, store, or dispose of hazardous waste.	Relevant and Appropriate- Groundwater at the site is not a current source of drinking water, therefore RCRA groundwater concentrations are not applicable. In addition, removal of the treatment plant indicates that this citation is not relevant and appropriate.
EPA Risk Reference Doses (RfDs)	None	Toxicity values for evaluating noncarcinogenic effects resulting from exposures to contamination.	Applicable- EPA RfDs were used to characterize risks due to noncarcinogens in groundwater. Risks have not been recalculated for this Five Year Review.
EPA Human Health Assessment Group Cancer Slope Factors (CSFs)	None	A slope factor is used to estimate an upper-bound probability of an individual developing cancer as a result of a lifetime of exposure to a particular level of a potential carcinogen.	Applicable- EPA CSFs were used to compute the individual incremental cancer risk resulting from exposure to certain compounds. Risks have not been recalculated for this Five Year Review.

TABLE D-4
CHEMICAL-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS, ADVISORIES AND GUIDANCE – TANK FARM 5, TANKS 53 AND 56
FIVE-YEAR REVIEW
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
FEDERAL (cont.)			
Clean Water Act, Effluent Discharge Limitations	40 CFR 401.15	Regulates the discharge of contaminants from an industrial point source.	Applicable if groundwater is discharged directly to surface water. However, treated groundwater was discharged to the Newport WWTP. The treatment plant has been demolished so this regulation is no longer applicable.
STATE			
RI Groundwater Protection Act- Public Drinking Water Regulations	RIGL, 46-13 et seq.	Establishes provisions for the protection and management of potable drinking waters, including the development of groundwater classifications and associated standards which specify maximum contaminant levels for each classification.	Applicable- Contaminant concentrations will be compared to the established groundwater quality standards.
RI Pollution Control Law- RI Water Quality Standards	RIGL 46-12 et seq.	Establishes water use classification and water quality criteria for all waters of the state. Also established acute and chronic water quality criteria for the protection of aquatic life.	Applicable if groundwater is discharged directly to surface water. However, treated groundwater was discharged to the Newport WWTP. The treatment plant has been demolished so this regulation is no longer applicable.

TABLE D-5
LOCATION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS, ADVISORIES AND GUIDANCE - TANK FARM 5, TANKS 53 AND 56
FIVE-YEAR REVIEW
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
FEDERAL			
Wetlands Executive Order 11990	40 CFR 6, Appendix A	Regulates activities conducted in a wetland area to minimize the destruction, loss, or degradation of the wetlands.	Regulation applicable if implementation of the remedial action impacts wetland areas.
Wetlands Construction and Management Procedures	40 CFR 6, Appendix A	Sets forth EPA policy for carrying out the provisions of Executive Order 11990 (see above)	Regulation applicable if implementation of the remedial action impacts wetland areas.

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
STATE OF RHODE ISLAND			
Rhode Island Wetlands Laws	RIGL 2-1-18 et seq.	Defines and establishes provisions for the protection of swamps, marshes and other freshwater wetlands in the state.	Regulation applicable if implementation of the remedial action impacts wetland areas.
RI Groundwater Protection Act	RIGL, Title 46, Chapter 13.1 et. seq.	Provides for protection of state groundwater, required the maintenance or upgrading of existing or potential drinking water sources.	Applicable- Groundwater at Tank Farm 5 is GA-NA.

TABLE D-6
ACTION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS, ADVISORIES, AND GUIDANCE - TANK FARM 5, TANKS 53 AND 56
FIVE-YEAR REVIEW
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
FEDERAL			
Hazardous and Solid Waste Amendments of 1984 (HSWA)- Land Disposal Restrictions		Prohibits placement of hazardous wastes in locations of vulnerable hydrogeology and lists certain wastes, which will be evaluated for prohibition by EPA under RCRA.	A residual sludge containing hazardous constituents was generated from the treatment system. If analysis of the sludge fails TCLP analysis, land disposal restrictions were potentially applicable. However, the treatment plant has been demolished so these restrictions are no longer applicable.
RCRA Generator Requirements for Manifesting Waste for Off-Site Disposal	40 CFR 262	Standards for manifesting, making and recording off-site hazardous waste shipments for treatment/disposal.	Applicable for the off-site disposal/treatment of the treatment system residual if determined to be hazardous. However, the treatment plant has been demolished so these requirements are no longer applicable.
RCRA Transporter Requirements for Off-Site Disposal	40 CFR 263	Standards for transporters of hazardous waste materials.	Applicable for the off-site disposal/treatment of the treatment system residual if determined to be hazardous. However, the treatment plant has been demolished so these requirements are no longer applicable.
RCRA Subpart B- General Facility Standards	40 CFR 264.10-264.18	General requirements regarding waste analysis, security, training, inspections, and location applicable to a facility which stores, treats or dispose of hazardous wastes (a TSDF facility).	Relevant and Appropriate- NETC was issued a Hazardous Waste Facility Permit by RIDEM in 1985, RCRA General Facilities Standards were relevant to interim remedial actions conducted at the facility. However, the treatment plant has been demolished so these standards are no longer relevant and appropriate.

TABLE D-6
ACTION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS, ADVISORIES, AND GUIDANCE - TANK FARM 5, TANKS 53 AND 56
FIVE-YEAR REVIEW
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
FEDERAL (cont.)			
RCRA Subpart C- Preparedness and Prevention	40 CFR 264.30-264.37	Requirements applicable to the design and operation, equipment and communications associated with a TSDF facility, and to arrangements with local response departments.	Relevant and Appropriate- NETC was issued a Hazardous Waste Facility Permit by RIDEM in 1985, RCRA General Facilities Standards were relevant to interim remedial actions conducted at the facility. However, the treatment plant has been demolished so these standards are no longer relevant and appropriate.
RCRA Subpart D- Contingency Plan and Emergency Procedures	40 CFR 264.50- 264.56	Emergency planning procedures applicable to a TSDF facility	Relevant and Appropriate- NETC was issued a Hazardous Waste Facility Permit by RIDEM in 1985, RCRA General Facilities Standards were relevant to interim remedial actions conducted at the facility. However, the treatment plant has been demolished so these standards are no longer relevant and appropriate.
RCRA Subpart X- Miscellaneous Units	40 CFR 264.600-264.999	Environmental performance standards, monitoring requirements and post-closure care requirements applicable to miscellaneous units (not otherwise defined in the RCRA regulations) used to treat, store, or dispose hazardous waste.	Relevant and Appropriate- NETC was issued a Hazardous Waste Facility Permit by RIDEM in 1985, RCRA General Facilities Standards were relevant to interim remedial actions conducted at the facility. However, the treatment plant has been demolished so these standards are no longer relevant and appropriate.

TABLE D-6
ACTION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS, ADVISORIES, AND GUIDANCE - TANK FARM 5, TANKS 53 AND 56
FIVE-YEAR REVIEW
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
FEDERAL (cont.)			
RCRA Land Disposal Restrictions	40 CFR 268	Identifies hazardous wastes that are restricted from land disposal and sets treatment standards for restricted wastes.	A residual sludge containing hazardous constituents was generated from the treatment system. If analysis of the sludge fails TCLP analysis, land disposal restrictions were potentially applicable. However, the treatment plant has been demolished so these restrictions are no longer applicable.
Safe Drinking Water Act- Underground Injection Control Requirements	40 CFR 144 and 146	Establishes general requirements, technical criteria and standards for underground injection wells.	Applicable if treated groundwater is discharged to groundwater. Preferred alternative was to discharge to WWTP. However, the treatment plant has been demolished and groundwater is not being treated, so these requirements are no longer applicable.
Clean Water Act- National Pollutant Discharge Elimination System (NPDES) Permit Requirements	40 CFR 122-125	Permits contain applicable effluent standards (i.e. technology-based and/or water quality-based) monitoring requirements, and standards and special conditions for discharge.	Applicable if treated groundwater is discharged to groundwater or surface water. Preferred alternative was to discharge to WWTP. A permit would be required if the treated groundwater is discharged on-site. However, the treatment plant has been demolished and groundwater is not being treated, so these requirements are no longer applicable.
Clean Water Act- Discharge to Publicly-Owned Treatment Works (POTW)	40 CFR 403	A national pretreatment program designed to protect municipal wastewater treatment plants and the environment from damage that may occur when hazardous, toxic or other non-domestic wastes are discharged into a sewer system.	Applicable- Since discharge alternative preferred is to the Newport WWTP. Treated groundwater had to meet discharge limitations established by the WWTP. However, the treatment plant has been demolished and groundwater is not being treated, so these requirements are no longer applicable.

TABLE D-6
ACTION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE
REQUIREMENTS, ADVISORIES, AND GUIDANCE - TANK FARM 5, TANKS 53 AND 56
FIVE-YEAR REVIEW
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
FEDERAL (cont.)			
Hazardous Materials Transportation Act- Rules for Transportation of Hazardous Materials	49 CFR 170, 171	Procedures for packaging, labeling, manifesting, and off-site transport of hazardous materials.	Applicable for off-site disposal/ treatment of the treatment system residual, if determined to be hazardous. However, the treatment plant has been demolished so these requirements are no longer applicable.
Federal Water Pollution Control Act- Ocean Discharge Criteria	40 CFR 200-223	Establishes general requirements for discharge into United States' oceans.	Applicable if treated groundwater is discharged to groundwater or surface water. Preferred alternative was to discharge to WWTP. A permit would be required if the treated groundwater is discharged on-site. However, the treatment plant has been demolished and groundwater is not being treated, so these requirements are no longer applicable.
Occupational Safety and Health Act (OSHA)- Recordkeeping, Reporting and Related Regulations	29 CFR 1904	Outlines recordkeeping and reporting requirements.	Applicable because hazardous materials were present at Tank Farm 5. Apply for all contractors/ subcontractors involved in hazardous activities. However, hazardous materials are no longer present at Tank Farm 5 so these regulations are no longer applicable.
OSHA General Industry Standards	29 CFR 1910	Establishes requirement for 40-hour training and medical surveillance of hazardous waste workers. Establishes Permissible Exposure Limits (PELs) for workers at hazardous waste operations and during emergency response.	Applicable because hazardous materials were present at Tank Farm 5. Apply for all contractors/ subcontractors involved in hazardous activities. If PELs are exceeded during site activities, appropriate respiratory equipment will be worn. However, hazardous materials are no longer present at Tank Farm 5 so these regulations are no longer applicable.

TABLE D-6
ACTION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS, ADVISORIES, AND GUIDANCE - TANK FARM 5, TANKS 53 AND 56
FIVE-YEAR REVIEW
NAVSTA NEWPORT
NEWPORT, RHODE ISLAND

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
FEDERAL (cont.)			
OSHA Safety and Health Standards	29 CFR 1926	Regulations specify the type of safety equipment and procedures for site remediation/excavation.	Applicable because hazardous materials were present at Tank Farm 5. During remedial activities appropriate safety equipment must be worn and a health and safety plan followed. However, hazardous materials are no longer present at Tank Farm 5 so these regulations are no longer applicable.
STATE			
RI Water Pollution Control Act. RI Water Quality Regulations	RIGL 46-12 et seq.	Establishes general requirements and effluent limits for discharge to area waters.	Applicable if treated groundwater is discharged to groundwater or surface water, however preferred alternative was to discharge to WWTP. The treatment plant has been demolished and groundwater is not being treated, so these regulations are no longer applicable.
RI Water Pollution Control Act. RI Pollutant Discharge Elimination Systems	RIGL 46-12 et seq.	Permits contain applicable effluent standards (i.e. technology-based and/or water quality-based) monitoring requirements, and standards and special conditions for discharge.	Applicable if treated groundwater is discharged to groundwater or surface water, however preferred alternative was to discharge to WWTP. The treatment plant has been demolished and groundwater is not being treated, so these regulations are no longer applicable.
RI Water Pollution Control Act. RI Pretreatment Regulations	RIGL 46-12 et seq.	Establishes rules concerning pretreatment of water prior to discharge to a Rhode Island POTW.	Applicable- Effluent levels established by the WWTP were achieved prior to discharge. However, the treatment plant has been demolished and groundwater is not being treated, so these regulations are no longer applicable.

Requirement	Citation	Requirement Synopsis	Current Status/Applicability
STATE (cont.)			
RI Water Pollution Control Act. Underground Injection Control Regulations	RIGL 46-12 et seq.	Establishes the general requirements, technical criteria and standards for underground injection wells.	Applicable if treated groundwater is discharged to groundwater or surface water, however preferred alternative was to discharge to WWTP. The treatment plant has been demolished and groundwater is not being treated, so these regulations are no longer applicable.
RI Hazardous Waste Management Act of 1978, Hazardous Waste Management	RIGL 23-19.1 et seq.	Rules and regulations for hazardous waste generation, transportation, treatment, storage and disposal.	Applicable for off-site treatment/disposal of the treatment system residual, if hazardous. However, the treatment plant has been demolished so these regulations are no longer applicable.
RI Hazardous Substance Community Right-to-Know Act, Public Right-to-Know Requirements	RIGL Title 23, Chapter 24.4	Establishes rules for the public's right-to-know concerning hazardous waste storage and transportation.	Applicable for the off-site disposal/treatment if residual is hazardous. Documents applicable to remediation of groundwater in the vicinity of Tanks 53 and 56 at Tank Farm 5 will be available for public review. However, the treatment plant has been demolished and hazardous materials are no longer present at the site, so these regulations are no longer applicable.

APPENDIX E

INSTALLATION RESTORATION (IR) SITE ACCESS AND USE

DEPARTMENT OF THE NAVY
NAVAL STATION NEWPORT
690 PEARY ST
NEWPORT, RI 02841-1522

IN REPLY REFER TO:
NAVSTANPT/LOCAL AREA RI
COORDINST 5090.15A
Code N8N
17 Jun 03

NAVSTA NEWPORT/LOCAL AREA RHODE ISLAND COORDINATOR INSTRUCTION 5090.15A

Subj: INSTALLATION RESTORATION (IR) SITE ACCESS AND USE

Ref: (a) Comprehensive Environmental Response Compensation and Liability Act (CERCLA)
(b) Federal Facilities Agreement of 1992
(c) Superfund Amendments and Reauthorization Act (SARA)
(d) Administrative Record
(e) Navy/Marine Corps Installation Restoration Manual February 1992

1. Purpose. To control access and use of IR Sites at Naval Station Newport.

2. Cancellation. NAVSTANPT/LOCAL AREA RI COORDINST 5090.15.

3. Background. The NAVSTA IR Program consists of 12 study areas. These areas include Building 32 Gould Island, Derecktor Shipyard, McAllister Point Landfill, Melville North Landfill, Old Fire Fighter Training Area (Katy Field), Coddington Cove Rubble Fill, Naval Undersea Warfare Center Disposal Area, and Tank Farms 1-5. A Locus Map of each site can be viewed on our Restoration Advisory Board website at www.nsnpt.navy.mil/Environmental/rab_home.htm.

4. Discussion. This instruction establishes the procedures for controlling site access and use of IR sites and abutting properties (offshore areas, land and facilities) to protect against exposure to hazardous substances.

5. Responsibilities

a. Commanding Officer, NAVSTA Newport shall:

(1) Ensure compliance with references (a) through (e).

(2) Approve or disapprove of the recommendations made by NAVSTA Environmental Protection Storefront.

b. NAVSTA Environmental Protection (Code N8N) shall:

(1) Process all requests for site use and access, and provide written recommendations to the Commanding Officer for final disposition.

(2) Authorize limited access and use by contractors, consultants and others for the purpose of administering the IR Program.

(3) The IR Program Manager shall conduct annual visual inspections of all sites to ensure that all necessary land use controls have been implemented.

(4) If a significant change occurs, prepare and forward a report to the USEPA and RIDEM certifying the change in use and land use controls.

c. NAVSTA Security (Code N53) shall:

(1) Report any incidents of unauthorized access and use to NAVSTA Environmental Protection.

(2) Remove any individuals not authorized access and use.

d. All NAVSTA Newport area and tenant commands shall:

(1) Request, in writing, permission from NAVSTA Environmental Protection Storefront for access and use of IR sites by Navy personnel and contractors.

(2) Ensure all personnel and contractors under their cognizance are aware that access and use of IR sites are prohibited without prior approval from Commanding Officer, NAVSTA Newport.

/s/
R. A. COOPER

Distribution:
Lists A-P

Stocked by: NAVSTANPT Code N01A1

FINAL, SIGNED

DEPARTMENT OF THE NAVY
NAVAL STATION NEWPORT
690 PEARY ST
NEWPORT, RI 02841-1522

IN REPLY REFER TO
NAVSTANPT/LOCAL AREA RI
COORDINST 5090.15B
Code N8N
SEP 27 2007

NAVSTA NEWPORT/LOCAL AREA RHODE ISLAND COORDINATOR INSTRUCTION 5090.15B

Subj: INSTALLATION RESTORATION (IR) SITE USE RESTRICTIONS

Ref:
(a) Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA)
(b) Federal Facilities Agreement under CERCLA 120, In the Matter of the US Department of the Navy, Naval Education and Training Center, Newport, Rhode Island, 1992
(c) Superfund Amendments and Reauthorization Act of 1986 (SARA)
(d) Resource Conservation and Recovery Act (RCRA)
(e) Rhode Island Department of Environmental Management Site Remediation Regulations
(f) Operational Naval Instruction (OPNAVINST) 5090.1B, Current Version
(g) Record of Decision, Source Control Operable Unit, Site 01, McAllister Point Landfill, Naval Education and Training Center, Newport, Rhode Island, September, 1993
(h) Record of Decision, Marine Sediment/Management of Migration Operable Unit, McAllister Point Landfill, Naval Education and Training Center, Newport, Rhode Island, March, 2000
(i) Record of Decision for an Interim Remedial Action, Tank Farm 5, Tanks 53 and 56, Naval Education and Training Center, Newport, Rhode Island, September, 1992
(j) Operation and Maintenance User Manual for McAllister Point Landfill, 1997
(k) Operation and Maintenance Manual for the Interim Remedial Action at Tank Farm 5, 1995
(l) Explanation of Significant Difference (ESD) for Implementation of Land Use Controls at McAllister Point Landfill, August, 2007
(m) ESD for McAllister Point Landfill, September, 2002

Encl:
(1) McAllister Point Landfill Installation Restoration Site and Landfill Cap
(2) Installation Restoration Site Map for Naval Station

Newport
(3) Excavated Soil Management for Installation Restoration Sites at Naval Station Newport
(4) Management of Dewatering Wastewaters for Installation Restoration Sites at Naval Station Newport

1. Purpose. This instruction defines the Naval Station Newport (NAVSTANPT) policy regarding ground surface disturbance of soils/sediments or any subsurface disturbance of soils/sediments and/or groundwater extraction, and/or changes in land use at Installation Restoration (IR) sites and the disturbance of any remedial infrastructure, including monitoring wells and waste caps. Disturbance is defined as any form of damage to remedial infrastructure, excavation, soil penetration, soil compaction, filling, or change of topography and/or change in land use. The definition of disturbance also includes any proposed action to dewater excavations or extract/expose groundwater for discharge, consumption, or use in any way. This instruction is intended to enact institutional controls that are specified in references (a) through (m) at the NAVSTANPT IR sites including the McAllister Point Landfill, Coddington Cove Rubble Fill Area, Old Fire Fighting Training Area, Melville Water Tower, Melville North Landfill, SWOS Parking Area, Former Carr Point Shooting Range, NUSC Disposal Area, and Tank Farms 1-5, Derecktor Shipyard, and Gould Island (BLDG 32).

2. Applicability. This instruction is applicable to all Navy departments, tenant commands, contractors, invitees, and personnel at Naval Station Newport.

3. Cancellation. NAVSTANPT/LOCAL AREA RI COORDINST 5090.15, 5090.15A, and 5090.15A CH-1.

4. Discussion. In accordance with references (a) through (m), the NAVSTANPT IR Program manages the identification, characterization and cleanup of contaminated soils, sediments and groundwater at specific NAVSTANPT IR locations. The existing IR sites at NAVSTANPT are in various stages of investigation and cleanup. A specialized cap has been installed over the former landfill at McAllister Point (see reference (g)), in order to isolate contaminated soils and sediments from the surrounding environment. This cap can be damaged by the operation or storage of heavy equipment on the cap surface or by unauthorized excavation or penetration through the cap surface. Enclosure (1) shows the landfill site and cap. Enclosure (2) shows all other IR sites at NAVSTANPT where restrictions are in effect. Areas shown in enclosures (1) and (2) may contain contaminated soil, sediment, or groundwater which can potentially threaten human health

or the environment if disturbed. Groundwater and surface water shall not be extracted and used for any purpose at NAVSTANPT. Work can be safely conducted within IR sites, but proper planning, coordination, preparation, and safety measures must be implemented in accordance with federal and state laws. IR site work requires strict adherence to a site-specific health and safety plan, proper training of site workers, correct use of personal protective equipment by site workers, and proper management of any generated waste. Enclosures (3) and (4) provide guidance for excavation and dewatering activities at IR sites at NAVSTANPT.

References (j) and (k) provide requirements and guidance for the protection and maintenance of McAllister Point Landfill and Tank Farm 5 and the associated structures, e.g. landfill cap asphalt wearing surfaces, landfill cap toe-slope protection, diversion channels, gas management vents, stormwater conveyances, material handling and storage pads, monitoring wells, and site perimeter fencing. Monitoring wells are not exclusively situated within the IR sites depicted in enclosure (2). All such structures shall not be modified, disturbed, or in any way affected without coordination with the NAVSTANPT Environmental Department. The periodic and routine maintenance, operation of equipment, and storage of materials at the McAllister Point Landfill and Tank Farm 5, and their associated structures, will be accomplished in strict adherence to references (j) and (k) by authorized Navy personnel.

5. Action.

a. The IR Program Manager of the NAVSTANPT Environmental Department will produce an annual report and submit it to RIDEM for review and approval for each IR site where remedial action has been implemented and contaminants are present above standards or cleanup objectives. The contents of the report will meet the requirements specified by RIDEM.

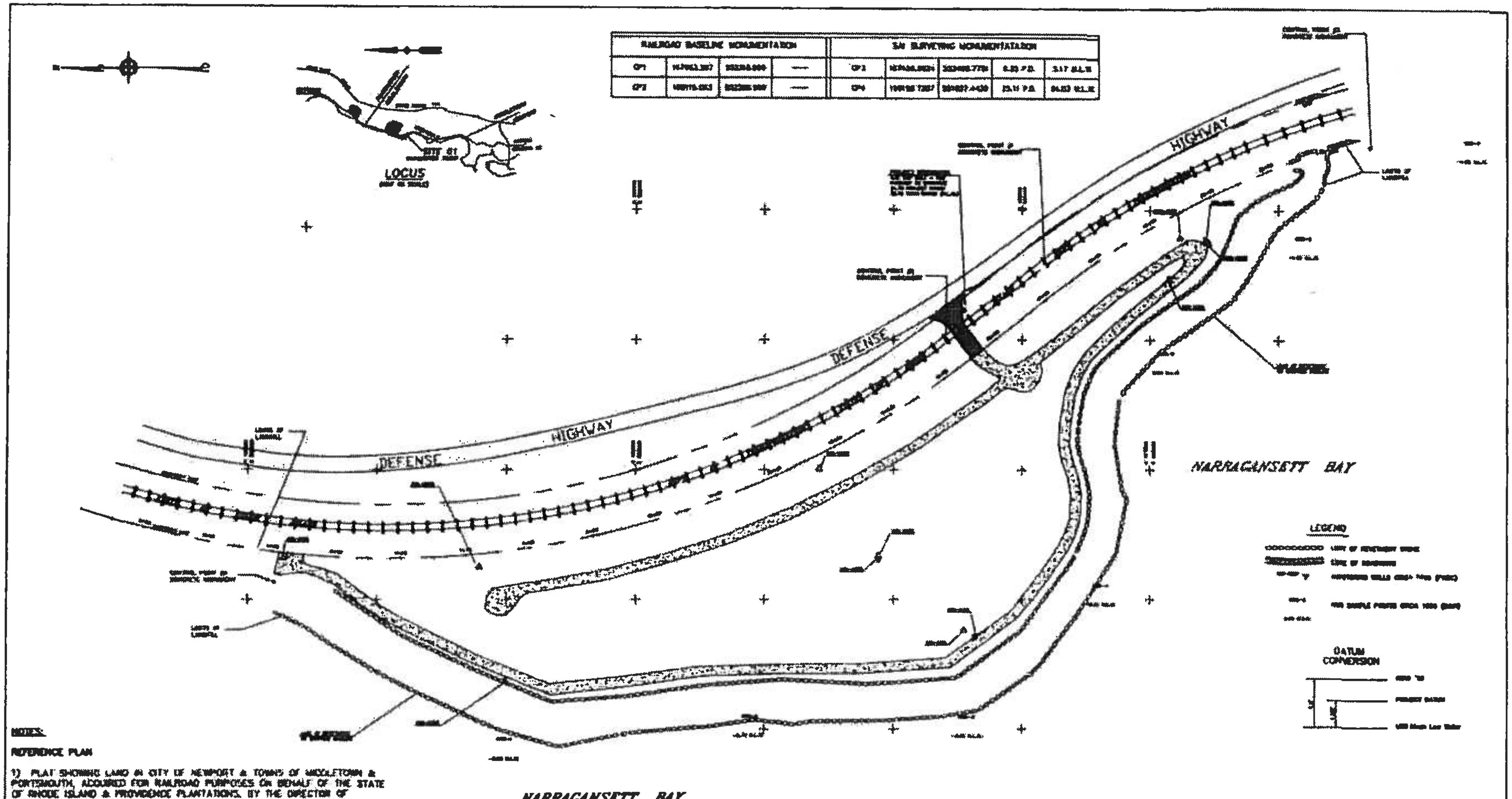
b. Prior to the operation or storage of any heavy equipment at the site depicted in enclosures (1) and (2), all NAVSTANPT departments, tenant commands, Navy contractors, and personnel shall contact the NAVSTANPT Environmental Department, which will determine general landfill cap loading restrictions for all equipment/materials to be operated or stationed on the landfill cap. The McAllister Point Landfill Installation Restoration Site and Landfill Cap depicted in enclosure (1) is a restricted area. All requests for access to this site and for the storage of any heavy equipment/materials will be referred to the Environmental Department. Precaution must be taken to insure that any equipment operated and/or stationed on the landfill cap will not damage the cap to any appreciable degree. Damage to the cap must be reported immediately to the NAVSTANPT Environmental Department.

c. Any NAVSTANPT department, tenant command or Navy contractor planning projects involving subsurface excavation, subsurface penetration of the soil, dewatering, ground surface disturbance or change in land use at the sites depicted in enclosures (1) and (2) shall notify the NAVSTANPT IR Program Manager in the Environmental Department at (401) 841-7561 at the earliest project planning phase. The IR Program Manager will coordinate project review with the Naval Facilities Remedial Project Manager, the NAVSTANPT Public Works Department, and the Safety Department. The IR Program Manager will coordinate project review with the USEPA and the RIDEM, as applicable under references (a) through (m), and obtain USEPA and RIDEM approval for the proposed actions at the IR sites. Based on the outcome of this coordination, the NAVSTANPT IR Program Manager will provide guidance for projects proposing ground surface disruption, subsurface excavation, penetration, or dewatering work in accordance with enclosures (3) and (4). No work shall commence in IR sites until permission is granted by the IR Program Manager. The IR Program Manager will specify requirements for the project, detail waste management procedures, and establish standards for protecting remedial infrastructure and restoration of the project site.

M. T. POIRIER

Distribution:
Lists A-P

Stocked by: NAVSTANPT Code N01A1



RAILROAD BASELINE MONUMENTATION				SAI SURVEYING MONUMENTATATION				
CP1	[illegible]	[illegible]	—	CP3	[illegible]	[illegible]	[illegible]	[illegible]
CP2	[illegible]	[illegible]	—	CP4	[illegible]	[illegible]	[illegible]	[illegible]

NOTES:

REFERENCE PLAN

1) PLAT SHOWING LAND IN CITY OF NEWPORT & TOWNS OF MIDDLETOWN & PORTSMOUTH, ACQUIRED FOR RAILROAD PURPOSES ON BEHALF OF THE STATE OF RHODE ISLAND & PROVIDENCE PLANTATIONS, BY THE DIRECTOR OF TRANSPORTATION, RAILROAD PLAT NO. 1.

2) SAI SURVEYING CO. INC. 5-22-97 SITE PLAN, MCALLISTER POINT LANDFILL, NAVAL EDUCATION AND TRAINING CENTER, MIDDLETOWN, RHODE ISLAND FOR BROWN AND ROOT ENVIRONMENTAL

GENERAL NOTE

1) NSB SAMPLE POINTS ELEVATIONS ARE LISTED AS NAVY MEAN LOW WATER.

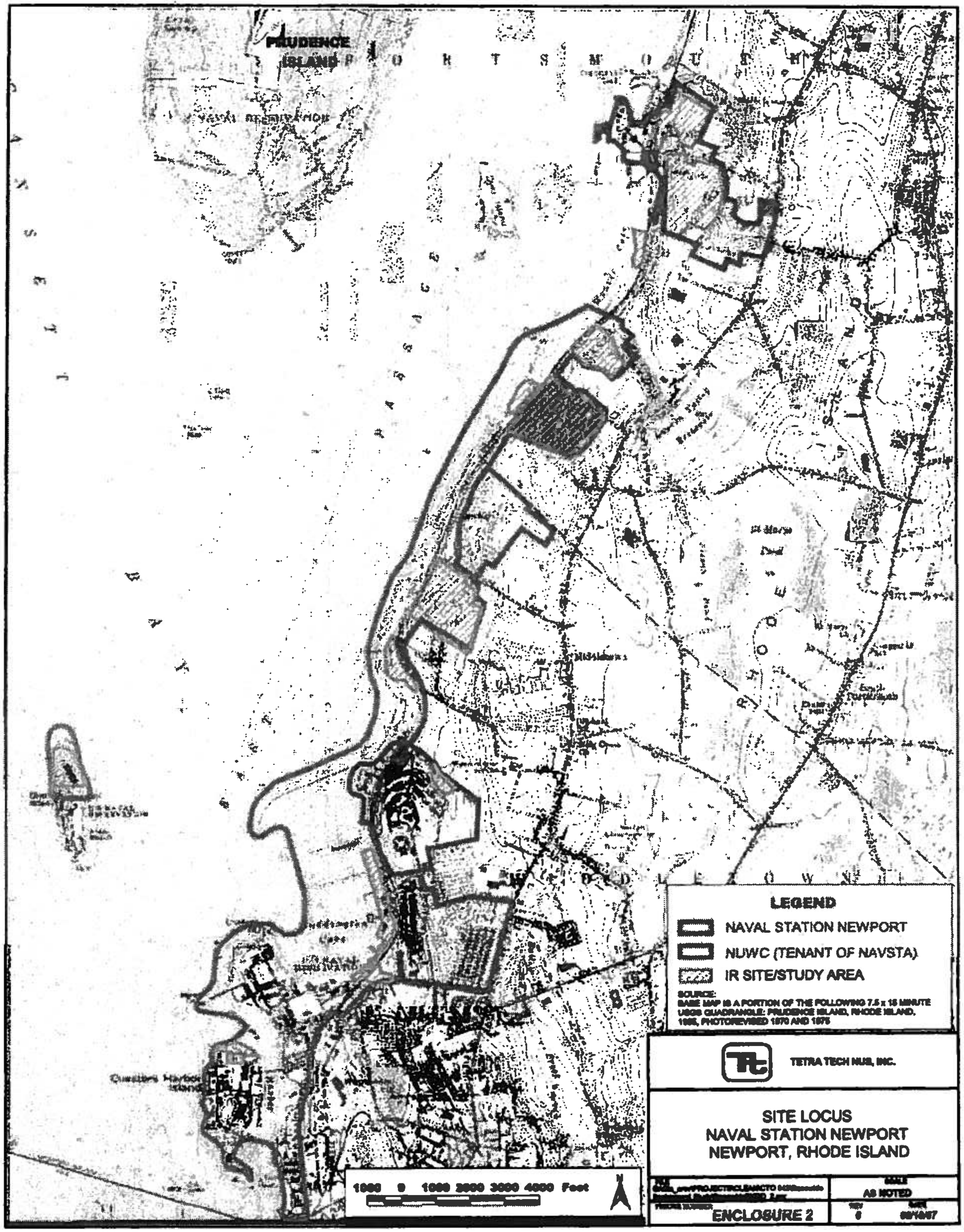
2) DATUM USED FOR PLAN – PROJECT DATUM, HORIZONTAL COORDINATES BASED ON REFERENCE PLAN NO. 1, NOTED ABOVE.

MCALLISTER POINT LANDFILL			
NAVSTA NEWPORT			
NEWPORT, RHODE ISLAND			
DRAWN BY:	D.W. MACDOUGALL	REV.:	0
CHECKED BY:	S. PARKER	DATE:	SEPTEMBER 12, 2007
SCALE:	AS NOTED	FILE NO.:	00633\0430\ENCLOSURE_1.DWG

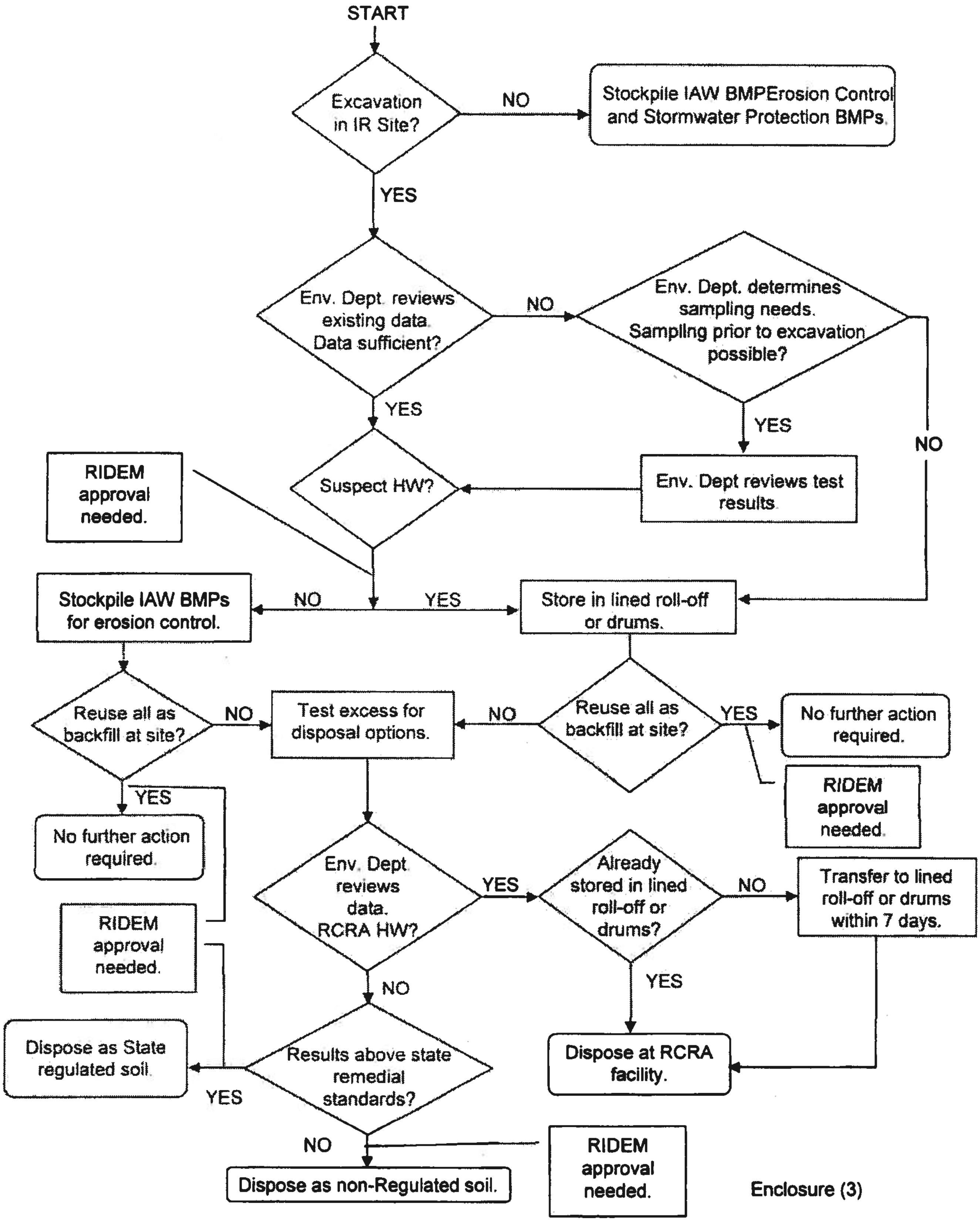
ENCLOSURE 1

TETRA TECH NUS, INC.

55 Jonspin Road Wilmington, MA 01887
(978)658-7899

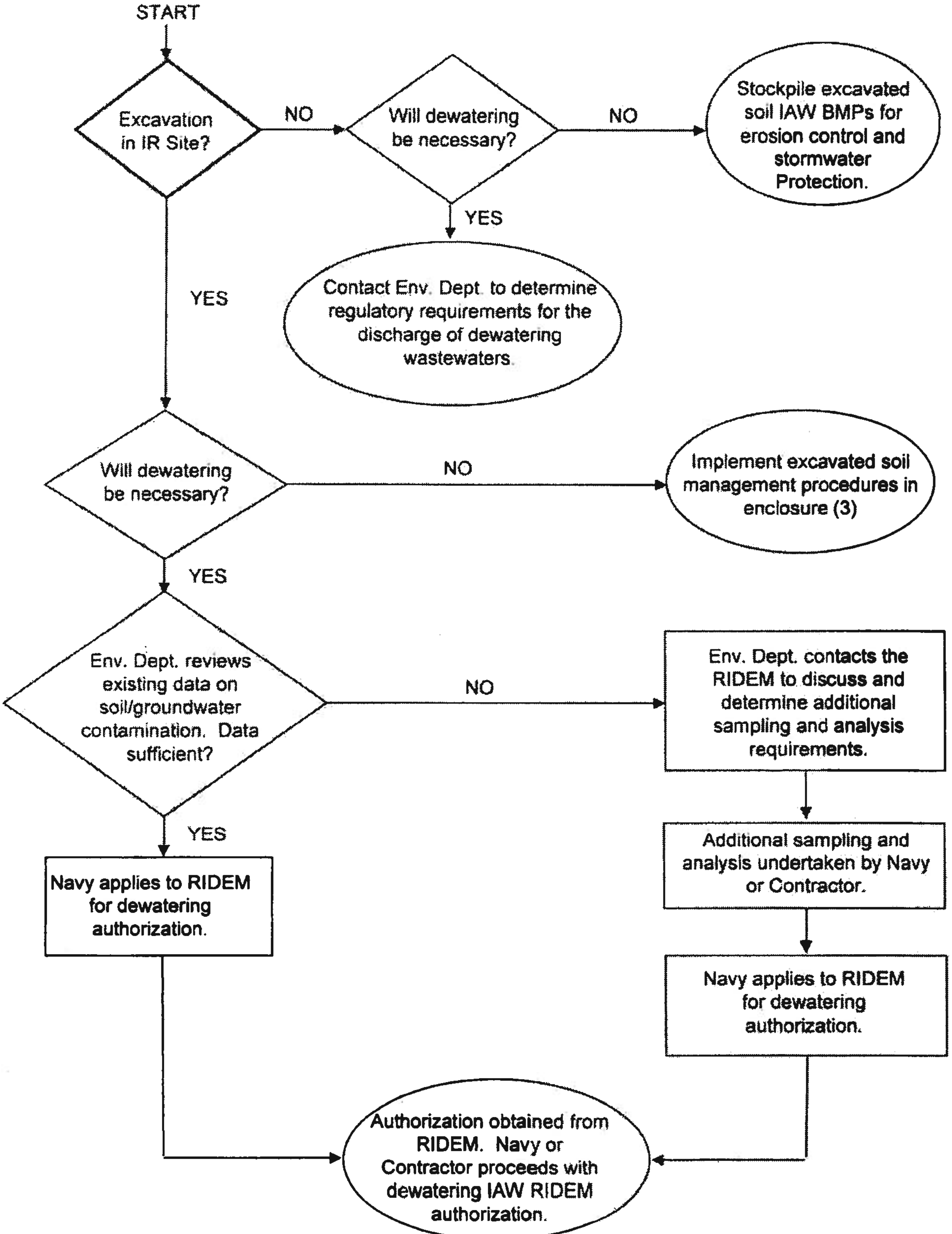

PRUDENCE ISLAND
PORTSMOUTH
LEGEND
NAVAL STATION NEWPORT
NUWC (TENANT OF NAVSTA)
IR SITE/STUDY AREA
SOURCE:
BASE MAP IS A PORTION OF THE FOLLOWING 7.5 x 15 MINUTE USGS QUADRANGLE: PRUDENCE ISLAND, RHODE ISLAND, PHOTOREVISED 1970 AND 1975
TETRA TECH NUS, INC.
SITE LOCUS
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND
AS NOTED
ENCLOSURE 2
1000 0 1000 2000 3000 4000 Feet
N

EXCAVATED SOIL MANAGEMENT FOR INSTALLATION RESTORATION SITES
NAVAL STATION NEWPORT (formerly NETC)
NEWPORT, RHODE ISLAND



Enclosure (3)

MANAGEMENT OF DEWATERING WASTEWATERS FOR INSTALLATION RESTORATION SITES
NAVAL STATION NEWPORT (formerly NETC)
NEWPORT, RHODE ISLAND



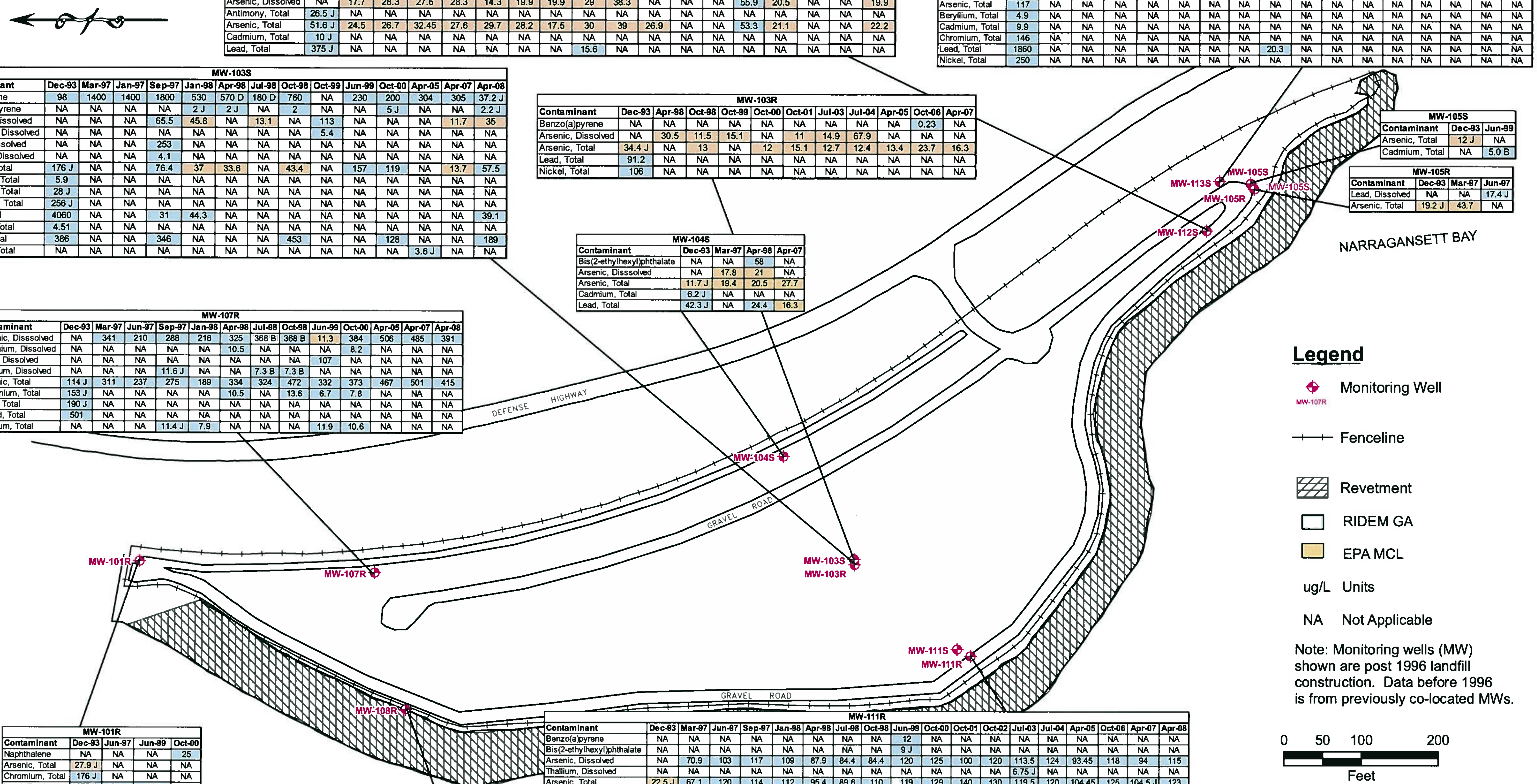
Enclosure (4)

APPENDIX F

McALLISTER DATA

APPENDIX F-1

McALLISTER LANDFILL – GROUNDWATER CONTAMINANTS EXCEEDING PRGS



MW-112S

Contaminant	Dec-93	Mar-97	Jun-97	Sep-97	Jan-98	Apr-98	Jul-98	Oct-98	Jun-99	Oct-00	Oct-01	Oct-02	Jul-03	Jul-04	Apr-05	Oct-06	Apr-07	Apr-08
Arsenic, Dissolved	NA	17.7	28.3	27.6	28.3	14.3	19.9	19.9	29	38.3	NA	NA	NA	55.9	20.5	NA	NA	19.9
Antimony, Total	26.5 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic, Total	51.6 J	24.5	26.7	32.45	27.6	29.7	28.2	17.5	30	39	26.9	NA	NA	53.3	21.1	NA	NA	22.2
Cadmium, Total	10 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead, Total	375 J	NA	NA	NA	NA	NA	NA	NA	15.6	NA	NA	NA	NA	NA	NA	NA	NA	NA

MW-113S

Contaminant	Dec-93	Mar-97	Jun-97	Sep-97	Jan-98	Apr-98	Jul-98	Oct-98	Jun-99	Oct-00	Oct-01	Oct-02	Jul-03	Jul-04	Apr-05	Oct-06	Apr-07
Arsenic, Total	117	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium, Total	4.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium, Total	9.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Total	146	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead, Total	1860	NA	NA	NA	NA	NA	NA	NA	20.3	NA	NA	NA	NA	NA	NA	NA	NA
Nickel, Total	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

MW-103S

Contaminant	Dec-93	Mar-97	Jan-97	Sep-97	Jan-98	Apr-98	Jul-98	Oct-98	Oct-99	Jun-99	Oct-00	Apr-05	Apr-07	Apr-08
Naphthalene	98	1400	1400	1800	530	570 D	180 D	760	NA	230	200	304	305	37.2 J
Benzo(a)pyrene	NA	NA	NA	NA	2 J	2 J	NA	2	NA	NA	5 J	NA	NA	2.2 J
Arsenic, Dissolved	NA	NA	NA	65.5	45.8	NA	13.1	NA	113	NA	NA	NA	11.7	35
Cadmium, Dissolved	NA	NA	NA	NA	NA	NA	NA	NA	5.4	NA	NA	NA	NA	NA
Nickel, Dissolved	NA	NA	NA	253	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium, Dissolved	NA	NA	NA	4.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic, Total	176 J	NA	NA	76.4	37	33.6	NA	43.4	NA	157	119	NA	13.7	57.5
Beryllium, Total	5.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium, Total	28 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Total	256 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead, Total	4060	NA	NA	31	44.3	NA	NA	NA	NA	NA	NA	NA	NA	39.1
Mercury, Total	4.51	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel, Total	386	NA	NA	346	NA	NA	NA	453	NA	NA	128	NA	NA	189
Thallium, Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.6 J	NA	NA

MW-103R

Contaminant	Dec-93	Apr-98	Oct-98	Oct-99	Oct-00	Oct-01	Jul-03	Jul-04	Apr-05	Oct-06	Apr-07
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.23	NA
Arsenic, Dissolved	NA	30.5	11.5	15.1	NA	11	14.9	67.9	NA	NA	NA
Arsenic, Total	34.4 J	NA	13	NA	12	15.1	12.7	12.4	13.4	23.7	16.3
Lead, Total	91.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel, Total	106	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

MW-105S

Contaminant	Dec-93	Jun-99
Arsenic, Total	12 J	NA
Cadmium, Total	NA	5.0 B

MW-105R

Contaminant	Dec-93	Mar-97	Jun-97
Lead, Dissolved	NA	NA	17.4 J
Arsenic, Total	19.2 J	43.7	NA

MW-104S

Contaminant	Dec-93	Mar-97	Apr-98	Apr-07
Bis(2-ethylhexyl)phthalate	NA	NA	58	NA
Arsenic, Disssolved	NA	17.8	21	NA
Arsenic, Total	11.7 J	19.4	20.5	27.7
Cadmium, Total	6.2 J	NA	NA	NA
Lead, Total	42.3 J	NA	24.4	16.3

MW-107R

Contaminant	Dec-93	Mar-97	Jun-97	Sep-97	Jan-98	Apr-98	Jul-98	Oct-98	Jun-99	Oct-00	Apr-05	Apr-07	Apr-08
Arsenic, Disssolved	NA	341	210	288	216	325	368 B	368 B	11.3	384	506	485	391
Cadmium, Dissolved	NA	NA	NA	NA	NA	10.5	NA	NA	NA	8.2	NA	NA	NA
Lead, Dissolved	NA	NA	NA	NA	NA	NA	NA	NA	107	NA	NA	NA	NA
Thallium, Dissolved	NA	NA	NA	11.6 J	NA	NA	7.3 B	7.3 B	NA	NA	NA	NA	NA
Arsenic, Total	114 J	311	237	275	189	334	324	472	332	373	467	501	415
Chromium, Total	153 J	NA	NA	NA	NA	10.5	NA	13.6	6.7	7.8	NA	NA	NA
Lead, Total	190 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel, Total	501	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium, Total	NA	NA	NA	11.4 J	7.9	NA	NA	NA	11.9	10.6	NA	NA	NA

Legend

Monitoring Well (MW-107R)

Fenceline

Revetment

RIDEM GA

EPA MCL

ug/L Units

NA Not Applicable

Note: Monitoring wells (MW) shown are post 1996 landfill construction. Data before 1996 is from previously co-located MWs.

0 50 100 200

Feet

MW-101R

Contaminant	Dec-93	Jun-97	Jun-99	Oct-00
Naphthalene	NA	NA	NA	25
Arsenic, Total	27.9 J	NA	NA	NA
Chromium, Total	176 J	NA	NA	NA
Lead, Total	275 J	19.8 J	18.8	NA
Nickel, Total	256	NA	NA	NA

MW-111R

Contaminant	Dec-93	Mar-97	Jun-97	Sep-97	Jan-98	Apr-98	Jul-98	Oct-98	Jun-99	Oct-00	Oct-01	Oct-02	Jul-03	Jul-04	Apr-05	Oct-06	Apr-07	Apr-08
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	12	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	NA	NA	NA	NA	NA	NA	NA	NA	9 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic, Dissolved	NA	70.9	103	117	109	87.9	84.4	84.4	120	125	100	120	113.5	124	93.45	118	94	115
Thallium, Dissolved	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.75 J	NA	NA	NA	NA	NA
Arsenic, Total	22.5 J	67.1	120	114	112	95.4	89.6	110	119	129	140	130	119.5	120	104.45	125	104.5 J	123
Lead, Total	548	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel, Total	122	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

MW-108R

Contaminant	Dec-93	Mar-97	Jun-97	Sep-97	Jan-98	Apr-98	Jul-98	Oct-98	Jun-99	Oct-00	Oct-01	Jul-04	Apr-05	Oct-06	Apr-07	Apr-08
Arsenic, Disssolved	NA	62.2	48.3	31.3	10.9	56.5	52.2 B	52.2 B	NA	28.2	26.9	32.6	33.3	25	11.9	55.9
Beryllium, Dissolved	NA	NA	NA	NA	NA	NA	NA	NA	29.3 B	NA	NA	NA	NA	NA	NA	NA
Lead, Dissolved	NA	NA	15.7 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic, Total	27.9 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	53.5
Chromium, Total	176 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead, Total	275 J	NA	19.8 J	NA	NA	NA	NA	NA	18.8	NA	NA	NA	NA	NA	NA	NA
Nickel, Total	256	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

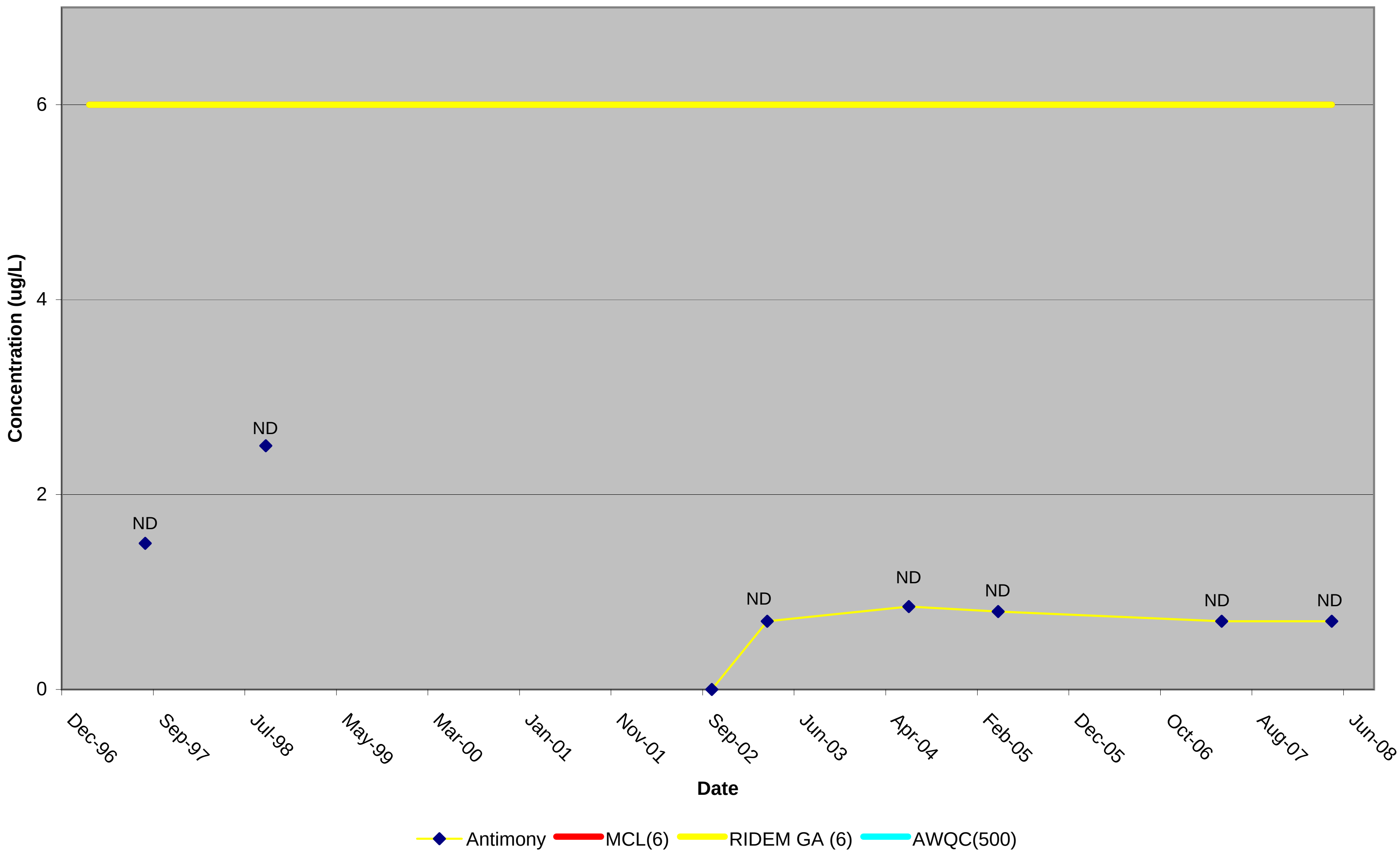
ENVIRONMENTAL CHEMICAL CORPORATION
33 Boston Post Road West
Marlborough, MA

DRAWN BY: ECC	FIGURE 2-4
APPROVED BY: ACE	HISTORIC GROUNDWATER COC EXCEEDANCES (1993-2008) McAllister Point Landfill Naval Station Newport Middletown, Rhode Island
DATE: 23-JAN-2009	PROJECT CODE: / CONTRACT CODE: N62472-03-D-0802
SIZE: B	1" = 125 ' / FILE NAME: McA_Fig2-4_2008.mxd / SHEET: 1 OF 1 / REV: 0

C:\NAVY_GIS\TO14_McAllister\Annual\ME2008\Map\Documents\McA_Fig2-4_2008.mxd

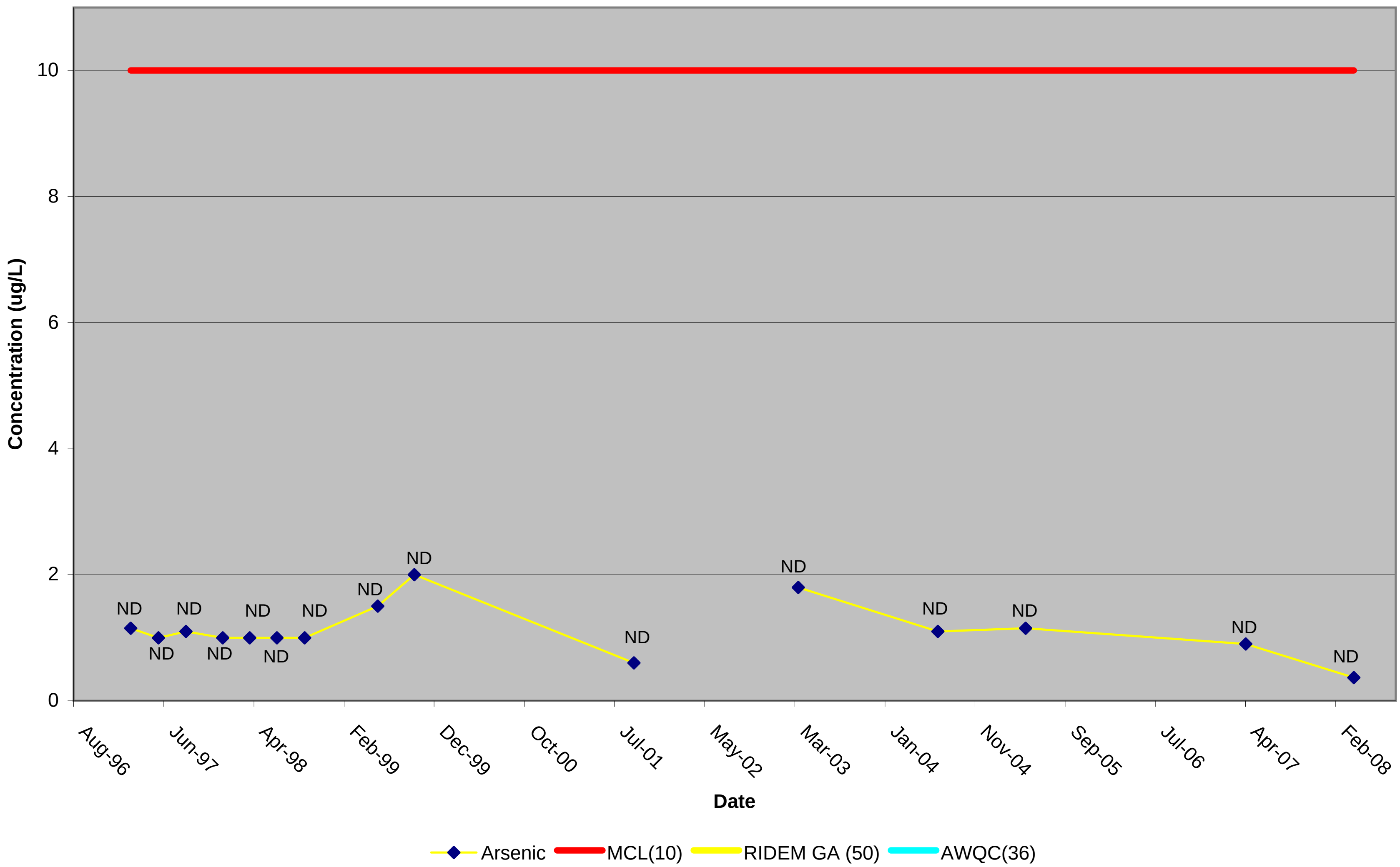
APPENDIX F-1: GROUNDWATER
FIGURE F-1.1-1

ANTIMONY IN GROUNDWATER, MW101R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



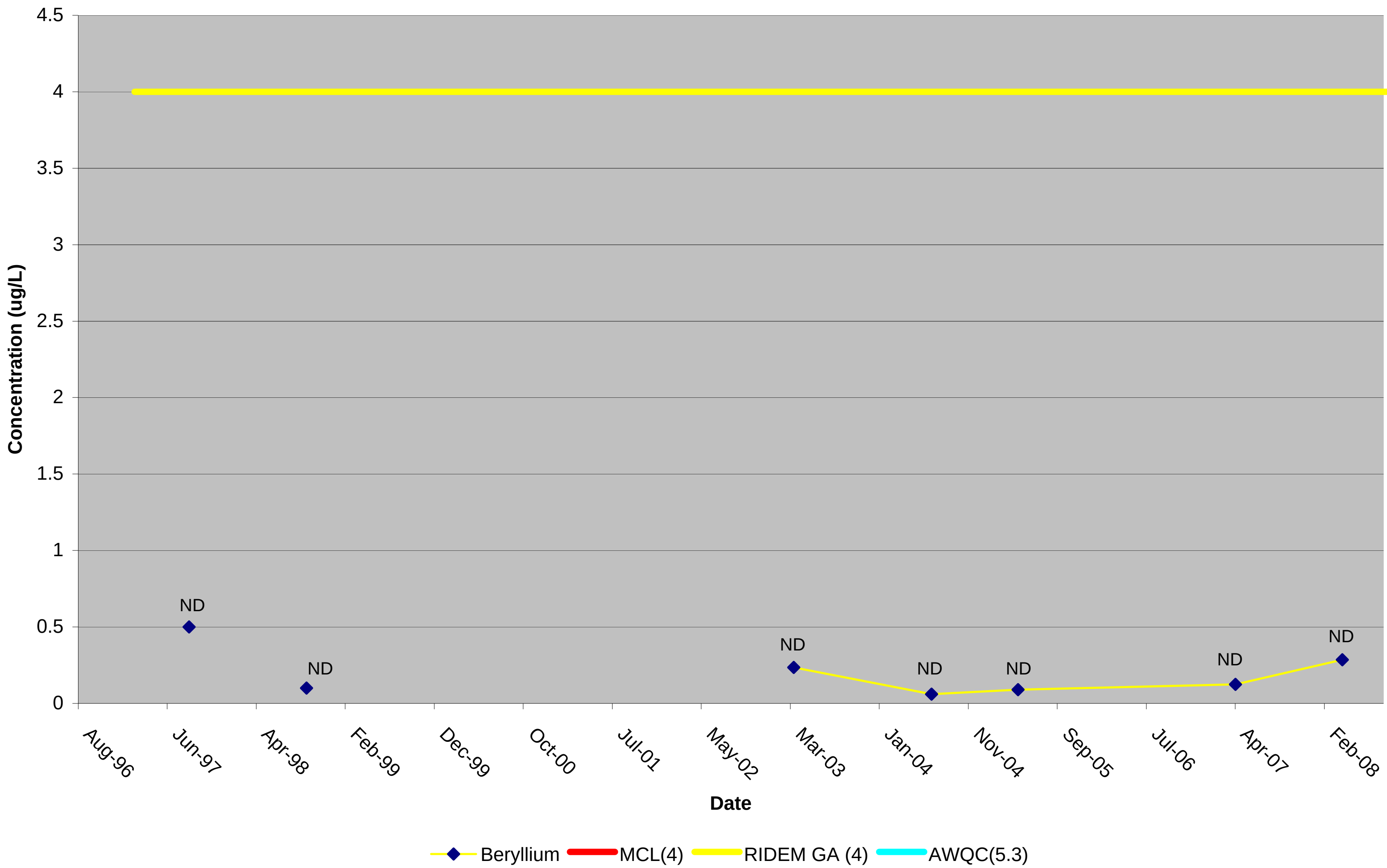
APPENDIX F-1: GROUNDWATER
FIGURE F-1.1-2

ARSENIC IN GROUNDWATER, MW101R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



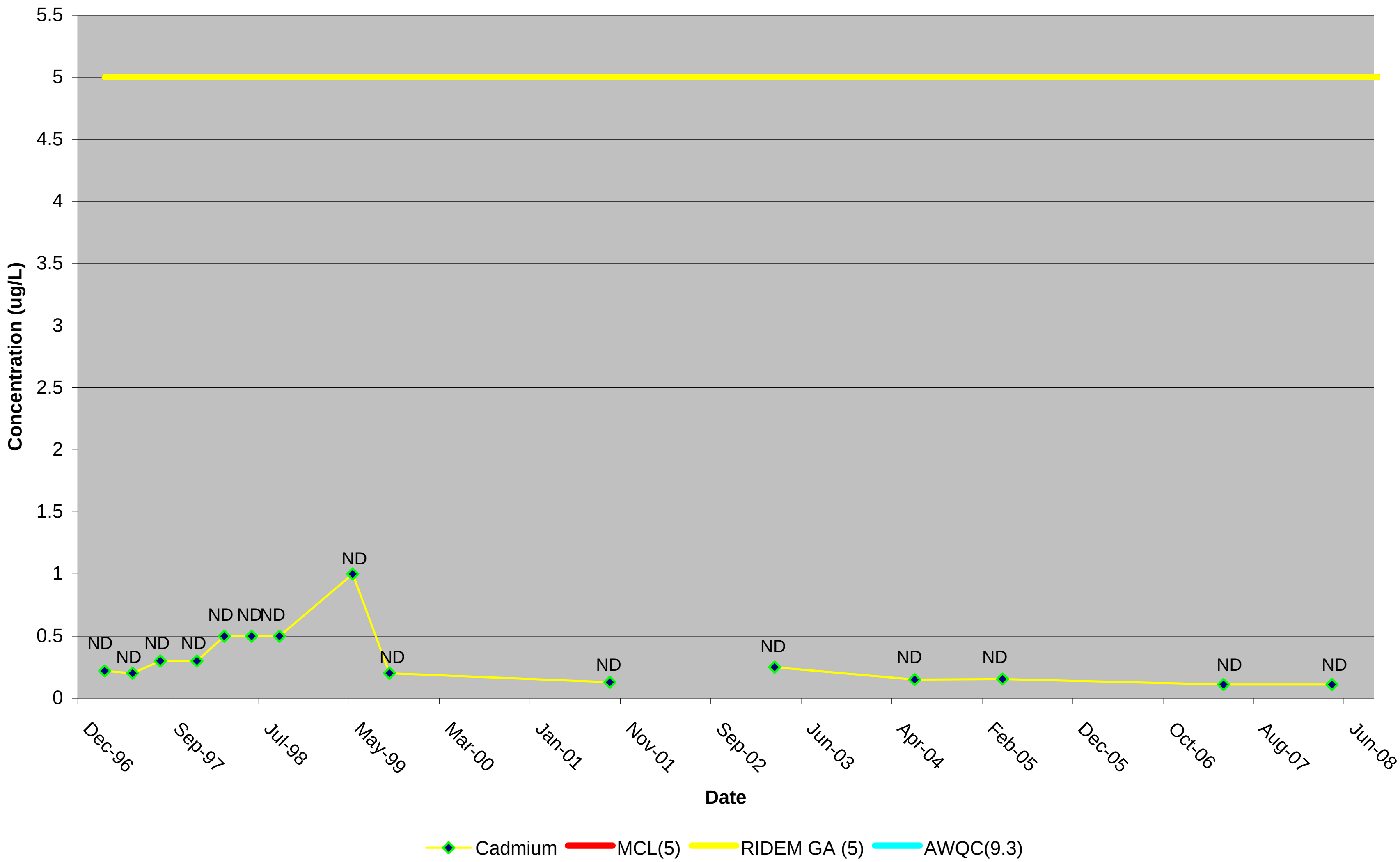
APPENDIX F-1: GROUNDWATER
FIGURE F-1.1-3

BERYLLIUM IN GROUNDWATER, MW101R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



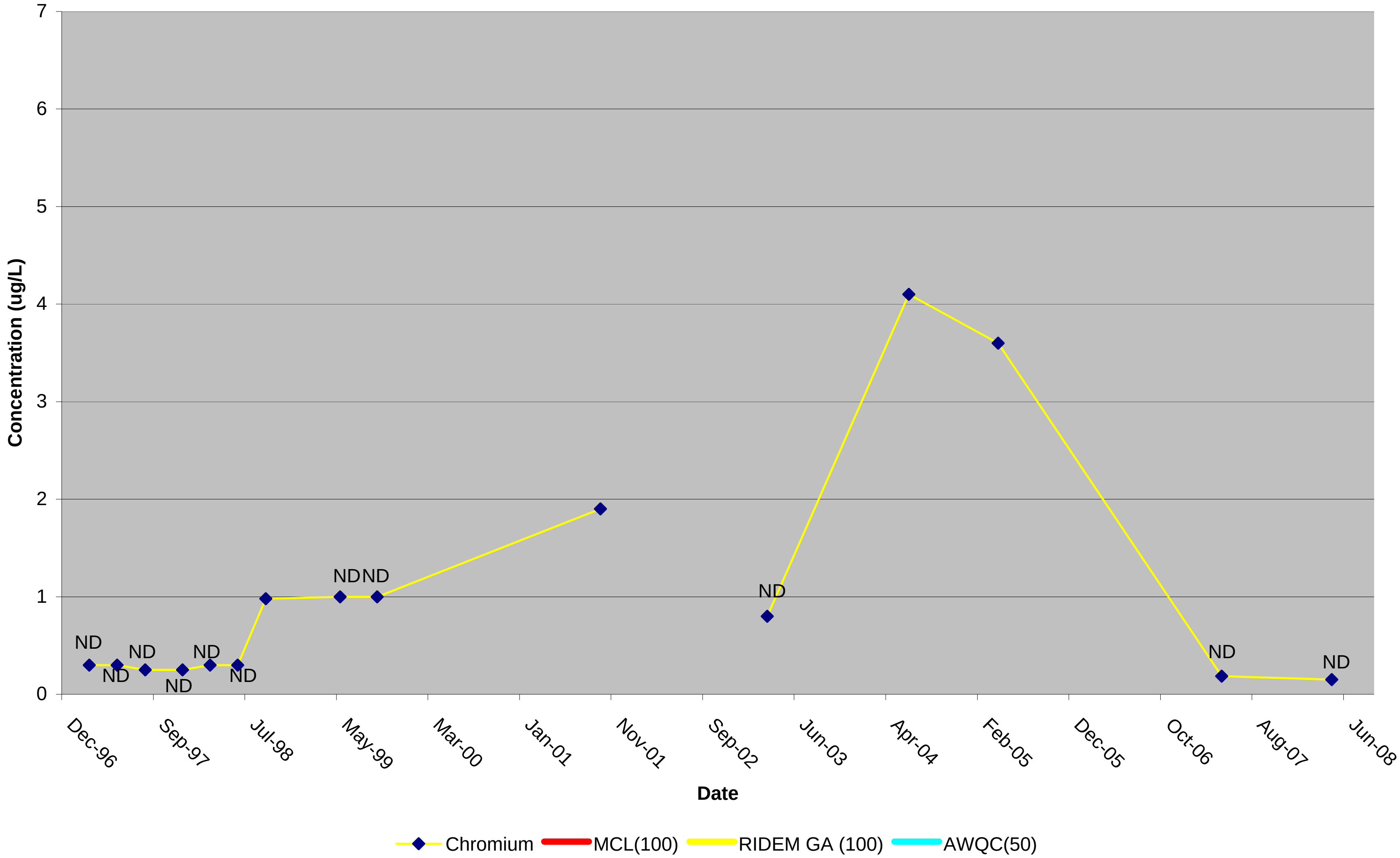
APPENDIX F-1: GROUNDWATER
FIGURE F-1.1-4

CADMIUM IN GROUNDWATER, MW101R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



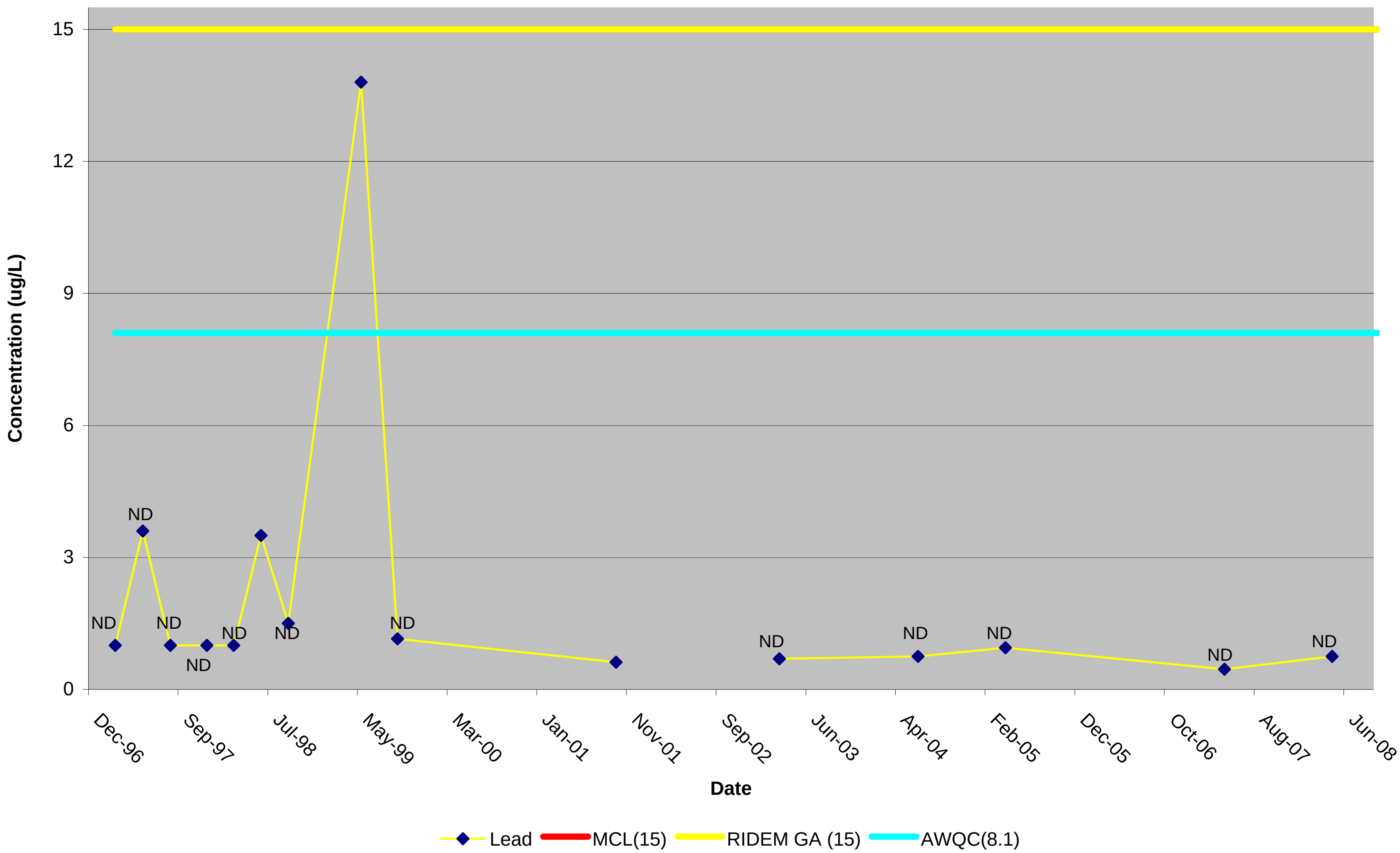
APPENDIX F-1: GROUNDWATER
FIGURE F-1.1-5

CHROMIUM IN GROUNDWATER, MW101R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



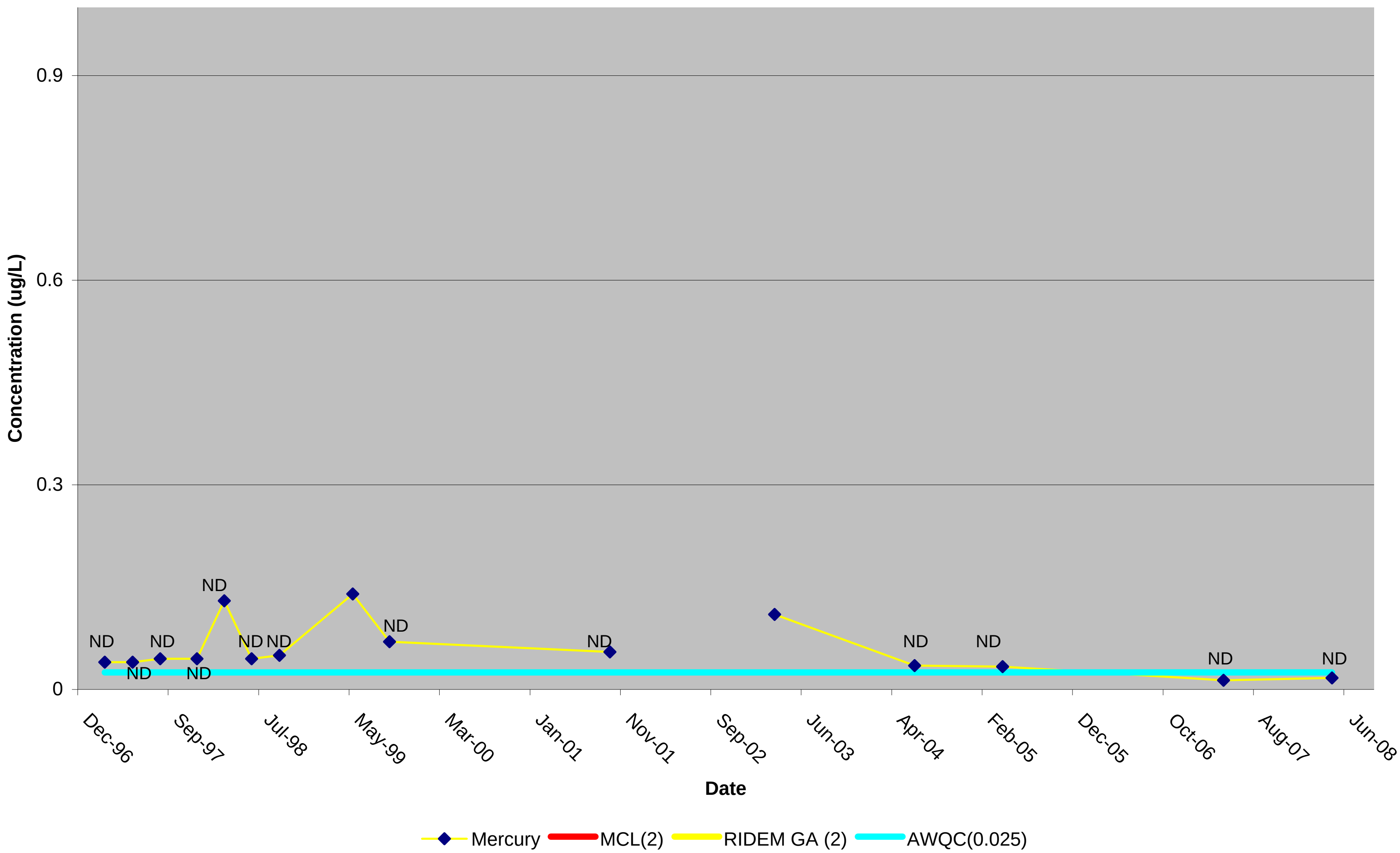
APPENDIX F-1: GROUNDWATER
FIGURE F-1.1-6

LEAD IN GROUNDWATER, MW101R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



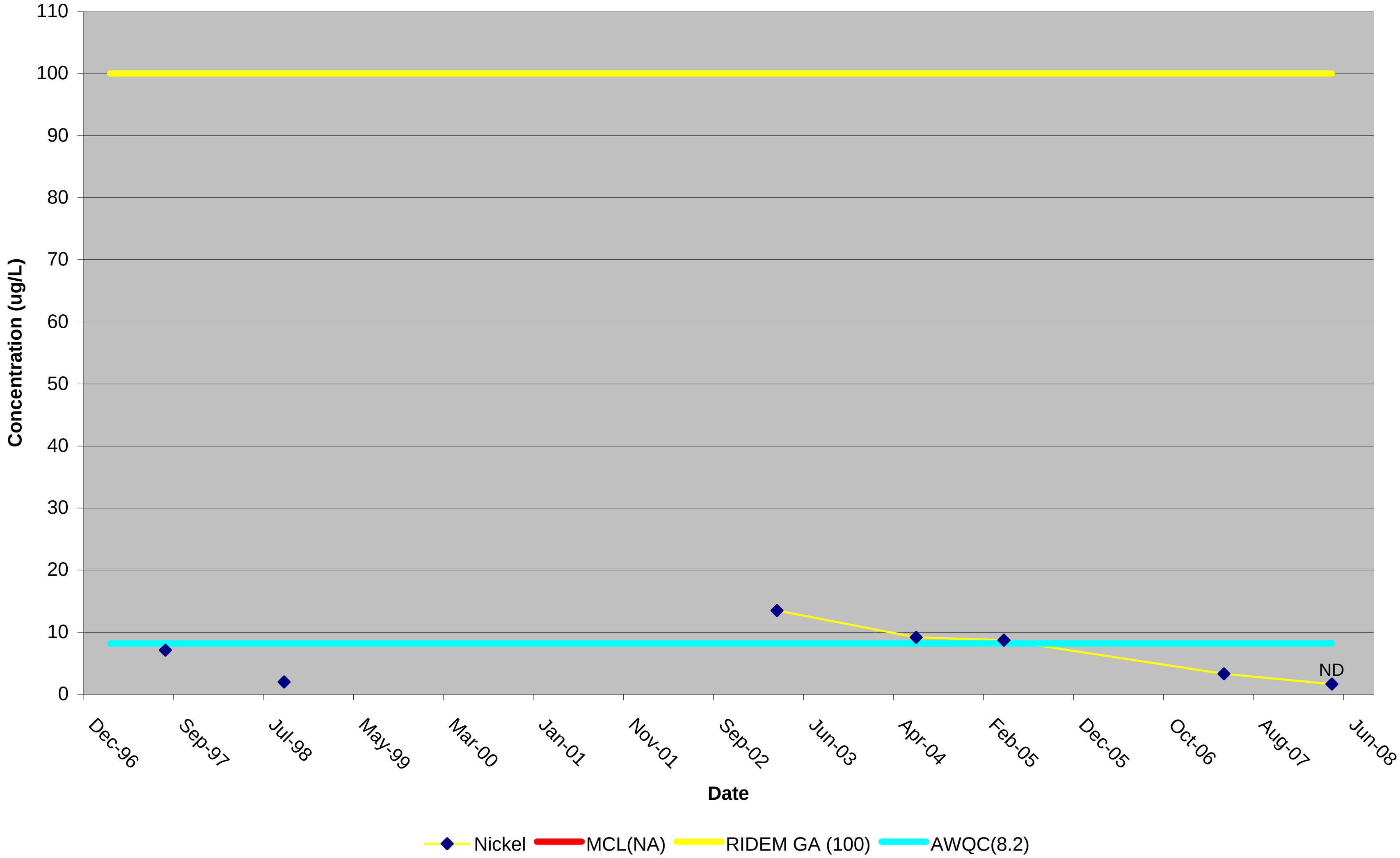
APPENDIX F-1: GROUNDWATER
FIGURE F-1.1-7

MERCURY IN GROUNDWATER, MW101R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



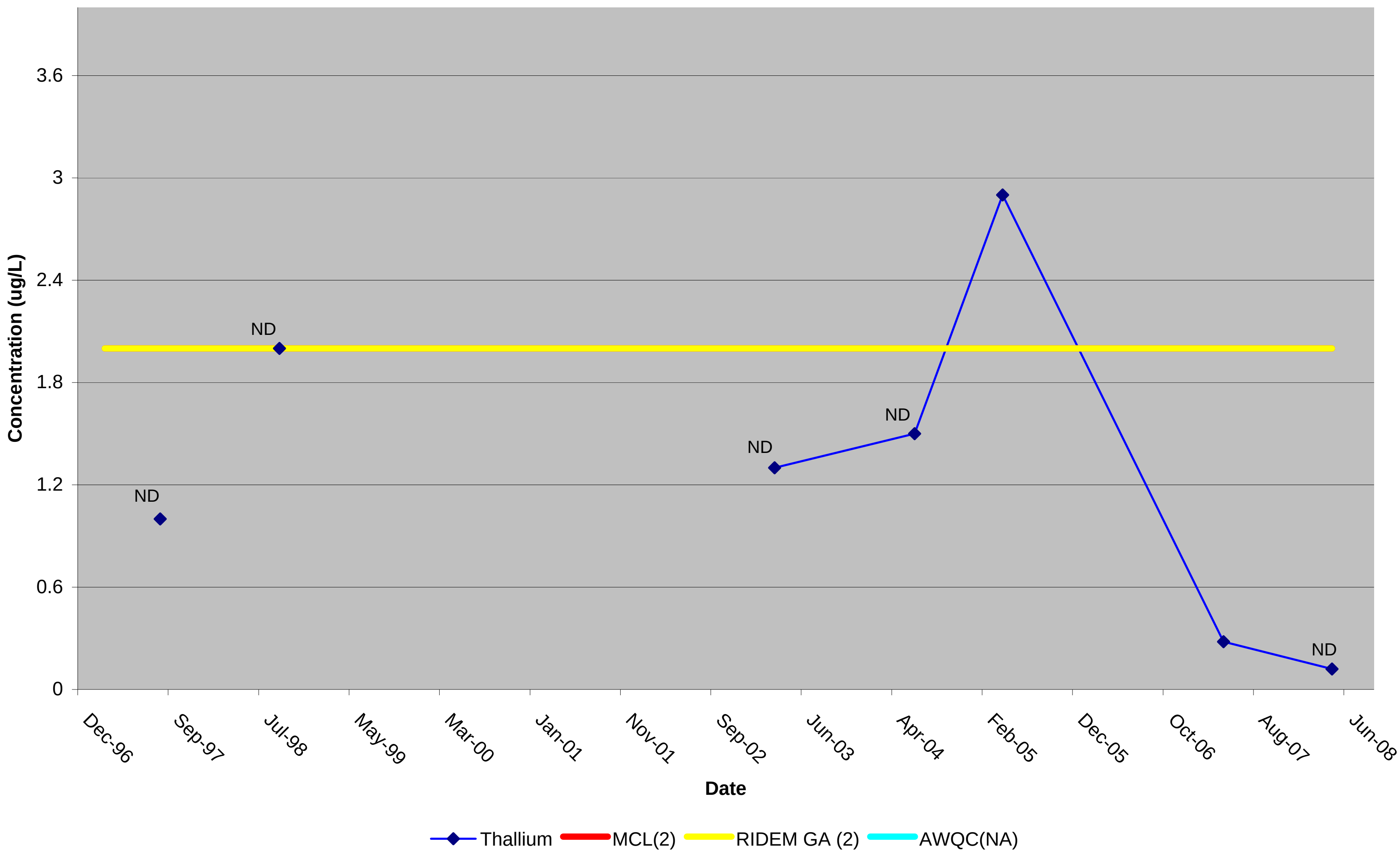
APPENDIX F-1: GROUNDWATER
FIGURE F-1.1-8

NICKEL IN GROUNDWATER, MW101R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



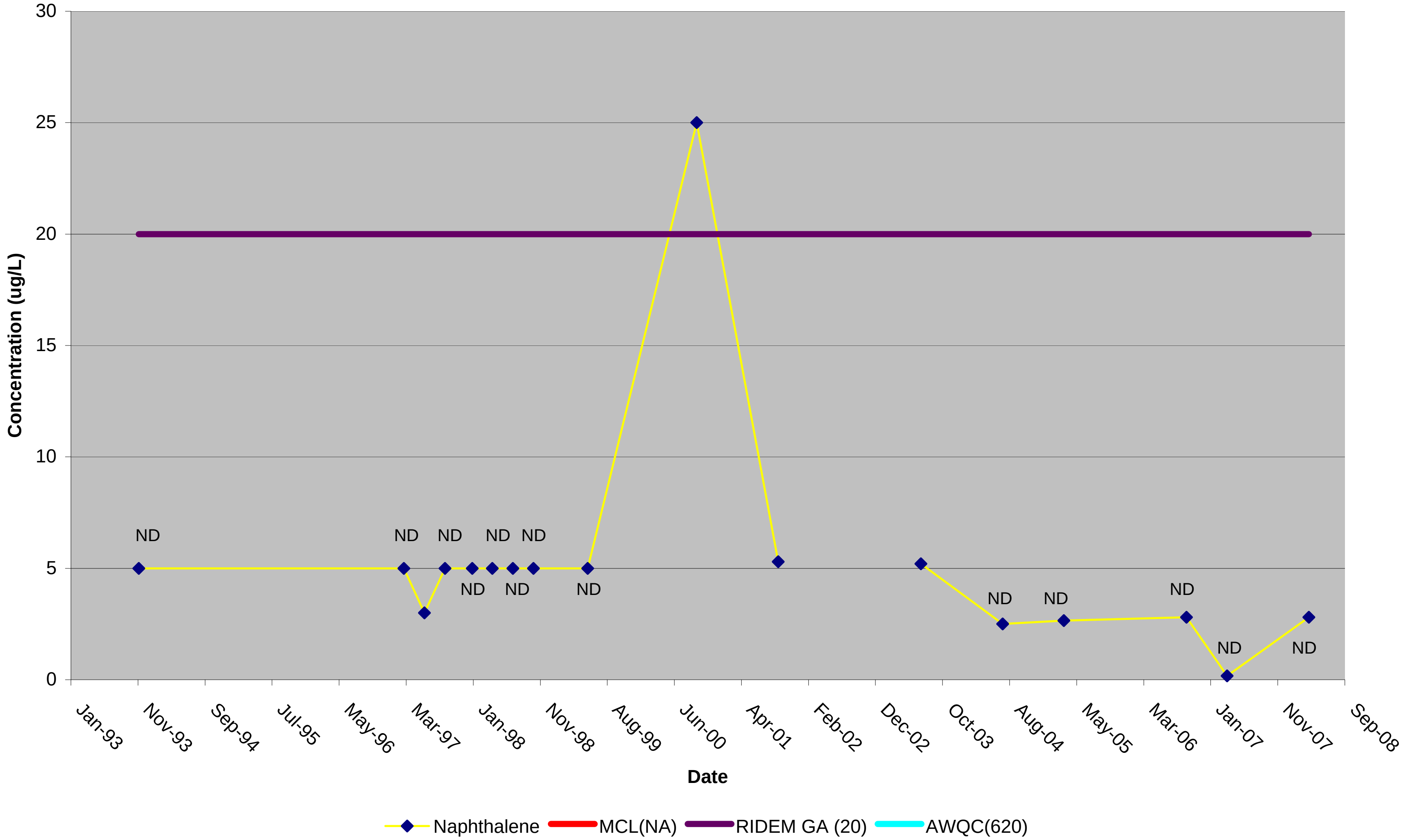
APPENDIX F-1: GROUNDWATER
FIGURE F-1.1-9

THALLIUM IN GROUNDWATER, MW101R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



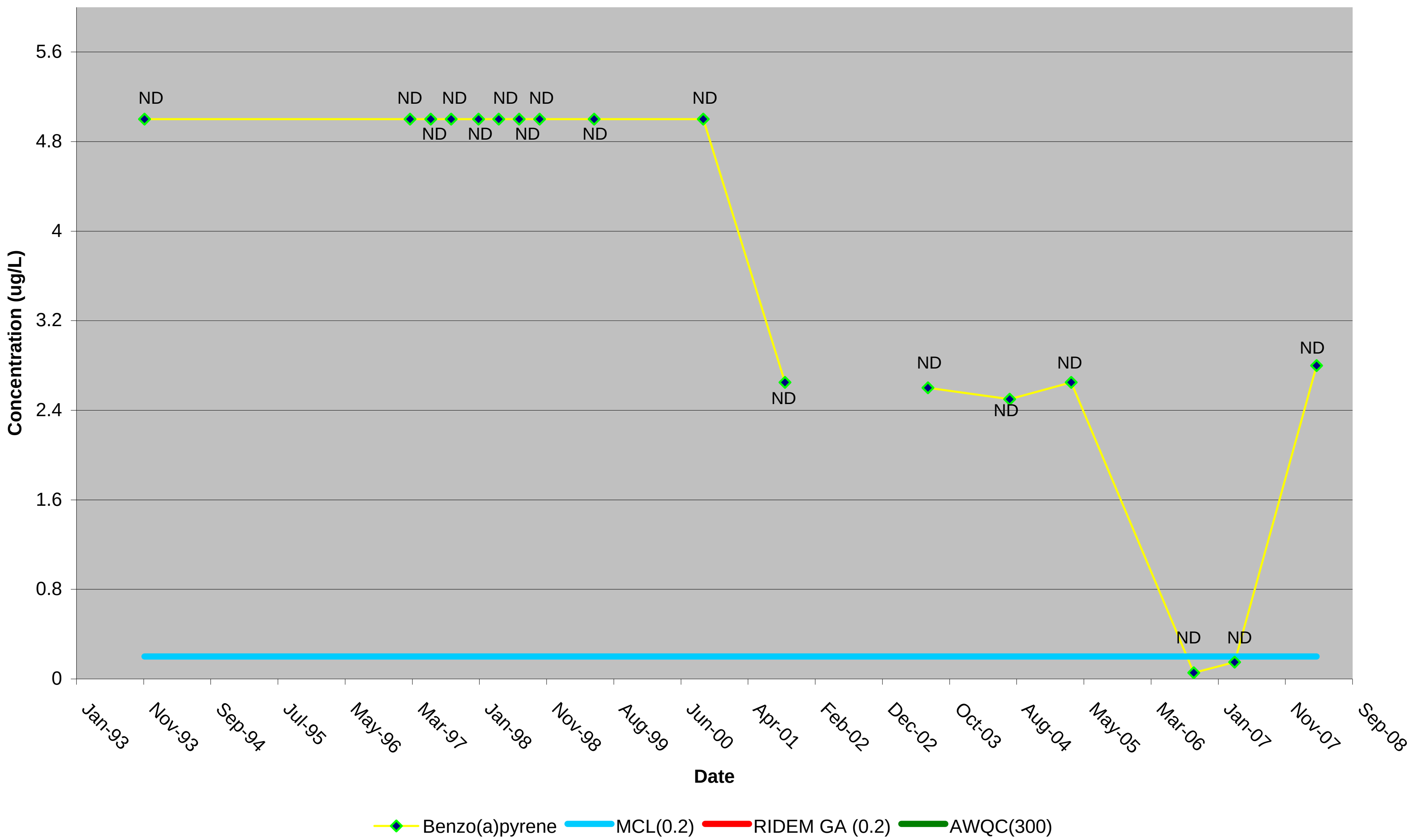
APPENDIX F-1: GROUNDWATER
FIGURE F-1.1-10

NAPHTHALENE IN GROUNDWATER, MW101R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



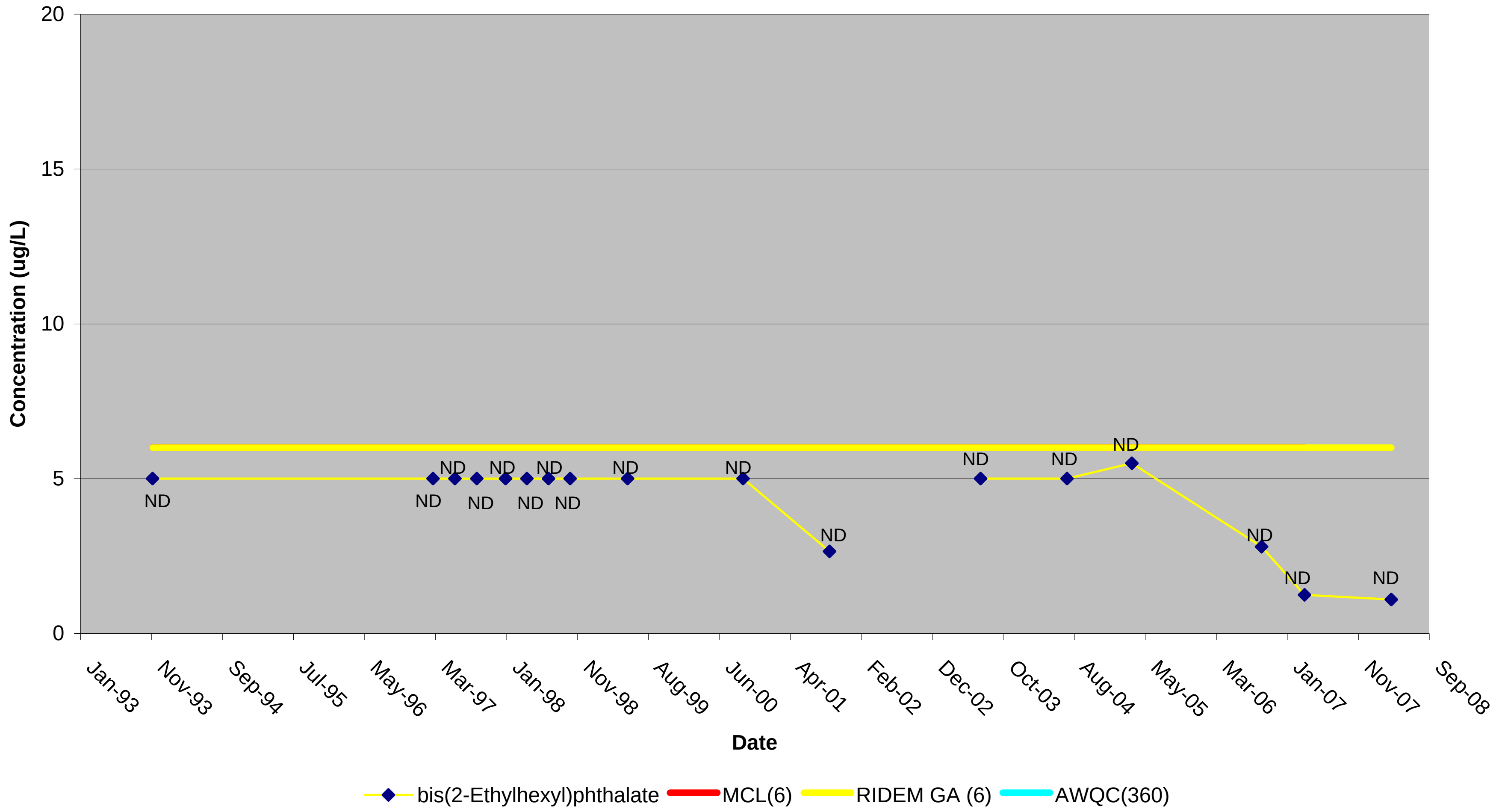
APPENDIX F-1: GROUNDWATER
FIGURE F-1.1-11

BENZO(A)PYRENE IN GROUNDWATER, MW101R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



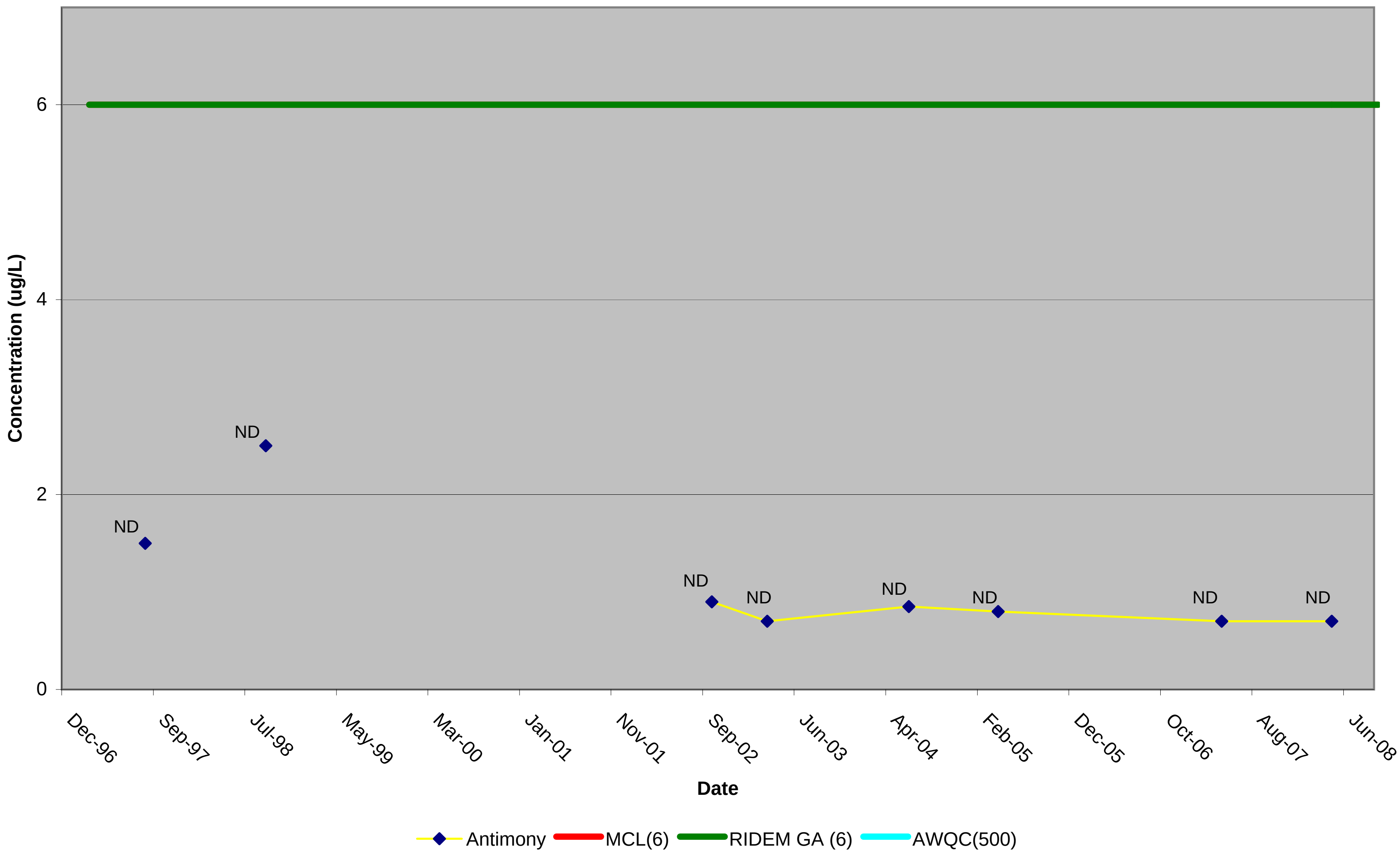
APPENDIX F-1: GROUNDWATER
FIGURE F-1.1-12

BIS(2-ETHYLHEXYL)PHTHALATE IN GROUNDWATER, MW101R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



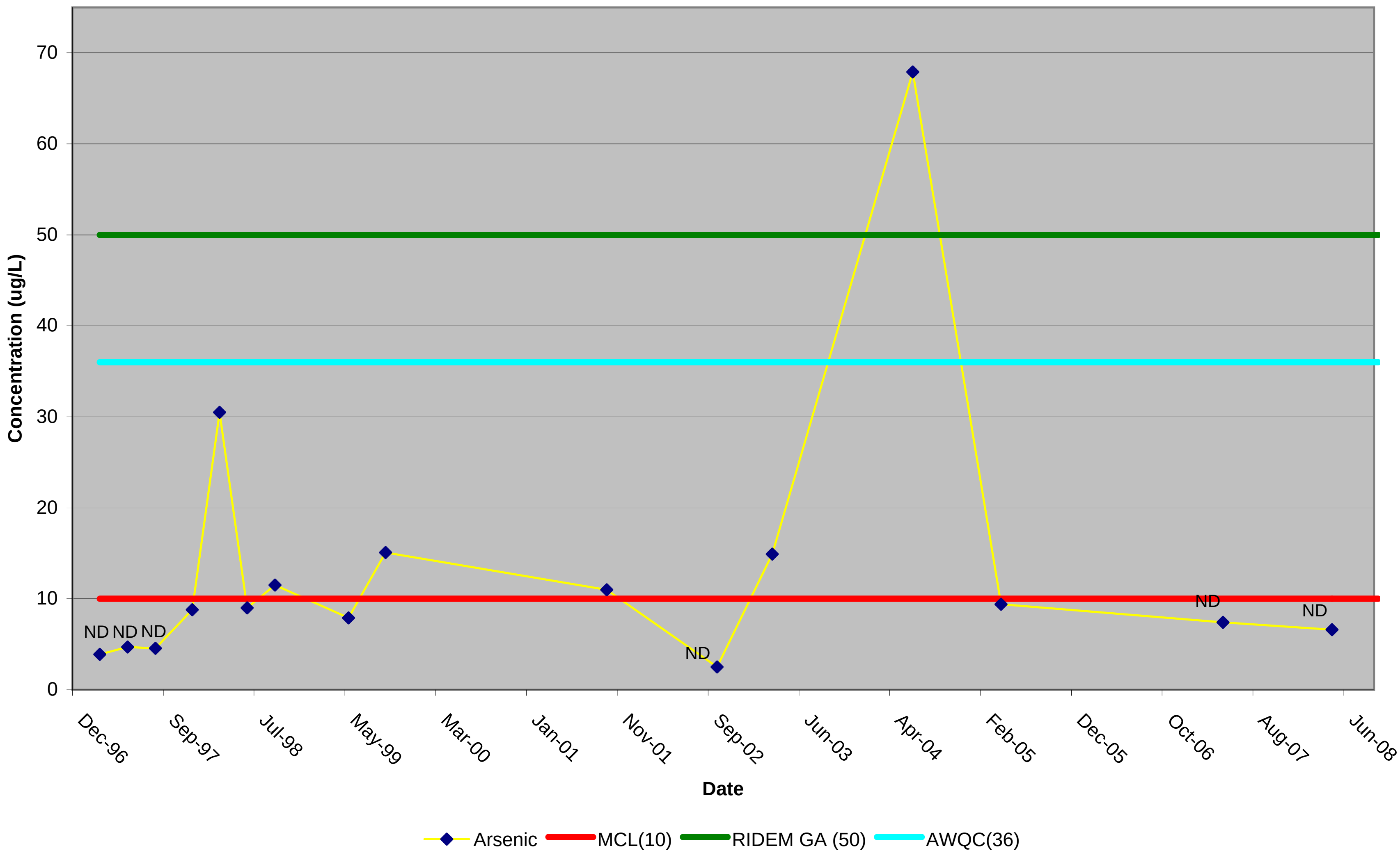
APPENDIX F-1: GROUNDWATER
FIGURE F-1.2-1

ANTIMONY IN GROUNDWATER, MW103R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



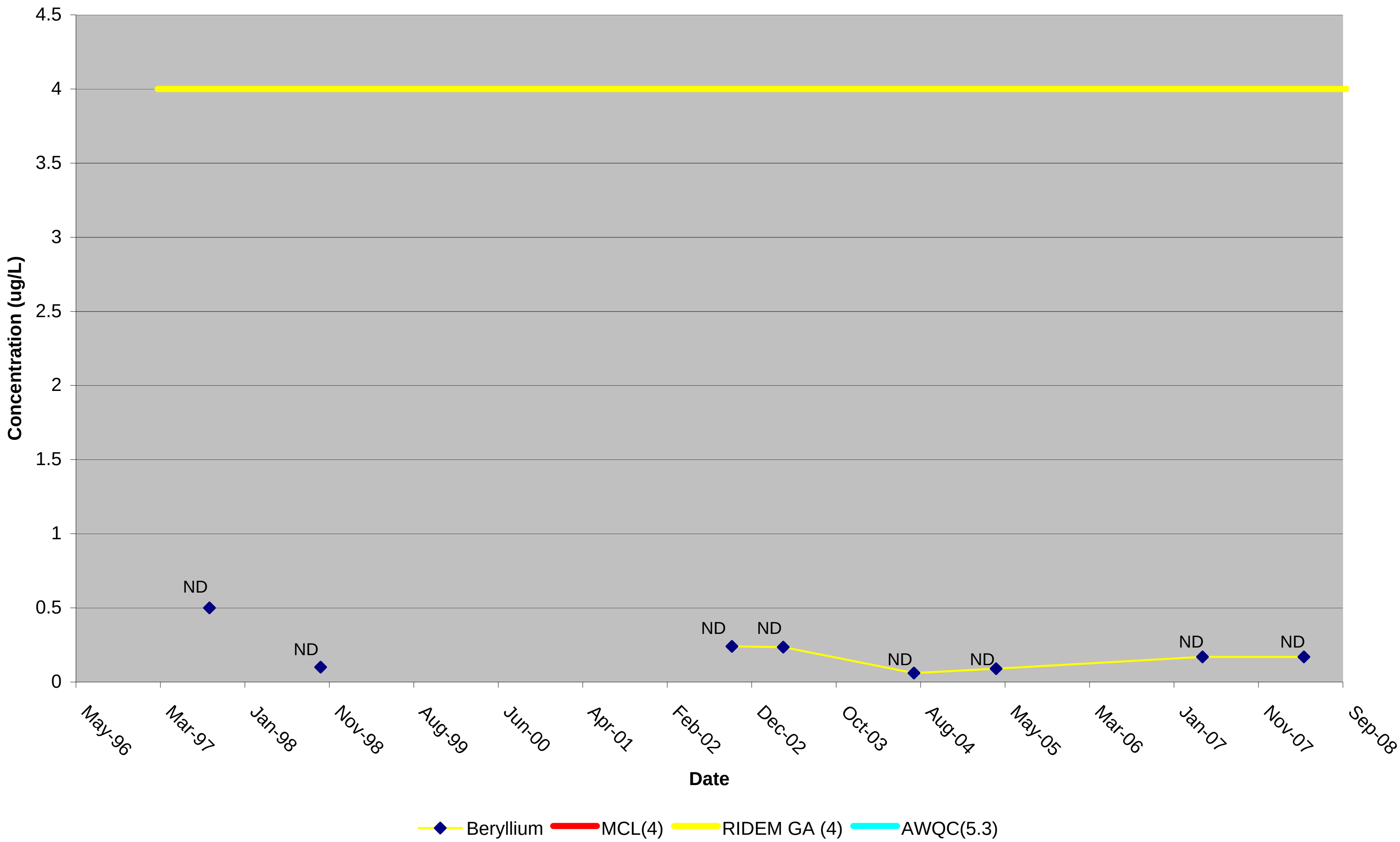
APPENDIX F-1: GROUNDWATER
FIGURE F-1.2-2

ARSENIC IN GROUNDWATER, MW103R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



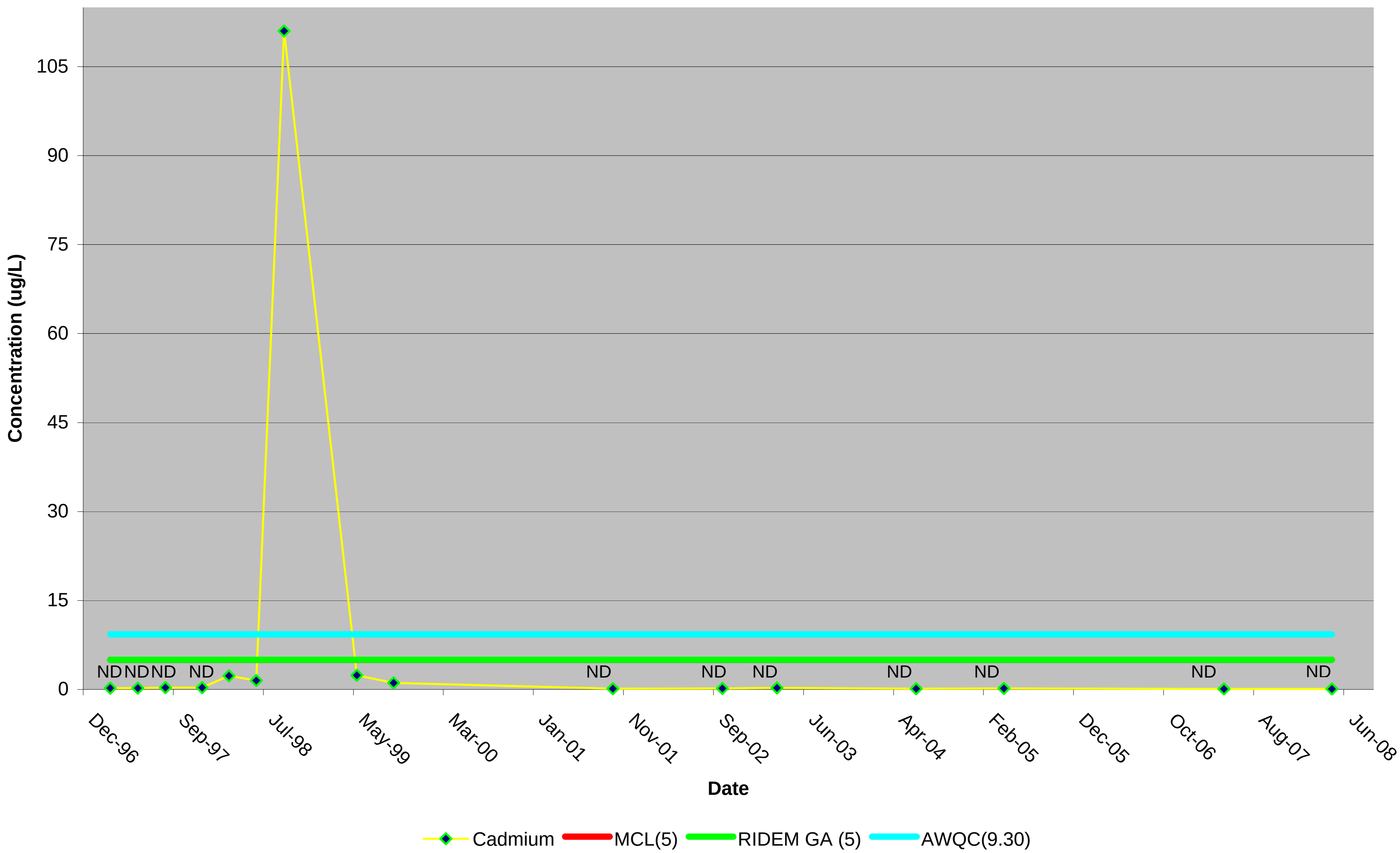
APPENDIX F-1: GROUNDWATER
FIGURE F-1.2-3

BERYLLIUM IN GROUNDWATER, MW103R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



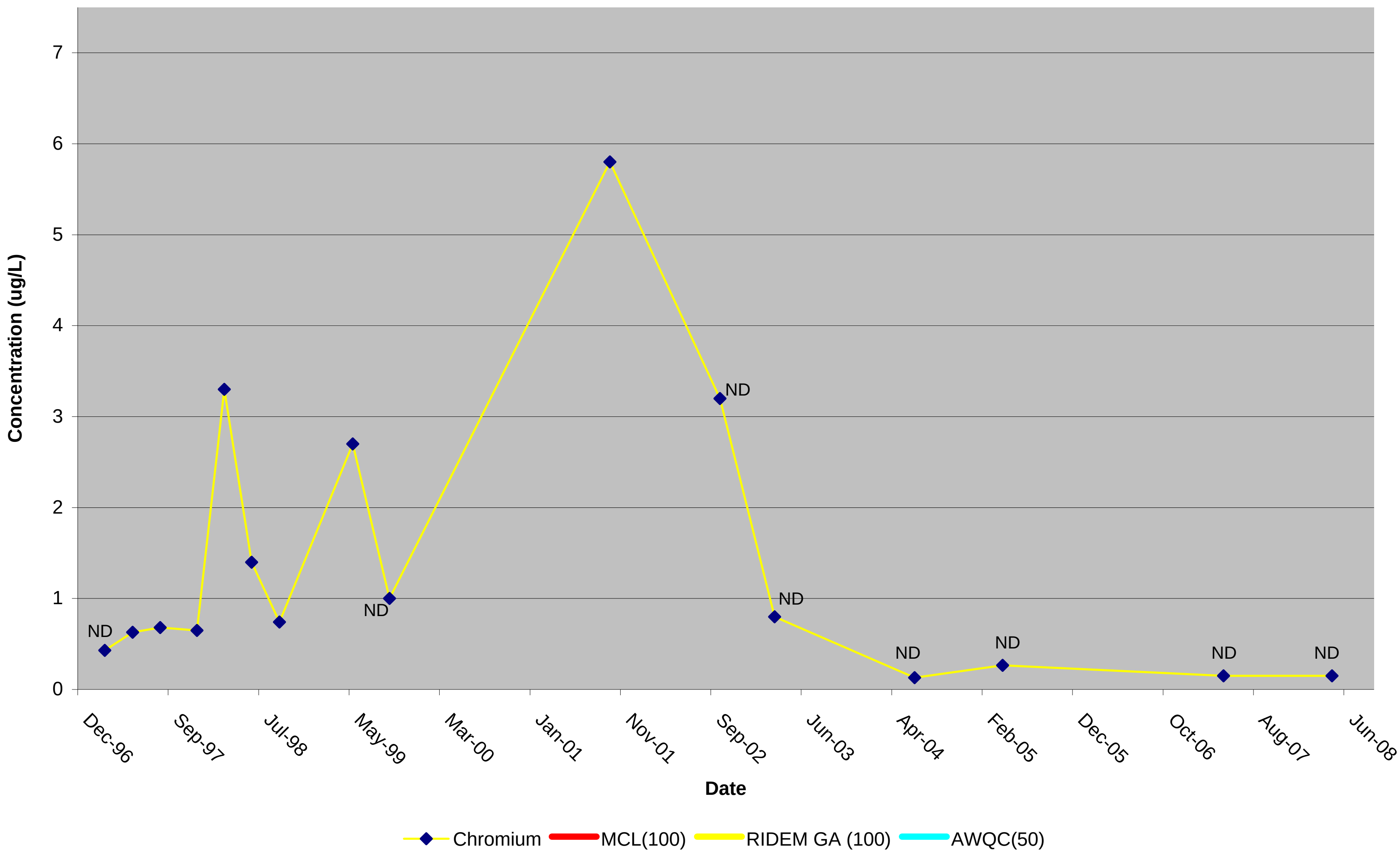
APPENDIX F-1: GROUNDWATER
FIGURE F-1.2-4

CADMIUM IN GROUNDWATER, MW103R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



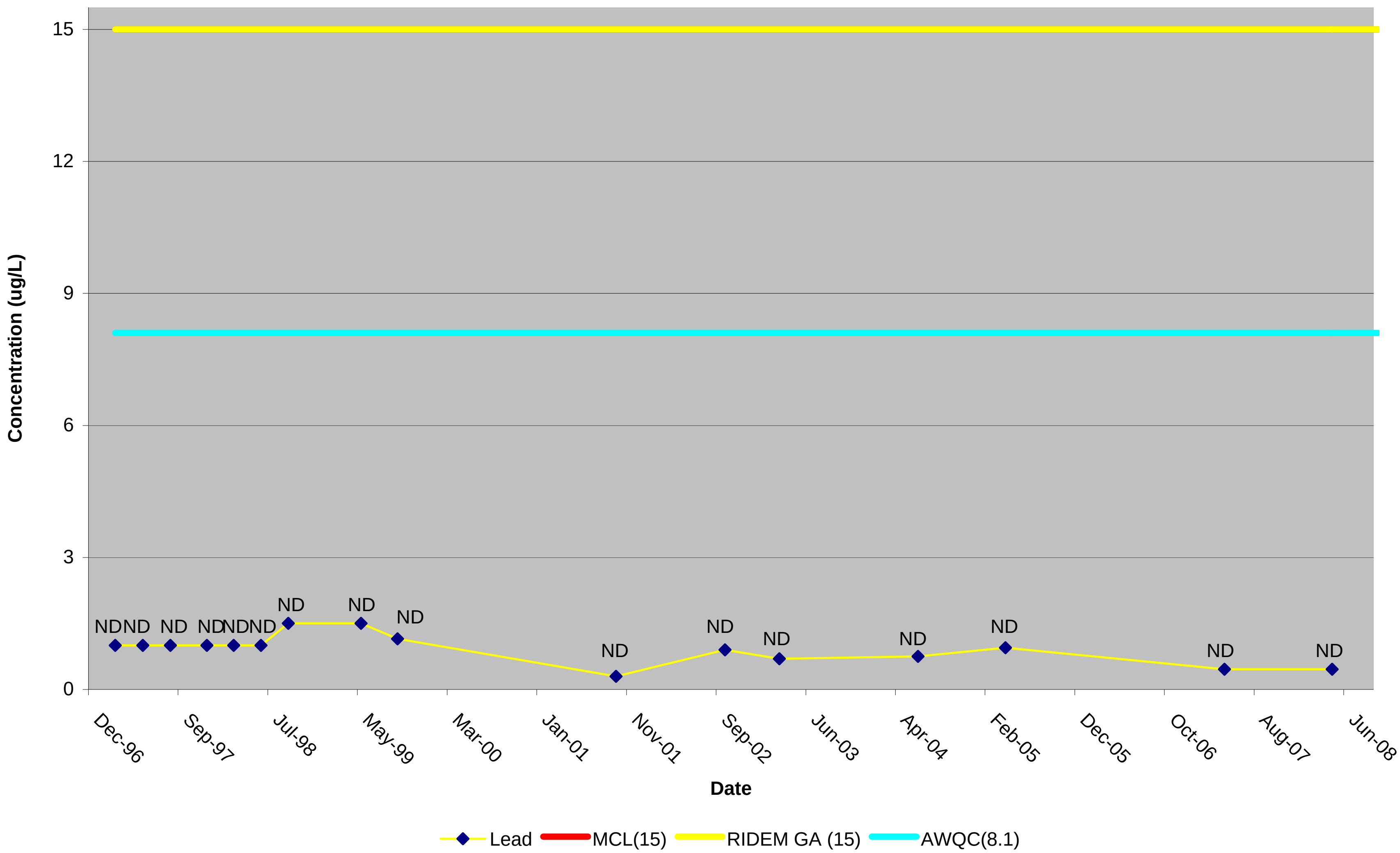
APPENDIX F-1: GROUNDWATER
FIGURE F-1.2-5

CHROMIUM IN GROUNDWATER, MW103R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



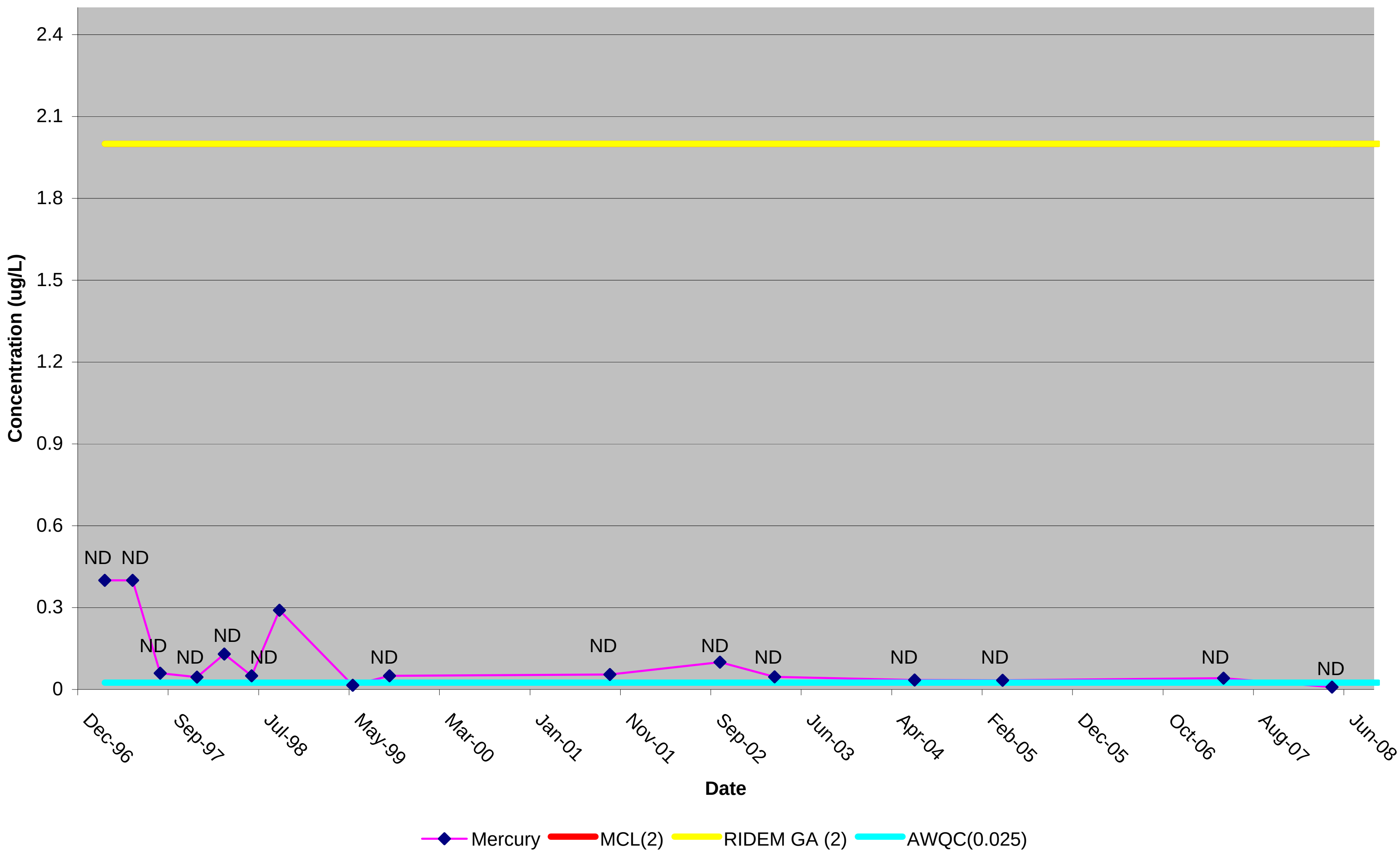
APPENDIX F-1: GROUNDWATER
FIGURE F-1.2-6

LEAD IN GROUNDWATER, MW103R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



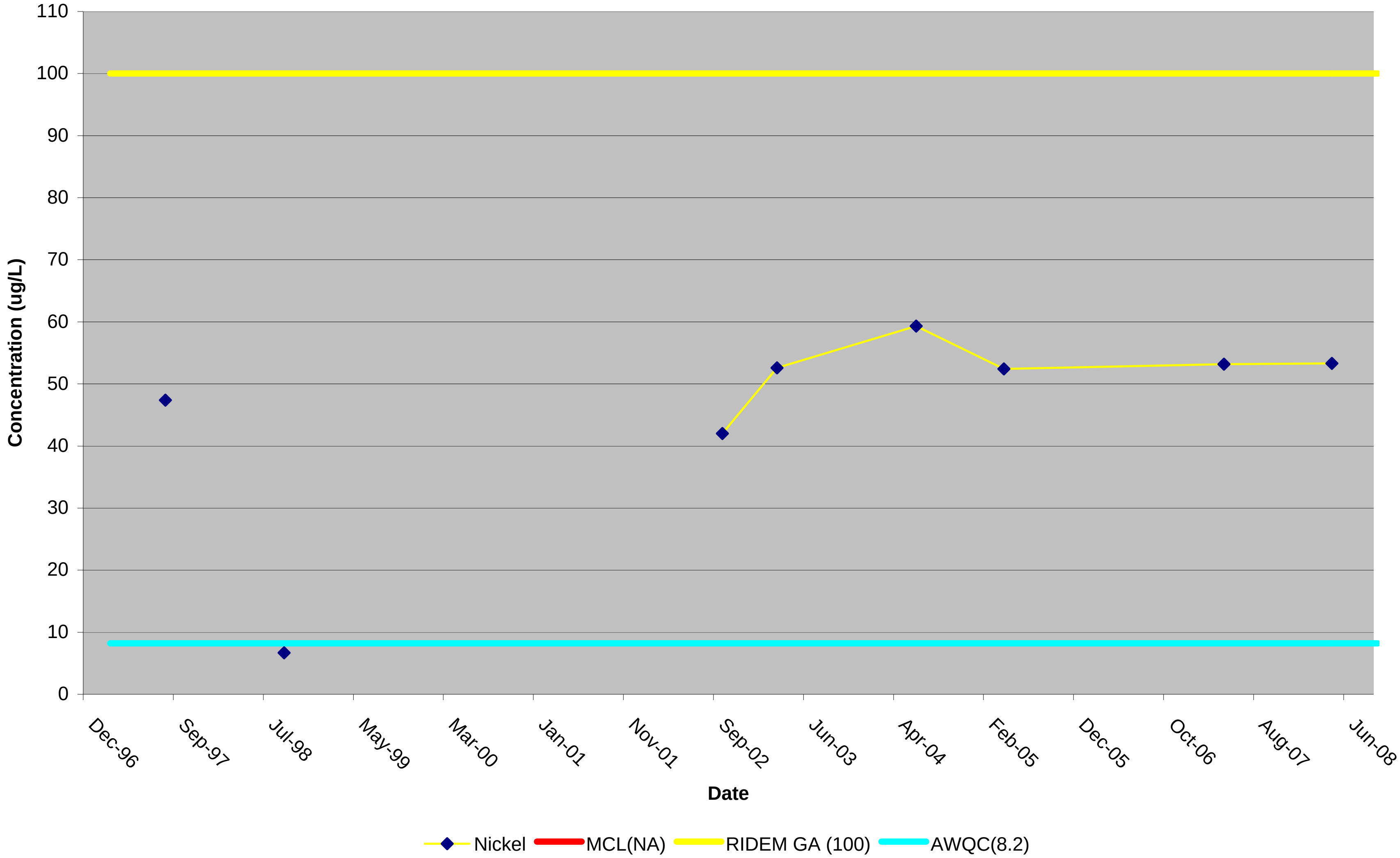
APPENDIX F-1: GROUNDWATER
FIGURE F-1.2-7

MERCURY IN GROUNDWATER, MW103R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



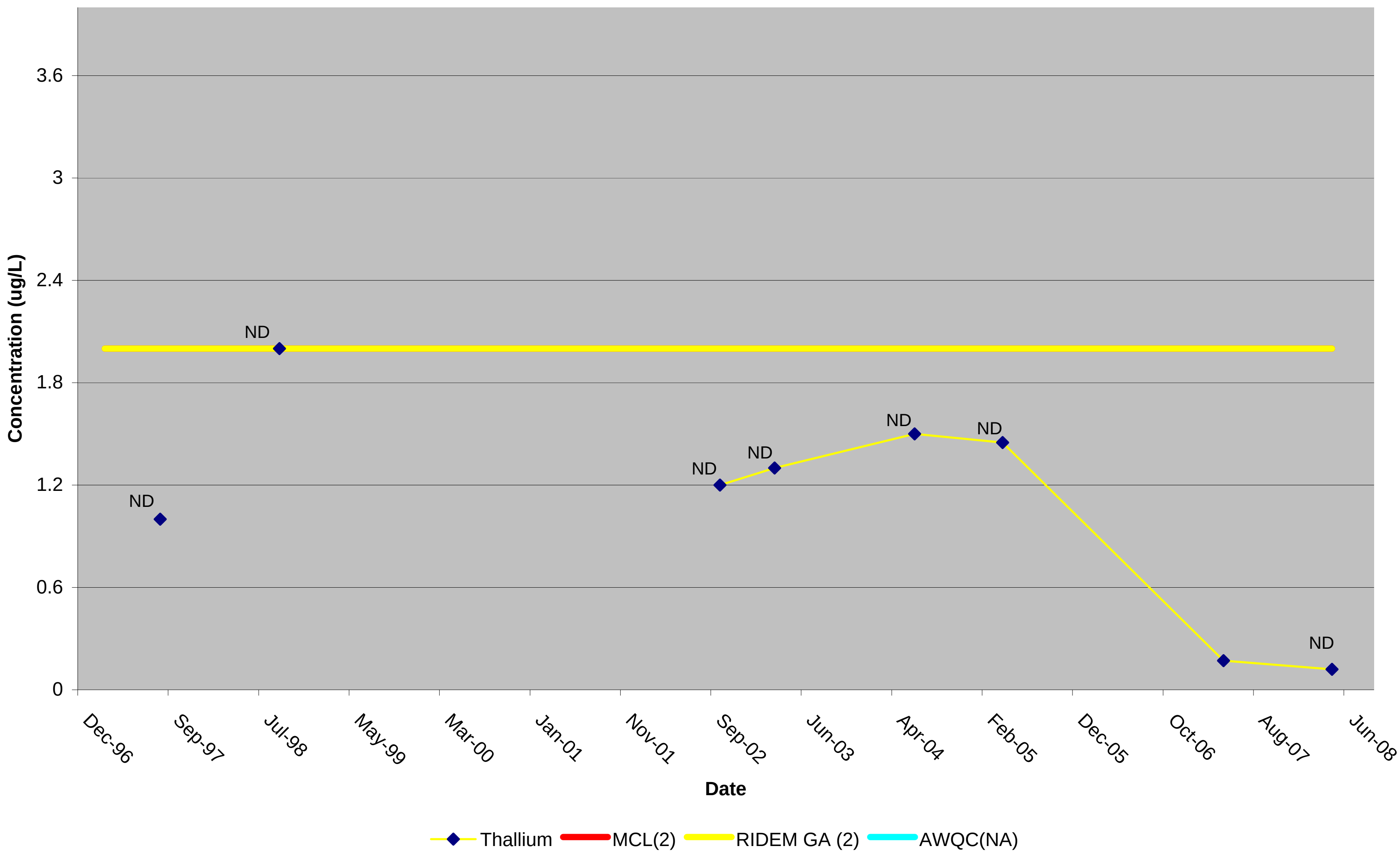
APPENDIX F-1: GROUNDWATER
FIGURE F-1.2-8

NICKEL IN GROUNDWATER, MW103R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



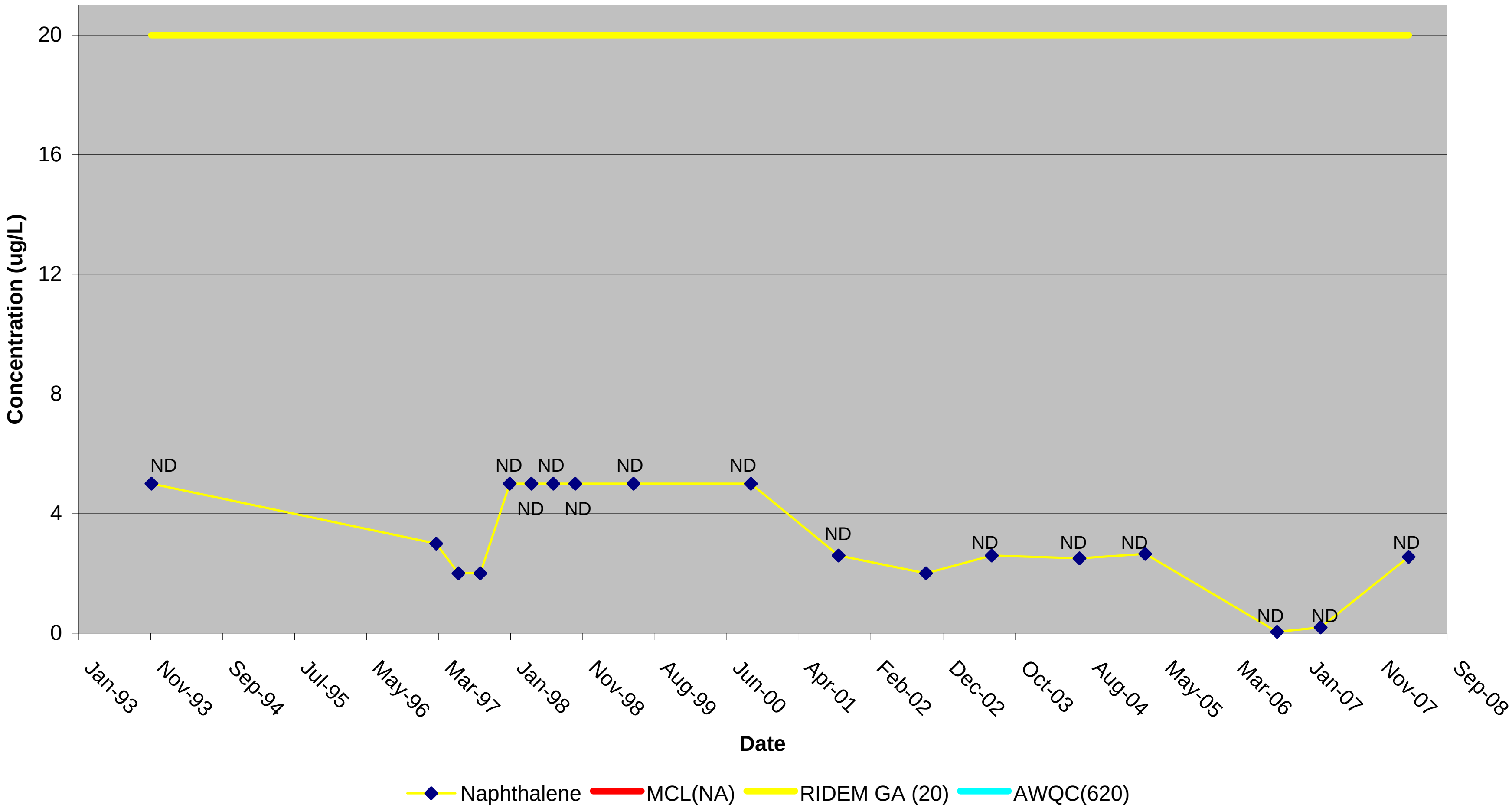
APPENDIX F-1: GROUNDWATER
FIGURE F-1.2-9

THALLIUM IN GROUNDWATER, MW103R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



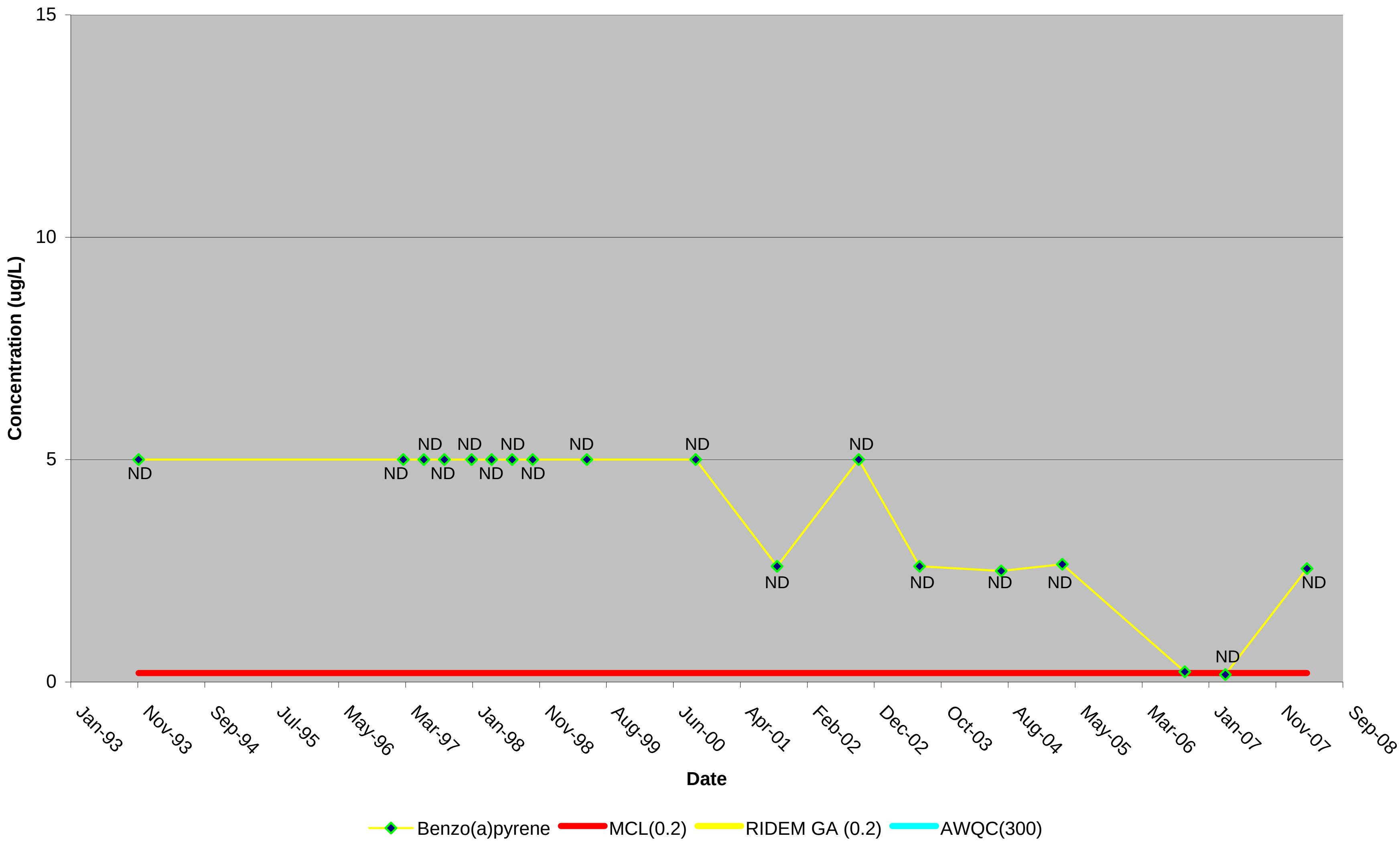
APPENDIX F-1: GROUNDWATER
FIGURE F-1.2-10

NAPHTHALENE IN GROUNDWATER, MW103R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



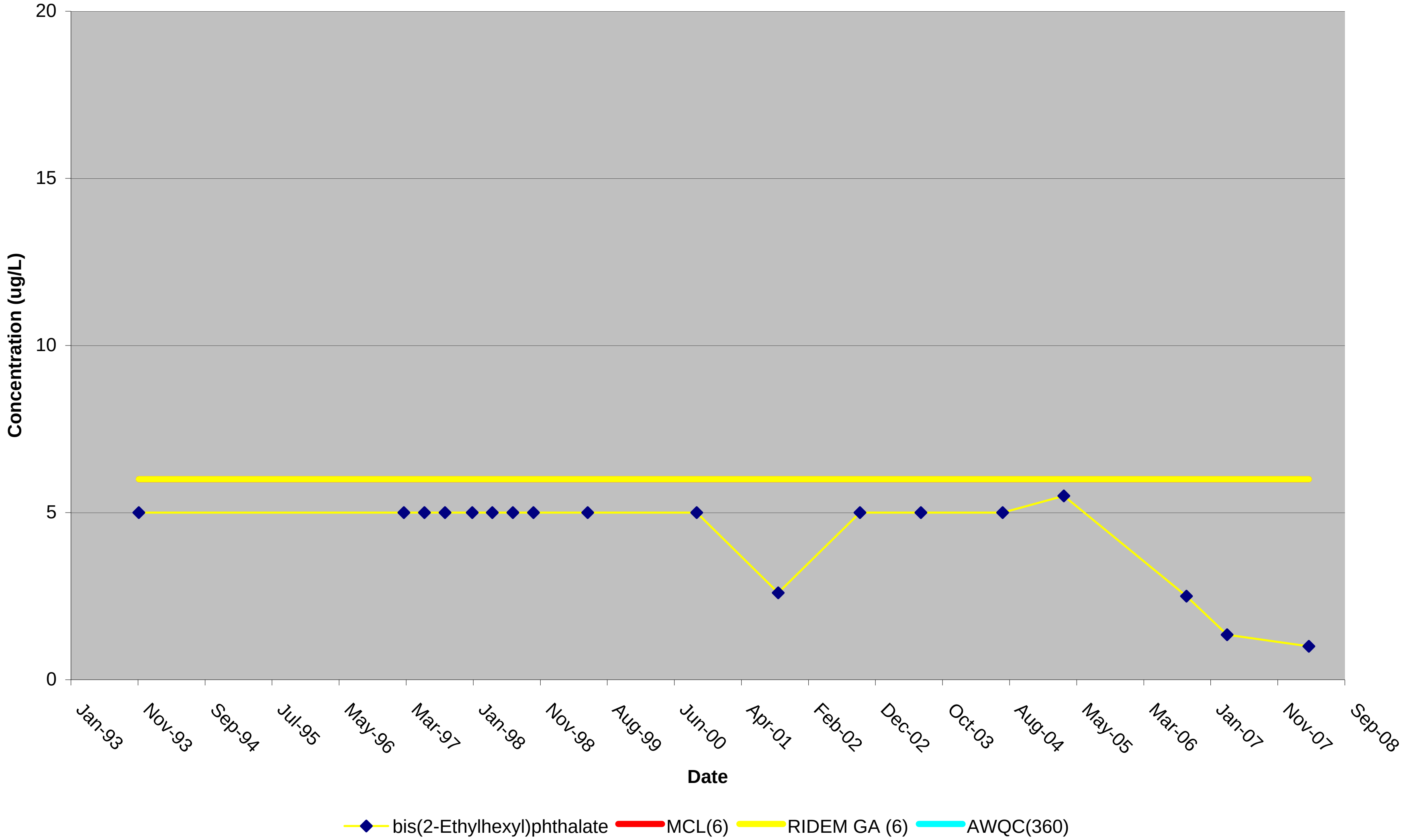
APPENDIX F-1: GROUNDWATER
FIGURE F-1.2-11

BENZO(A)PYRENE IN GROUNDWATER, MW103R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



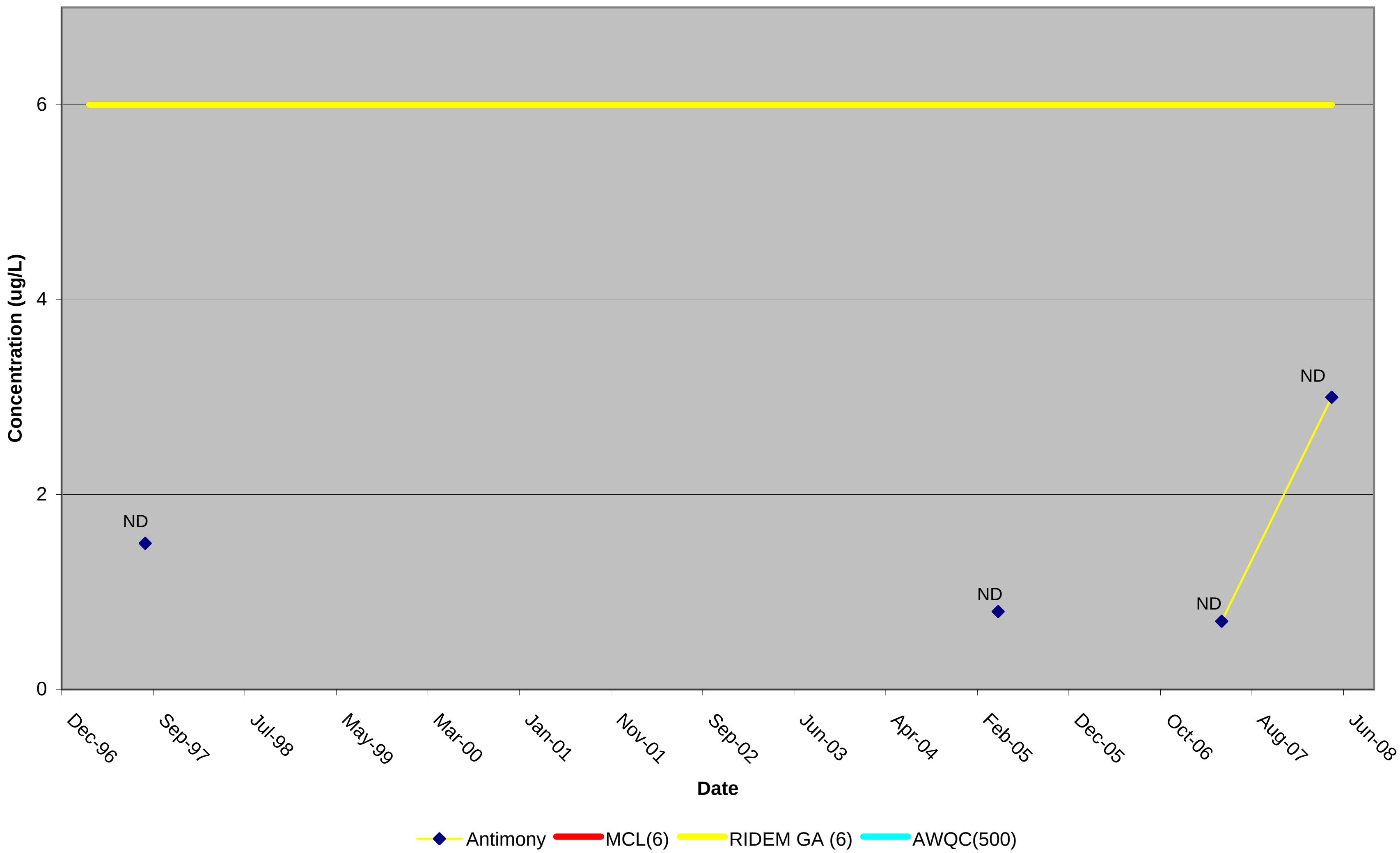
APPENDIX F-1: GROUNDWATER
FIGURE F-1.2-12

BIS(2-ETHYLHEXYL)PHTHALATE IN GROUNDWATER, MW103R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



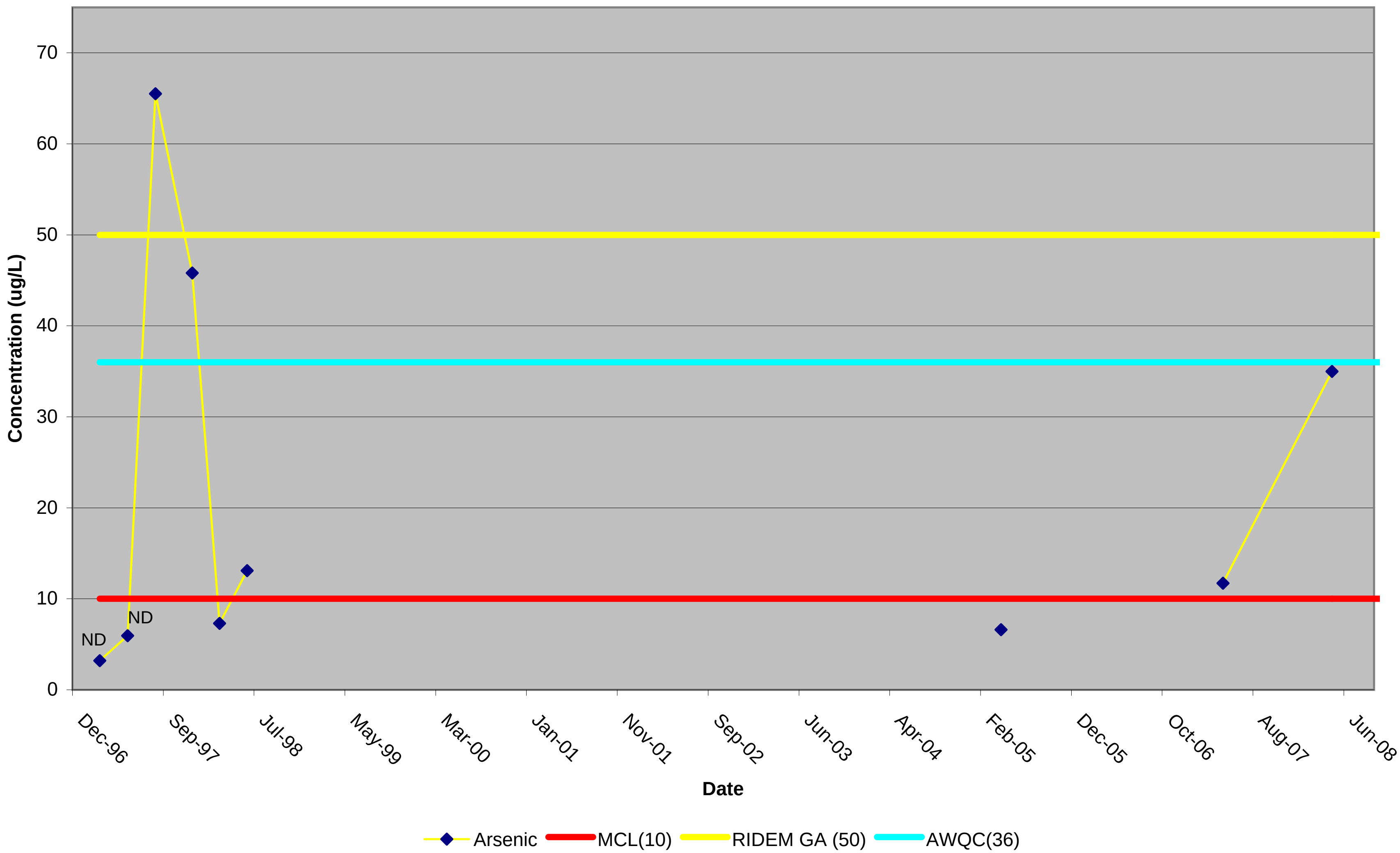
APPENDIX F-1: GROUNDWATER
FIGURE F-1.3-1

ANTIMONY IN GROUNDWATER, MW103S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



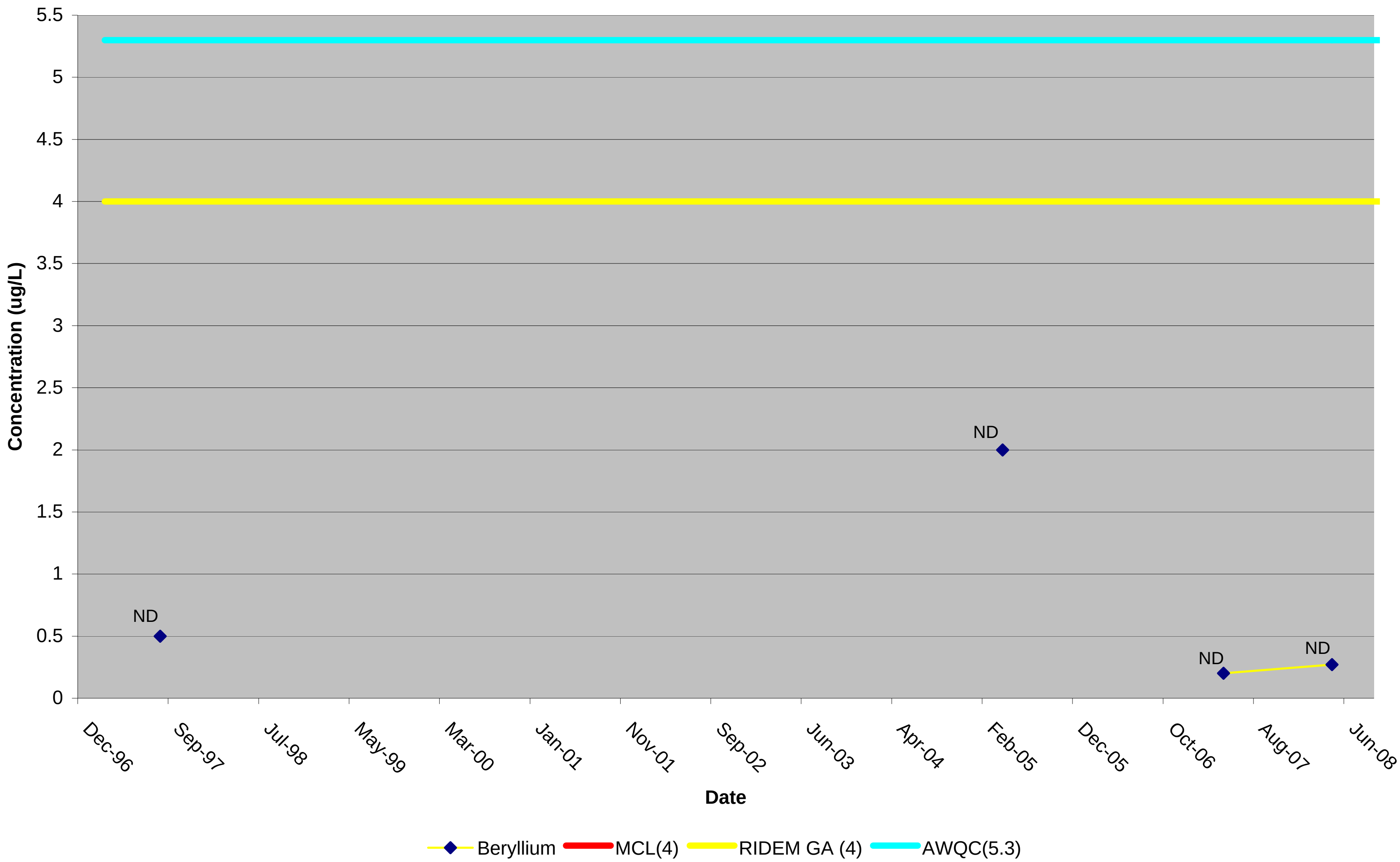
APPENDIX F-1: GROUNDWATER
FIGURE F-1.3-2

ARSENIC IN GROUNDWATER, MW103S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



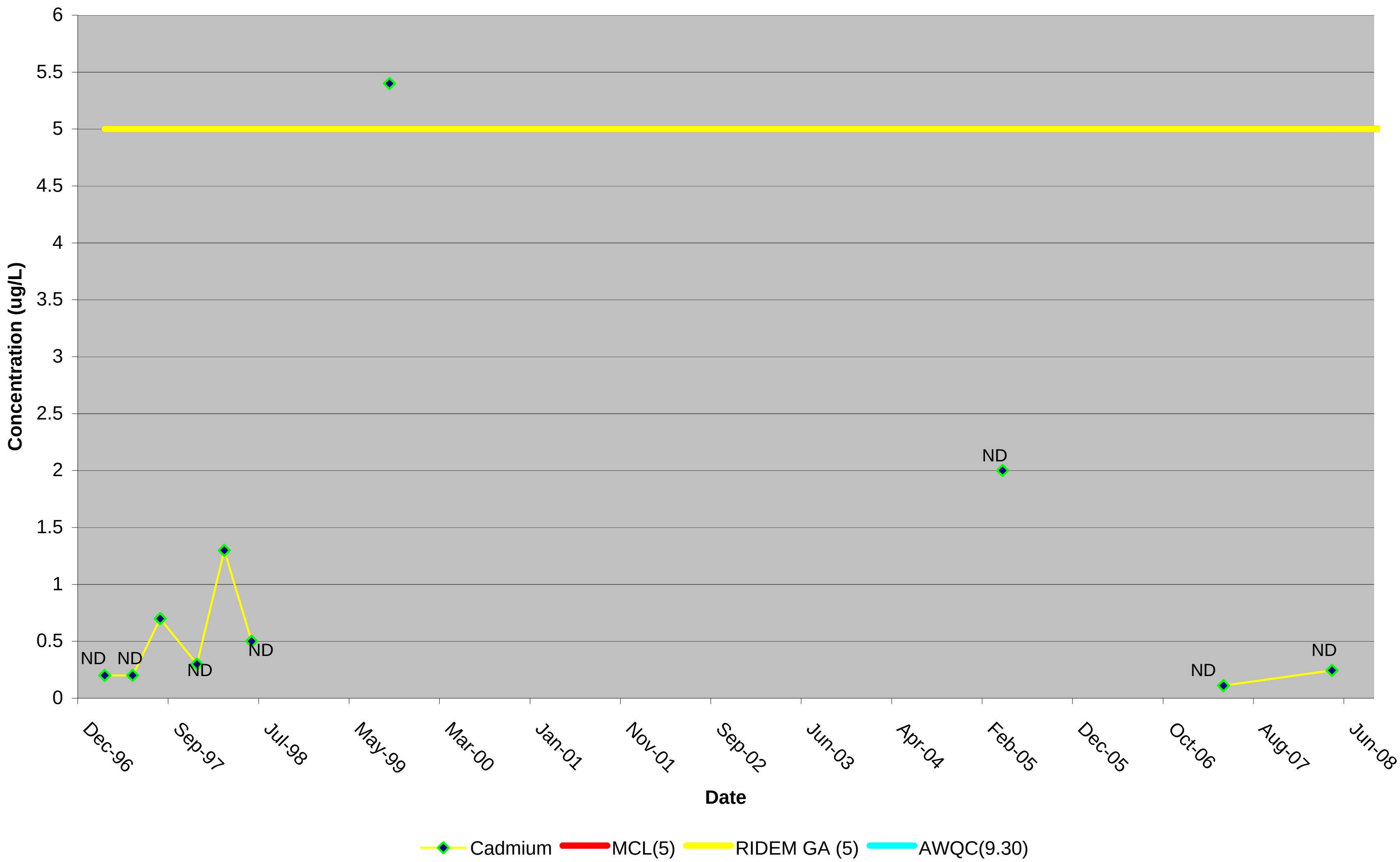
APPENDIX F-1: GROUNDWATER
FIGURE F-1.3-3

BERYLLIUM IN GROUNDWATER, MW103S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



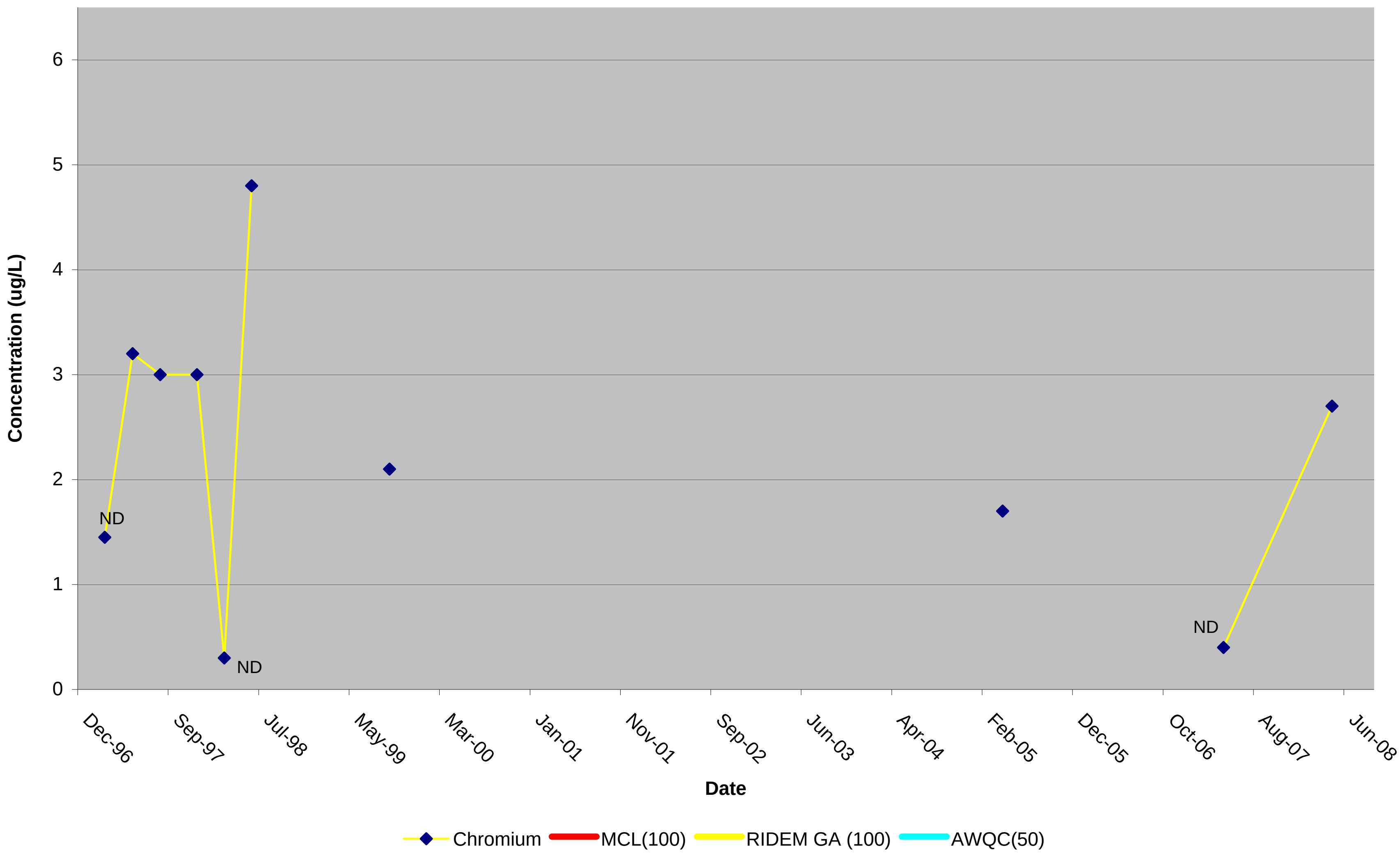
APPENDIX F-1: GROUNDWATER
FIGURE F-1.3-4

CADMIUM IN GROUNDWATER, MW103S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



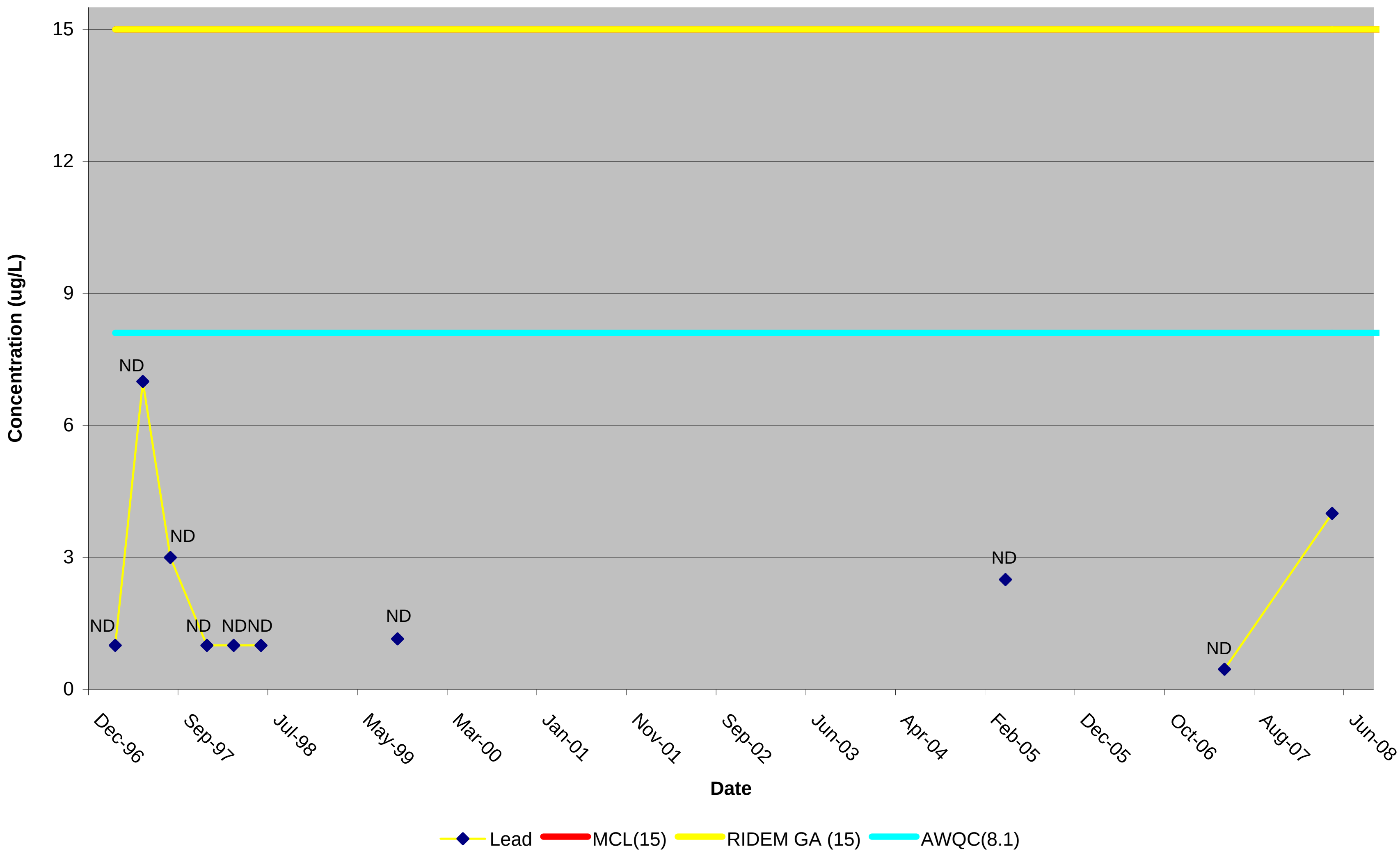
APPENDIX F-1: GROUNDWATER
FIGURE F-1.3-5

CHROMIUM IN GROUNDWATER, MW103S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



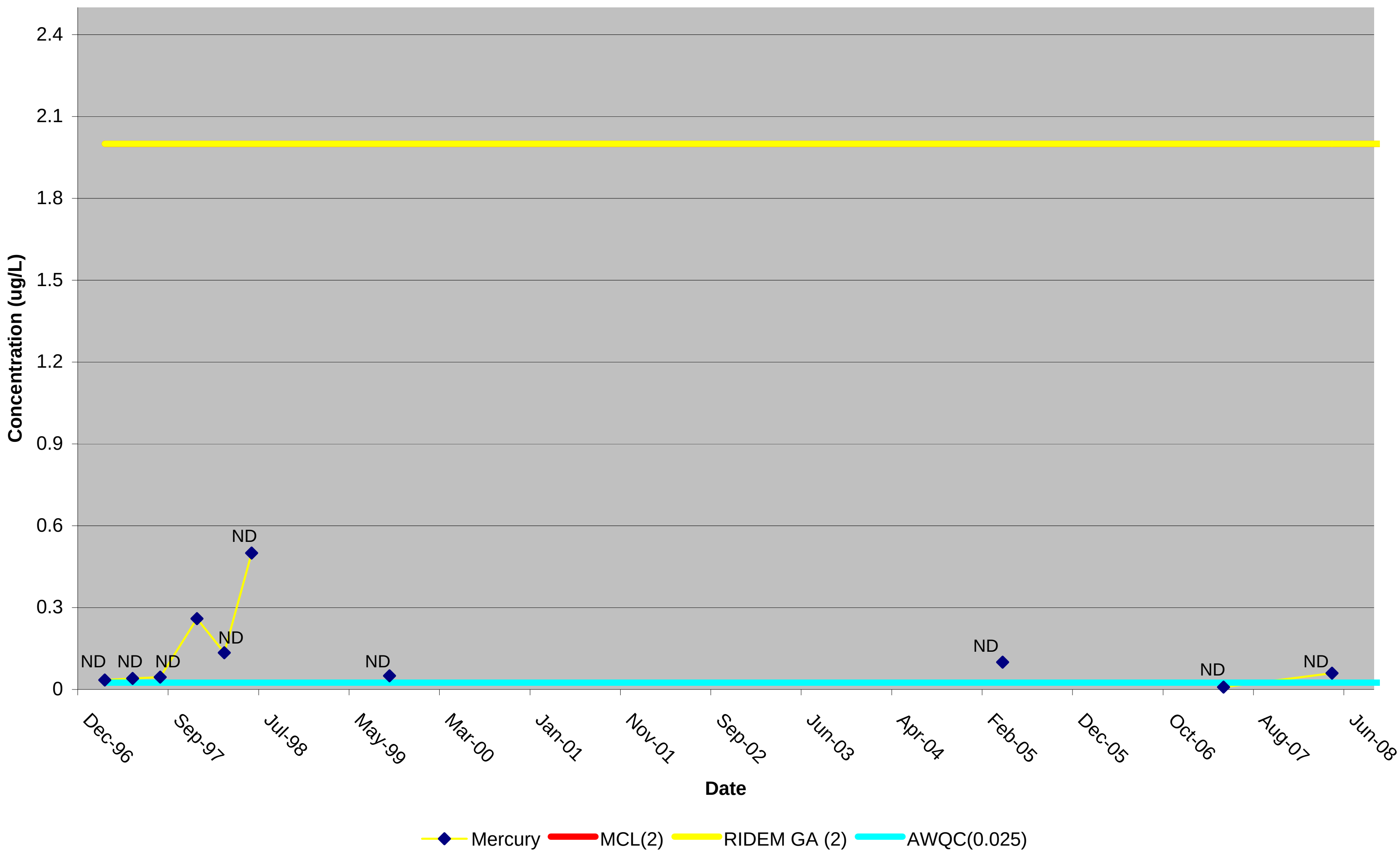
APPENDIX F-1: GROUNDWATER
FIGURE F-1.3-6

LEAD IN GROUNDWATER, MW103S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



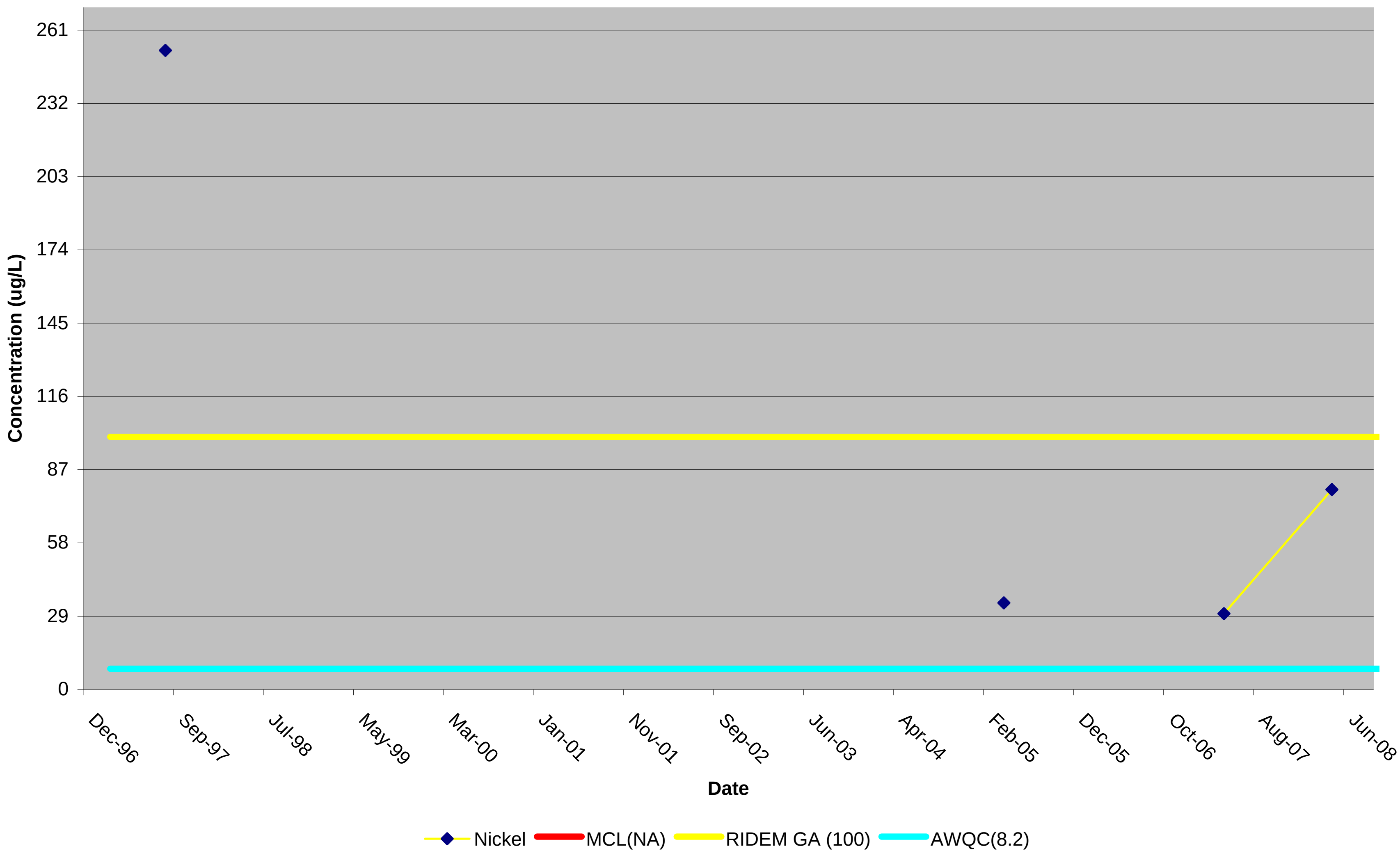
APPENDIX F-1: GROUNDWATER
FIGURE F-1.3-7

MERCURY IN GROUNDWATER, MW103S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



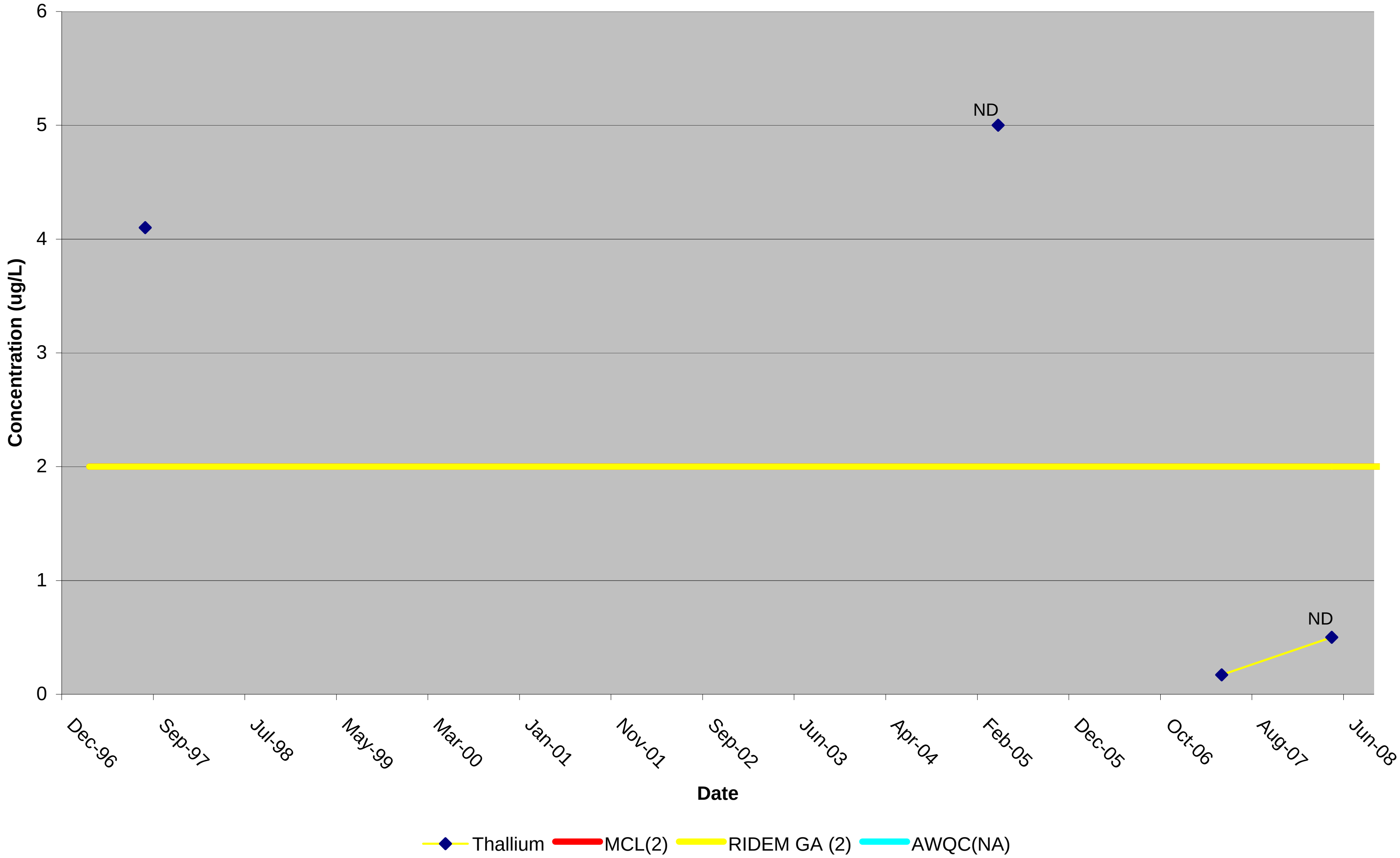
APPENDIX F-1: GROUNDWATER
FIGURE F-1.3-8

NICKEL IN GROUNDWATER, MW103S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



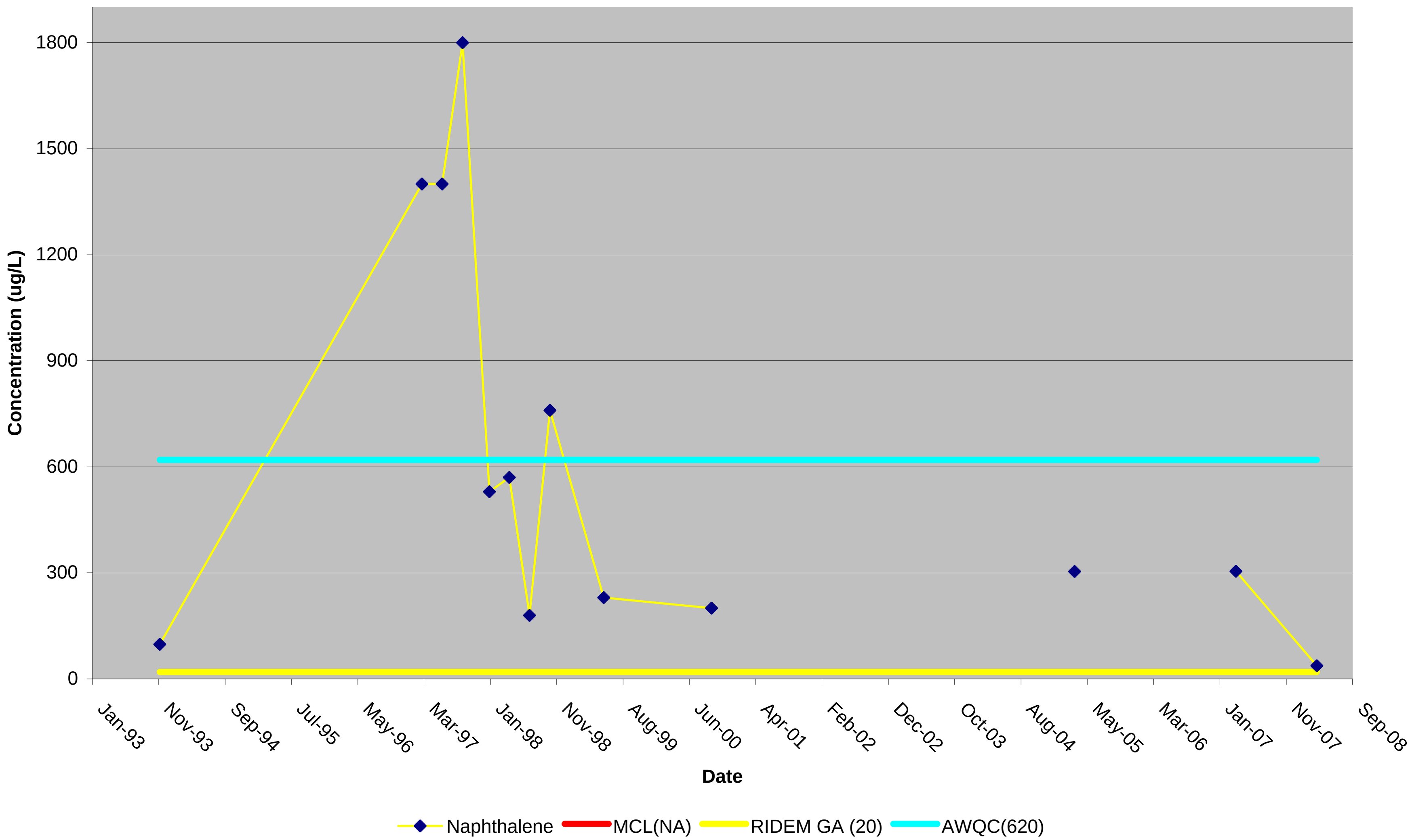
APPENDIX F-1: GROUNDWATER
FIGURE F-1.3-9

THALLIUM IN GROUNDWATER, MW103S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



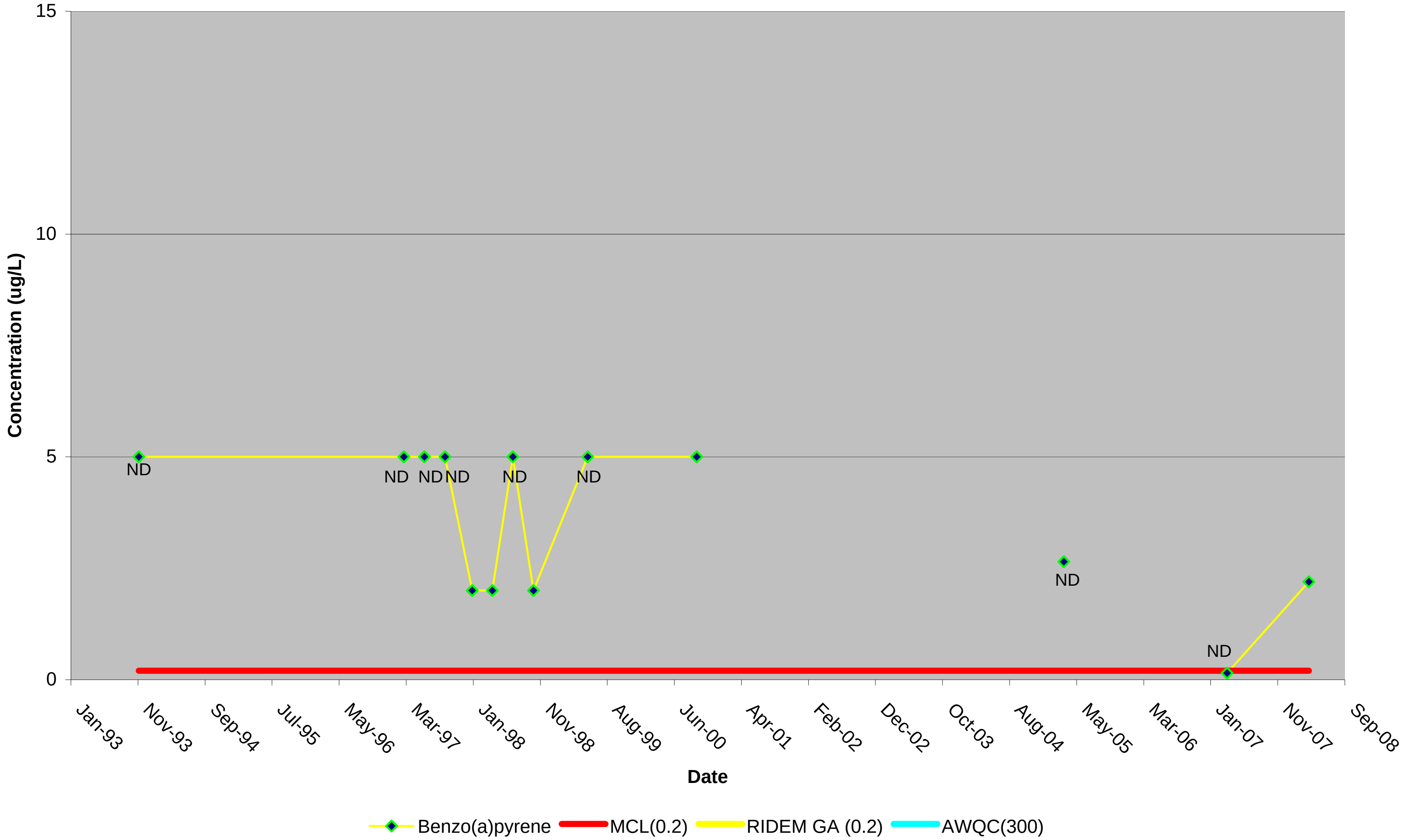
APPENDIX F-1: GROUNDWATER
FIGURE F-1.3-10

NAPHTHALENE IN GROUNDWATER, MW103S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



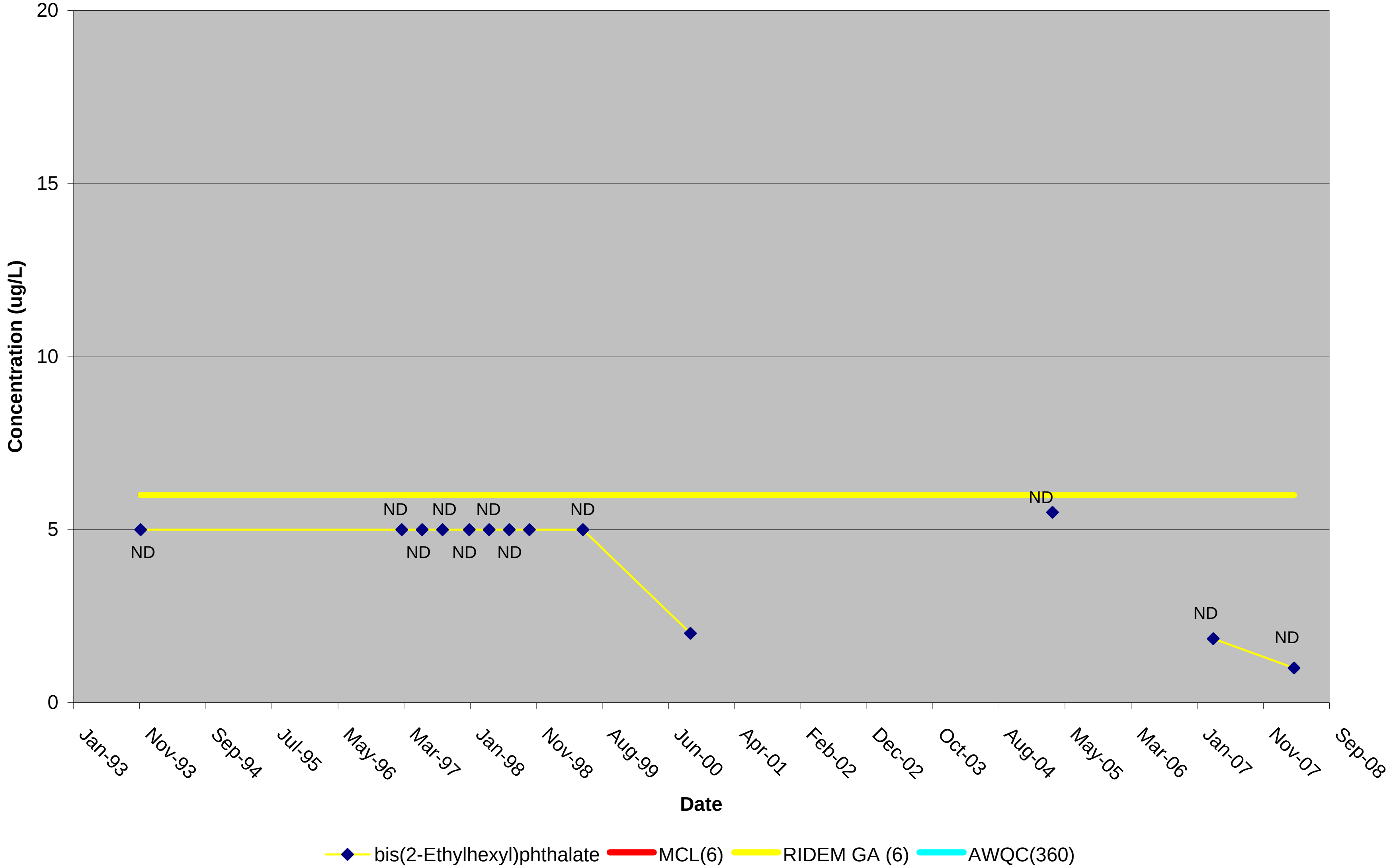
APPENDIX F-1: GROUNDWATER
FIGURE F-1.3-11

BENZO(A)PYRENE IN GROUNDWATER, MW103S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



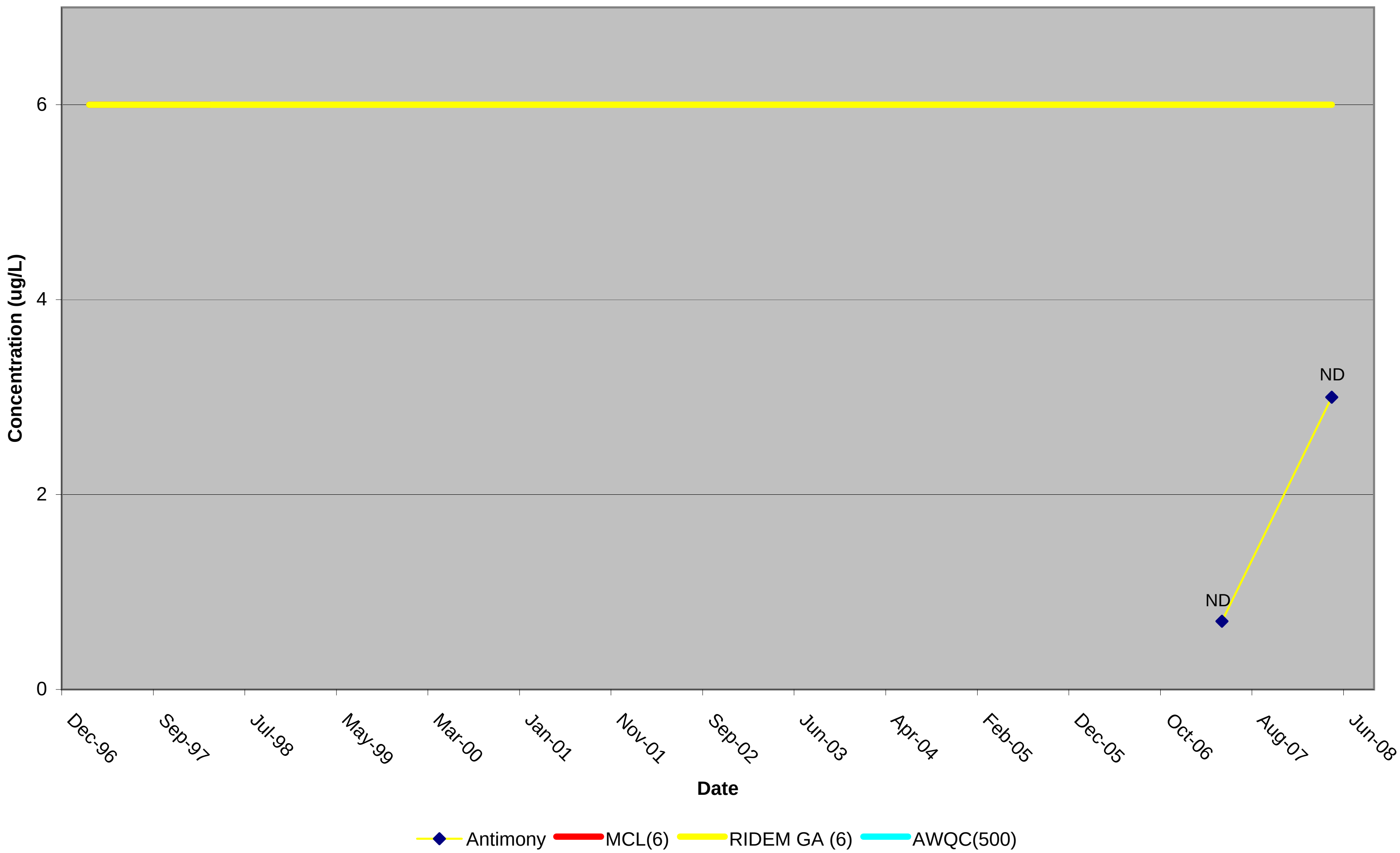
APPENDIX F-1: GROUNDWATER
FIGURE F-1.3-12

BIS(2-ETHYLHEXYL)PHTHALATE IN GROUNDWATER, MW103S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



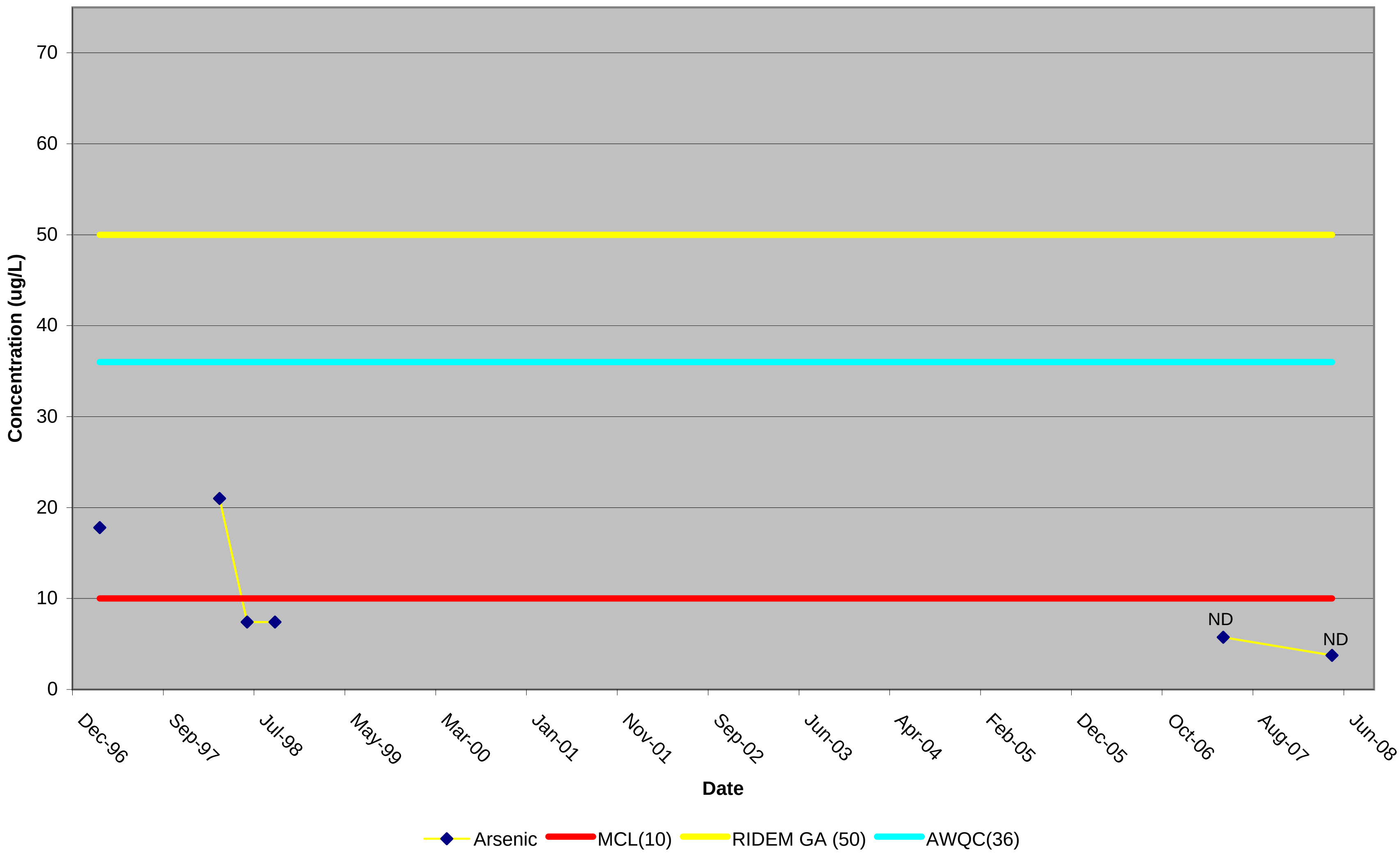
APPENDIX F-1: GROUNDWATER
FIGURE F-1.4-1

ANTIMONY IN GROUNDWATER, MW104S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



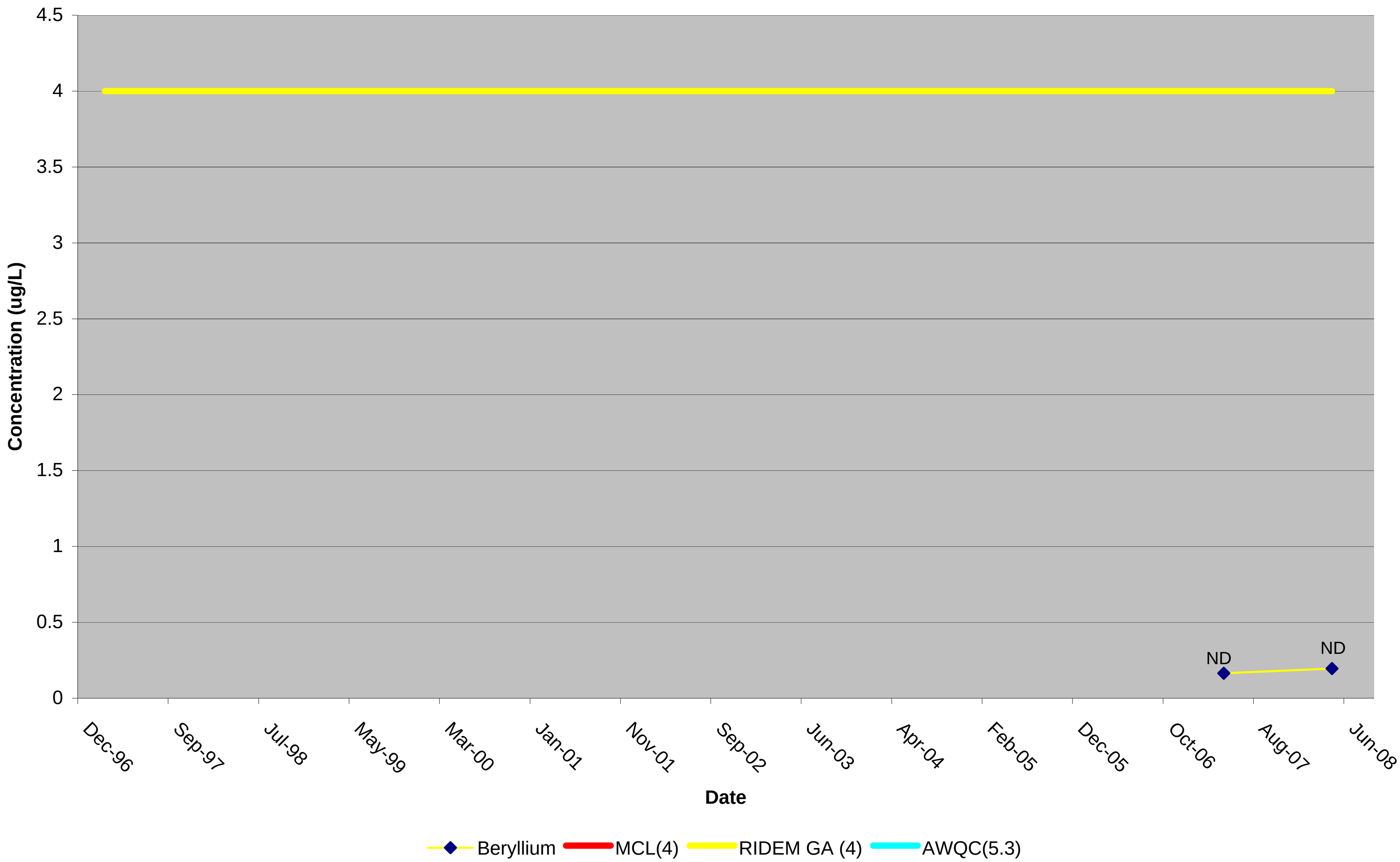
APPENDIX F-1: GROUNDWATER
FIGURE F-1.4-2

ARSENIC IN GROUNDWATER, MW104S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



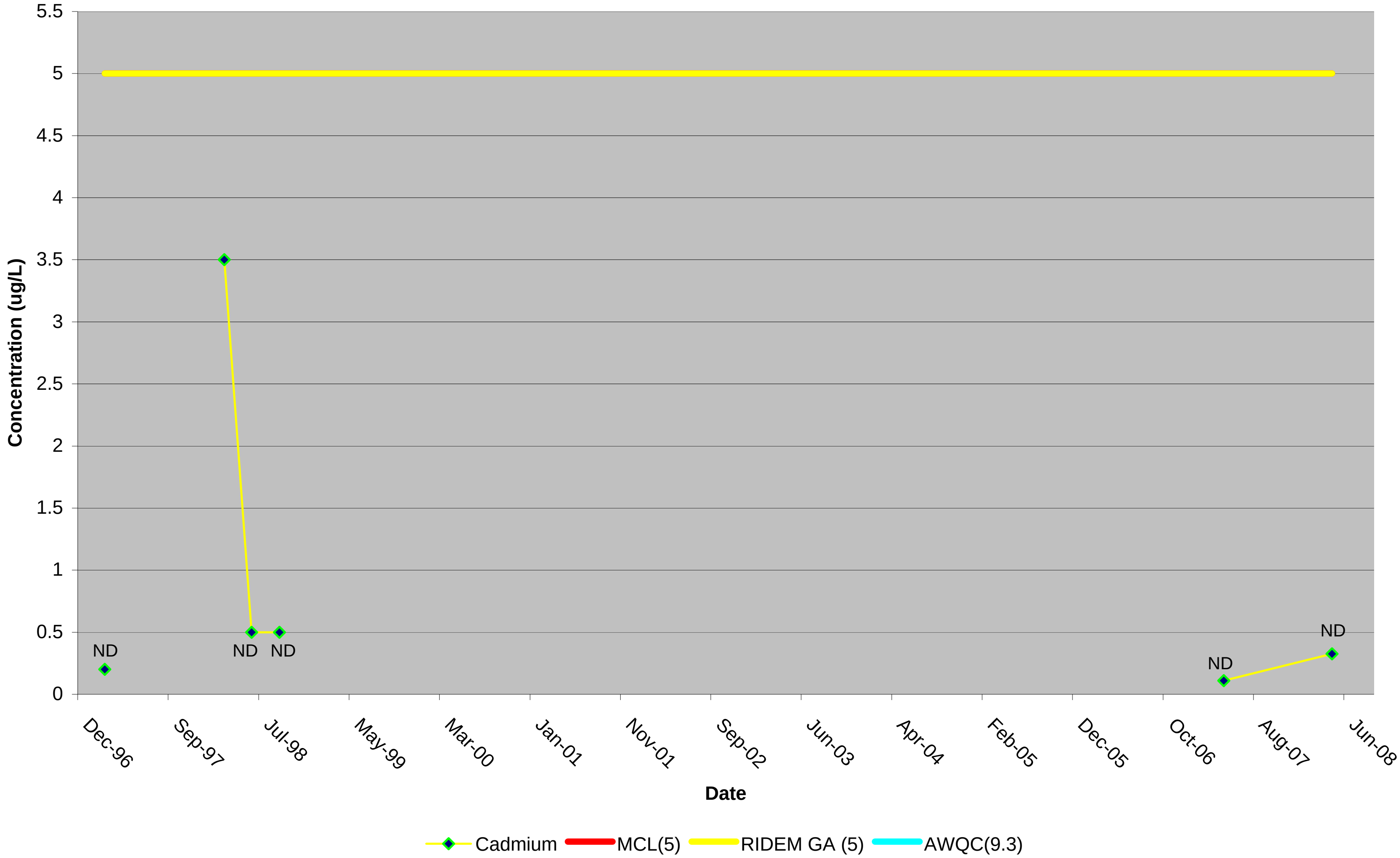
APPENDIX F-1: GROUNDWATER
FIGURE F-1.4-3

BERYLLIUM IN GROUNDWATER, MW104S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



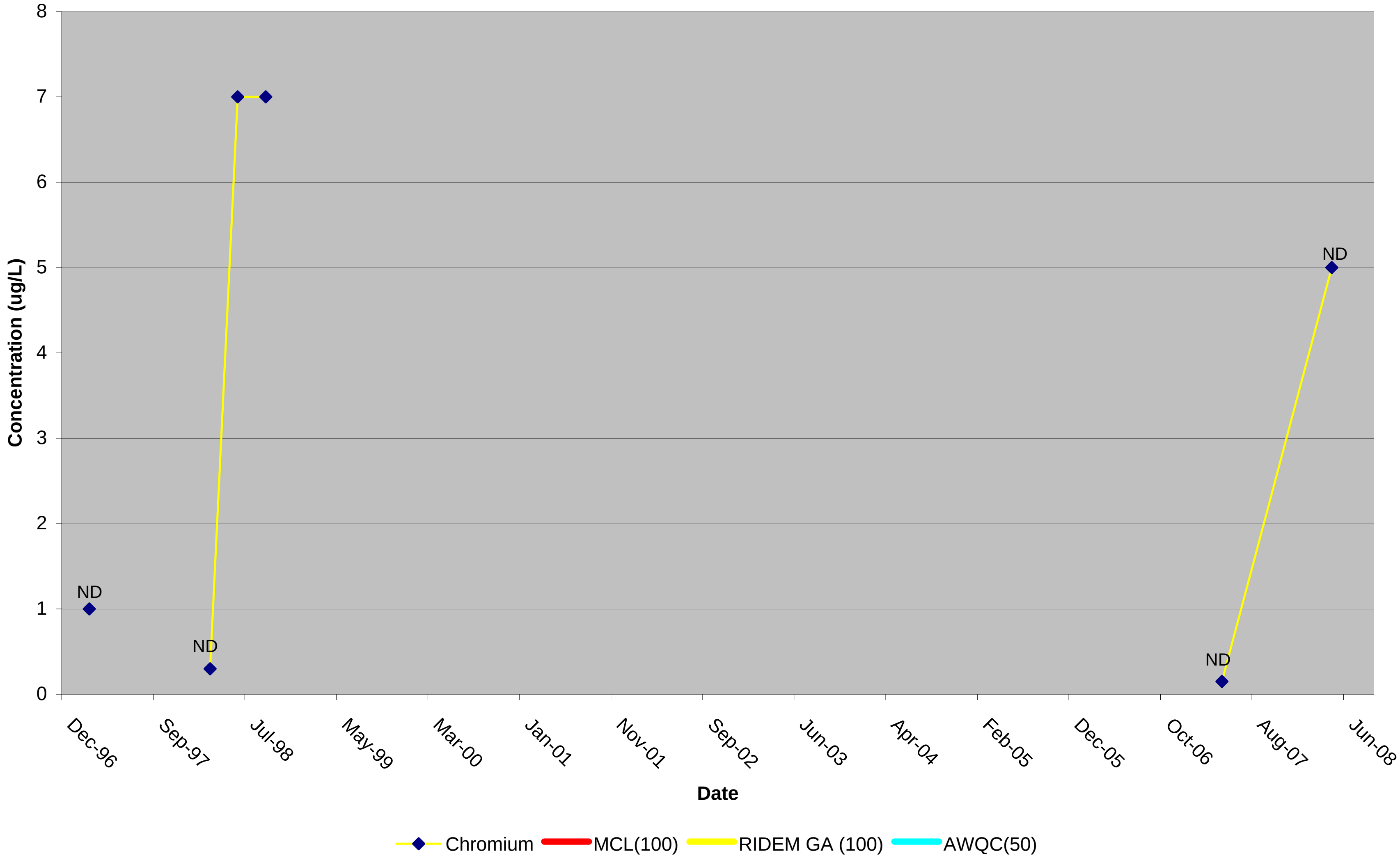
APPENDIX F-1: GROUNDWATER
FIGURE F-1.4-4

CADMIUM IN GROUNDWATER, MW104S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



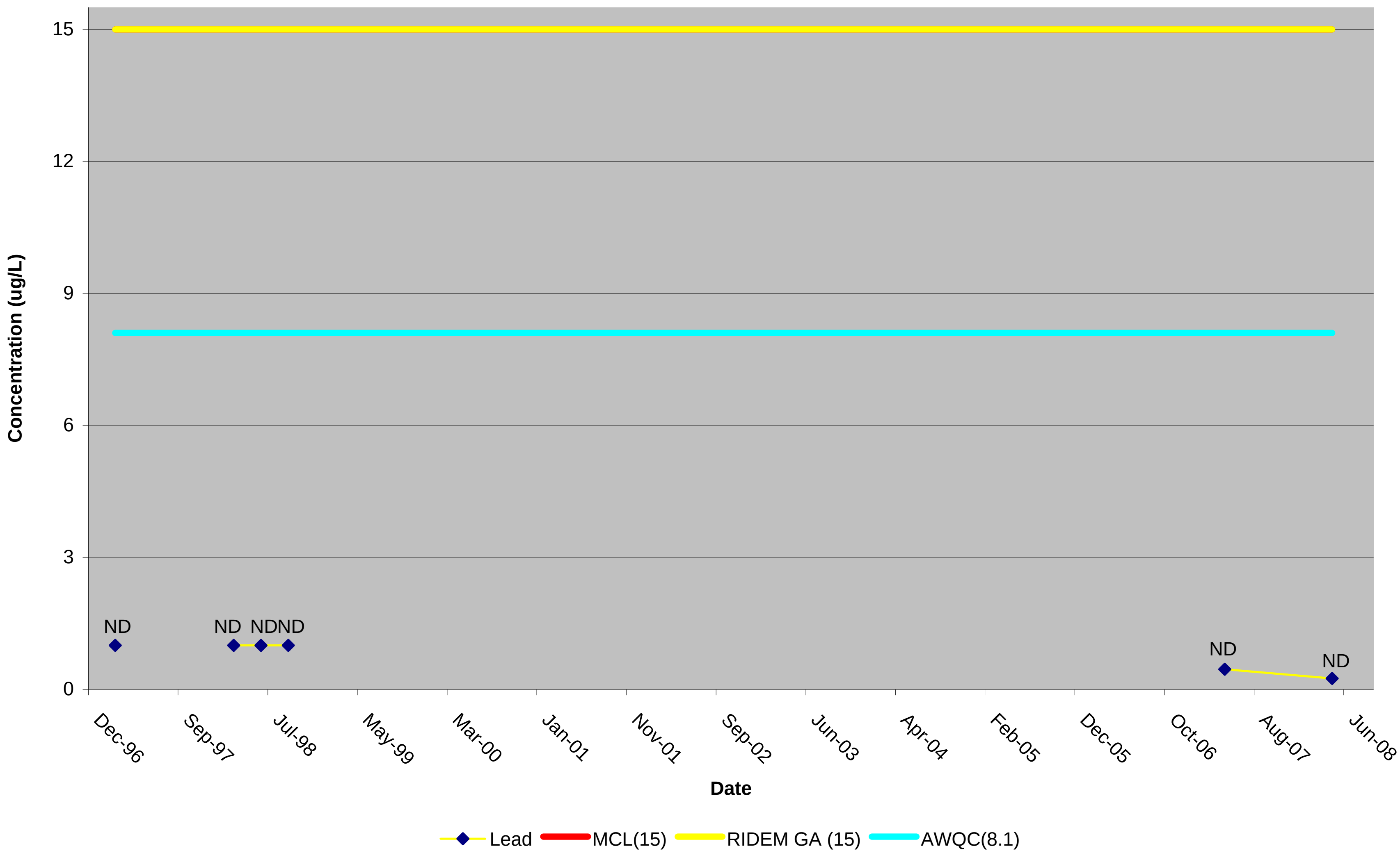
APPENDIX F-1: GROUNDWATER
FIGURE F-1.4-5

CHROMIUM IN GROUNDWATER, MW104S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



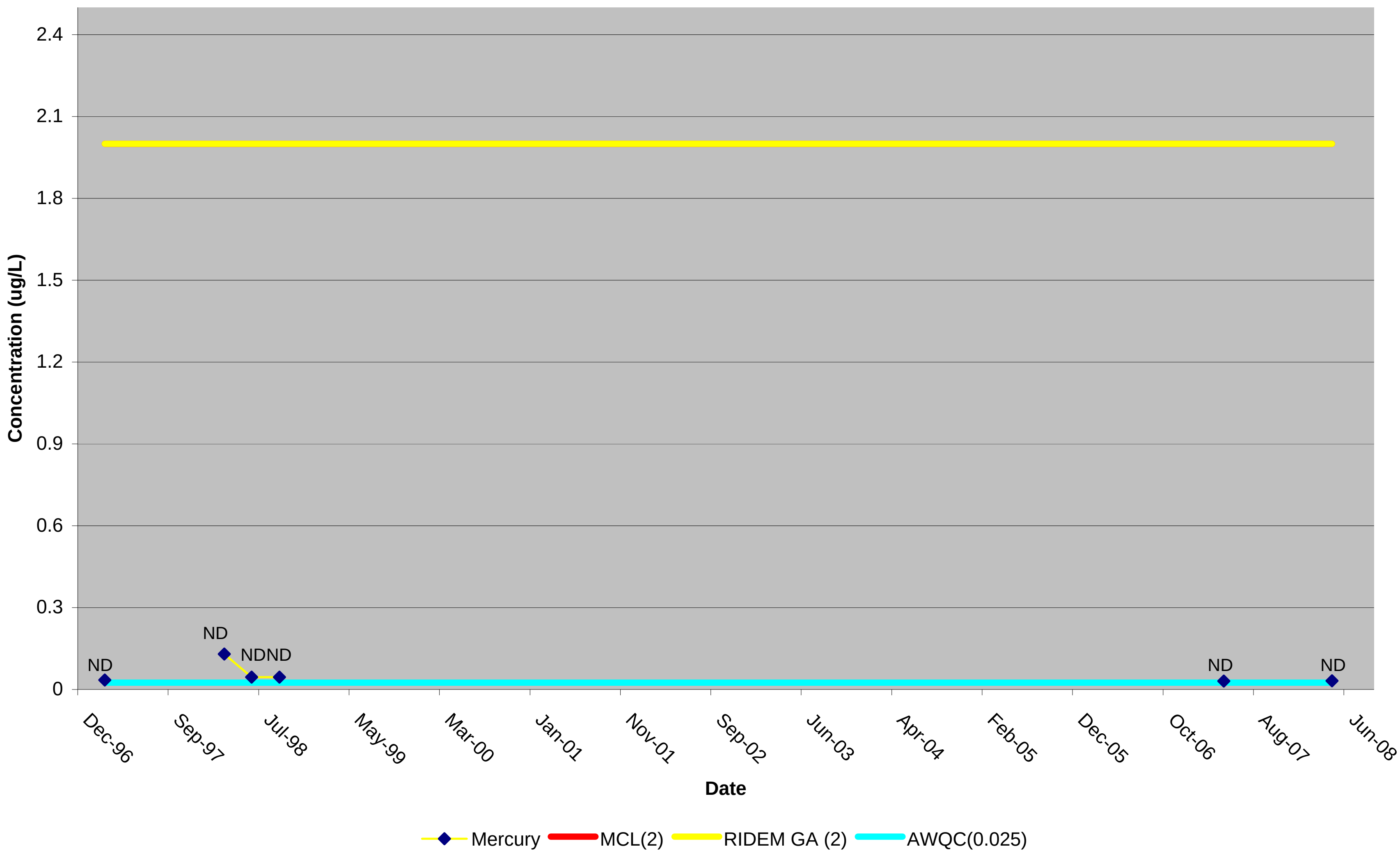
APPENDIX F-1: GROUNDWATER
FIGURE F-1.4-6

LEAD IN GROUNDWATER, MW104S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



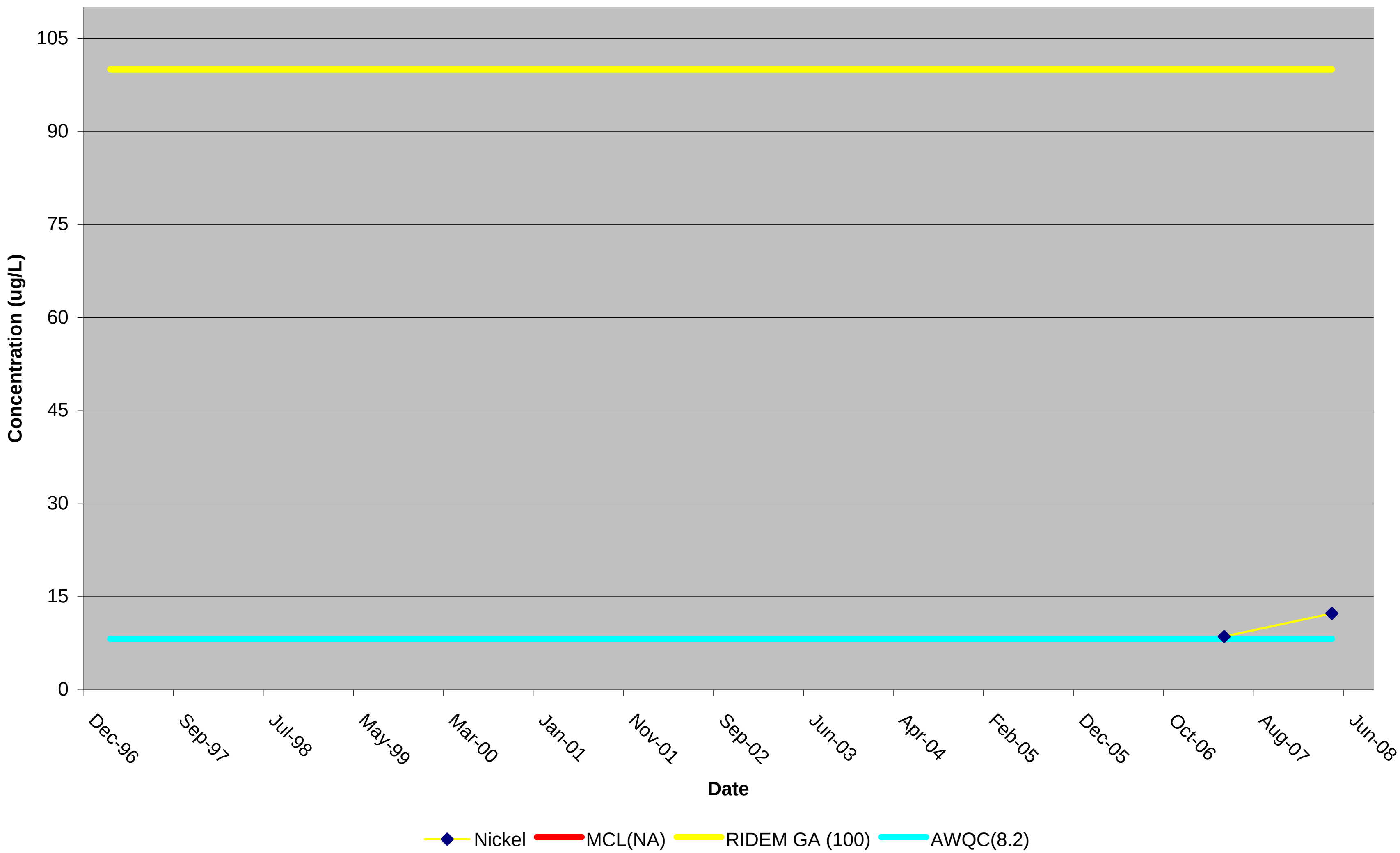
APPENDIX F-1: GROUNDWATER
FIGURE F-1.4-7

MERCURY IN GROUNDWATER, MW104S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



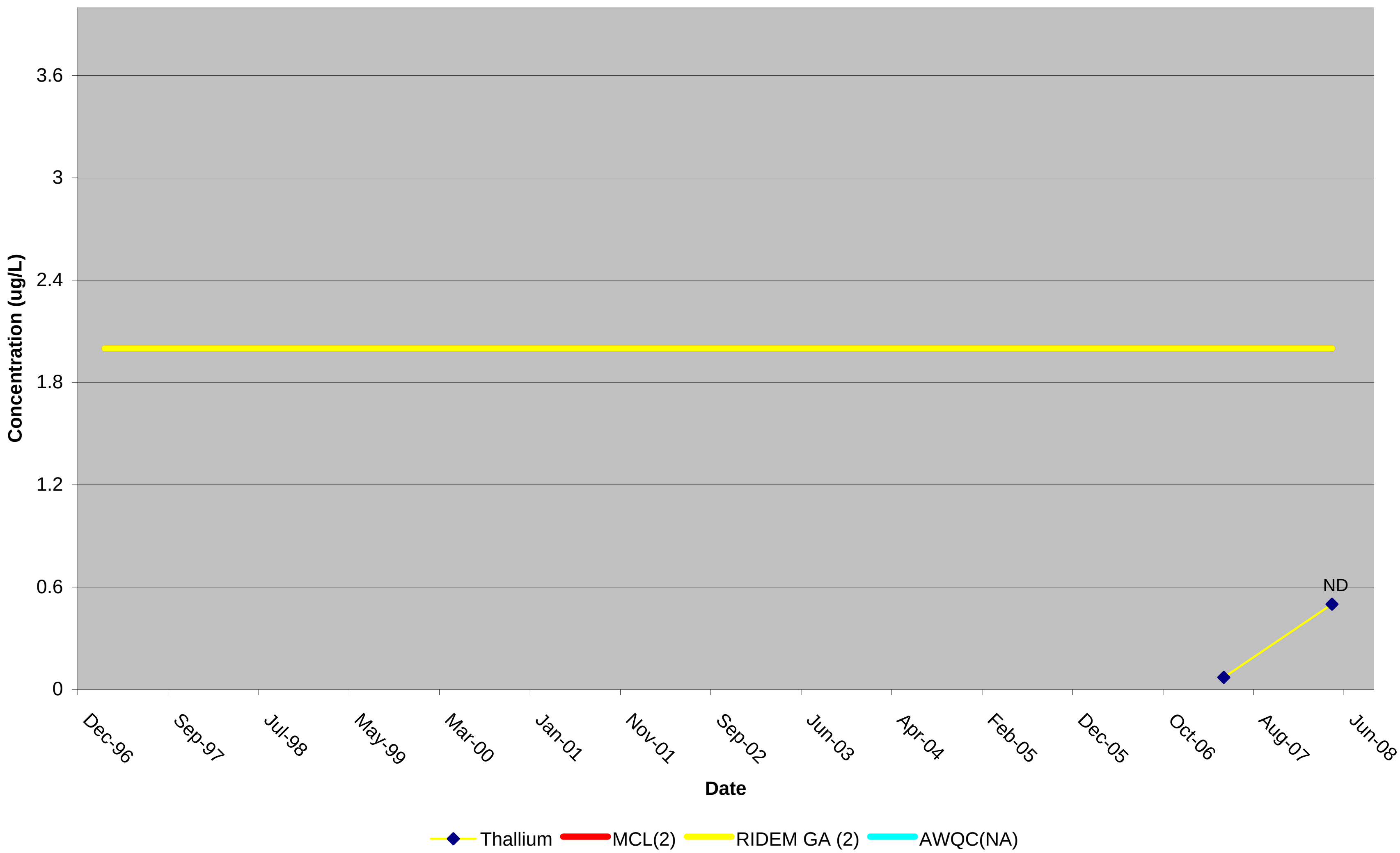
APPENDIX F-1: GROUNDWATER
FIGURE F-1.4-8

NICKEL IN GROUNDWATER, MW104S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



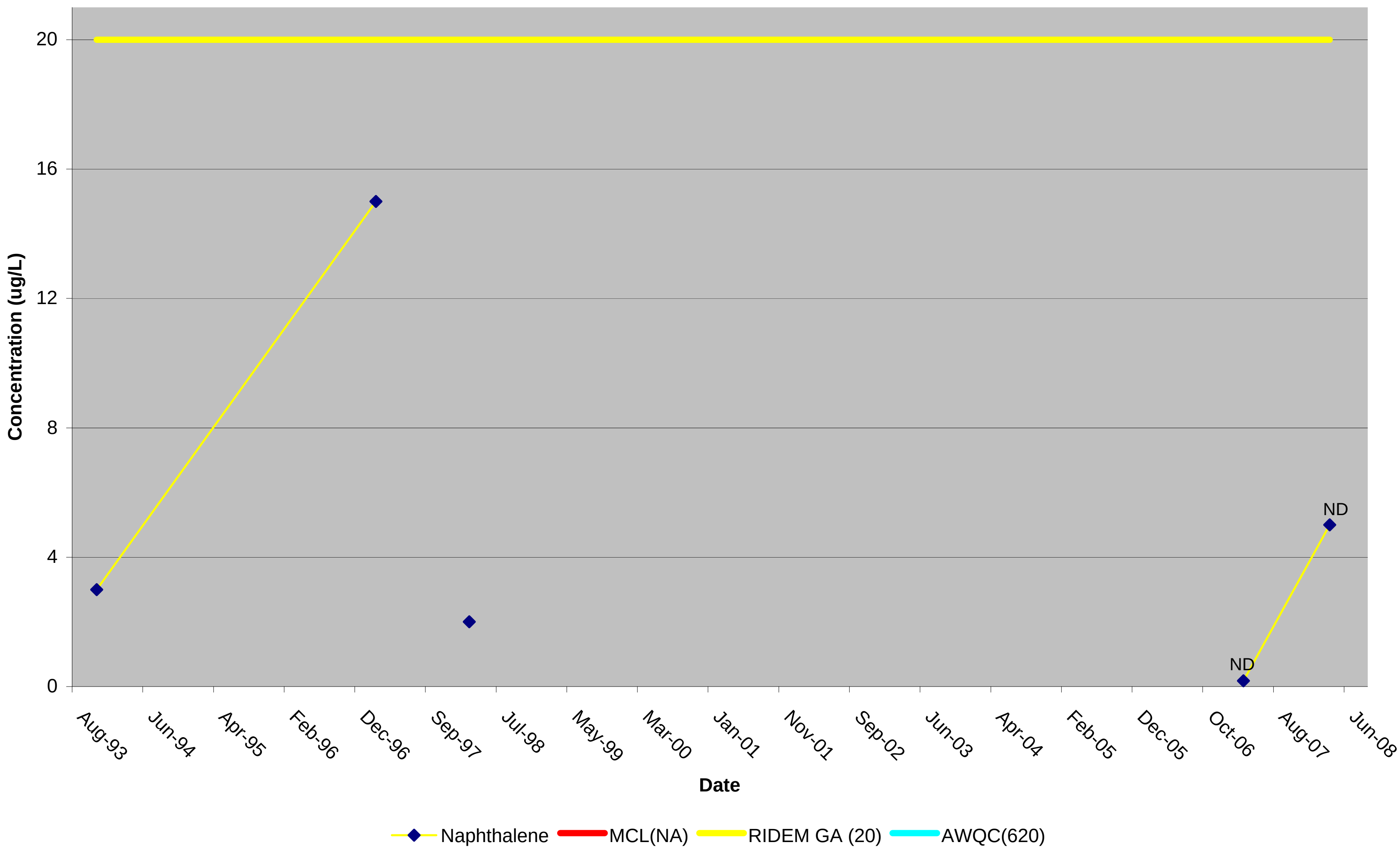
APPENDIX F-1: GROUNDWATER
FIGURE F-1.4-9

THALLIUM IN GROUNDWATER, MW104S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



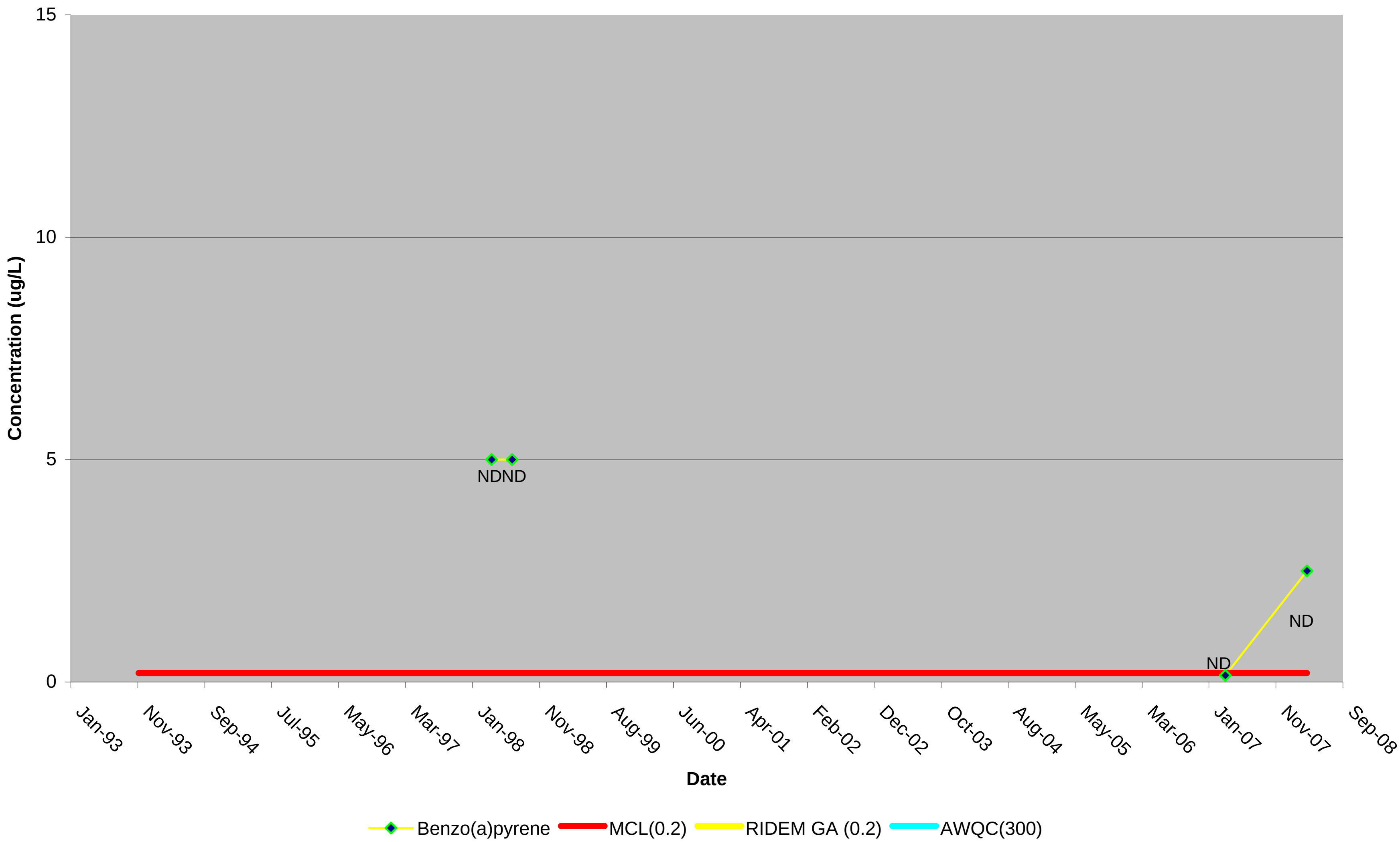
APPENDIX F-1: GROUNDWATER
FIGURE F-1.4-10

NAPHTHALENE IN GROUNDWATER, MW104S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



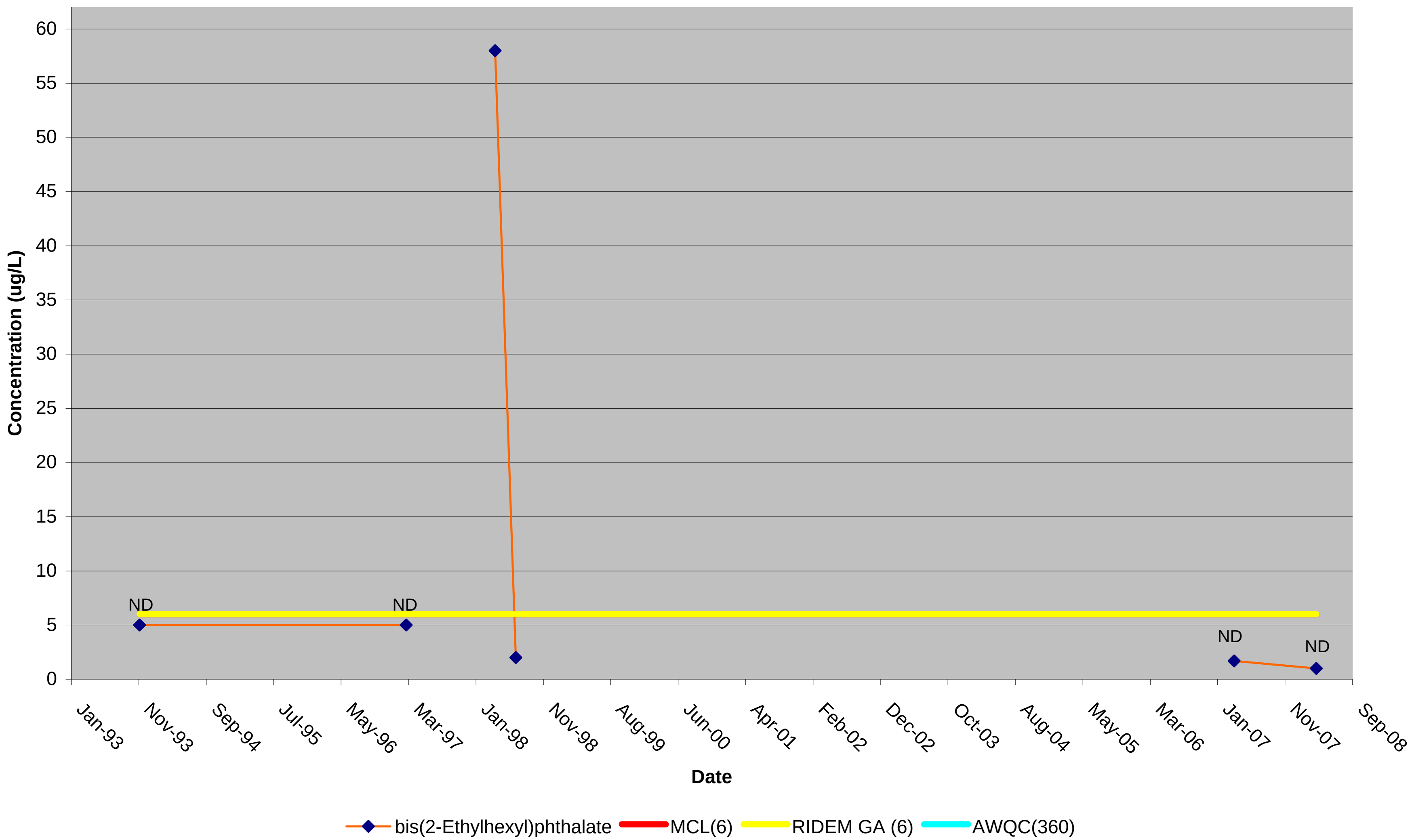
APPENDIX F-1: GROUNDWATER
FIGURE F-1.4-11

BENZO(A)PYRENE IN GROUNDWATER, MW104S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



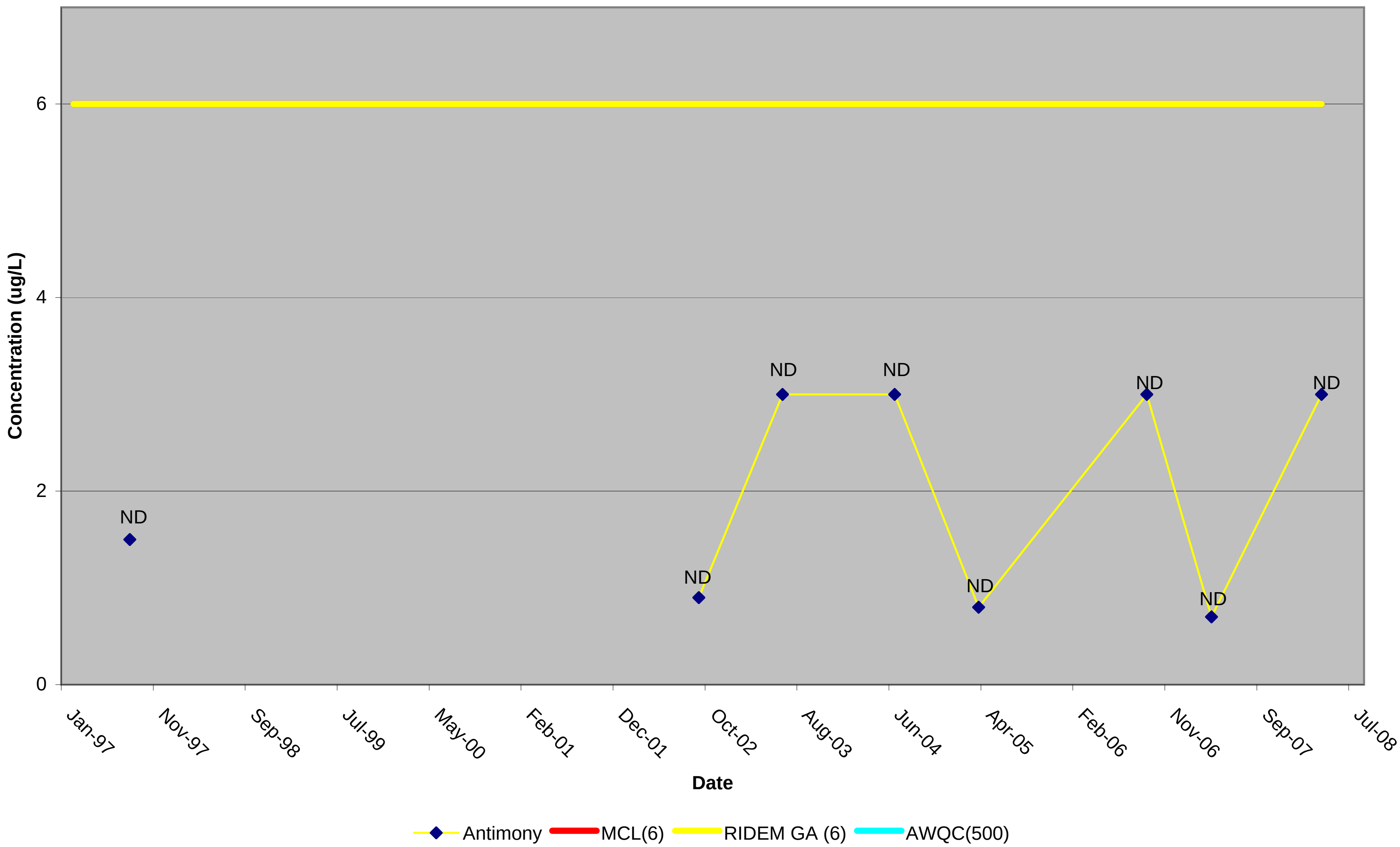
APPENDIX F-1: GROUNDWATER
FIGURE F-1.4-12

BIS(2-ETHYLHEXYL)PHTHALATE IN GROUNDWATER, MW104S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



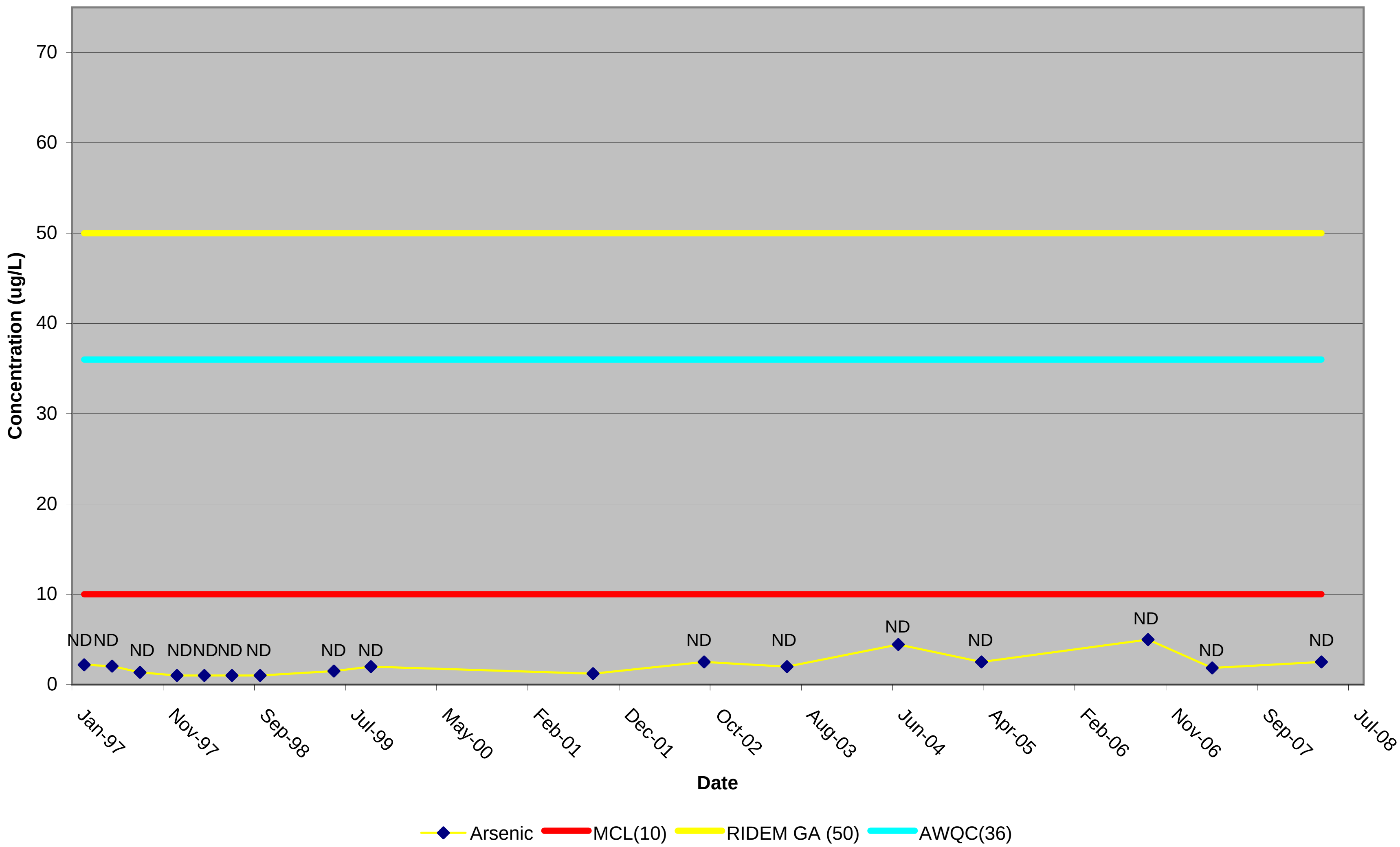
APPENDIX F-1: GROUNDWATER
FIGURE F-1.5-1

ANTIMONY IN GROUNDWATER, MW105R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



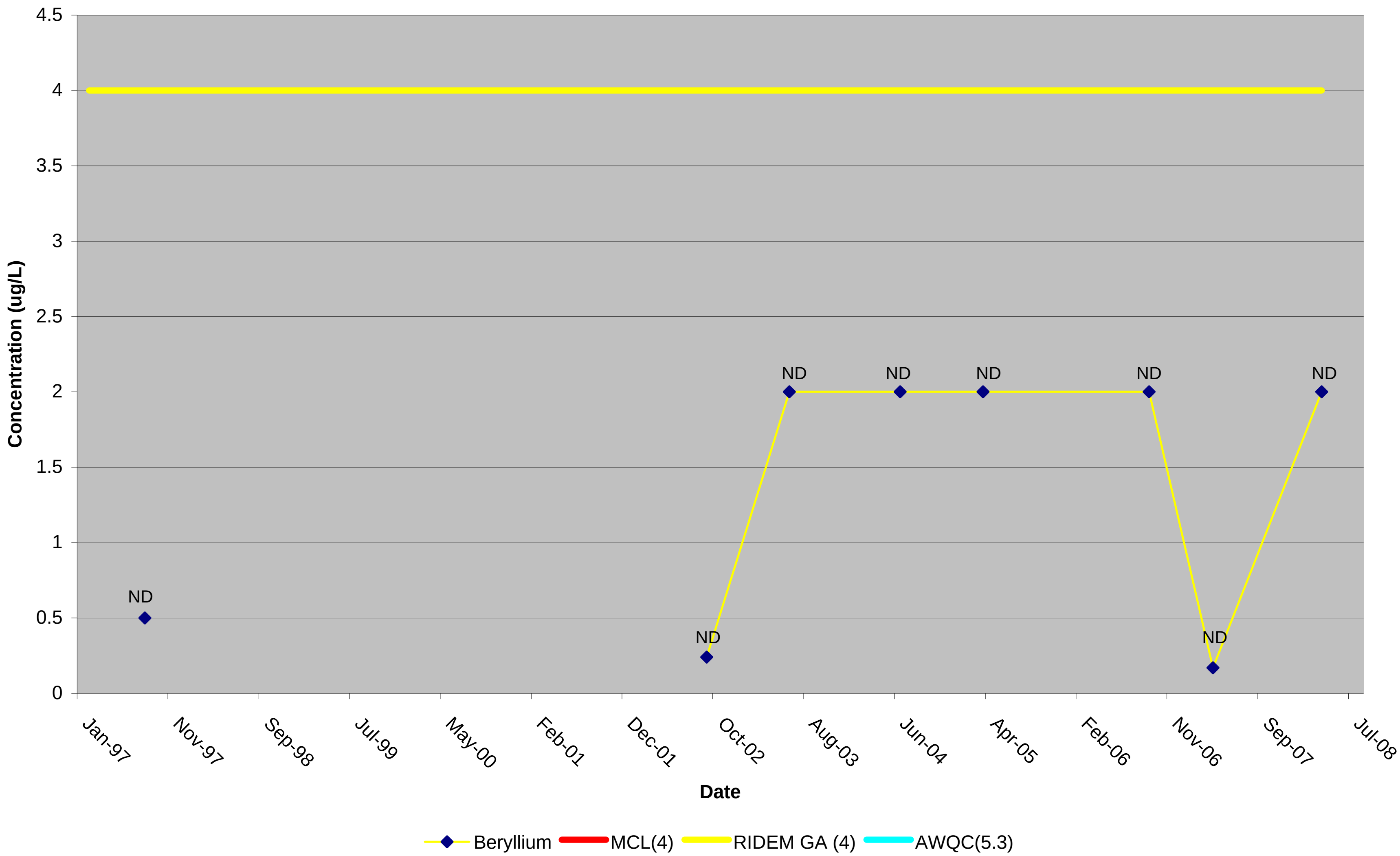
APPENDIX F-1: GROUNDWATER
FIGURE F-1.5-2

ARSENIC IN GROUNDWATER, MW105R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



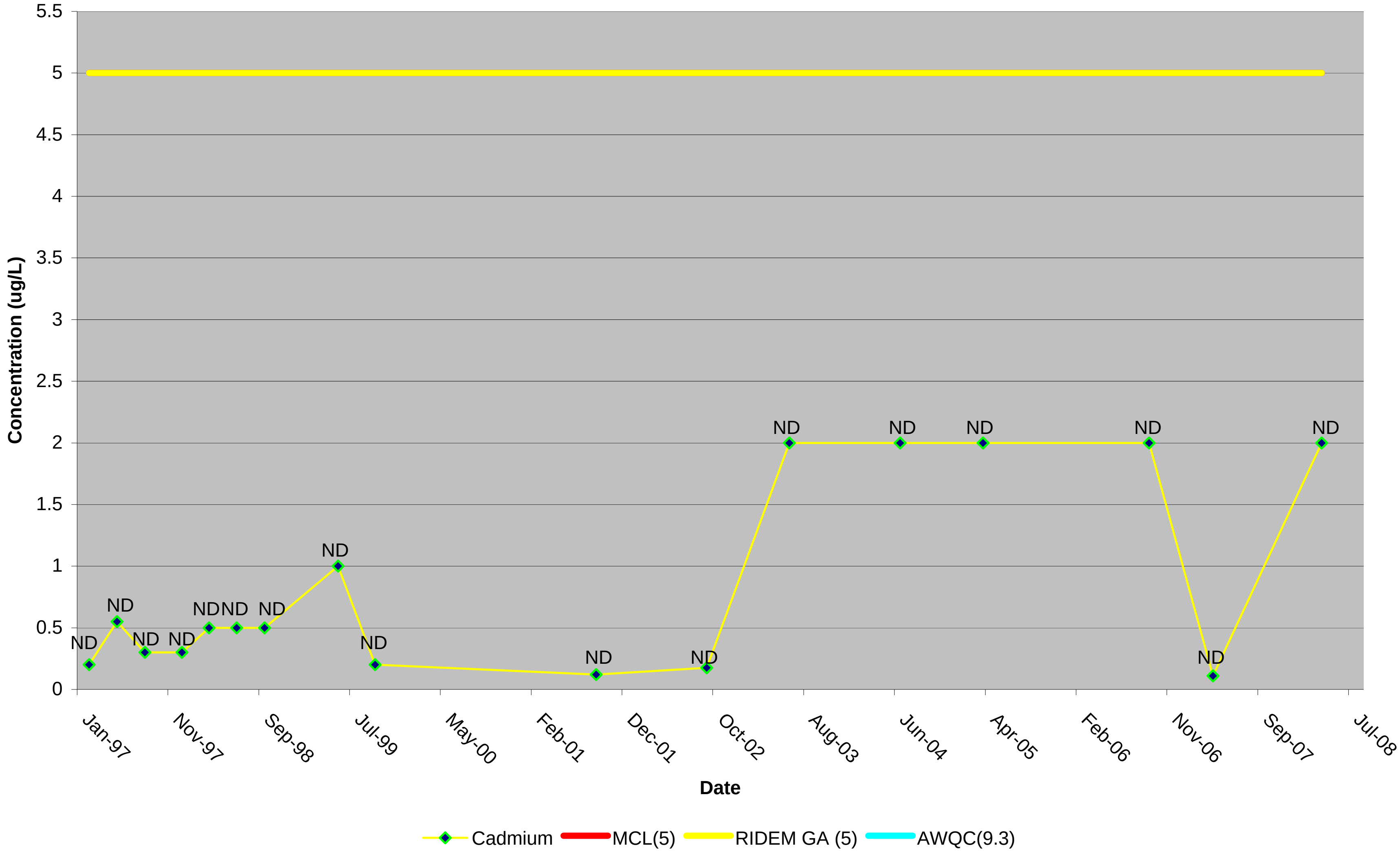
APPENDIX F-1: GROUNDWATER
FIGURE F-1.5-3

BERYLLIUM IN GROUNDWATER, MW105R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



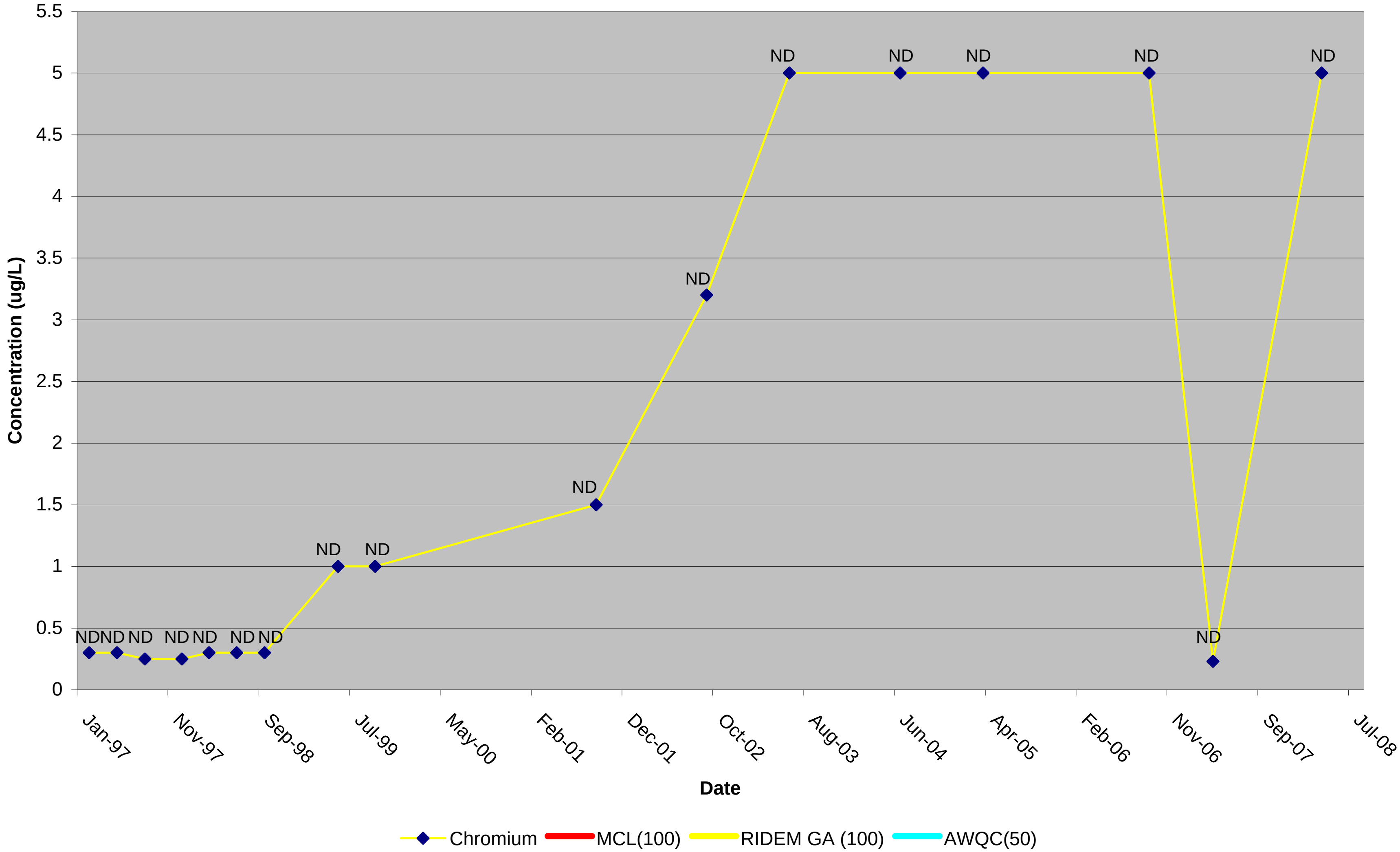
APPENDIX F-1: GROUNDWATER
FIGURE F-1.5-4

CADMIUM IN GROUNDWATER, MW105R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



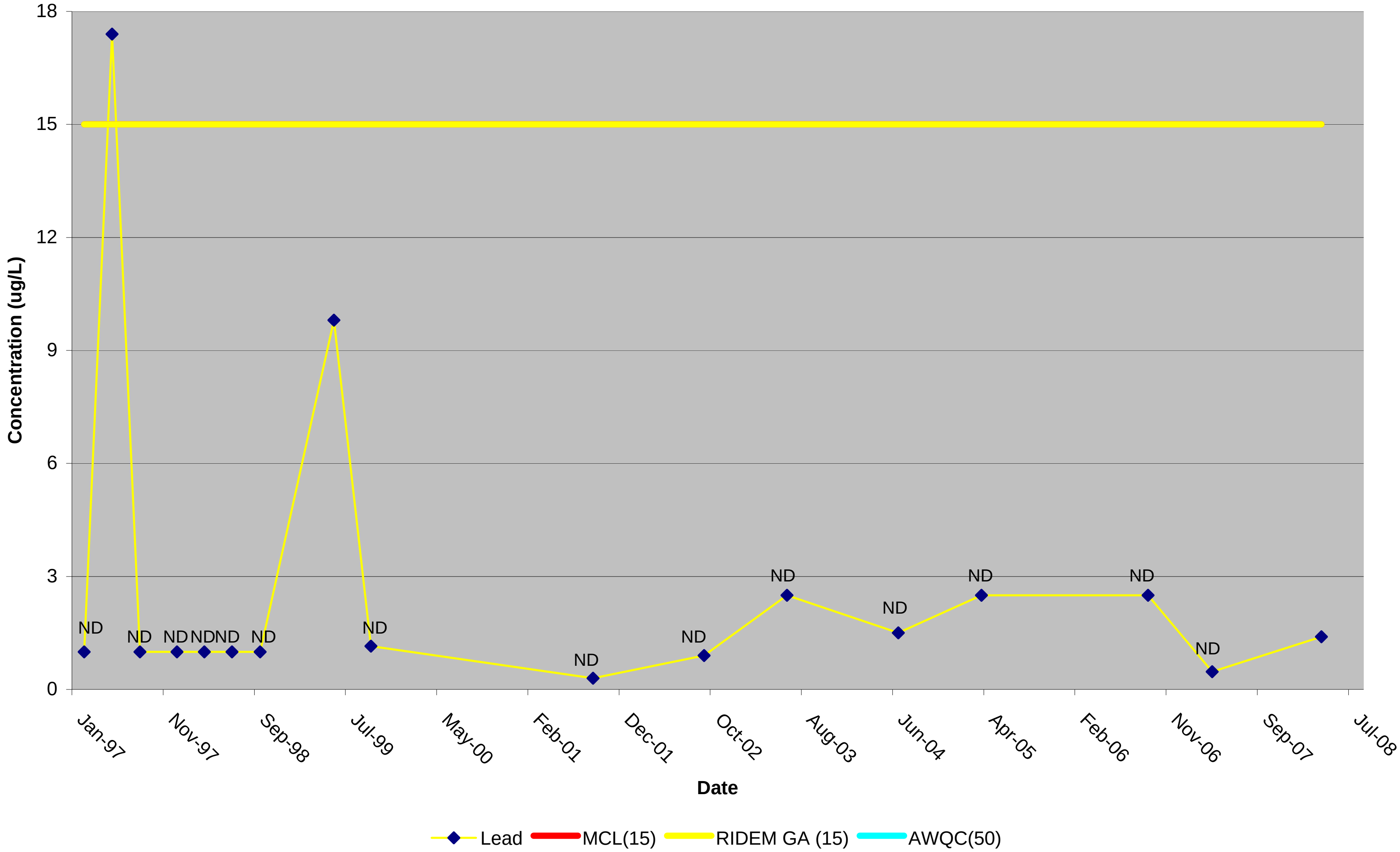
APPENDIX F-1: GROUNDWATER
FIGURE F-1.5-5

CHROMIUM IN GROUNDWATER, MW105R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



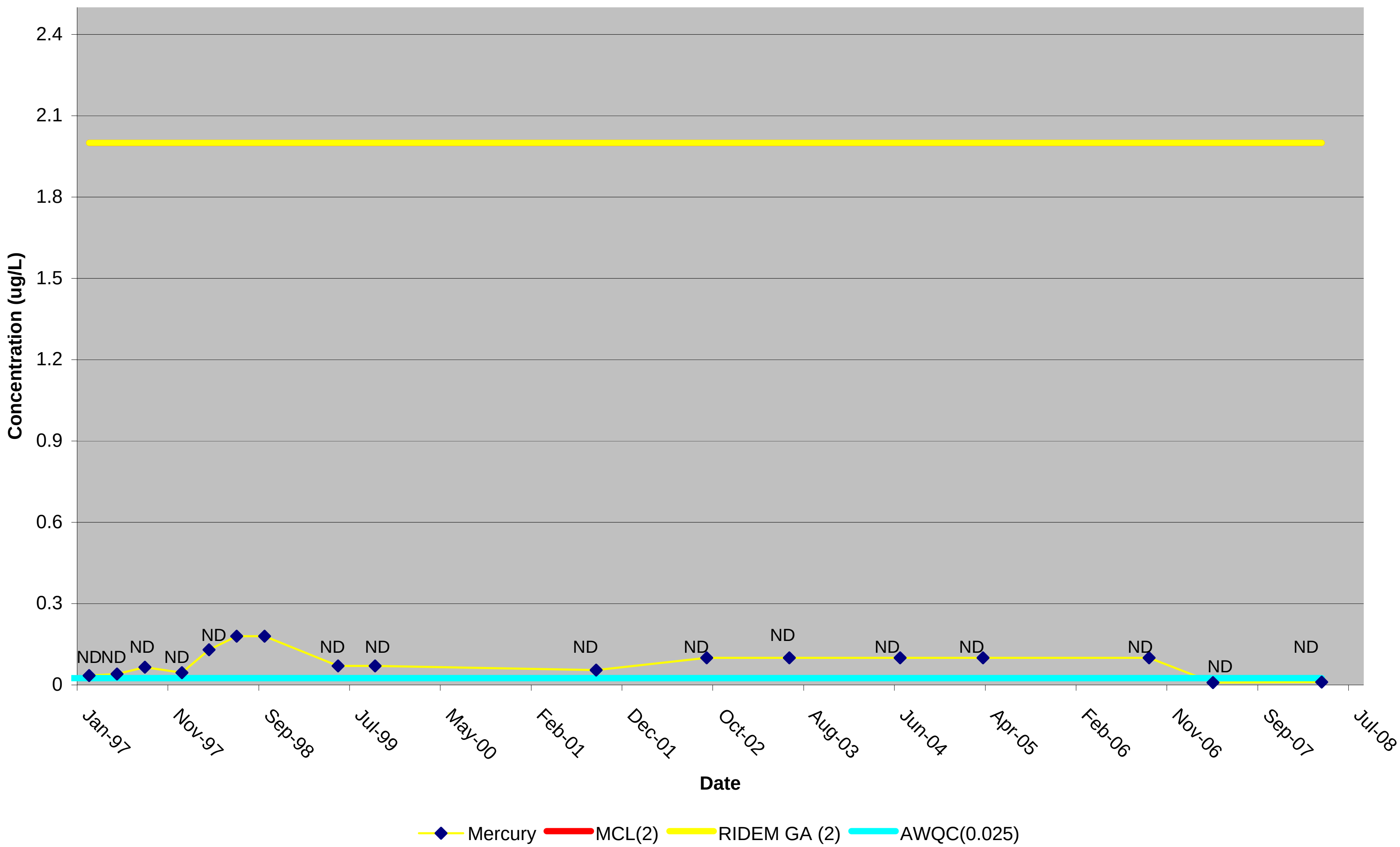
APPENDIX F-1: GROUNDWATER
FIGURE F-1.5-6

LEAD IN GROUNDWATER, MW105R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



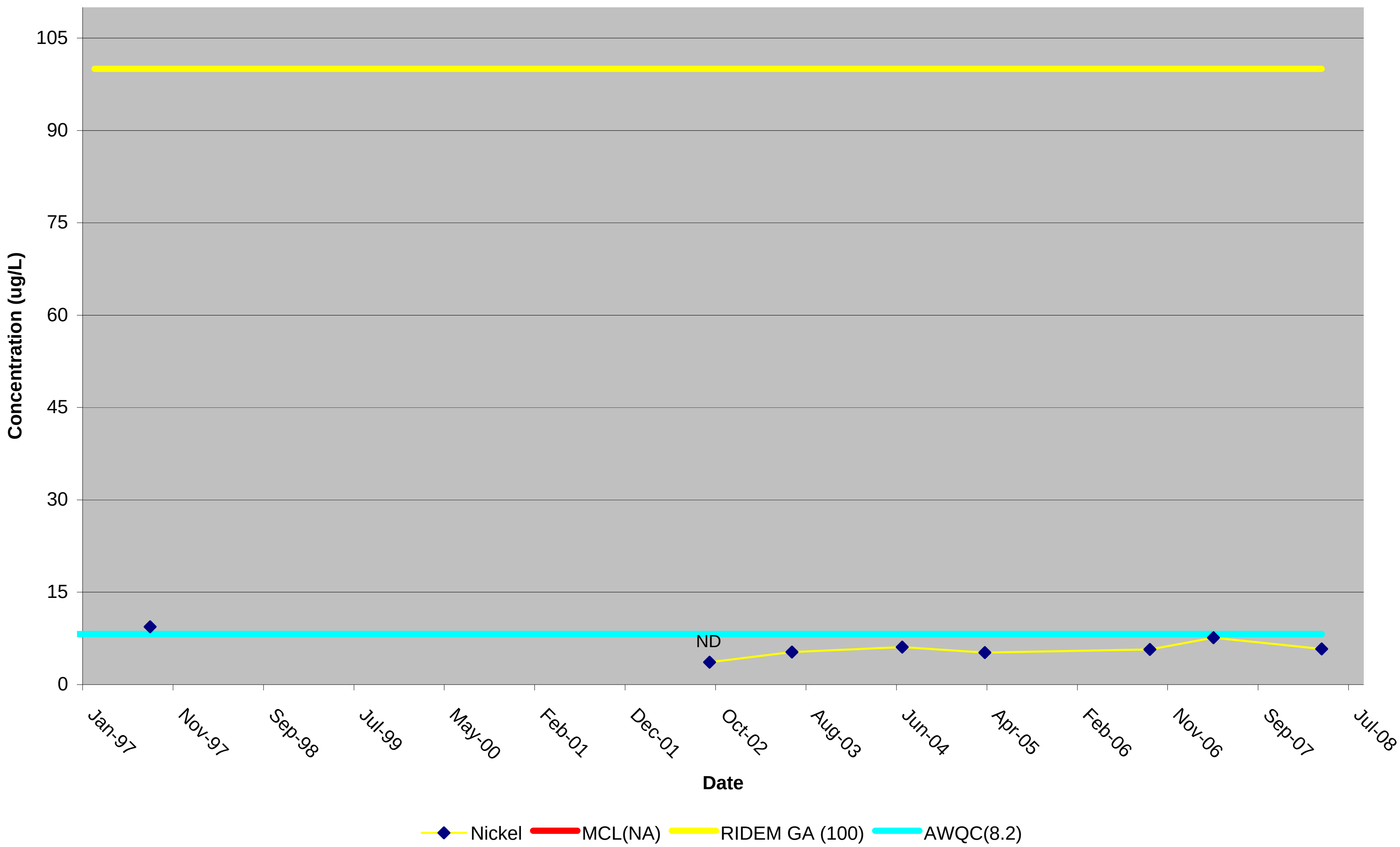
APPENDIX F-1: GROUNDWATER
FIGURE F-1.5-7

MERCURY IN GROUNDWATER, MW105R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



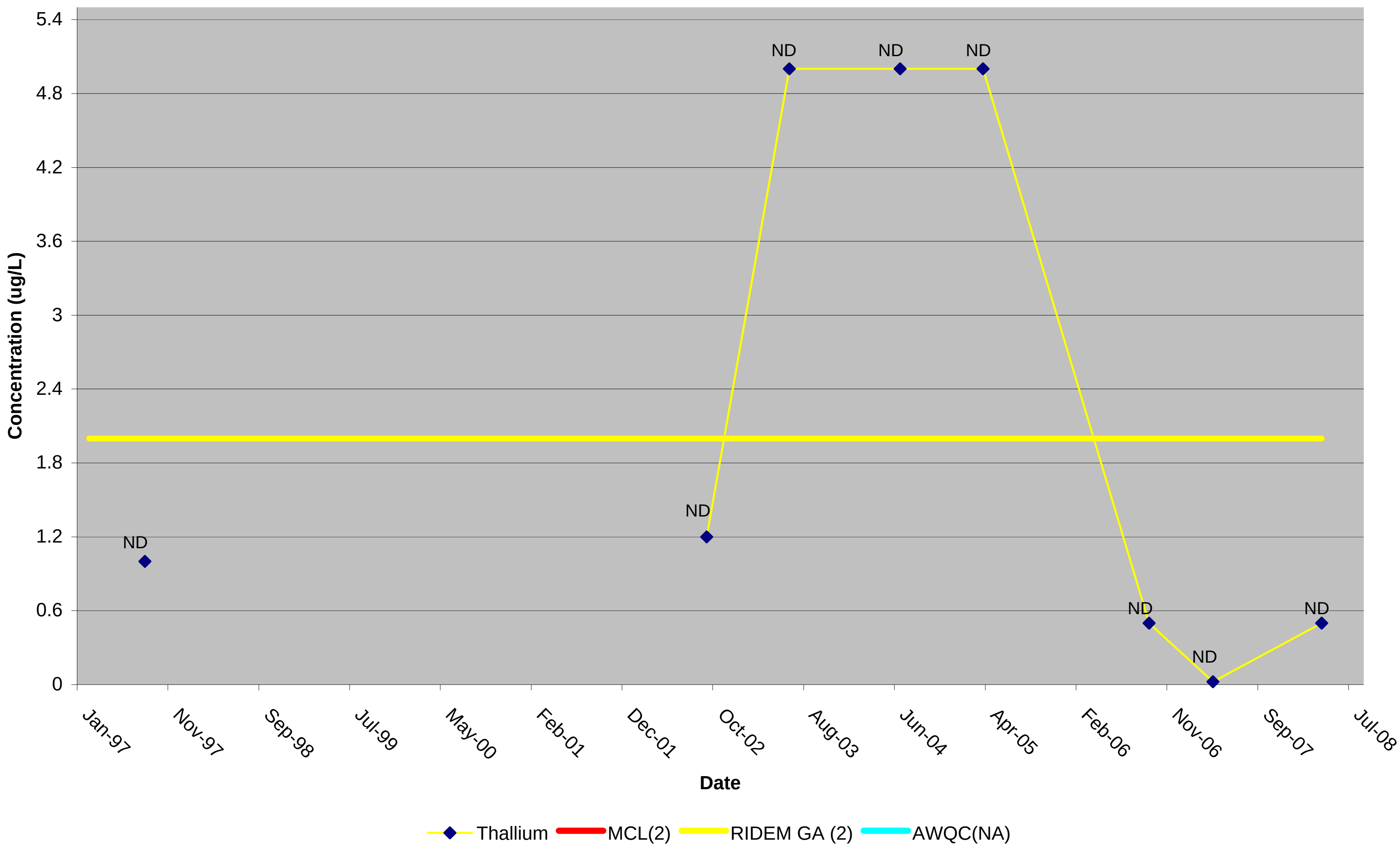
APPENDIX F-1: GROUNDWATER
FIGURE F-1.5-8

NICKEL IN GROUNDWATER, MW105R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



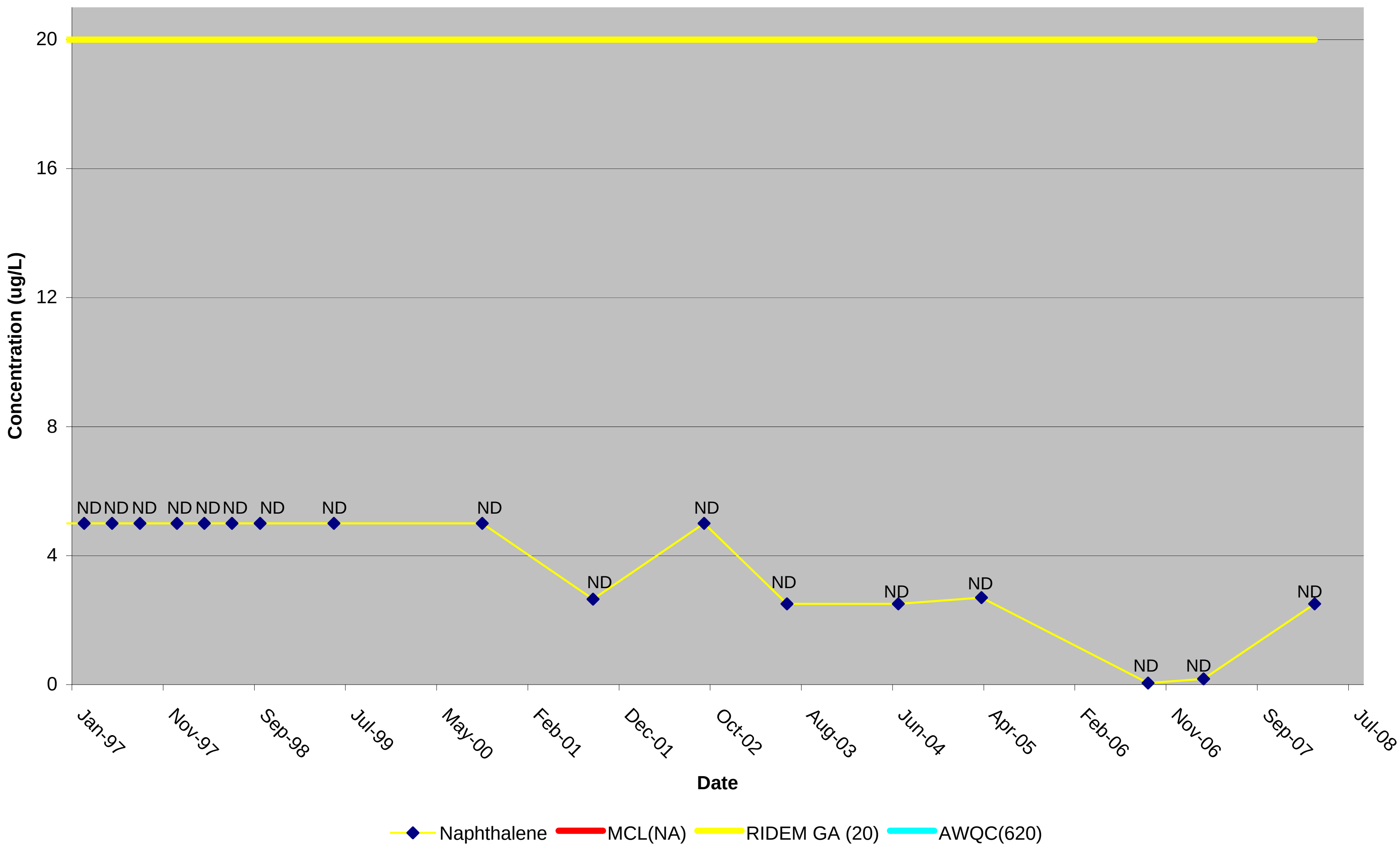
APPENDIX F-1: GROUNDWATER
FIGURE F-1.5-9

THALLIUM IN GROUNDWATER, MW105R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



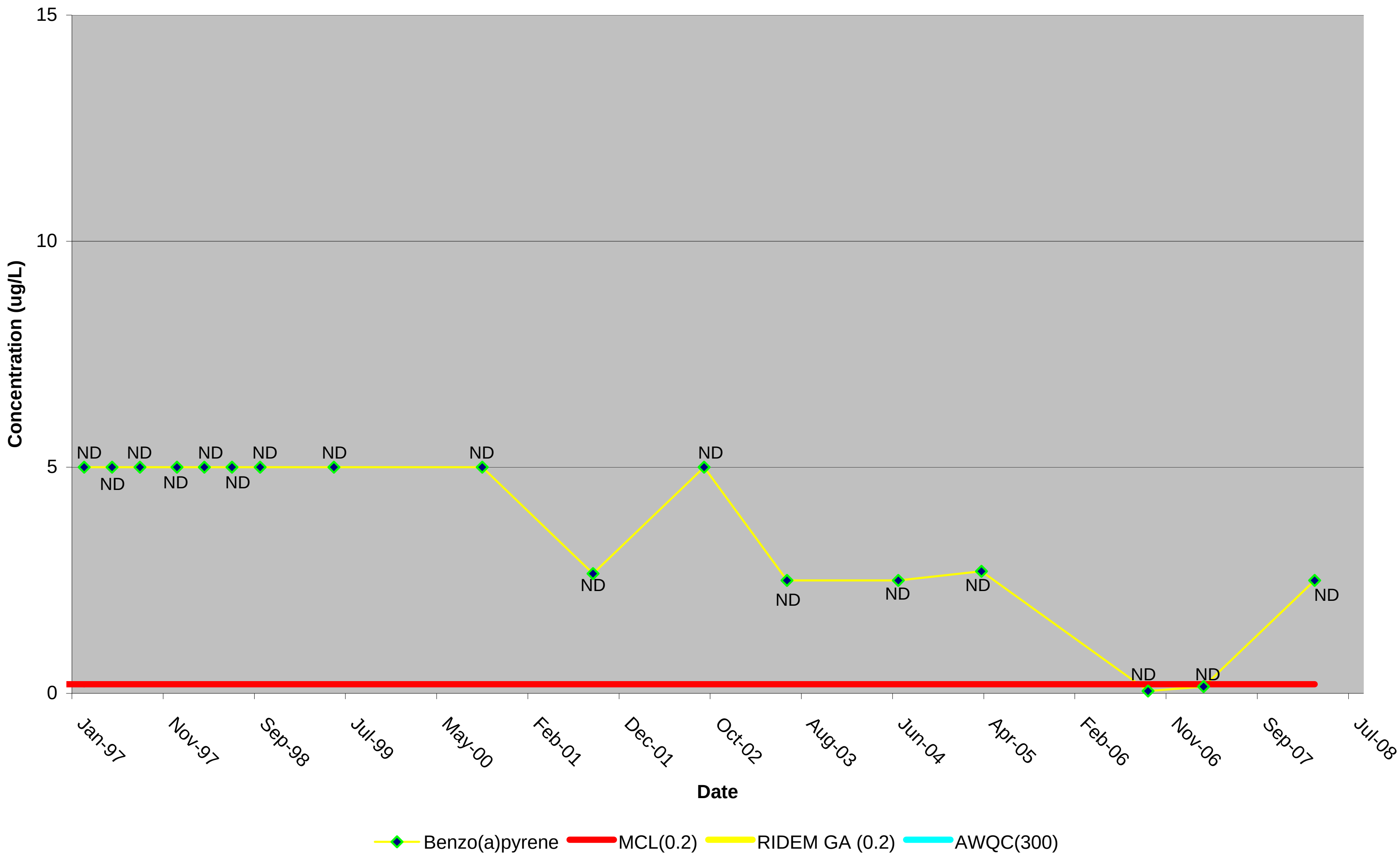
APPENDIX F-1: GROUNDWATER
FIGURE F-1.5-10

NAPTHALENE IN GROUNDWATER, MW105R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



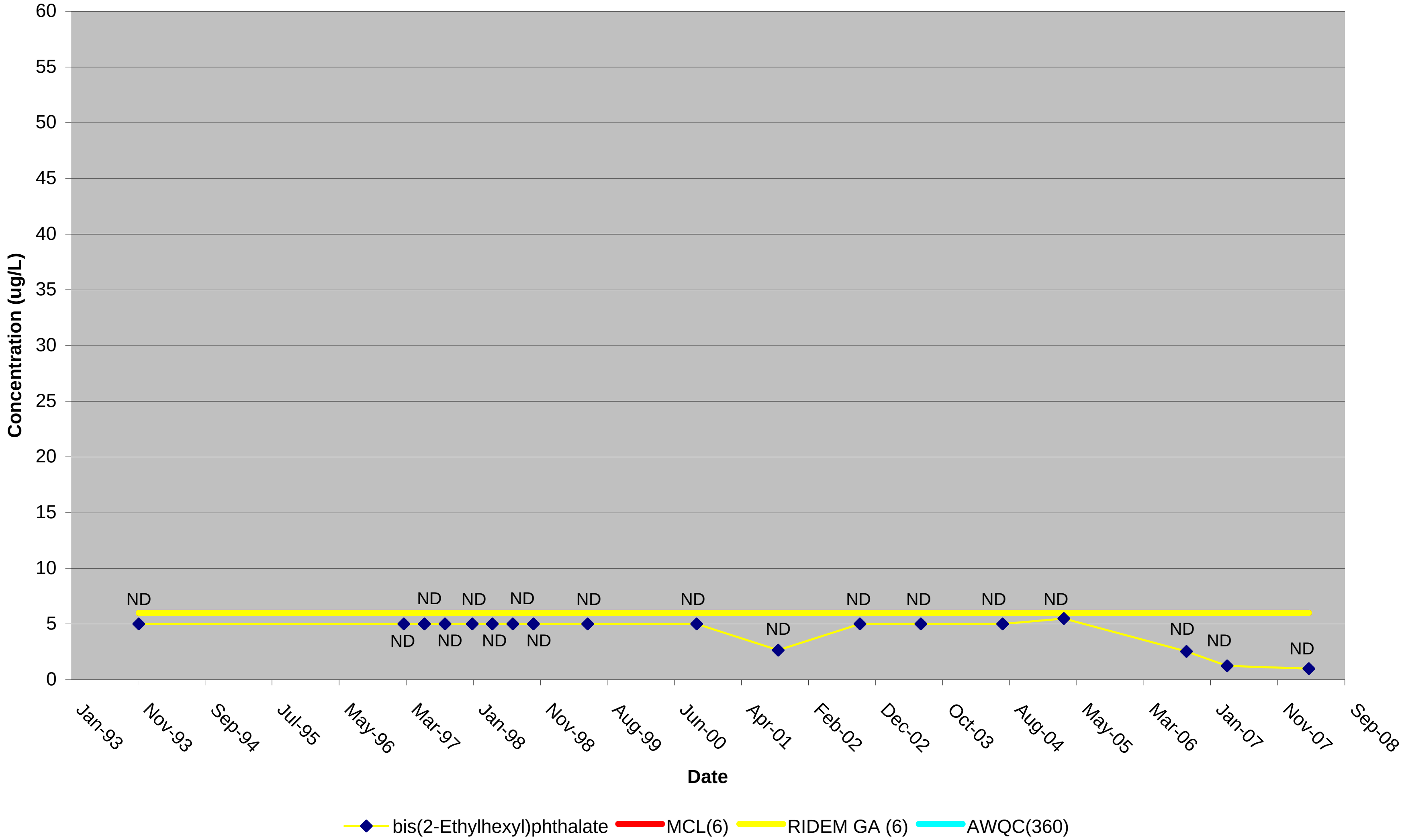
APPENDIX F-1: GROUNDWATER
FIGURE F-1.5-11

BENZO(A)PYRENE IN GROUNDWATER, MW105R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



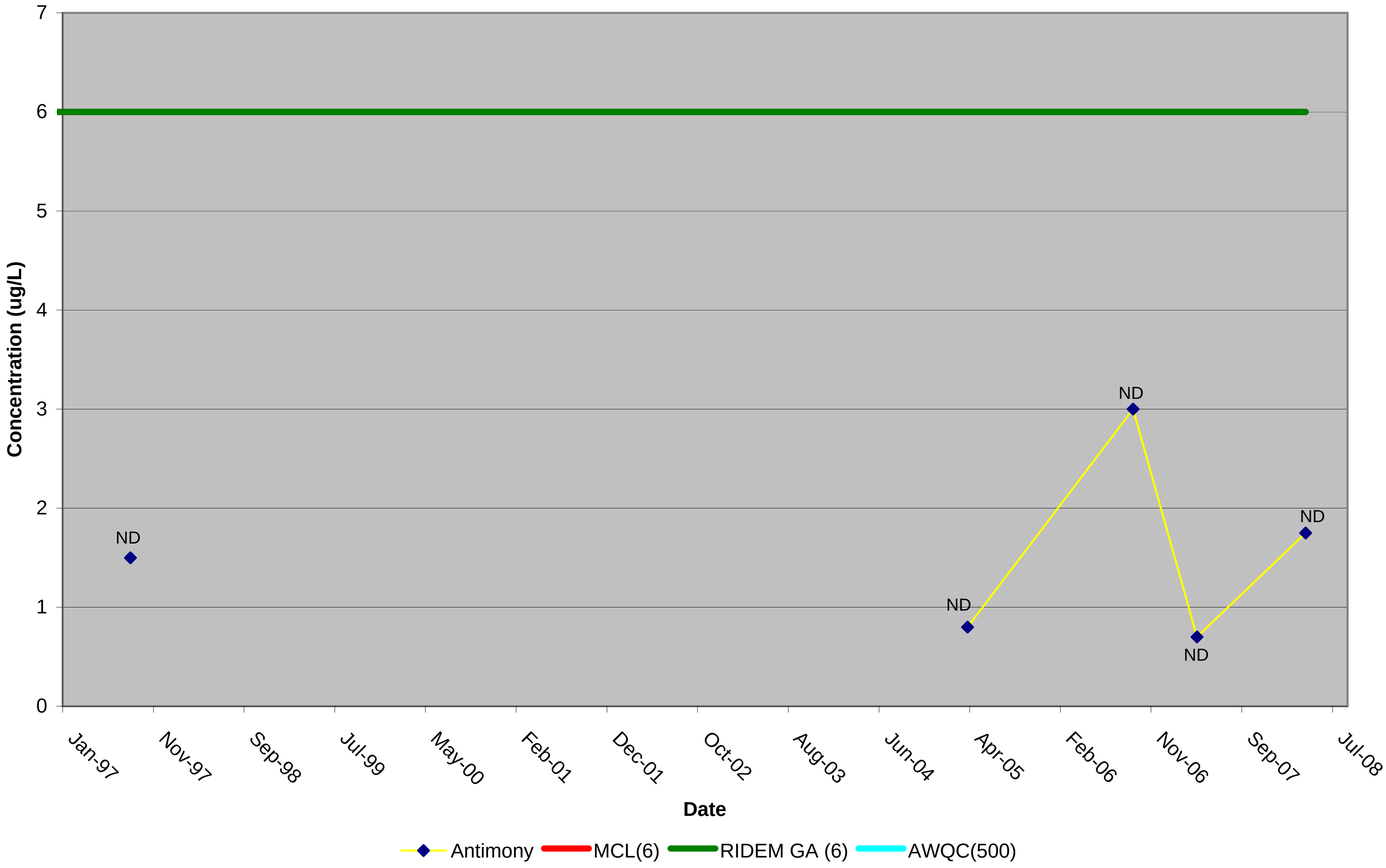
APPENDIX F-1: GROUNDWATER
FIGURE F-1.5-12

BIS(2-ETHYLHEXYL)PHTHALATE IN GROUNDWATER, MW105R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



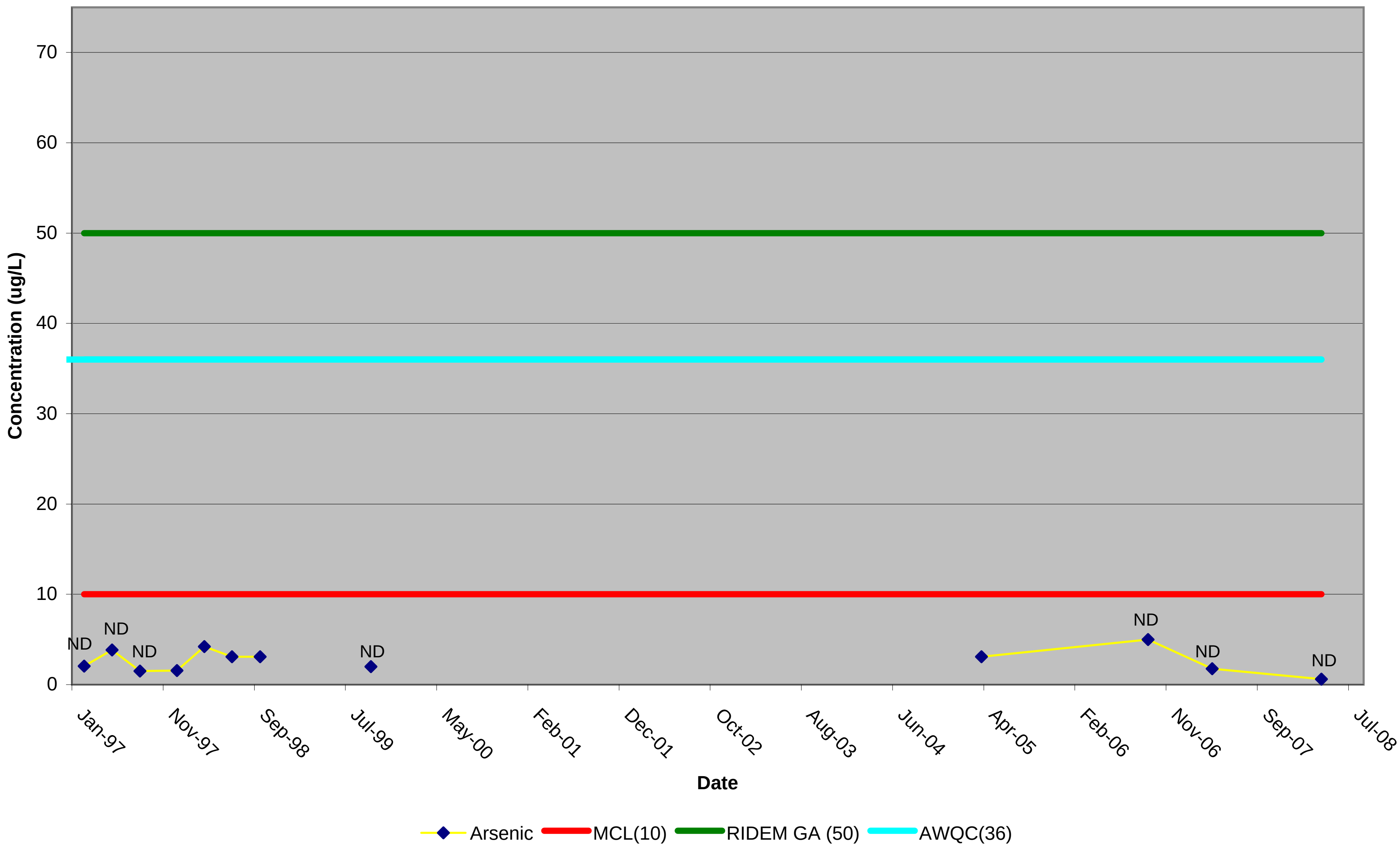
APPENDIX F-1: GROUNDWATER
FIGURE F-1.6-1

ANTIMONY IN GROUNDWATER, MW105S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



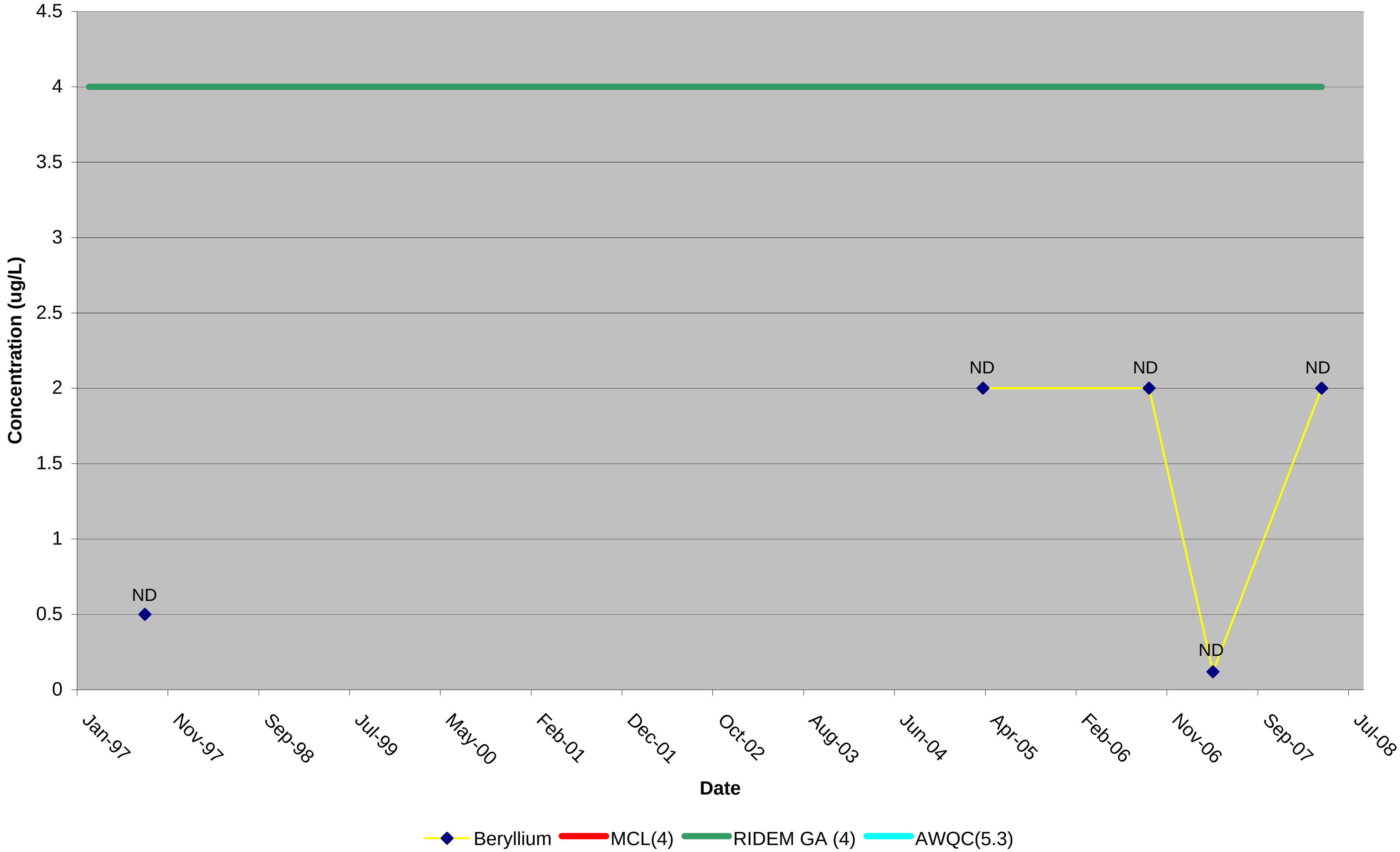
APPENDIX F-1: GROUNDWATER
FIGURE F-1.6-2

ARSENIC IN GROUNDWATER, MW105S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



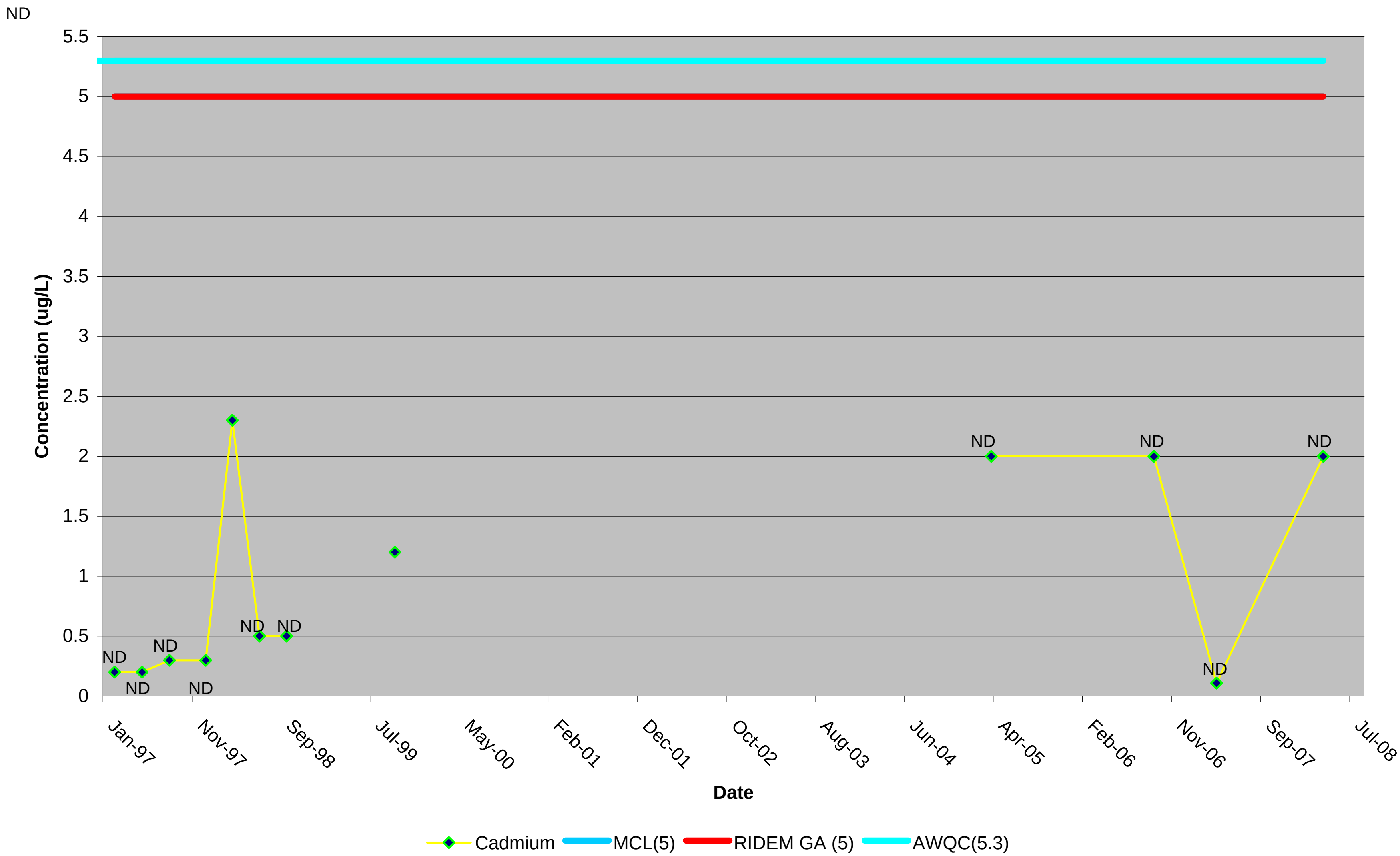
APPENDIX F-1: GROUNDWATER
FIGURE F-1.6-3

BERYLLIUM IN GROUNDWATER, MW105S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



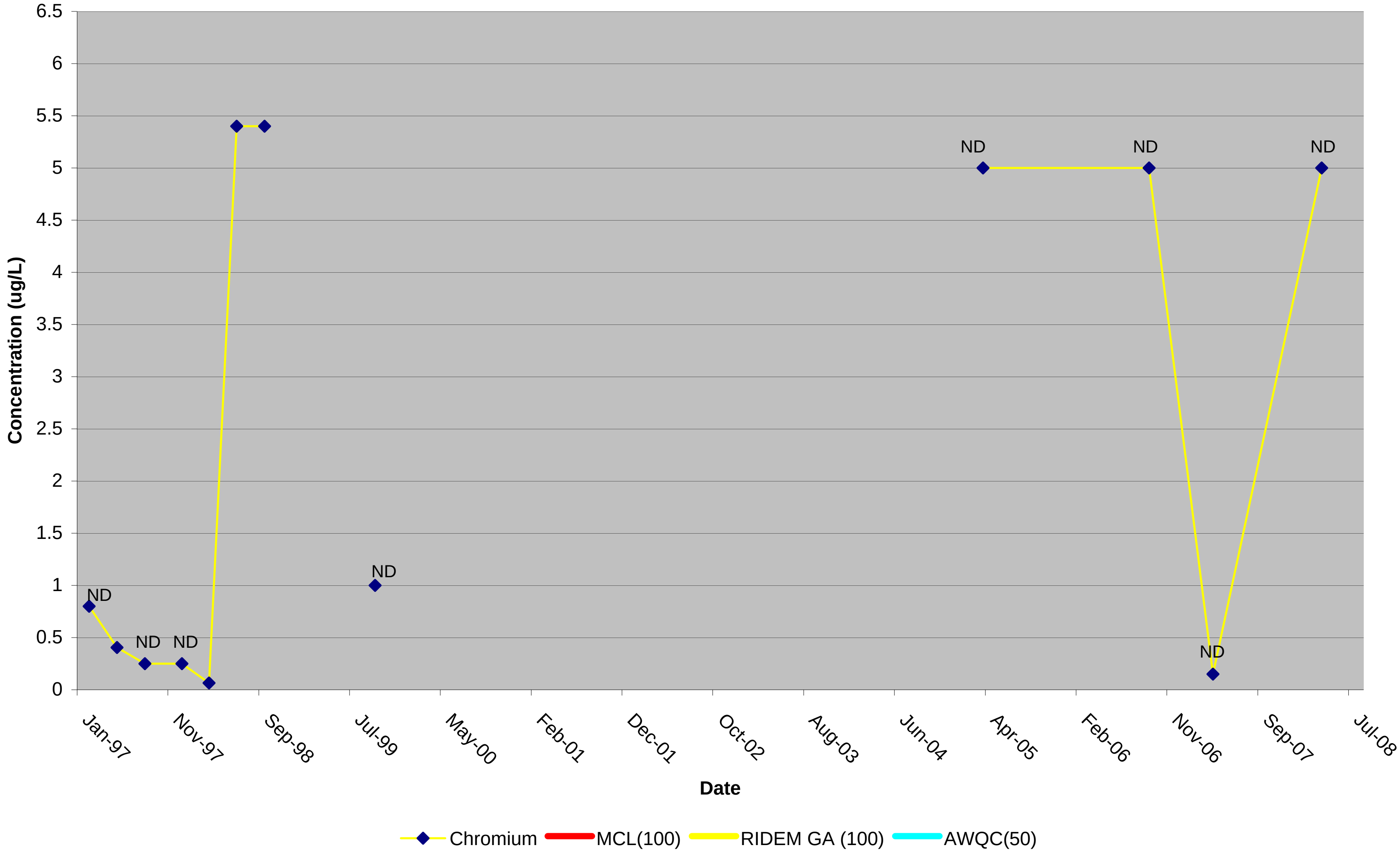
APPENDIX F-1: GROUNDWATER
FIGURE F-1.6-4

CADMIUM IN GROUNDWATER, MW105S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



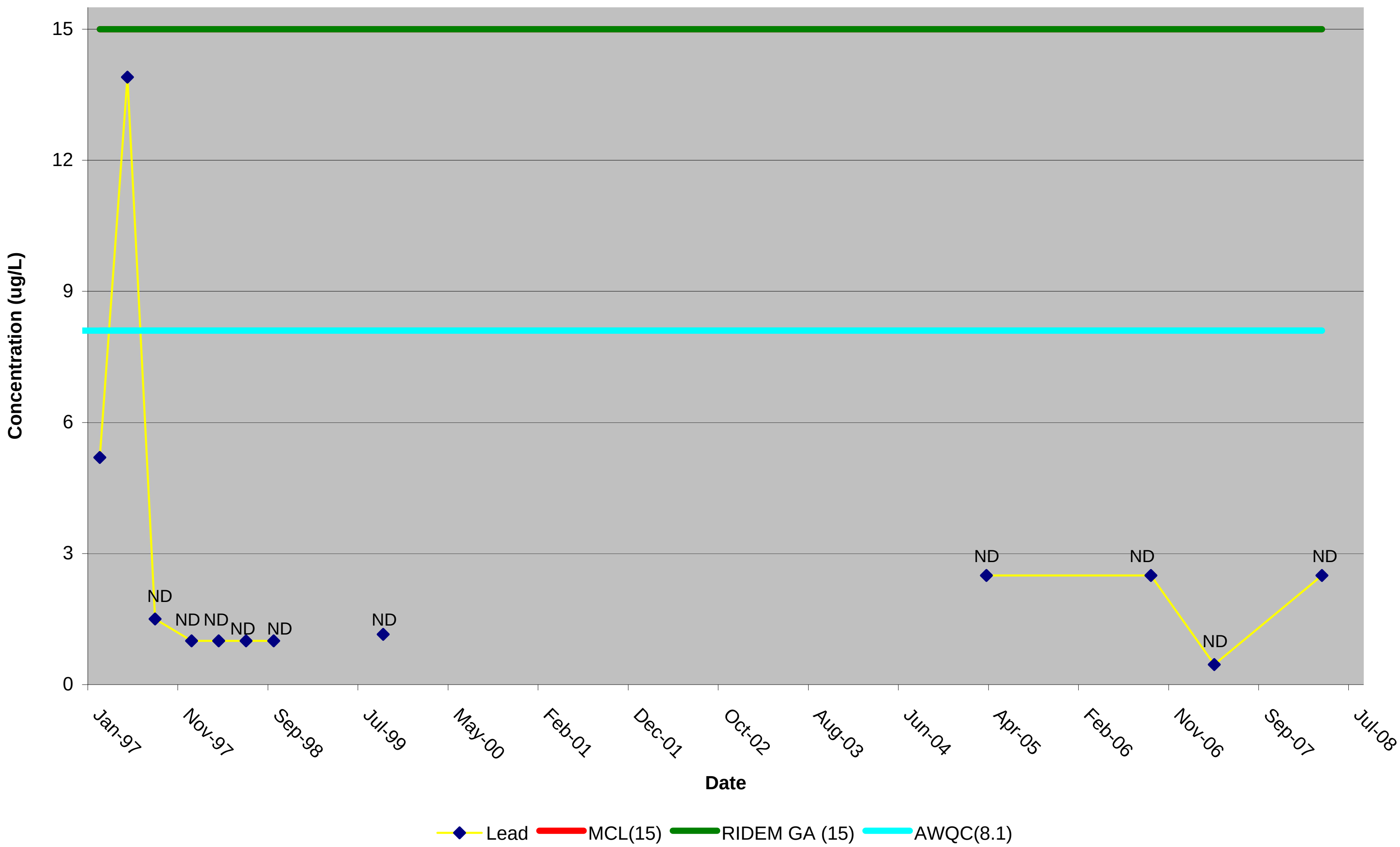
APPENDIX F-1: GROUNDWATER
FIGURE F-1.6-5

CHROMIUM IN GROUNDWATER, MW105S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



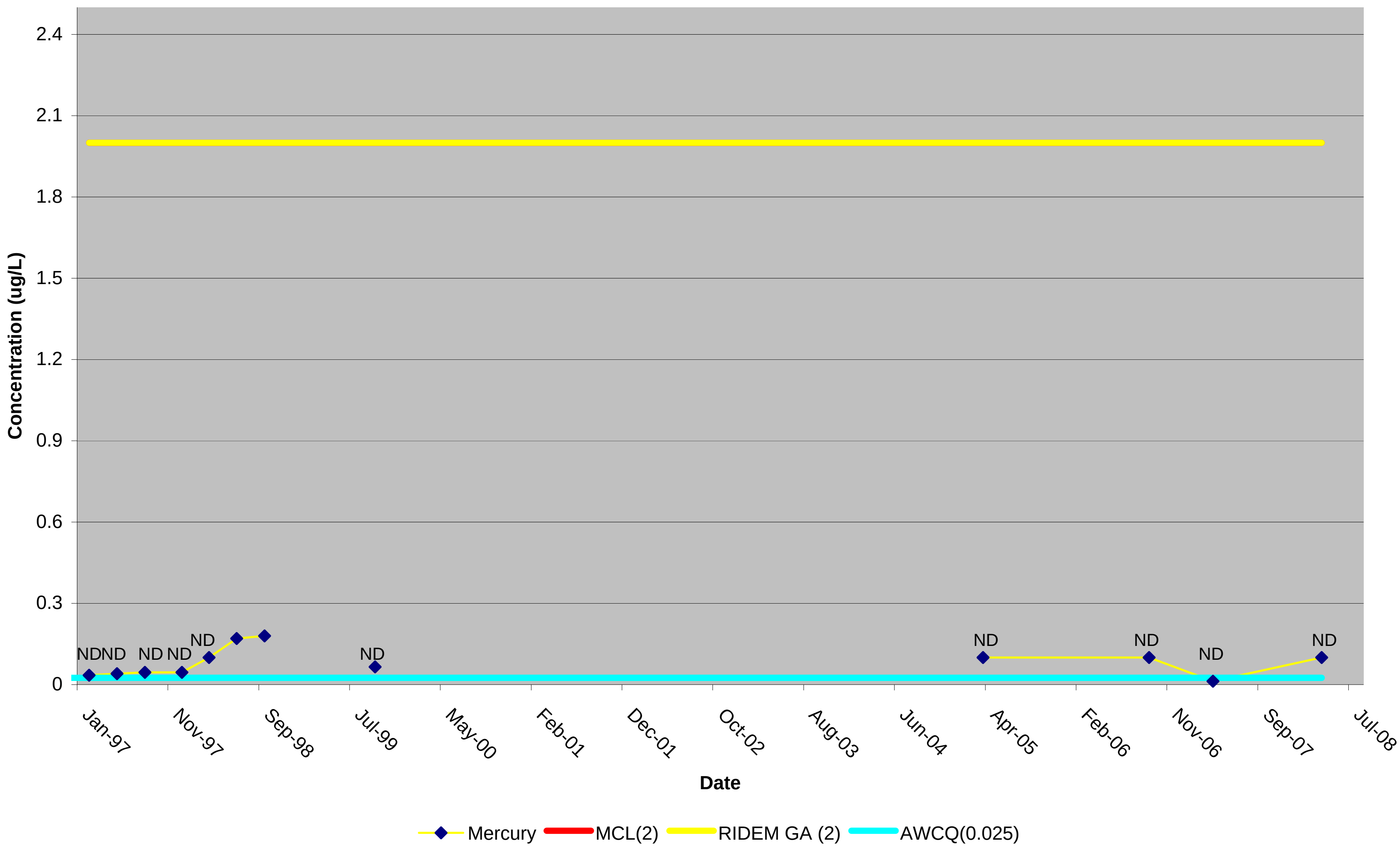
APPENDIX F-1: GROUNDWATER
FIGURE F-1.6-6

LEAD IN GROUNDWATER, MW105S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



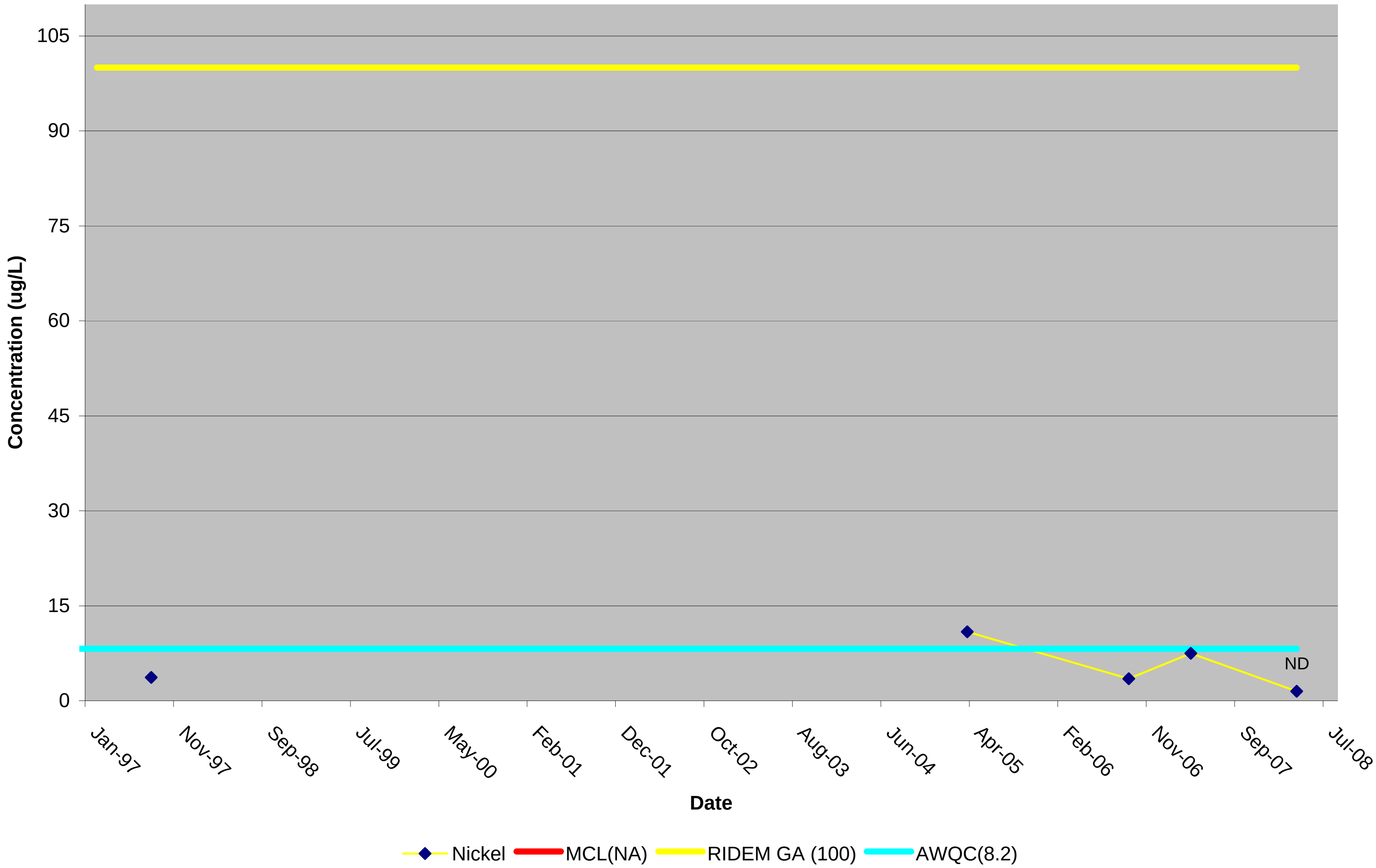
APPENDIX F-1: GROUNDWATER
FIGURE F-1.6-7

MERCURY IN GROUNDWATER, MW105S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



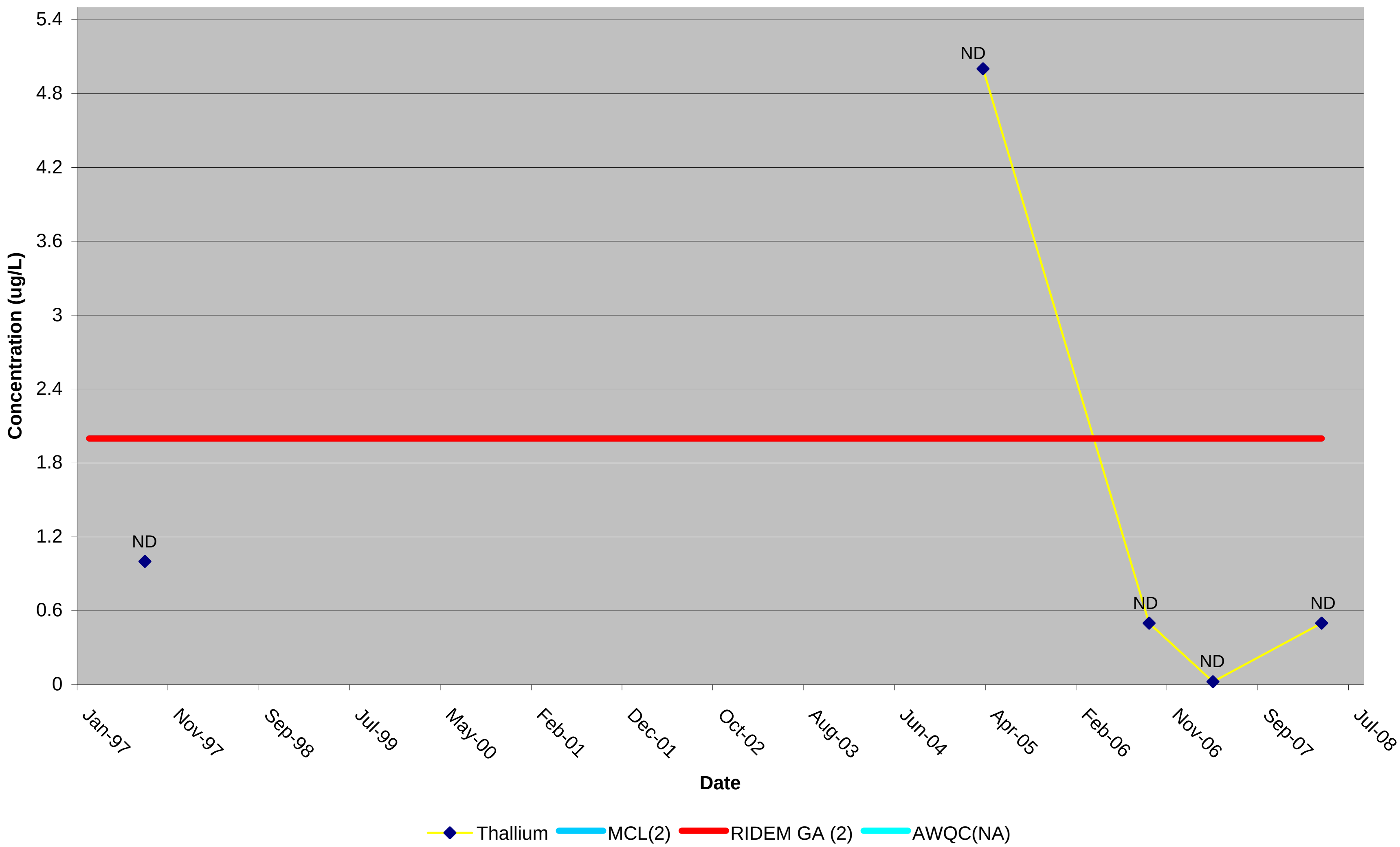
APPENDIX F-1: GROUNDWATER
FIGURE F-1.6-8

NICKEL IN GROUNDWATER, MW105S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



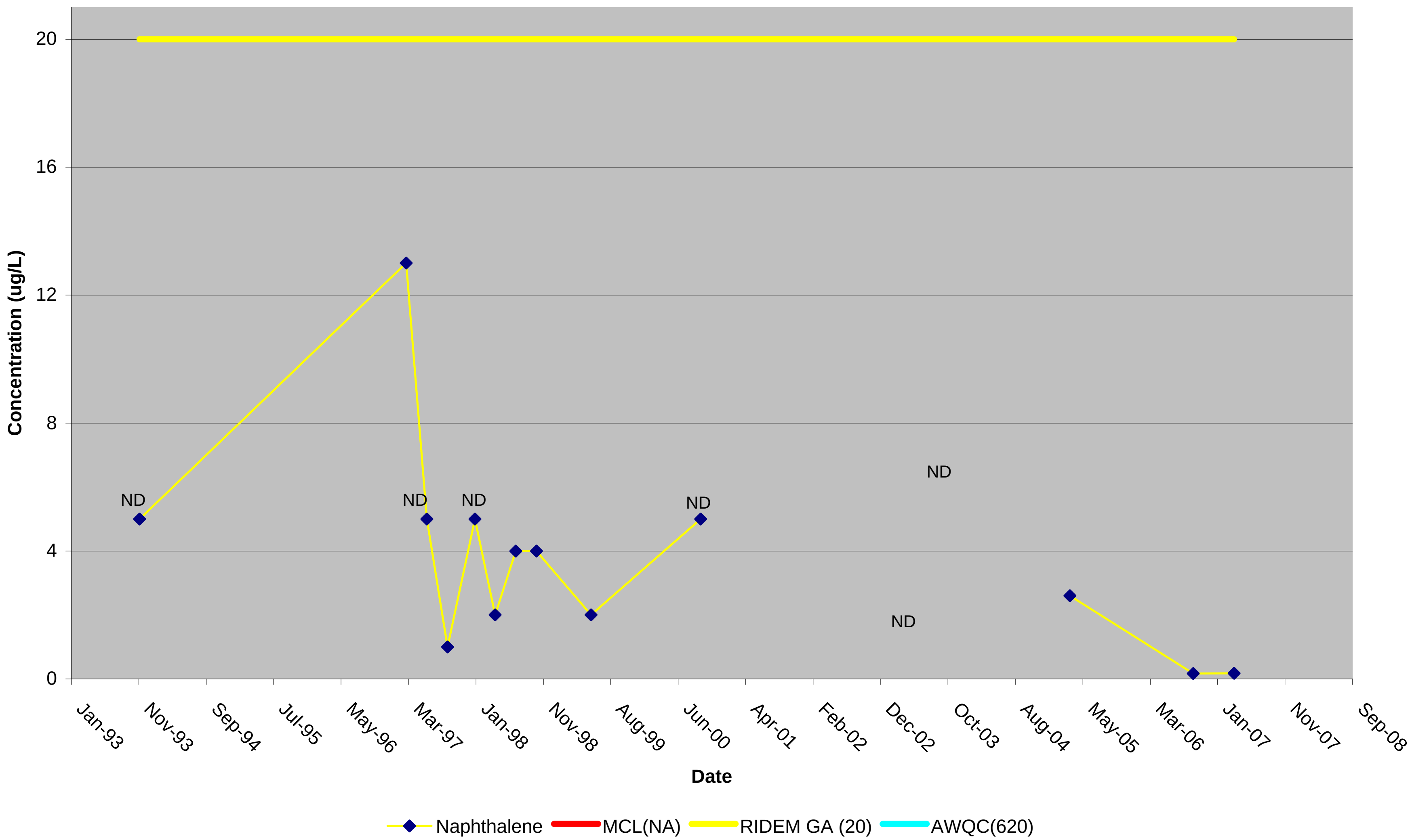
APPENDIX F-1: GROUNDWATER
FIGURE F-1.6-9

THALLIUM IN GROUNDWATER, MW105S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



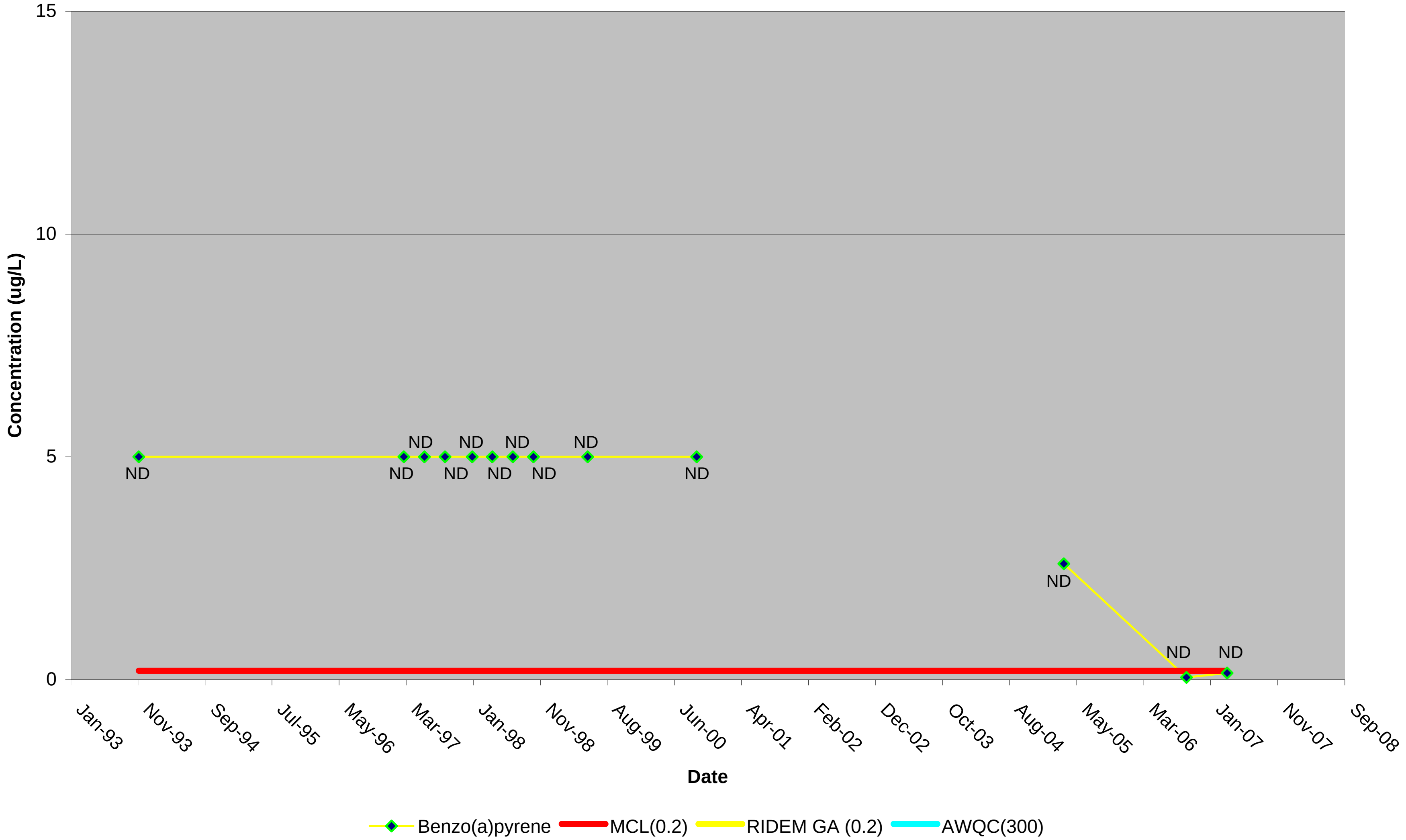
APPENDIX F-1: GROUNDWATER
FIGURE F-1.6-10

NAPHTHALENE IN GROUNDWATER, MW105S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



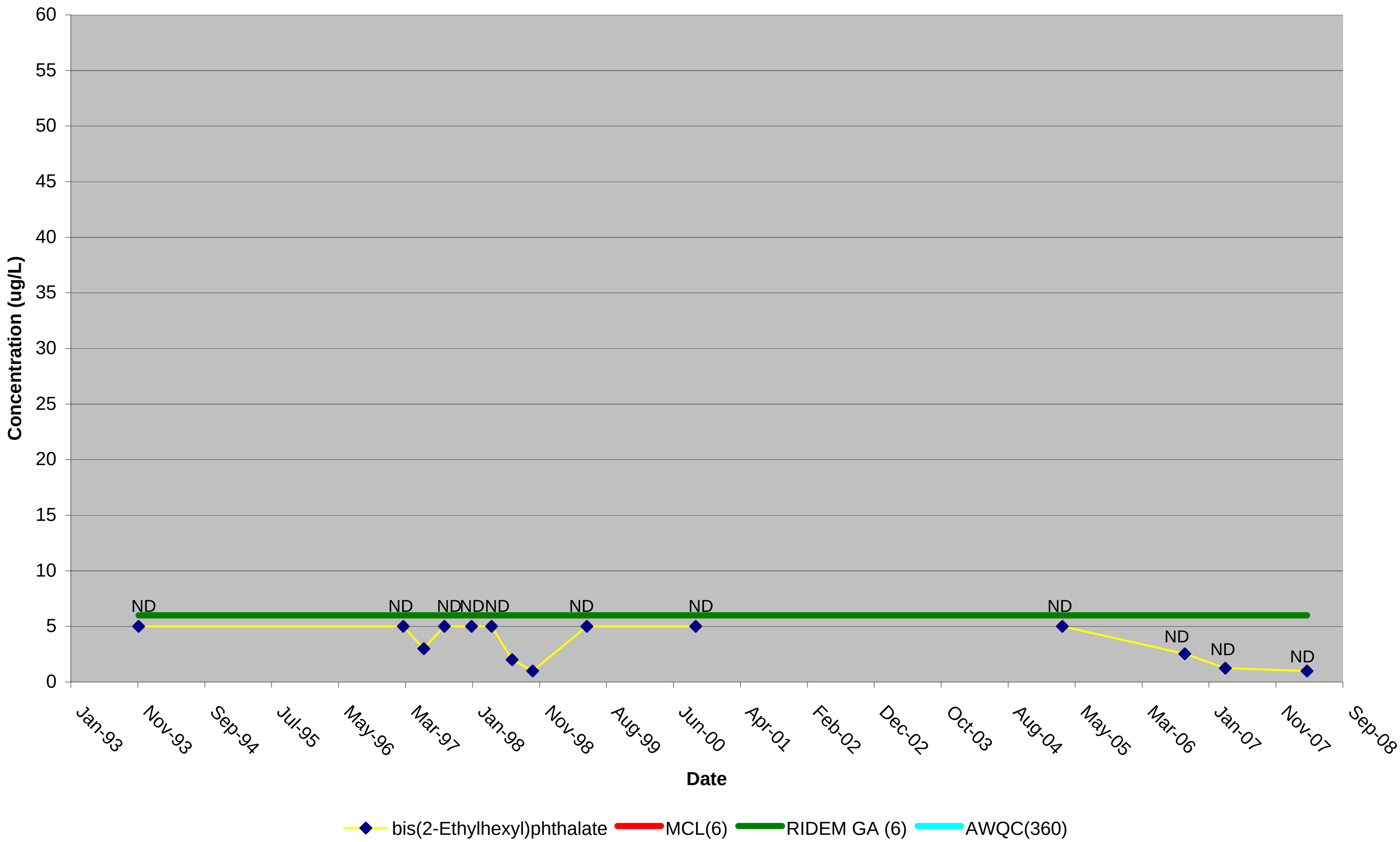
APPENDIX F-1: GROUNDWATER
FIGURE F-1.6-11

BENZO(A)PYRENE IN GROUNDWATER, MW105S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



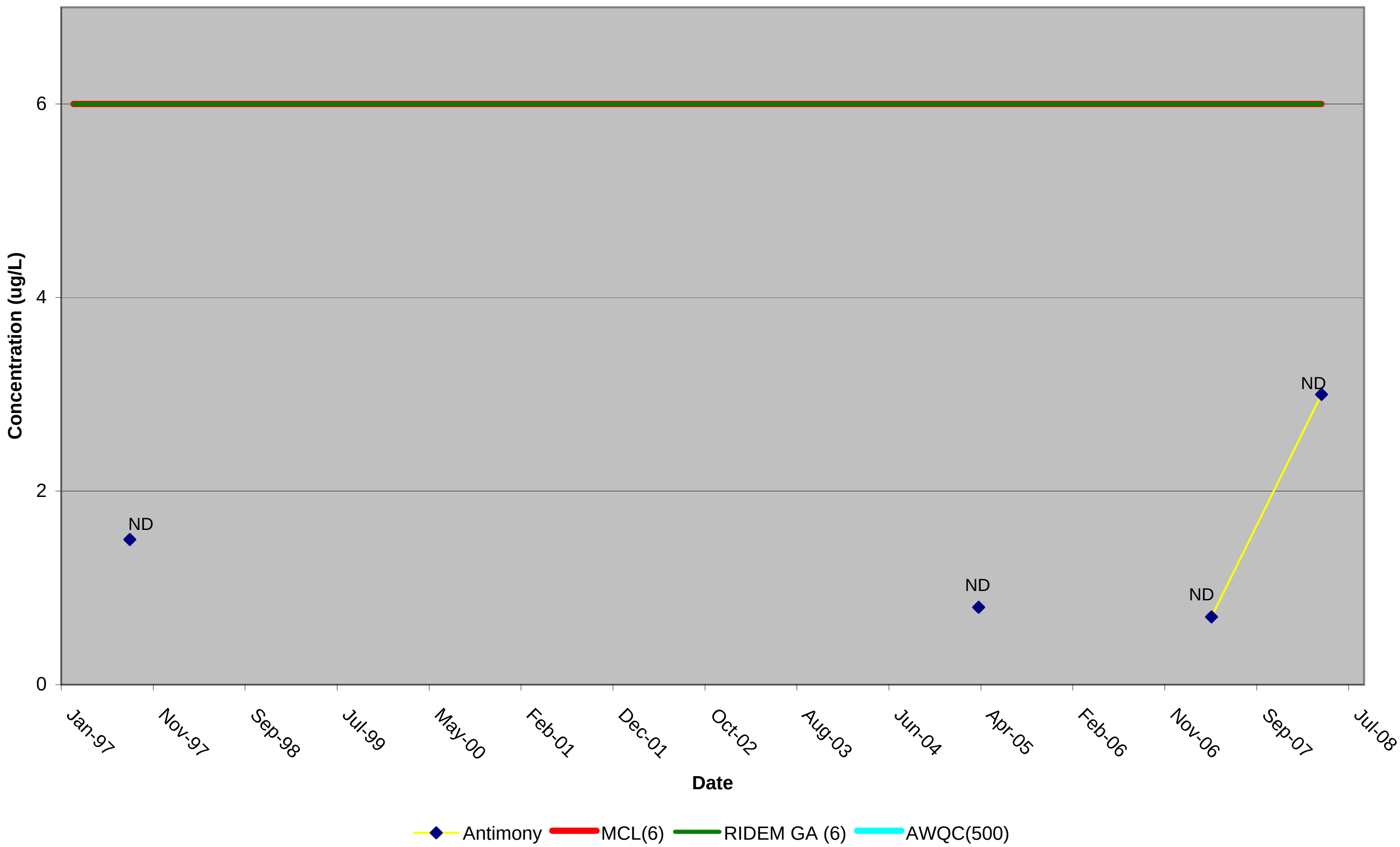
APPENDIX F-1: GROUNDWATER
FIGURE F-1.6-12

BIS(2-ETHYLHEXYL)PHTHALATE IN GROUNDWATER, MW105S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



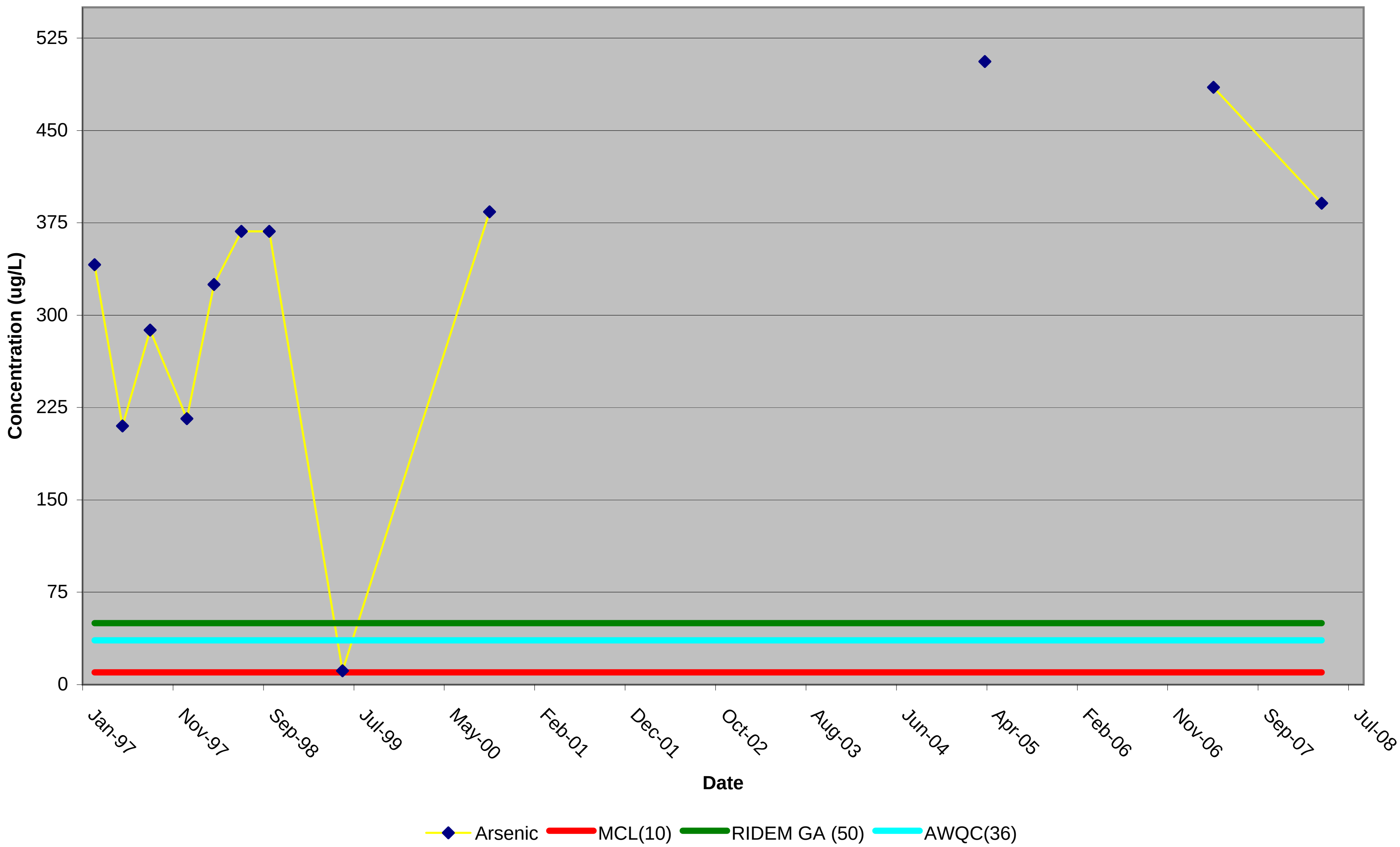
APPENDIX F-1: GROUNDWATER
FIGURE F-1.7-1

ANTIMONY IN GROUNDWATER, MW107R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



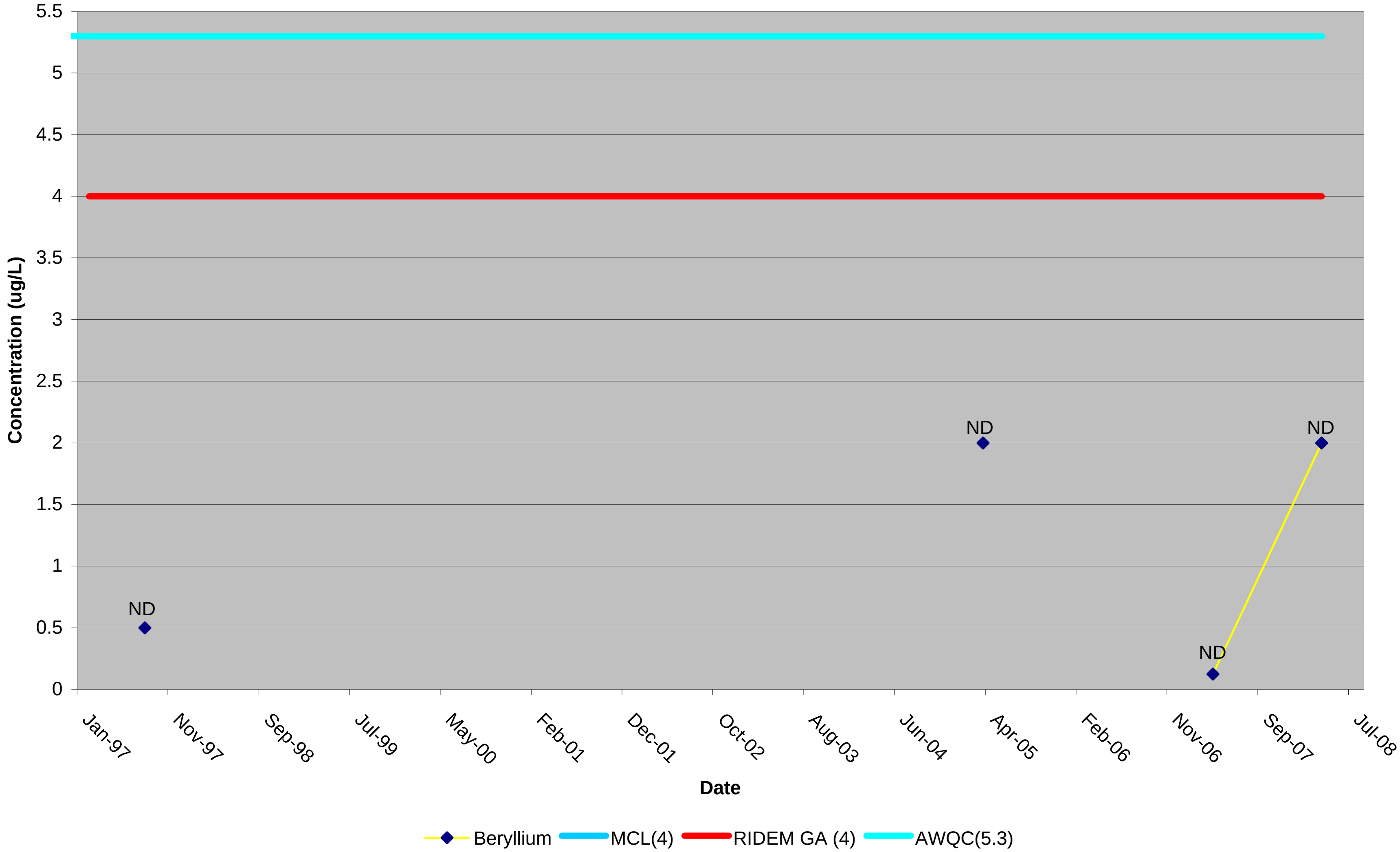
APPENDIX F-1: GROUNDWATER
FIGURE F-1.7-2

ARSENIC IN GROUNDWATER, MW107R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



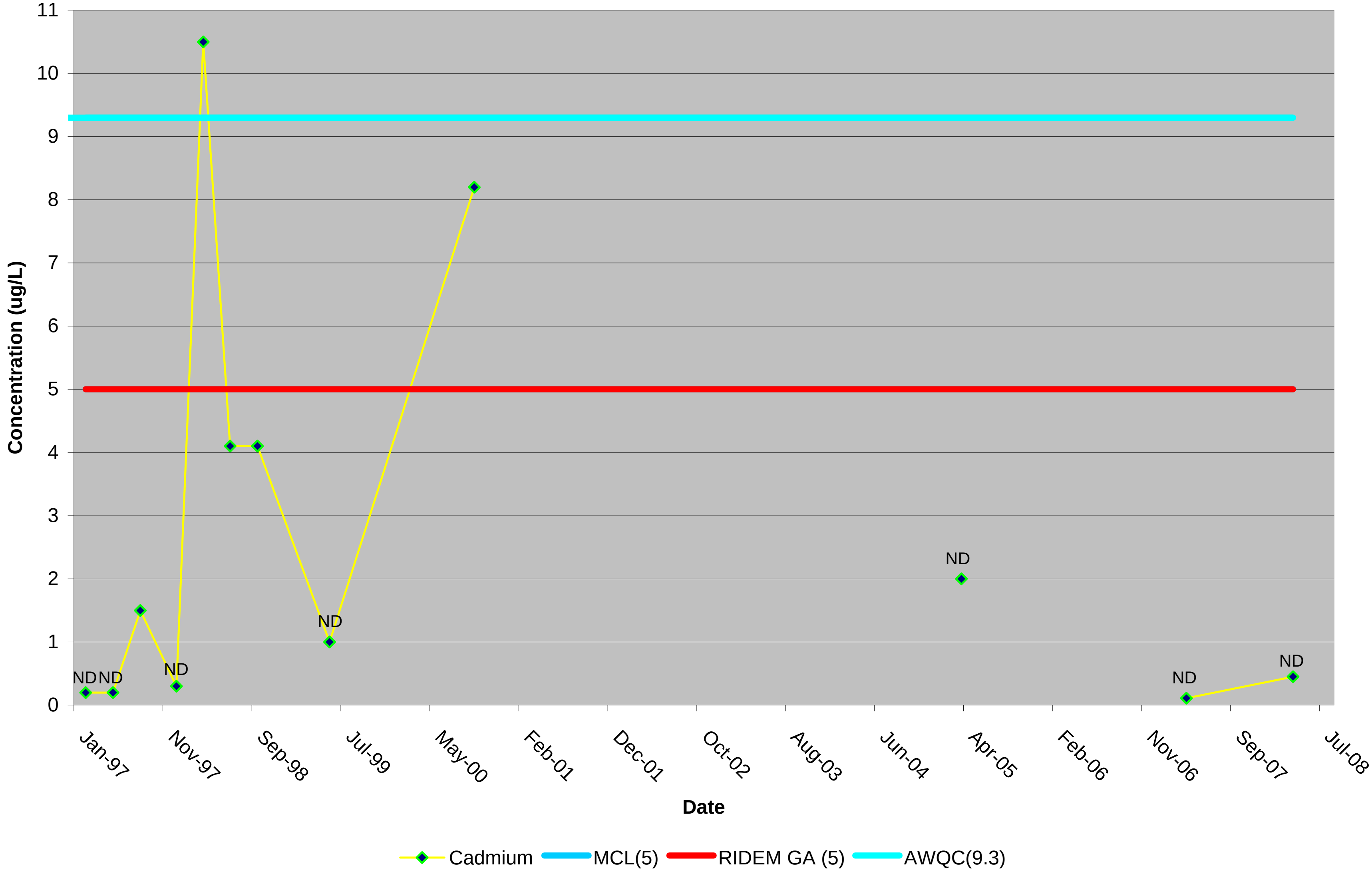
APPENDIX F-1: GROUNDWATER
FIGURE F-1.7-3

BERYLLIUM IN GROUNDWATER, MW107R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



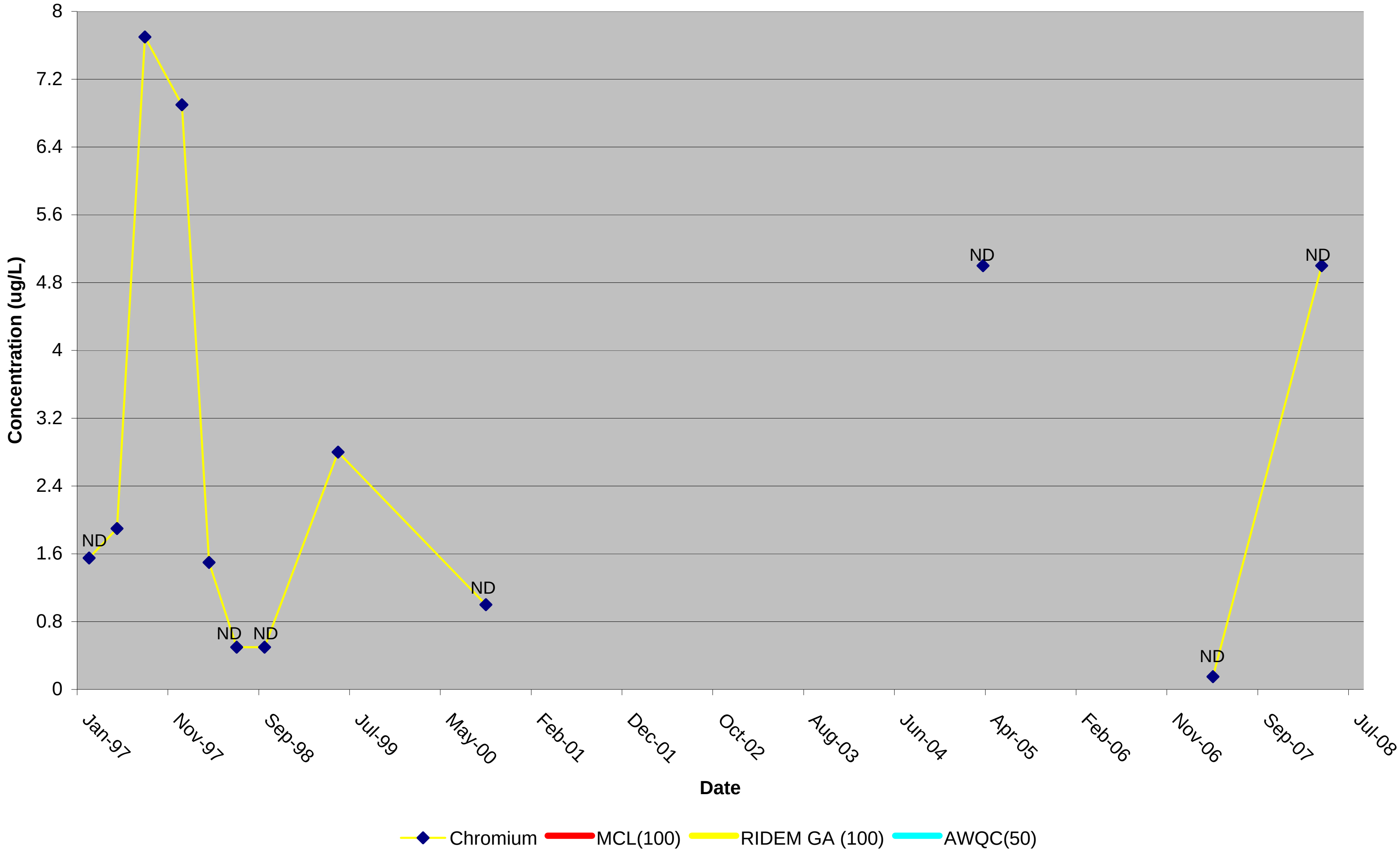
APPENDIX F-1: GROUNDWATER
FIGURE F-1.7-4

CADMIUM IN GROUNDWATER, MW107R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



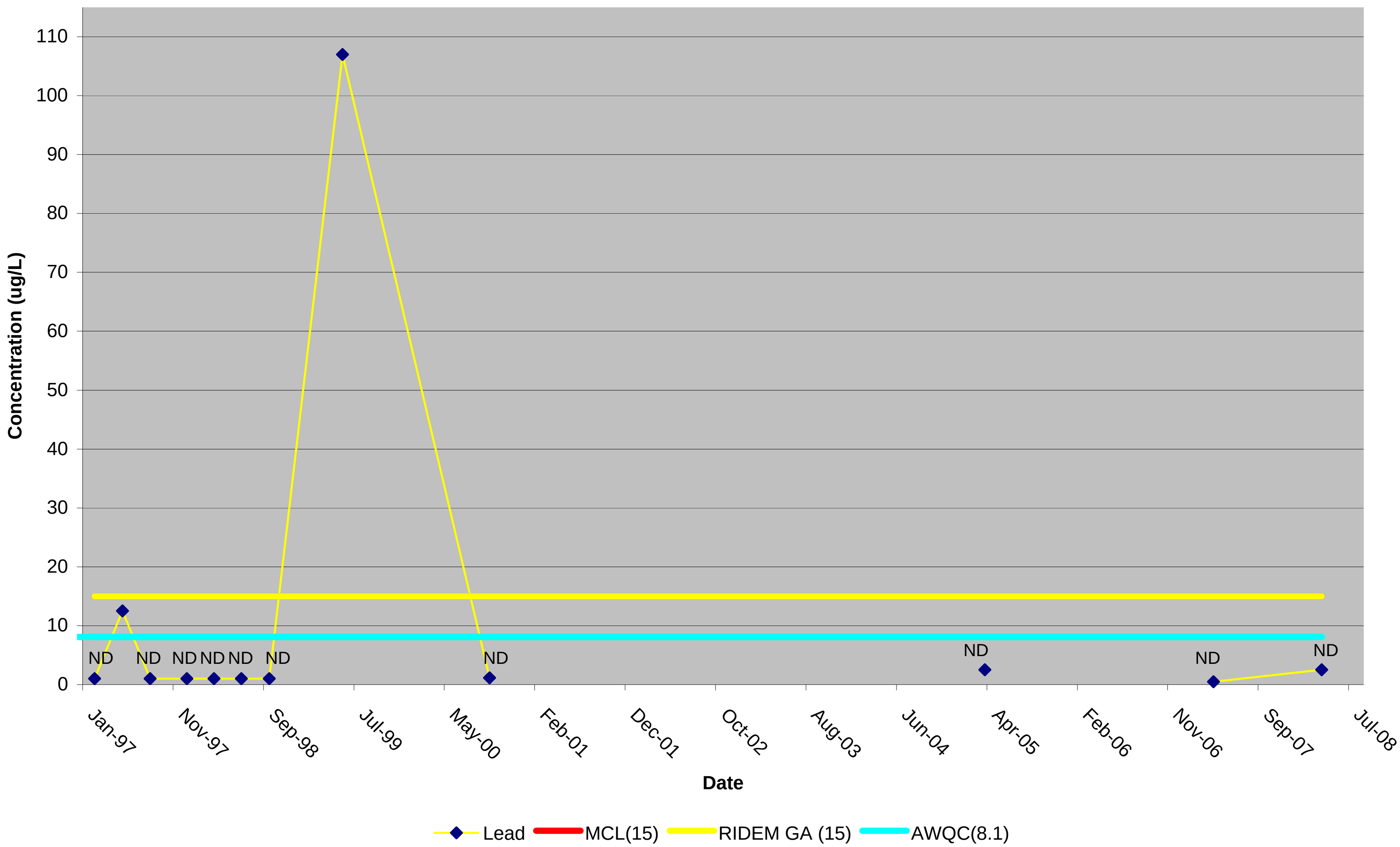
APPENDIX F-1: GROUNDWATER
FIGURE F-1.7-5

CHROMIUM IN GROUNDWATER, MW107R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



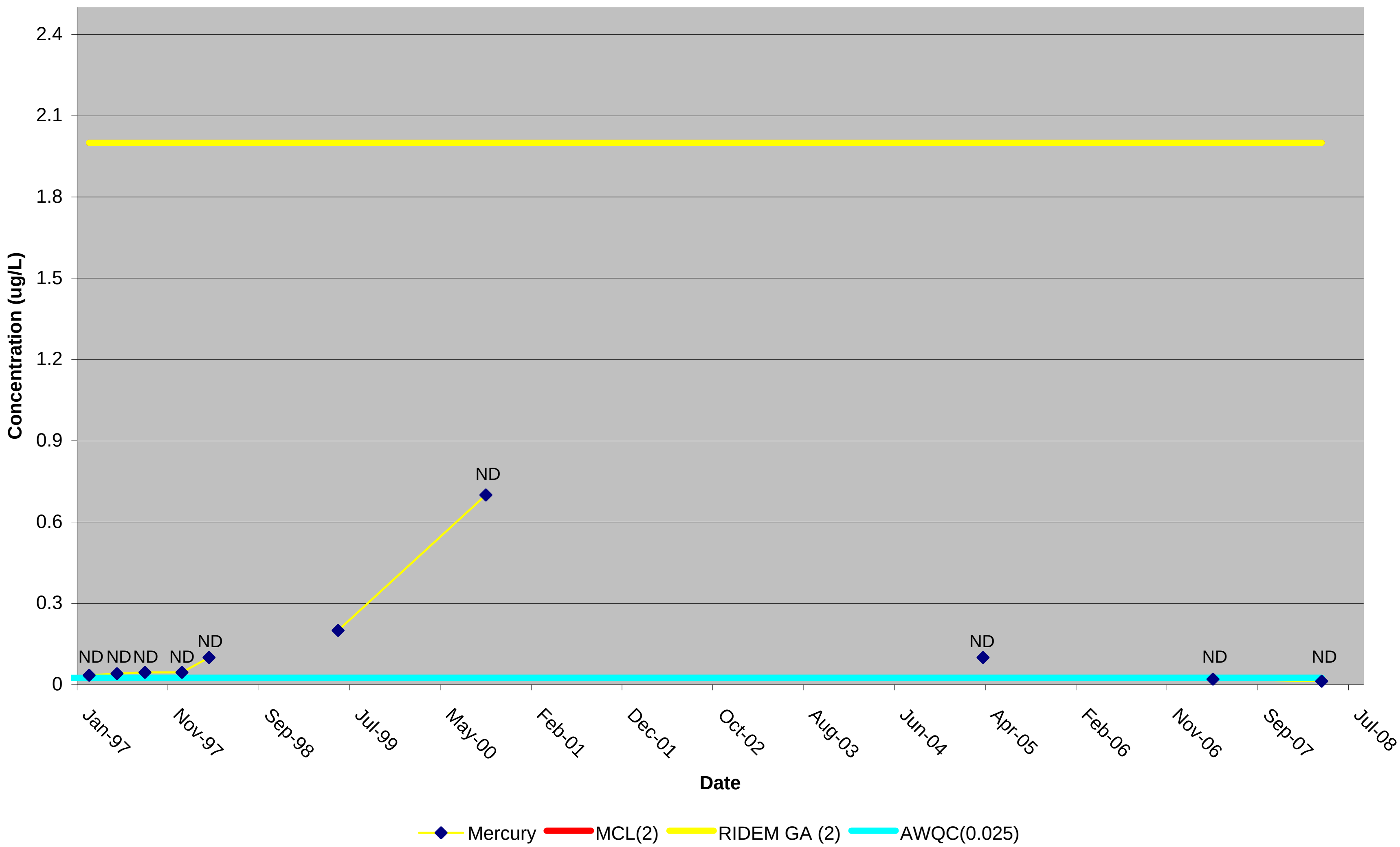
APPENDIX F-1: GROUNDWATER
FIGURE F-1.7-6

LEAD IN GROUNDWATER, MW107R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



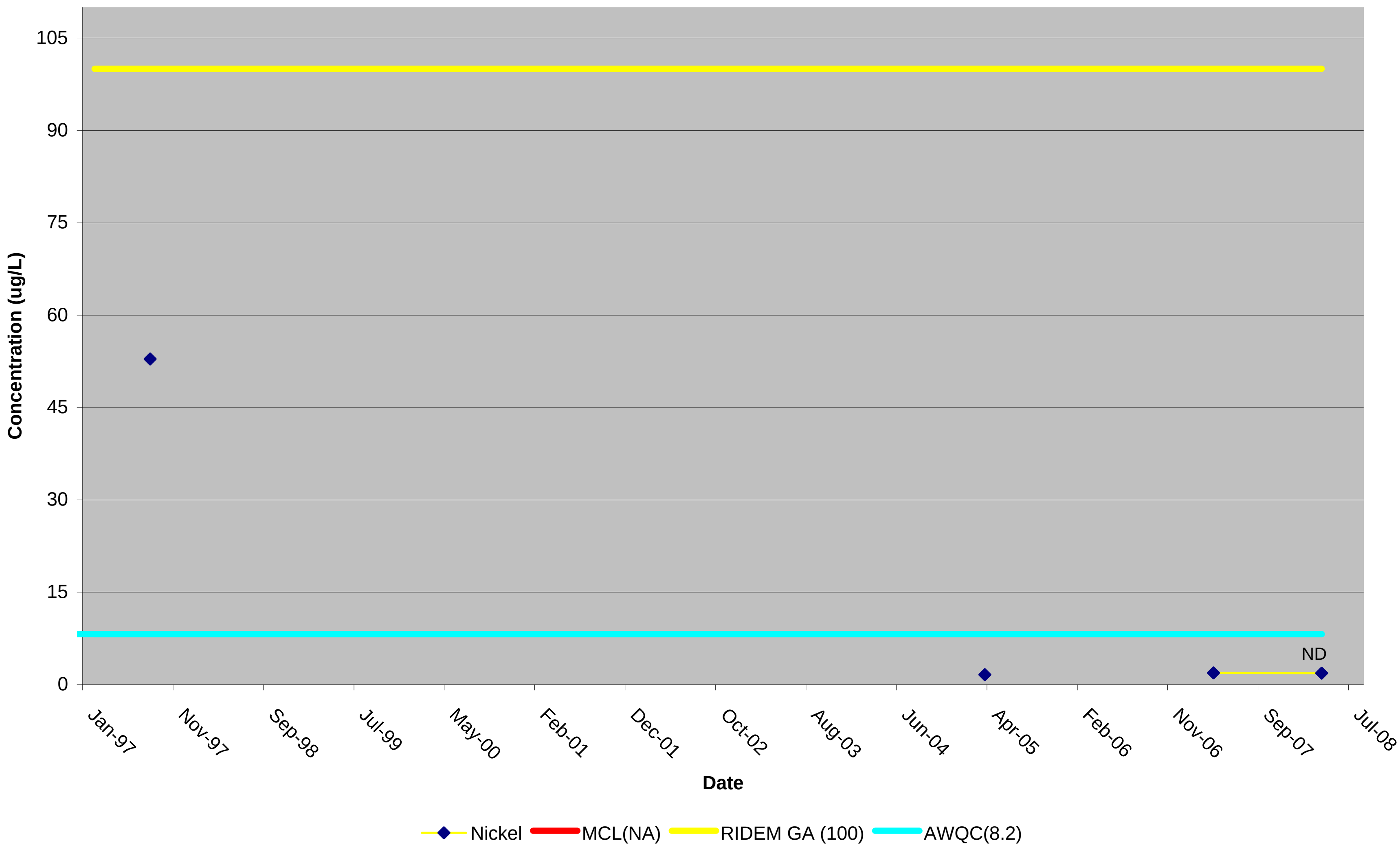
APPENDIX F-1: GROUNDWATER
FIGURE F-1.7-7

MERCURY IN GROUNDWATER, MW107R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



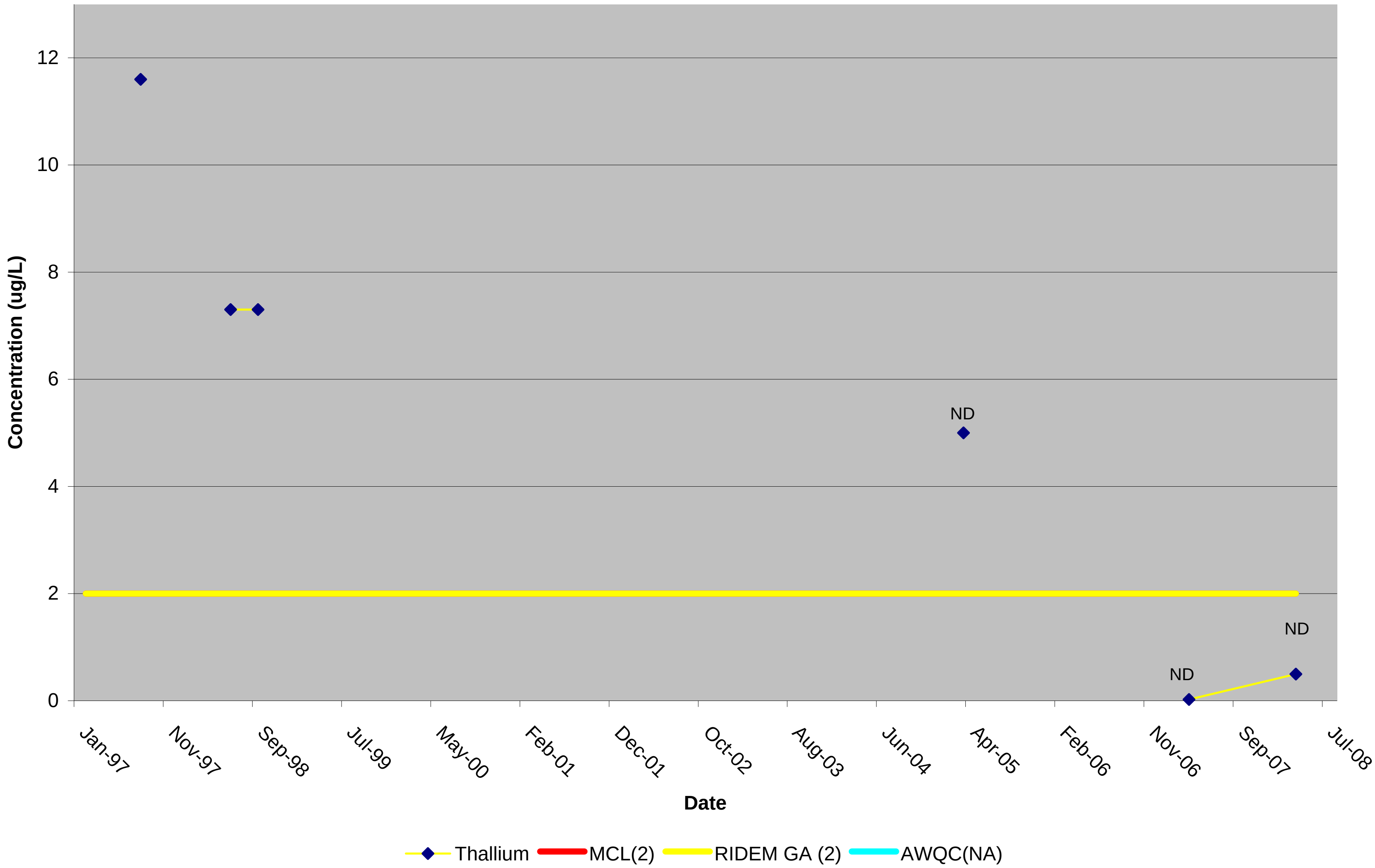
APPENDIX F-1: GROUNDWATER
FIGURE F-1.7-8

NICKEL IN GROUNDWATER, MW107R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



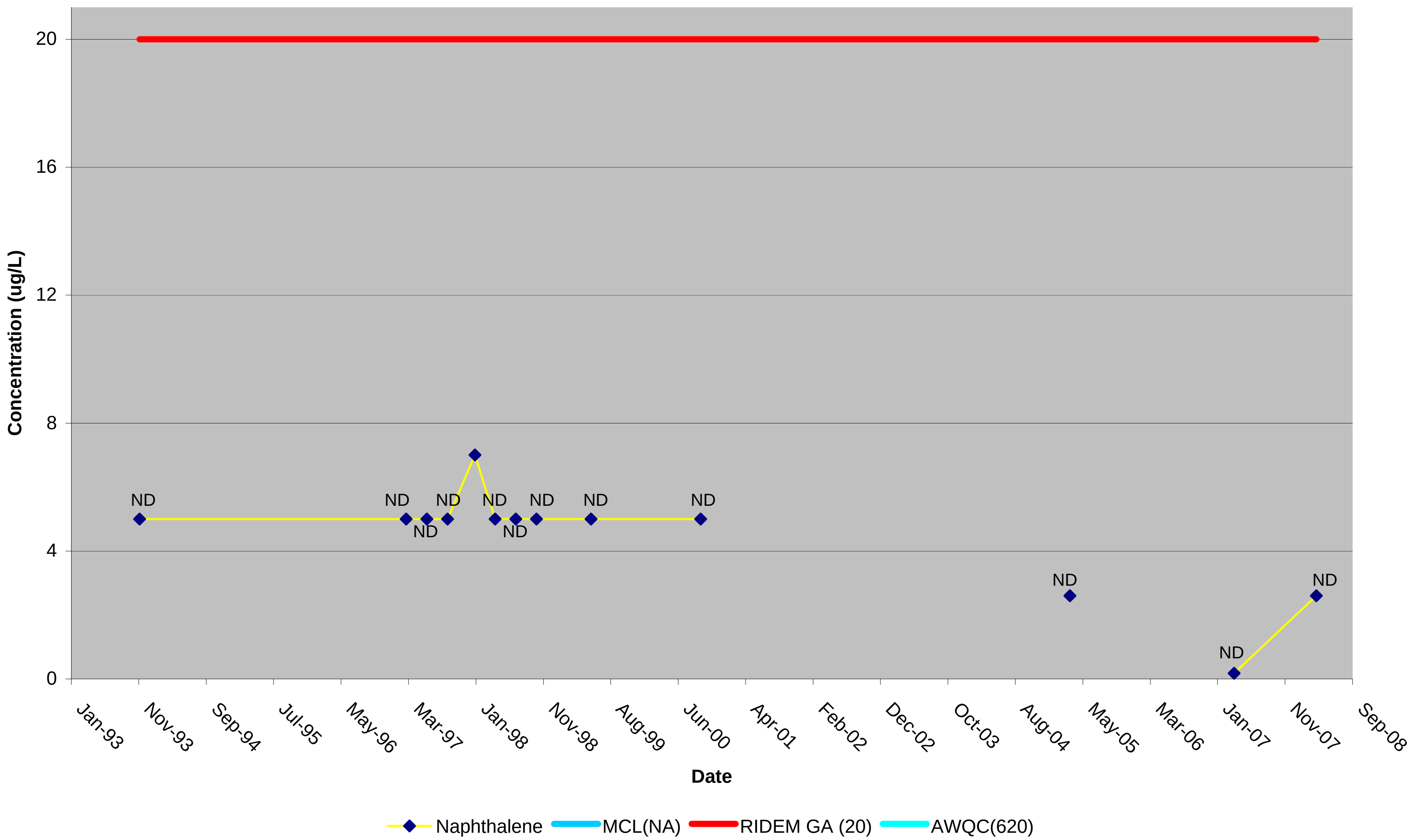
APPENDIX F-1: GROUNDWATER
FIGURE F-1.7-9

THALLIUM IN GROUNDWATER, MW107R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



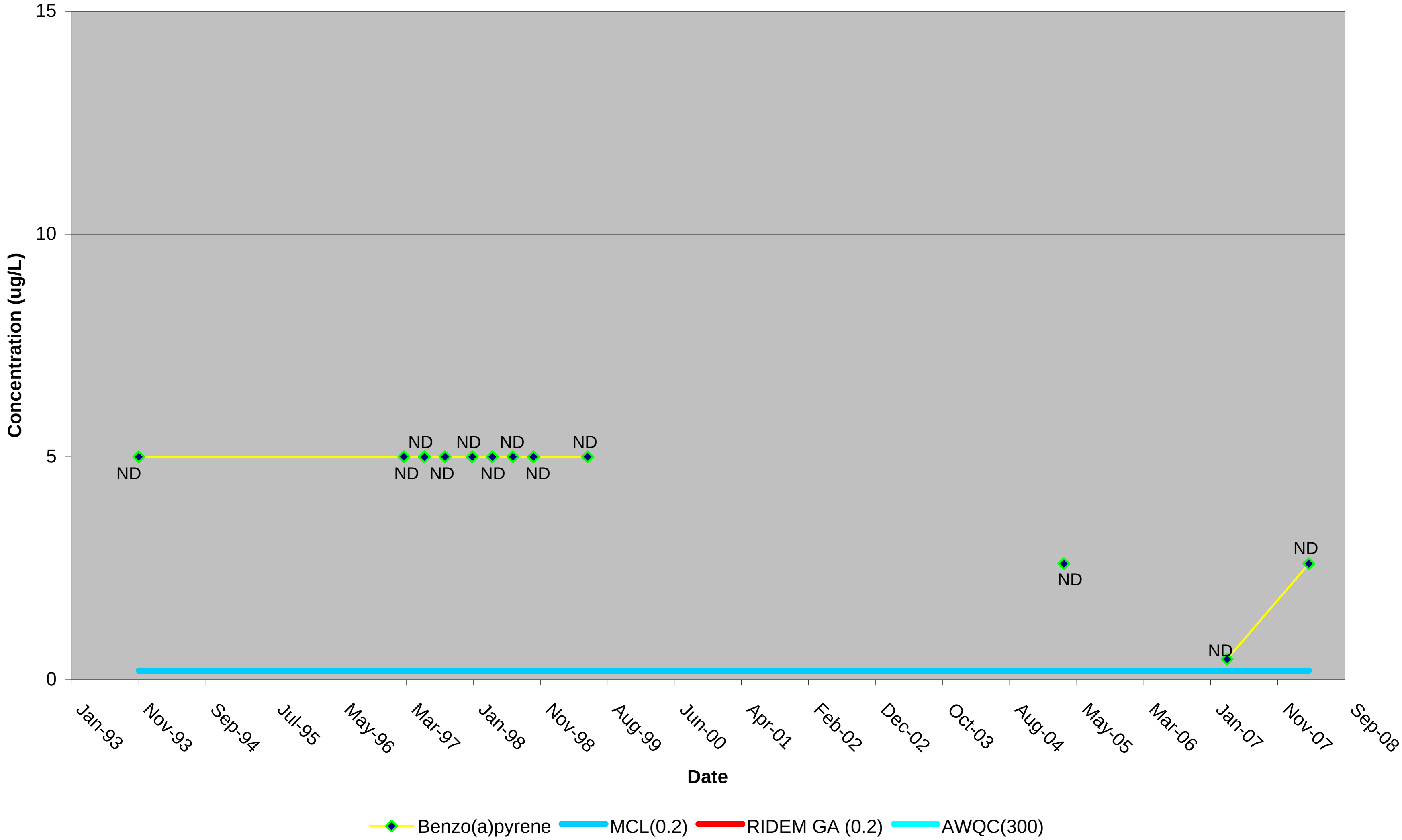
APPENDIX F-1: GROUNDWATER
FIGURE F-1.7-10

NAPHTHALENE IN GROUNDWATER, MW107R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



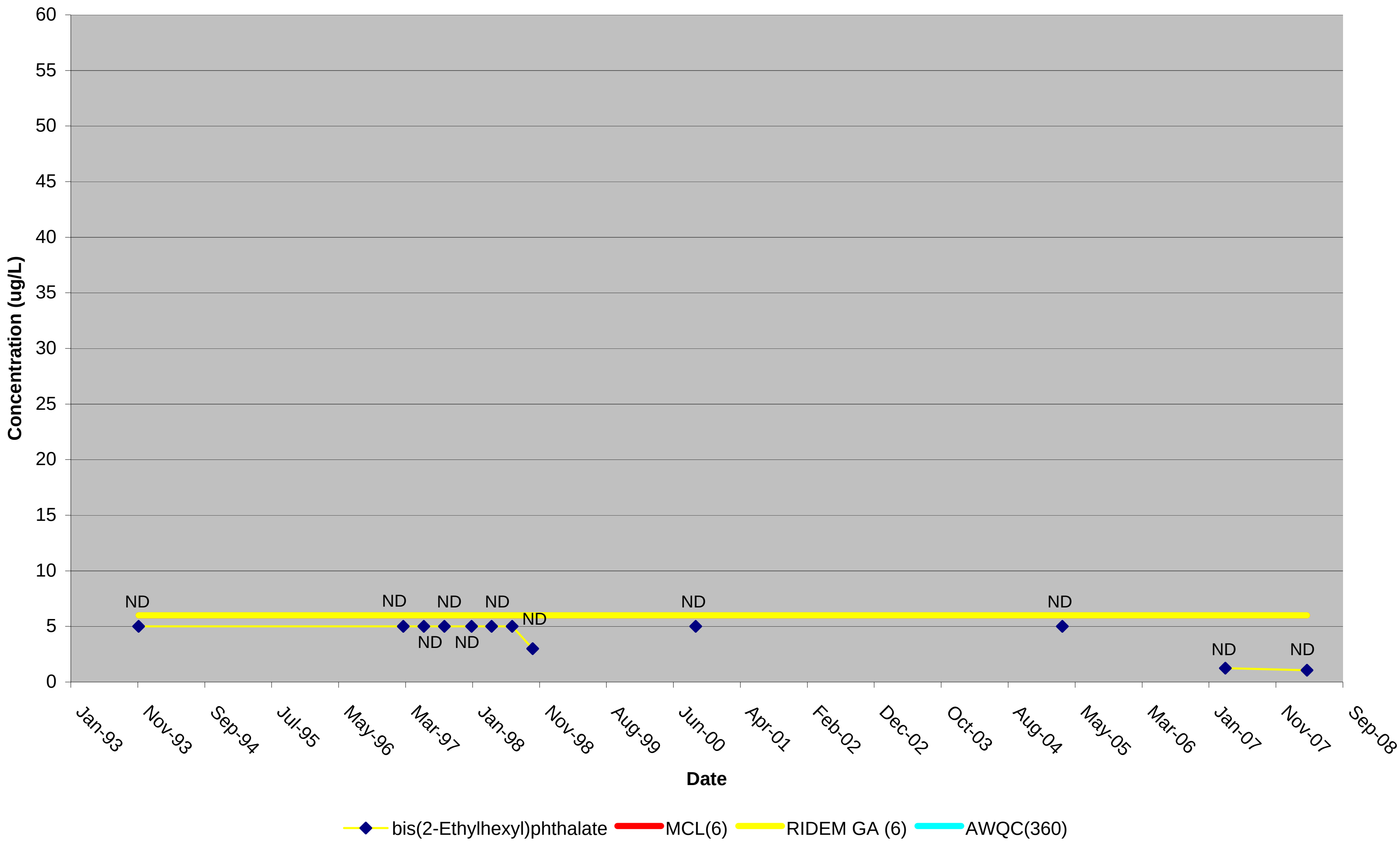
APPENDIX F-1: GROUNDWATER
FIGURE F-1.7-11

BENZO(A)PYRENE IN GROUNDWATER, MW107R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



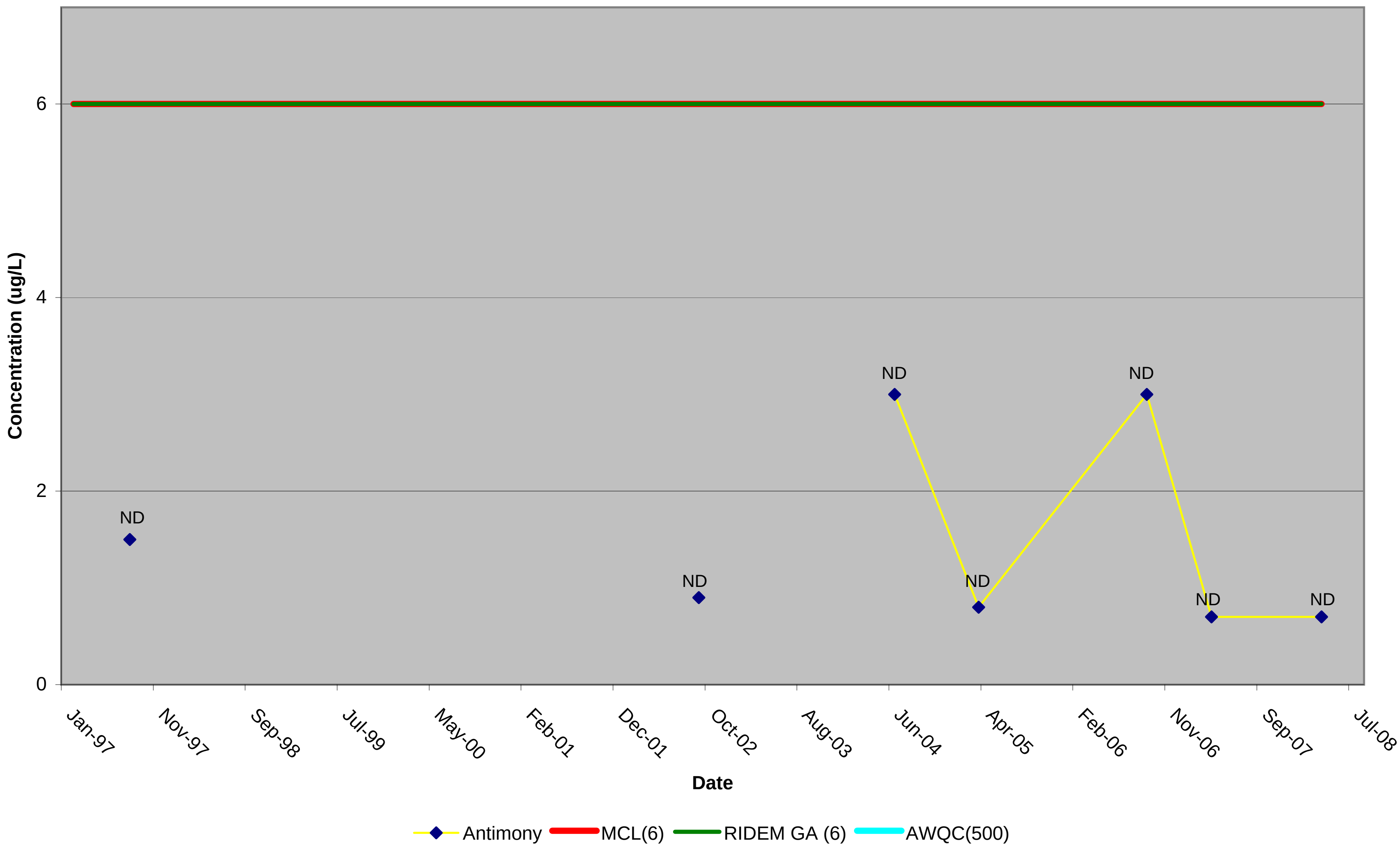
APPENDIX F-1: GROUNDWATER
FIGURE F-1.7-12

BIS(2-ETHYLHEXYL)PHTHALATE IN GROUNDWATER, MW107R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



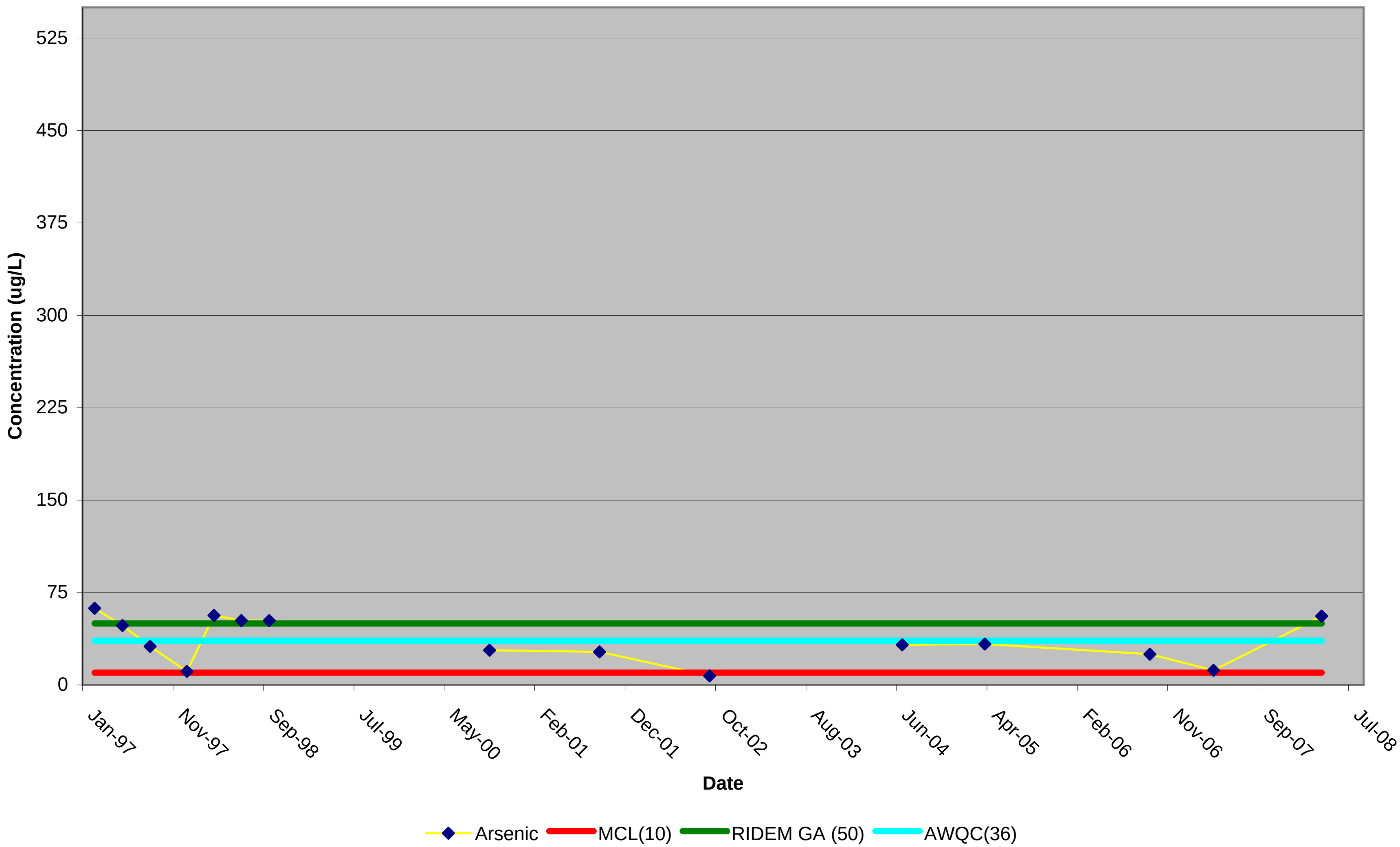
APPENDIX F-1: GROUNDWATER
FIGURE F-1.8-1

ANTIMONY IN GROUNDWATER, MW108R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



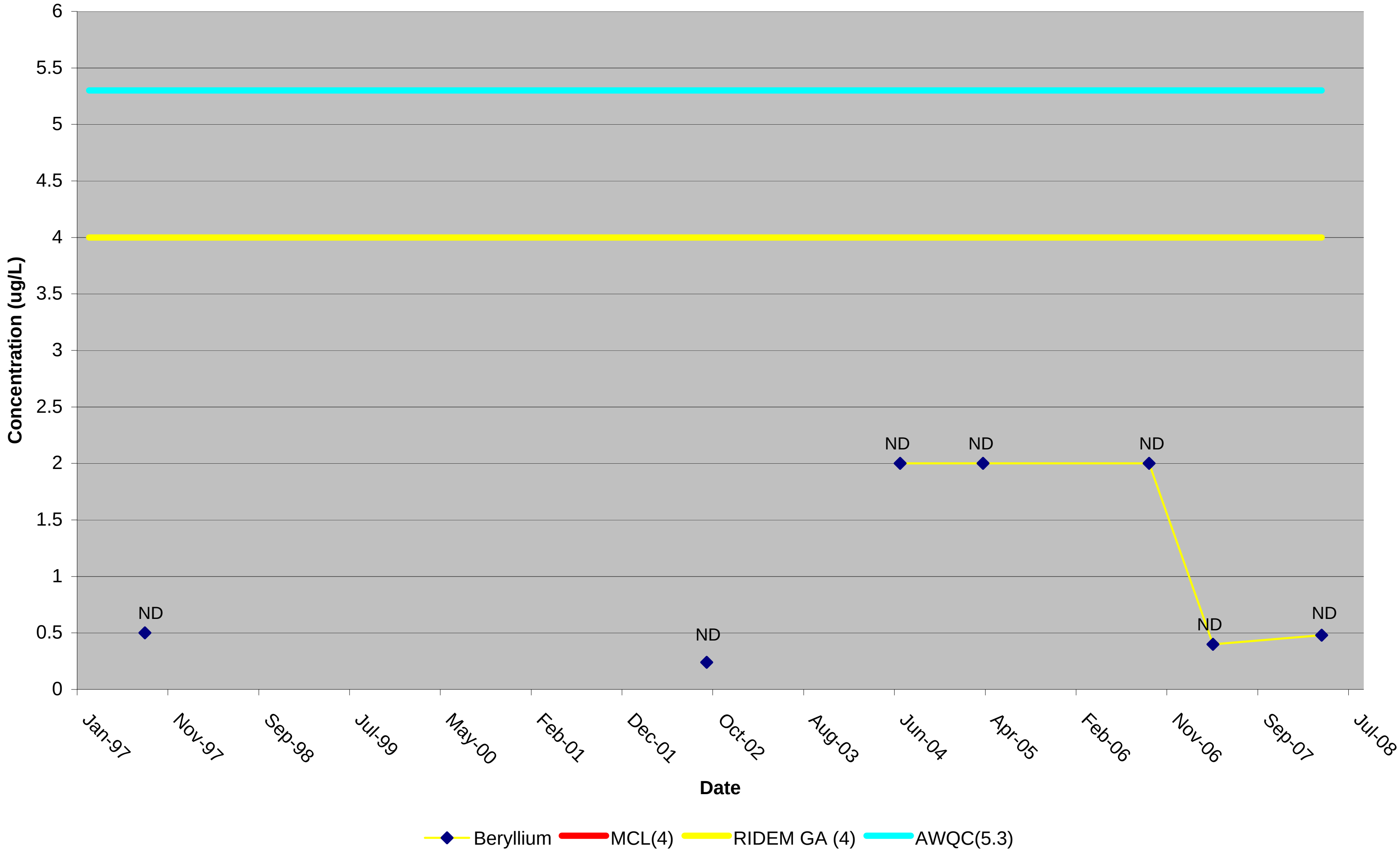
APPENDIX F-1: GROUNDWATER
FIGURE F-1.8-2

ARSENIC IN GROUNDWATER, MW108R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



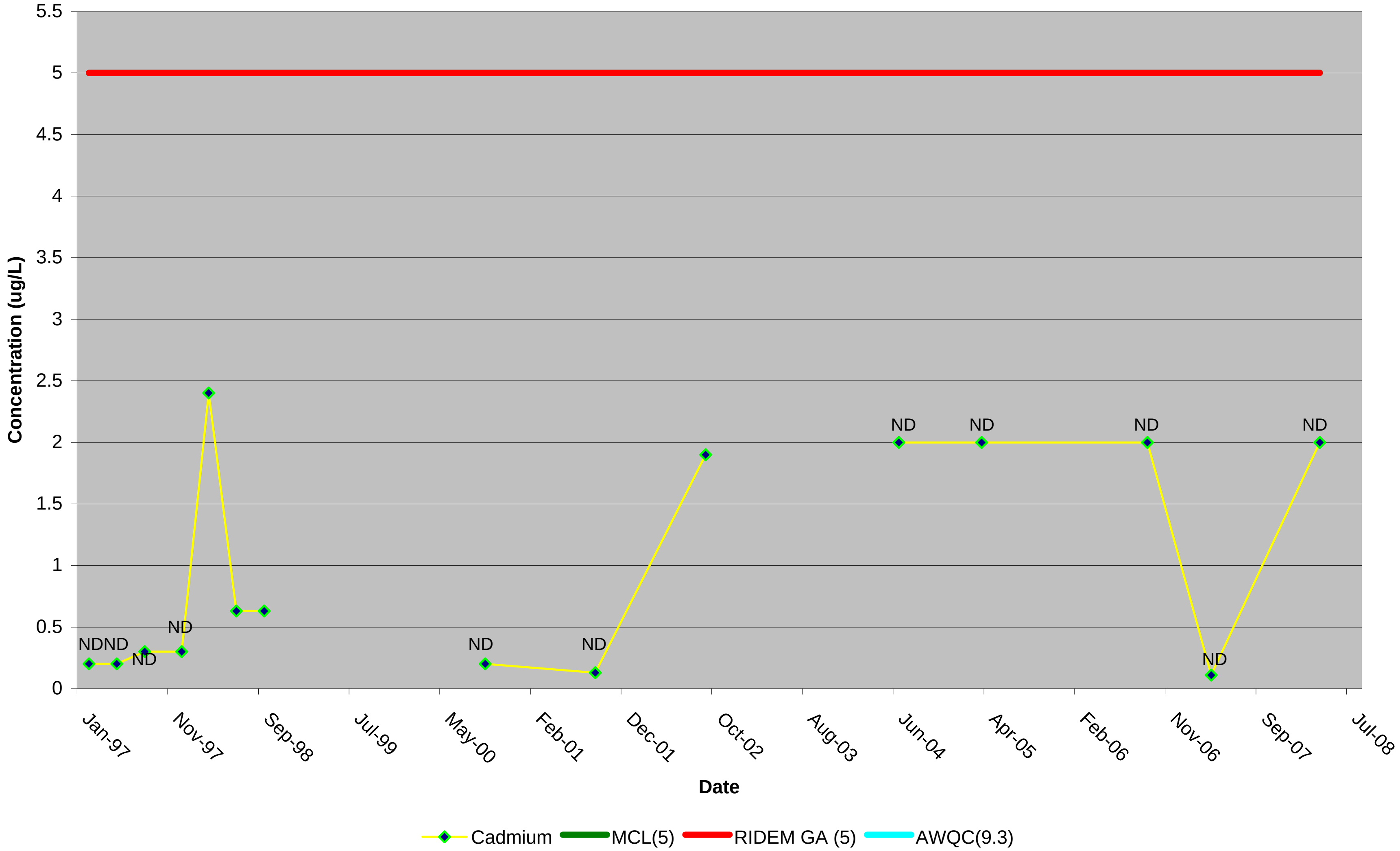
APPENDIX F-1: GROUNDWATER
FIGURE F-1.8-3

BERYLLIUM IN GROUNDWATER, MW108R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



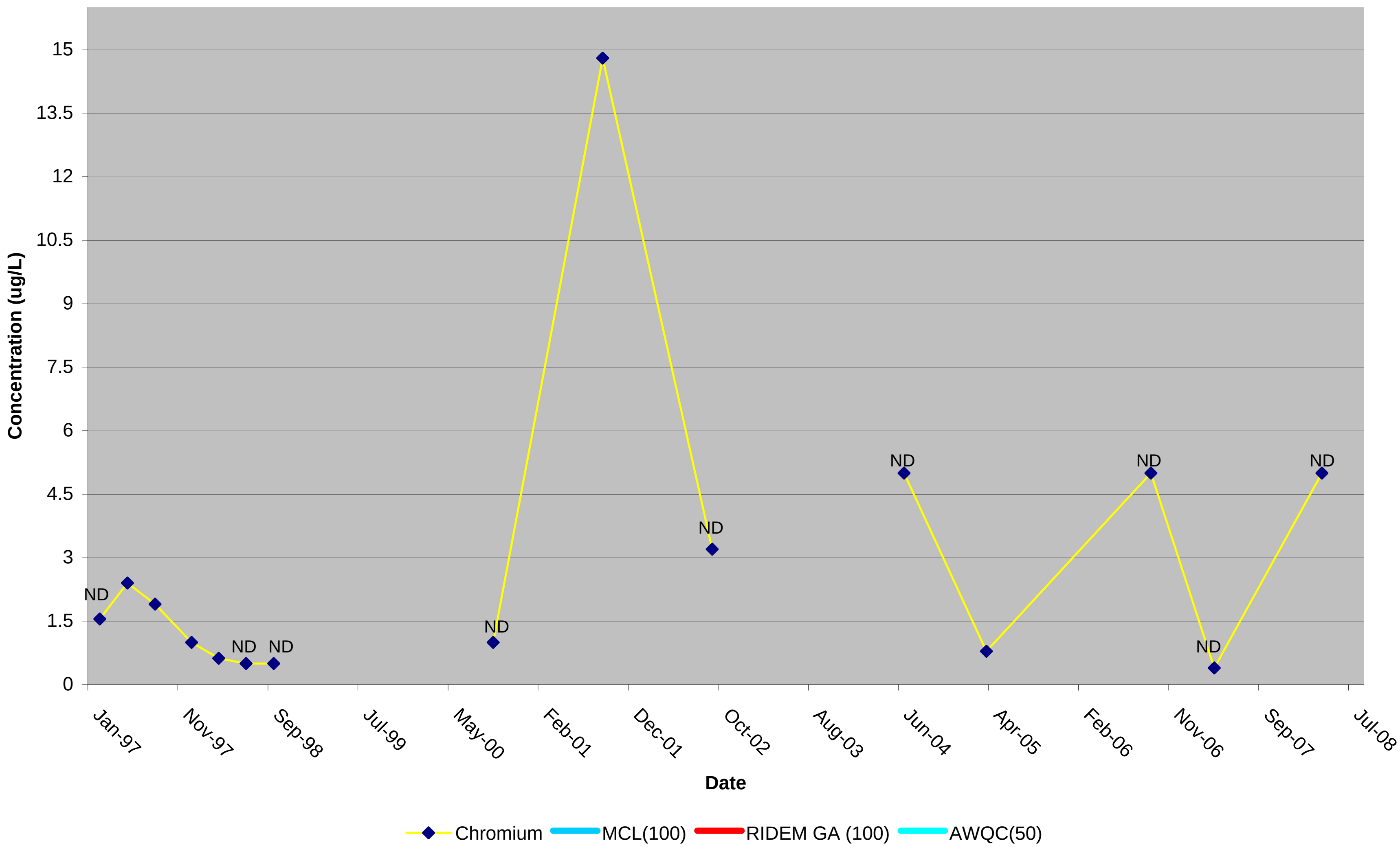
APPENDIX F-1: GROUNDWATER
FIGURE F-1.8-4

CADMIUM IN GROUNDWATER, MW108R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



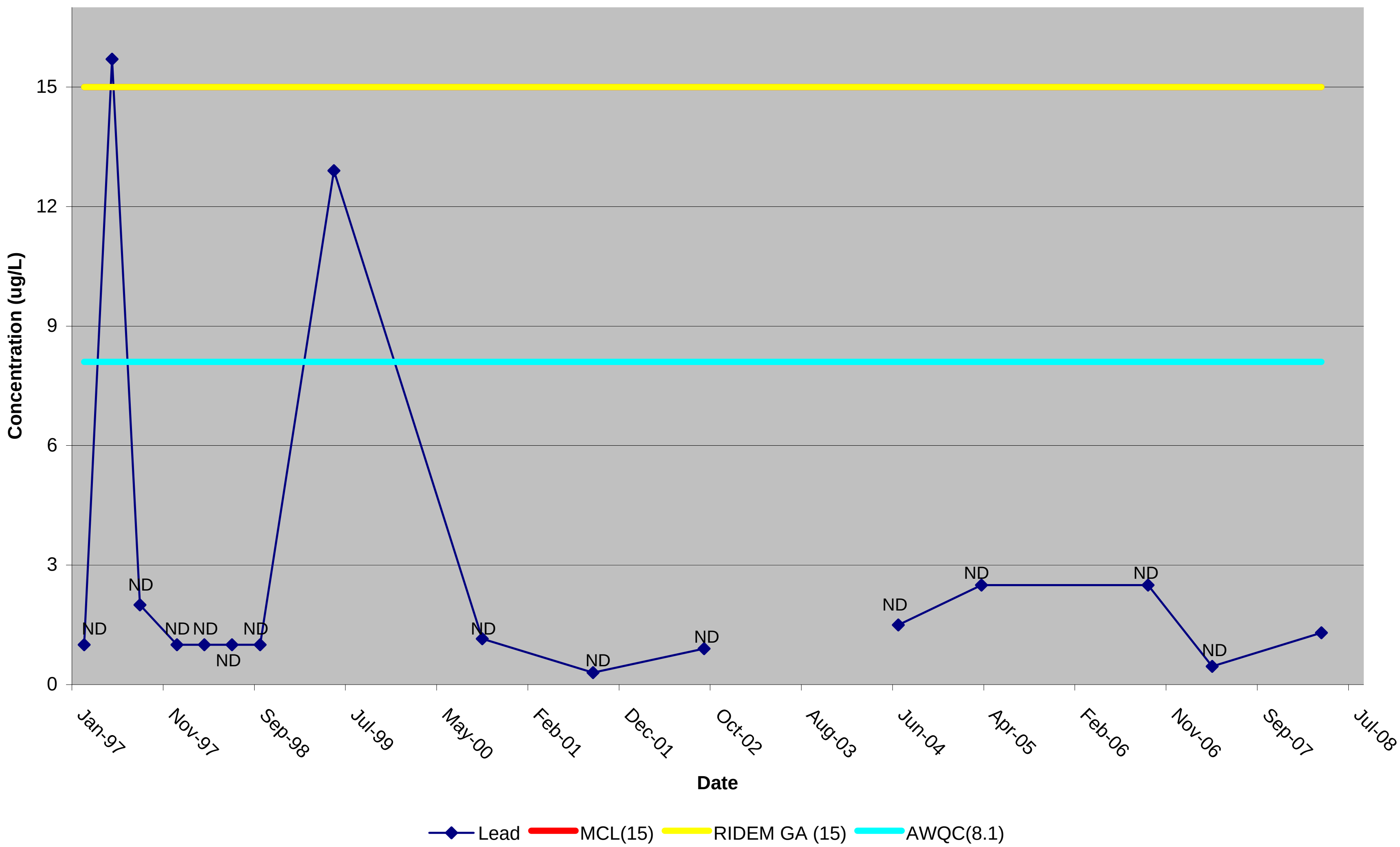
APPENDIX F-1: GROUNDWATER
FIGURE F-1.8-5

CHROMIUM IN GROUNDWATER, MW108R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



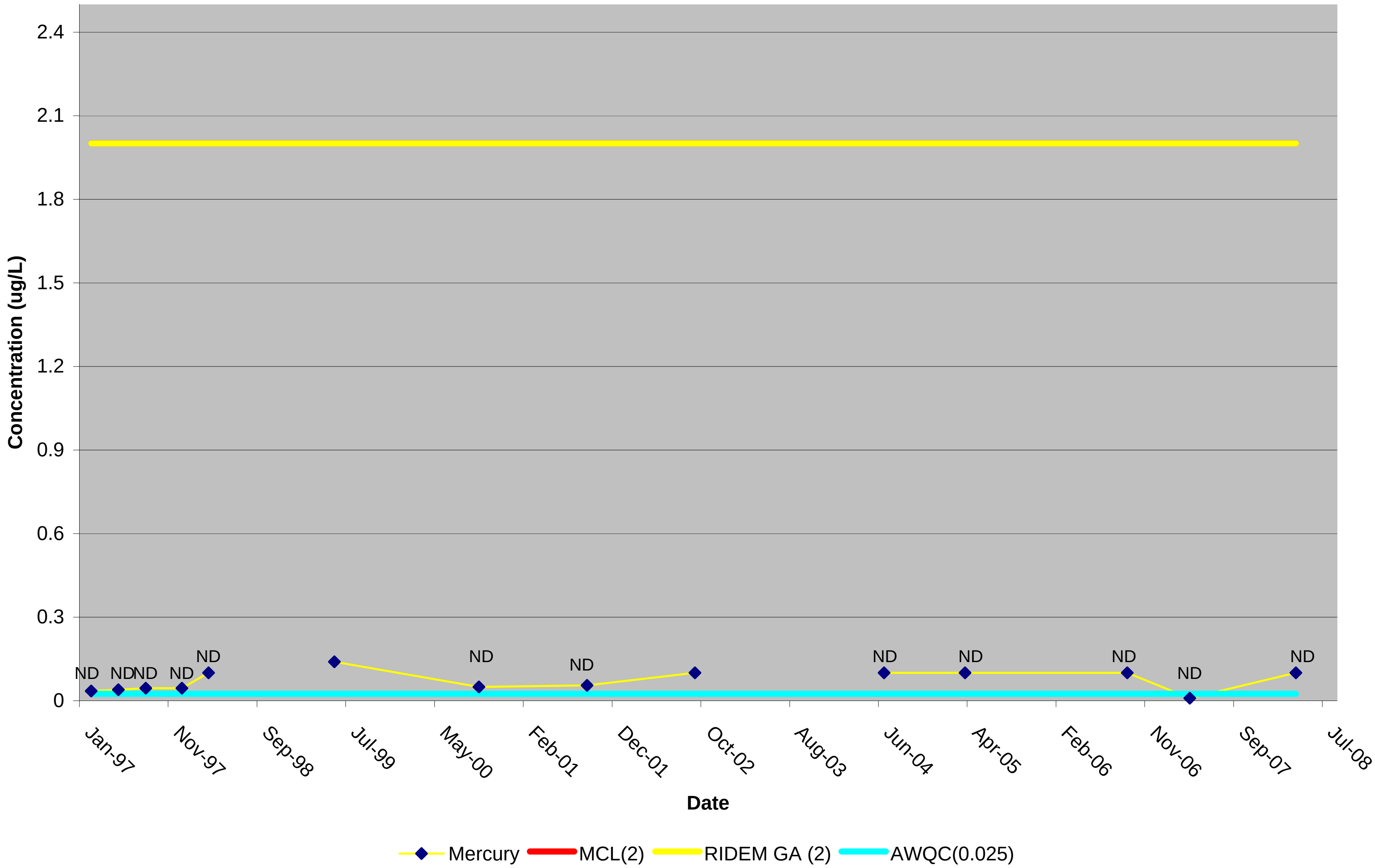
APPENDIX F-1: GROUNDWATER
FIGURE F-1.8-6

LEAD IN GROUNDWATER, MW108R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



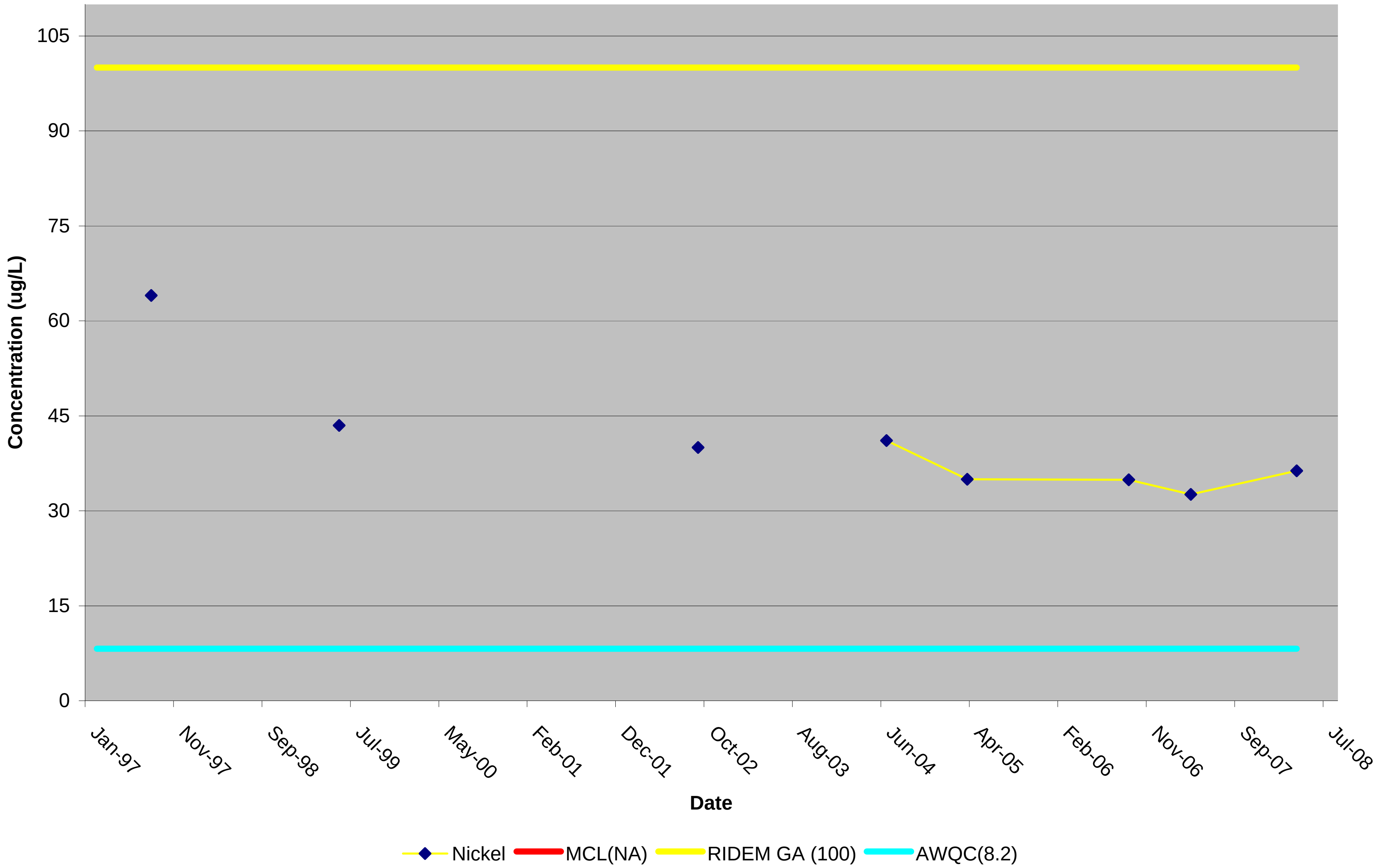
APPENDIX F-1: GROUNDWATER
FIGURE F-1.8-7

MERCURY IN GROUNDWATER, MW108R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



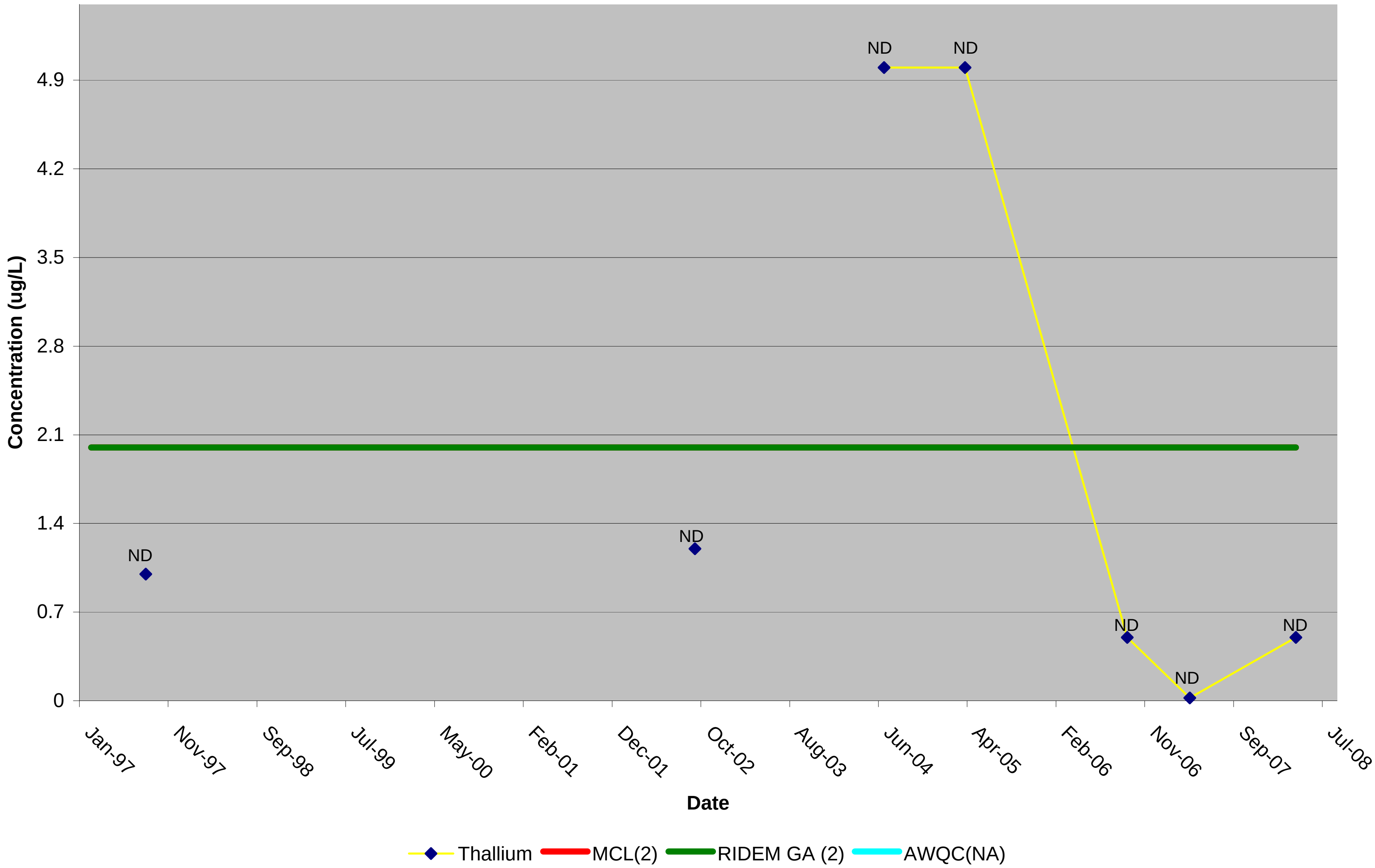
APPENDIX F-1: GROUNDWATER
FIGURE F-1.8-8

NICKEL IN GROUNDWATER, MW108R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



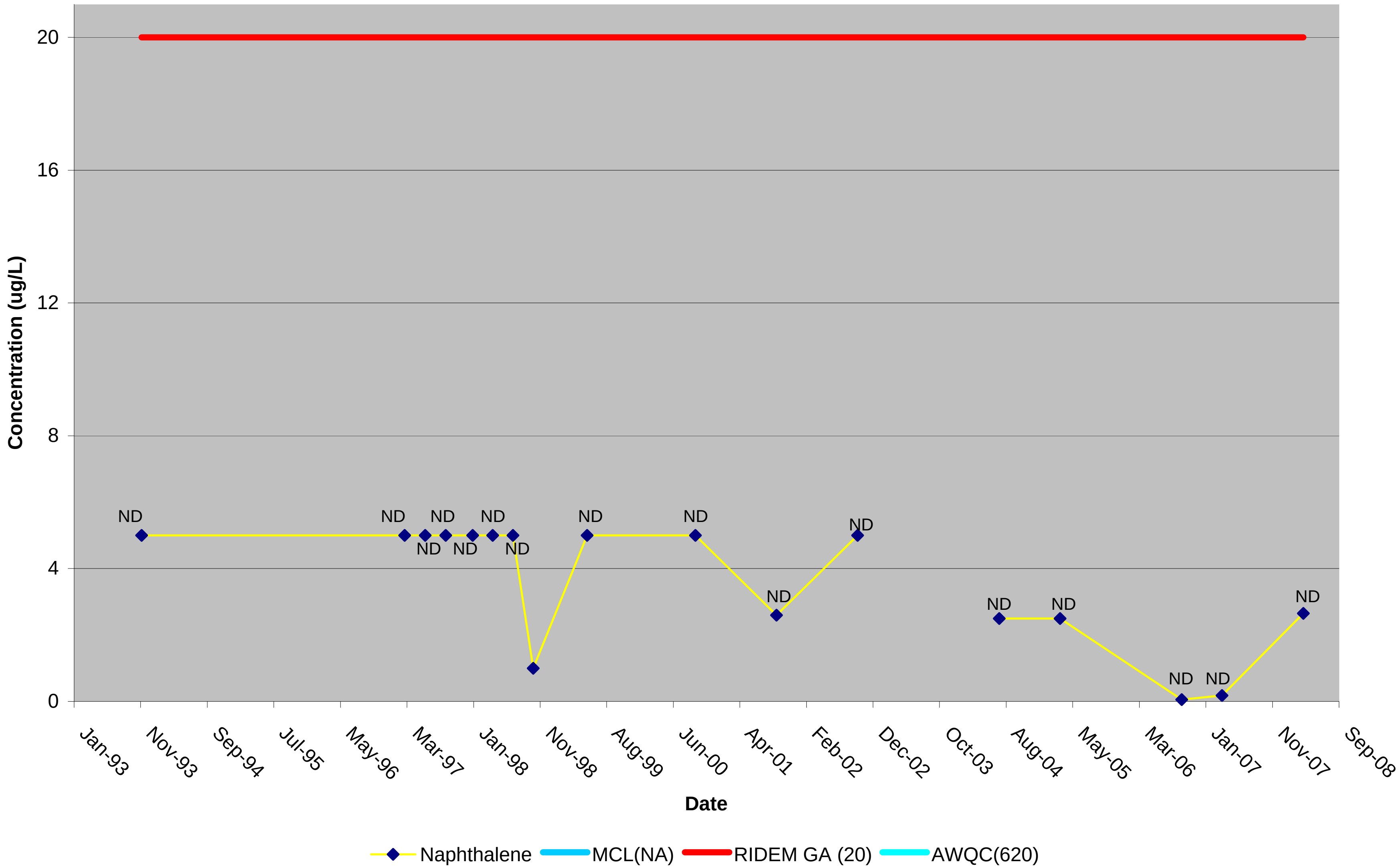
APPENDIX F-1: GROUNDWATER
FIGURE F-1.8-9

THALLIUM IN GROUNDWATER, MW108R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



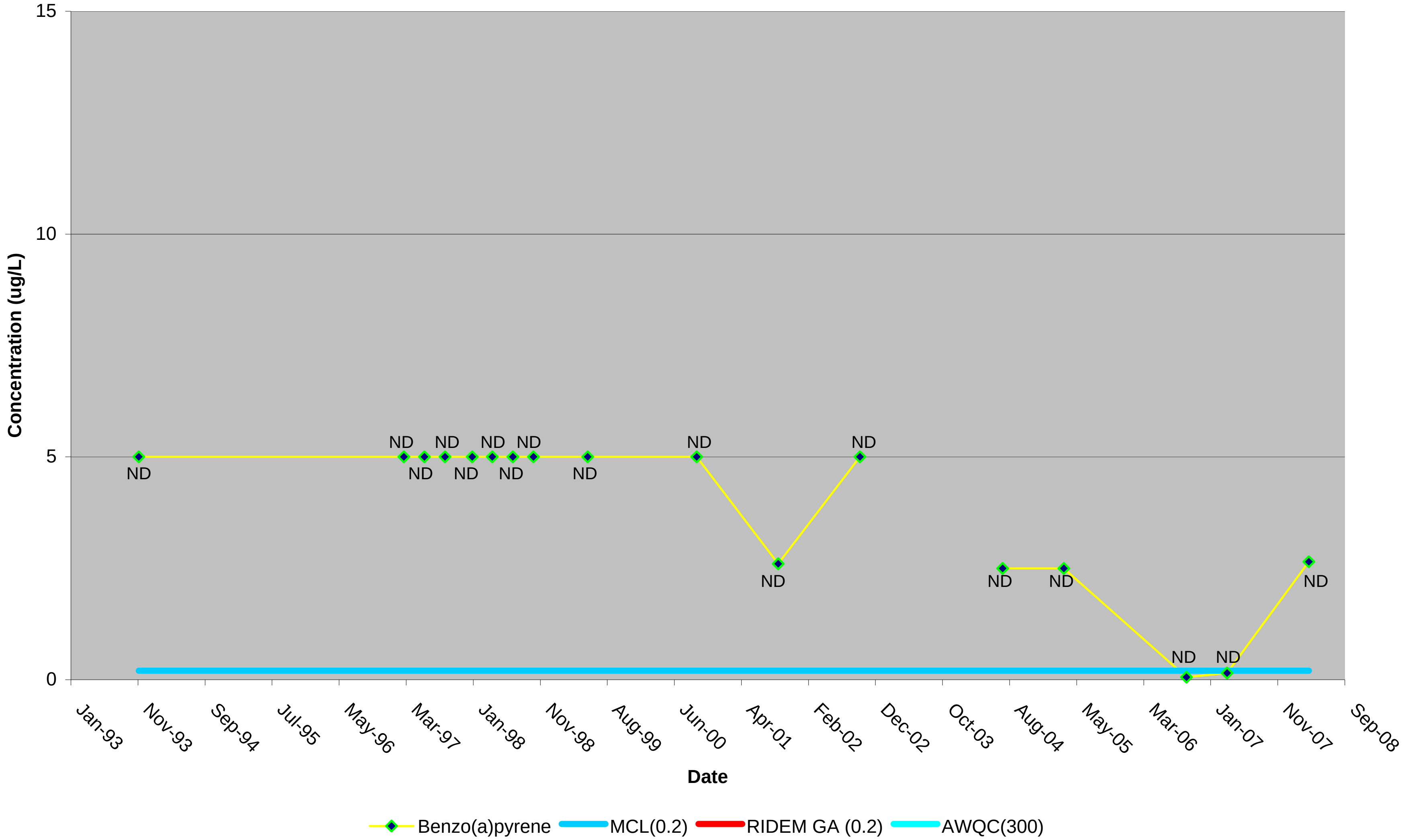
APPENDIX F-1: GROUNDWATER
FIGURE F-1.8-10

NAPHTHALENE IN GROUNDWATER, MW108R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



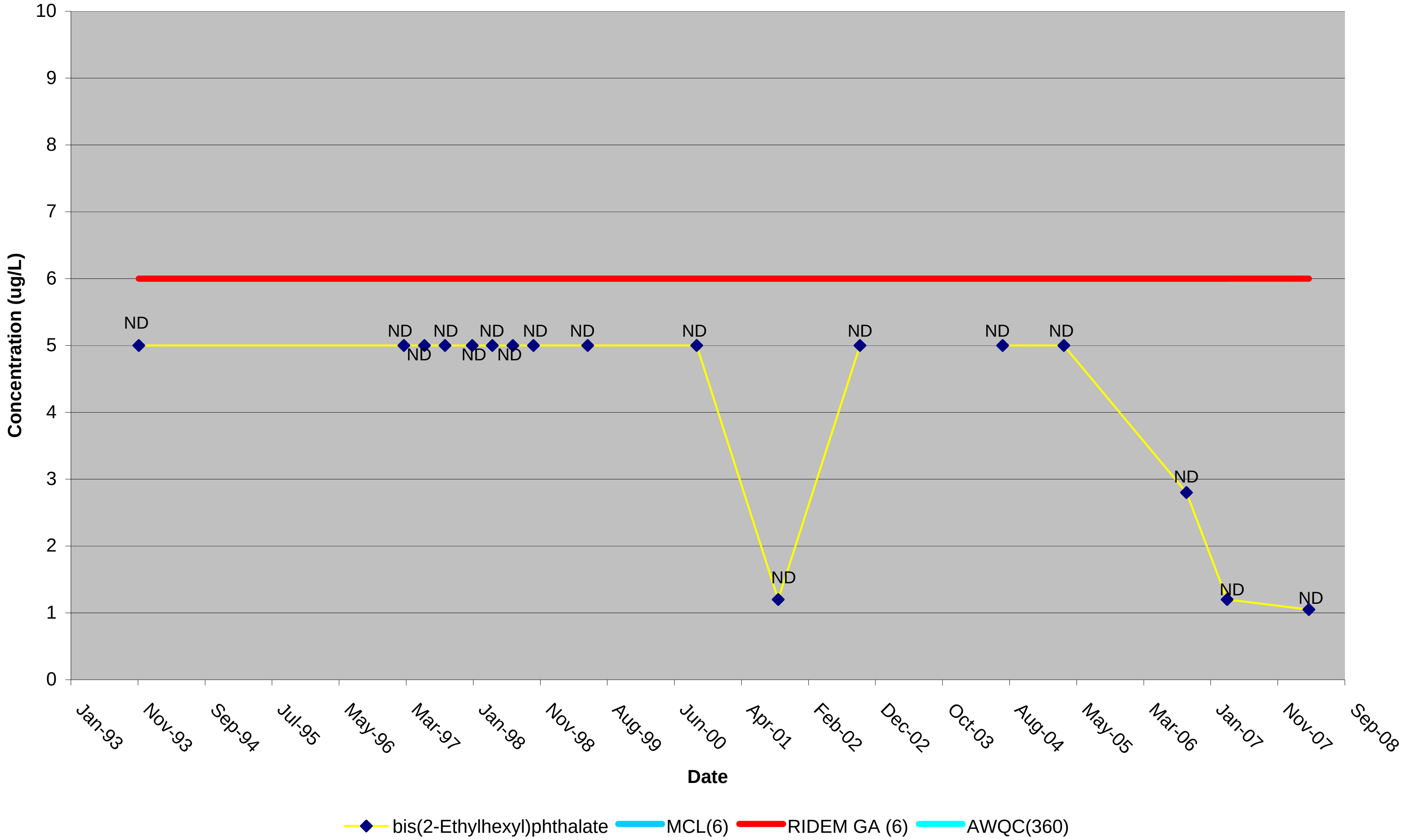
APPENDIX F-1: GROUNDWATER
FIGURE F-1.8-11

BENZO(A)PYRENE IN GROUNDWATER, MW108R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



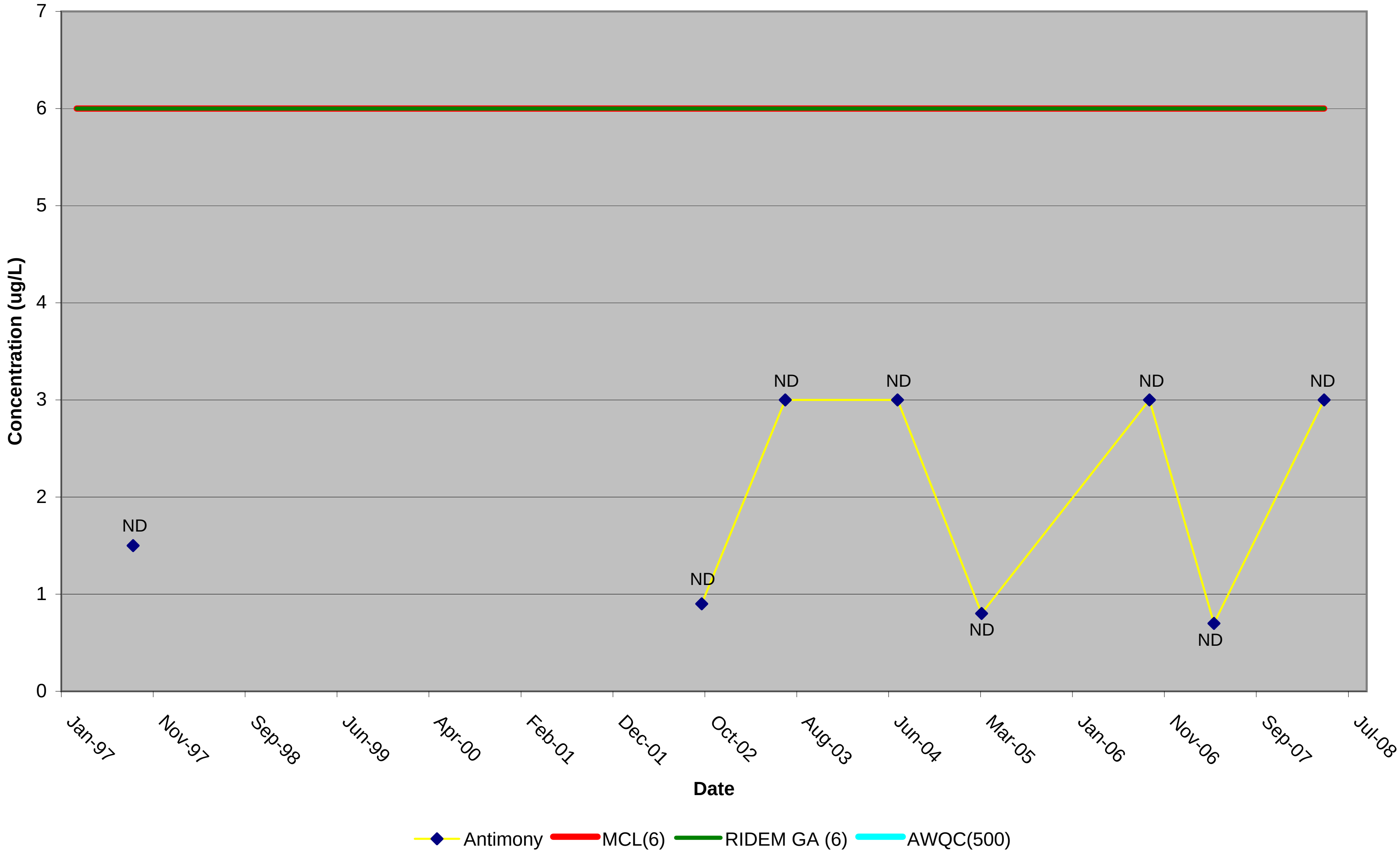
APPENDIX F-1: GROUNDWATER
FIGURE F-1.8-12

BIS(2-ETHYLHEXYL)PHTHALATE IN GROUNDWATER, MW108R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



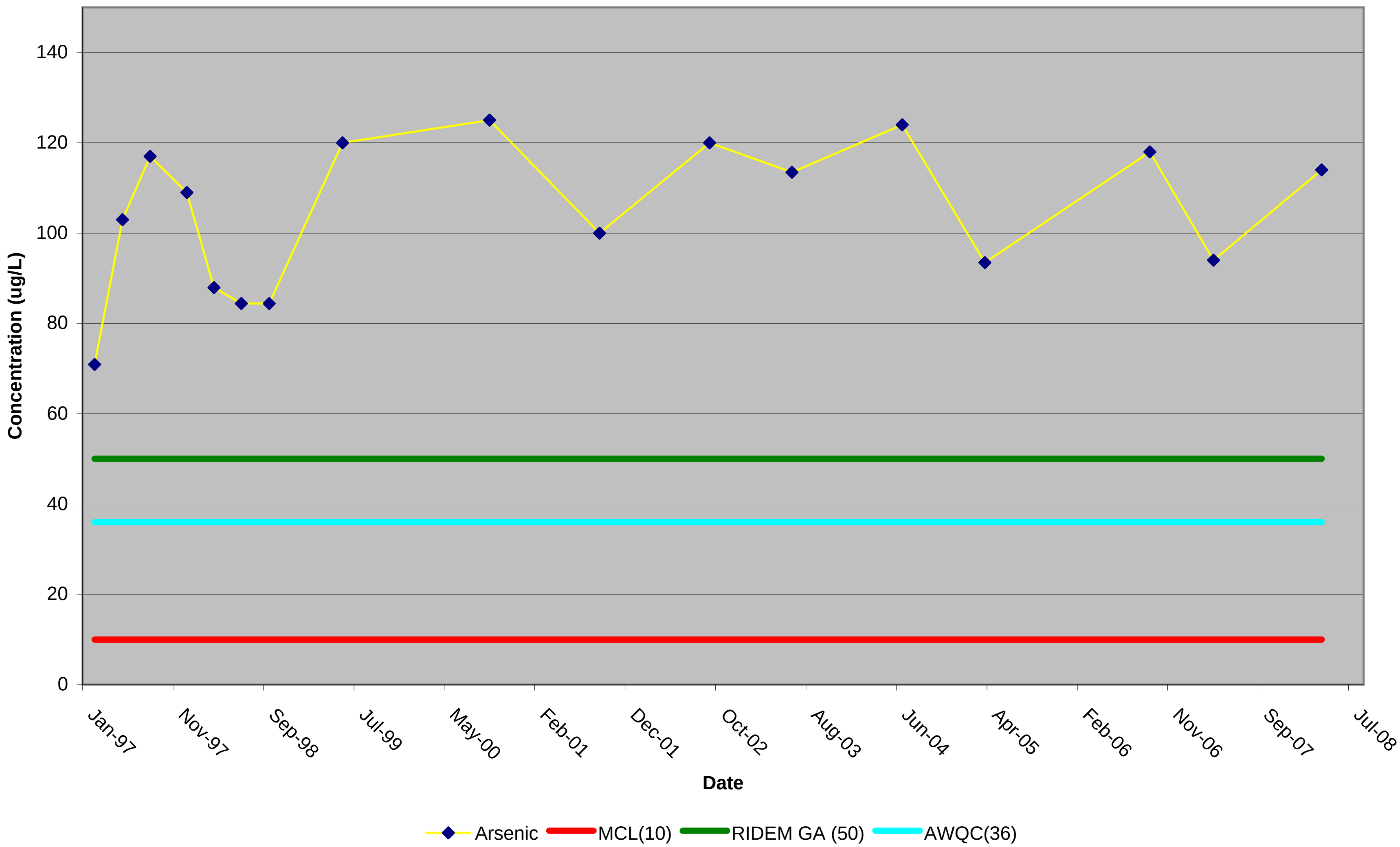
APPENDIX F-1: GROUNDWATER
FIGURE F-1.9-1

ANTIMONY IN GROUNDWATER, MW111R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



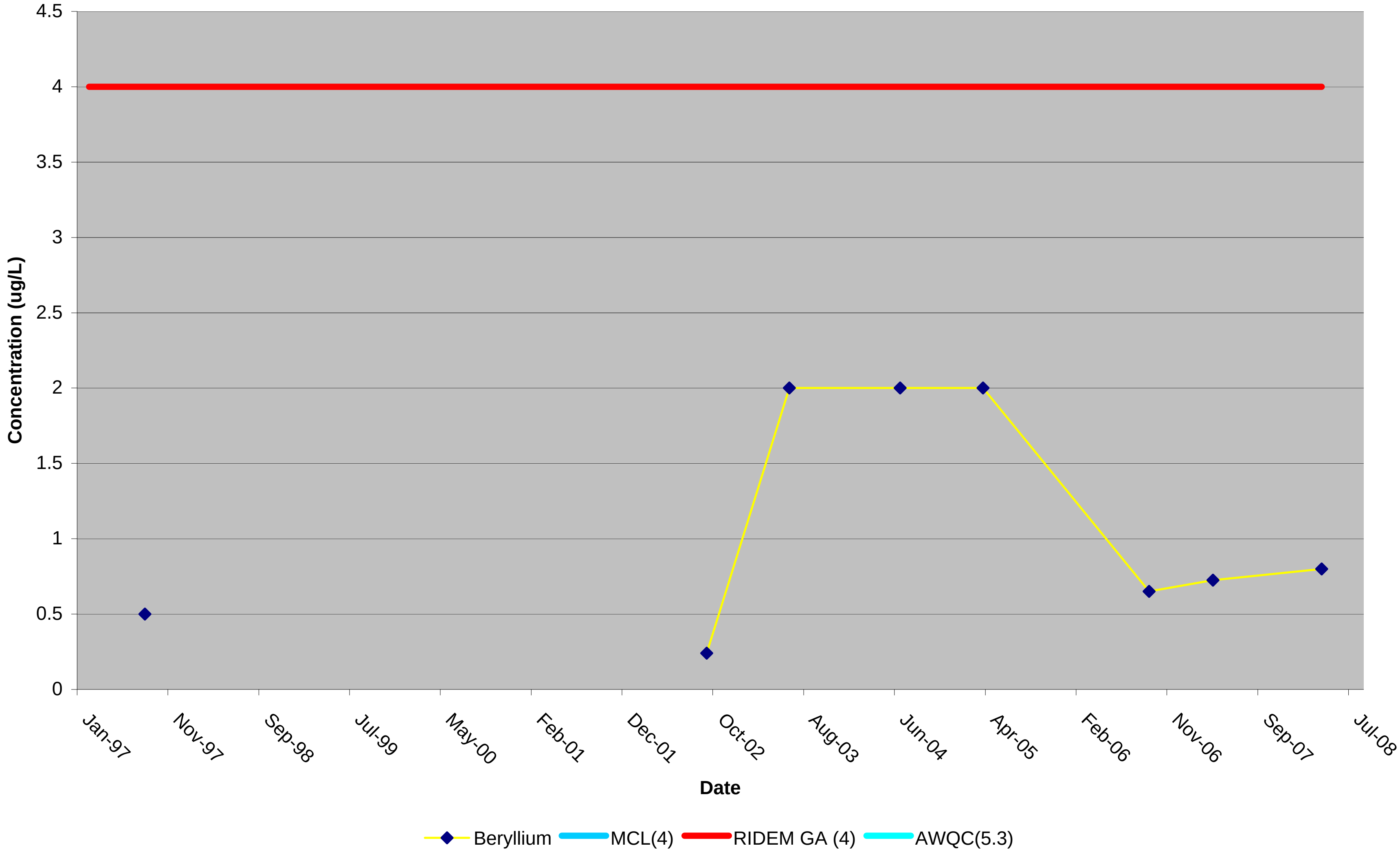
APPENDIX F-1: GROUNDWATER
FIGURE F-1.9-2

ARSENIC IN GROUNDWATER, MW111R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



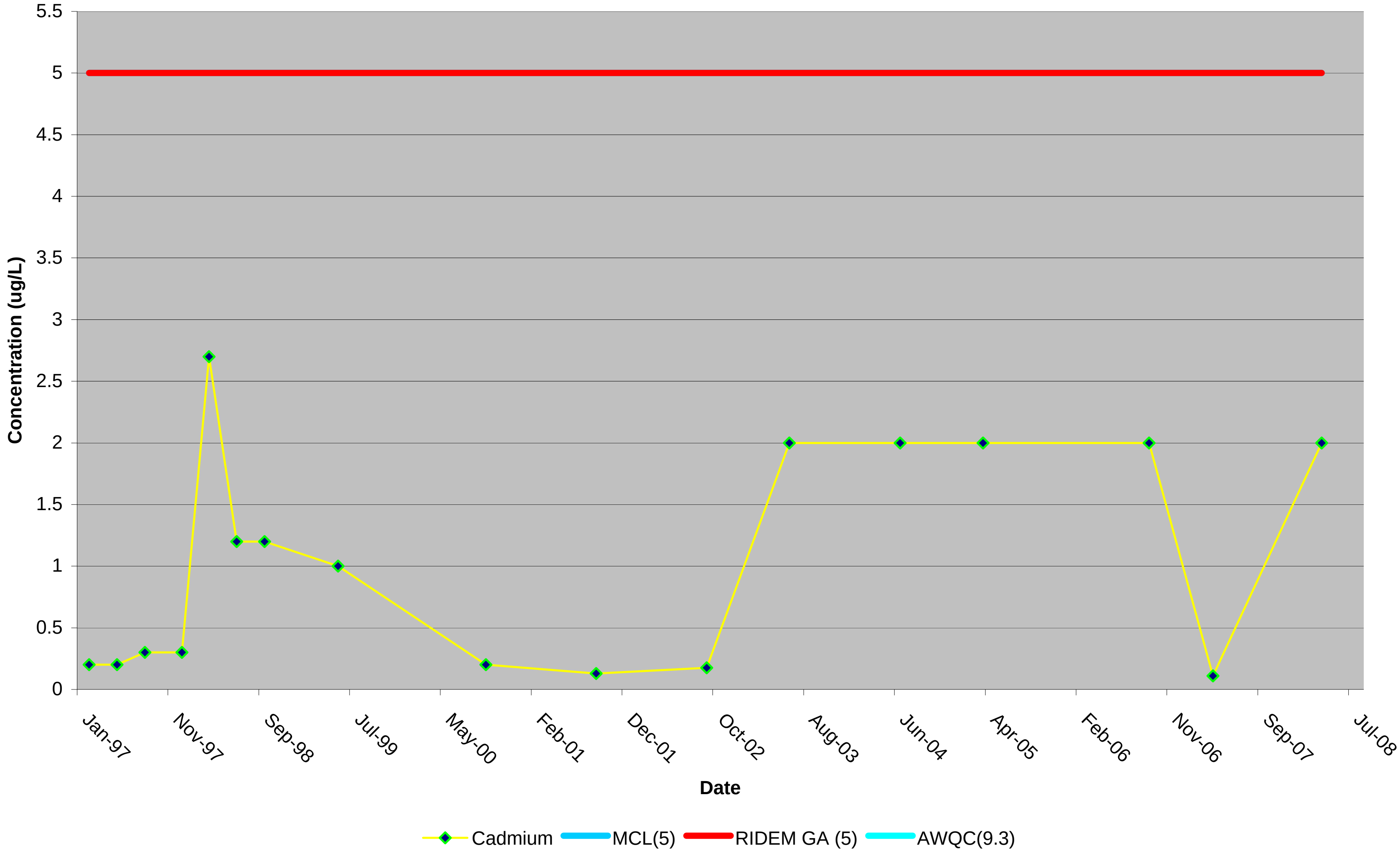
APPENDIX F-1: GROUNDWATER
FIGURE F-1.9-3

BERYLLIUM IN GROUNDWATER, MW111R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



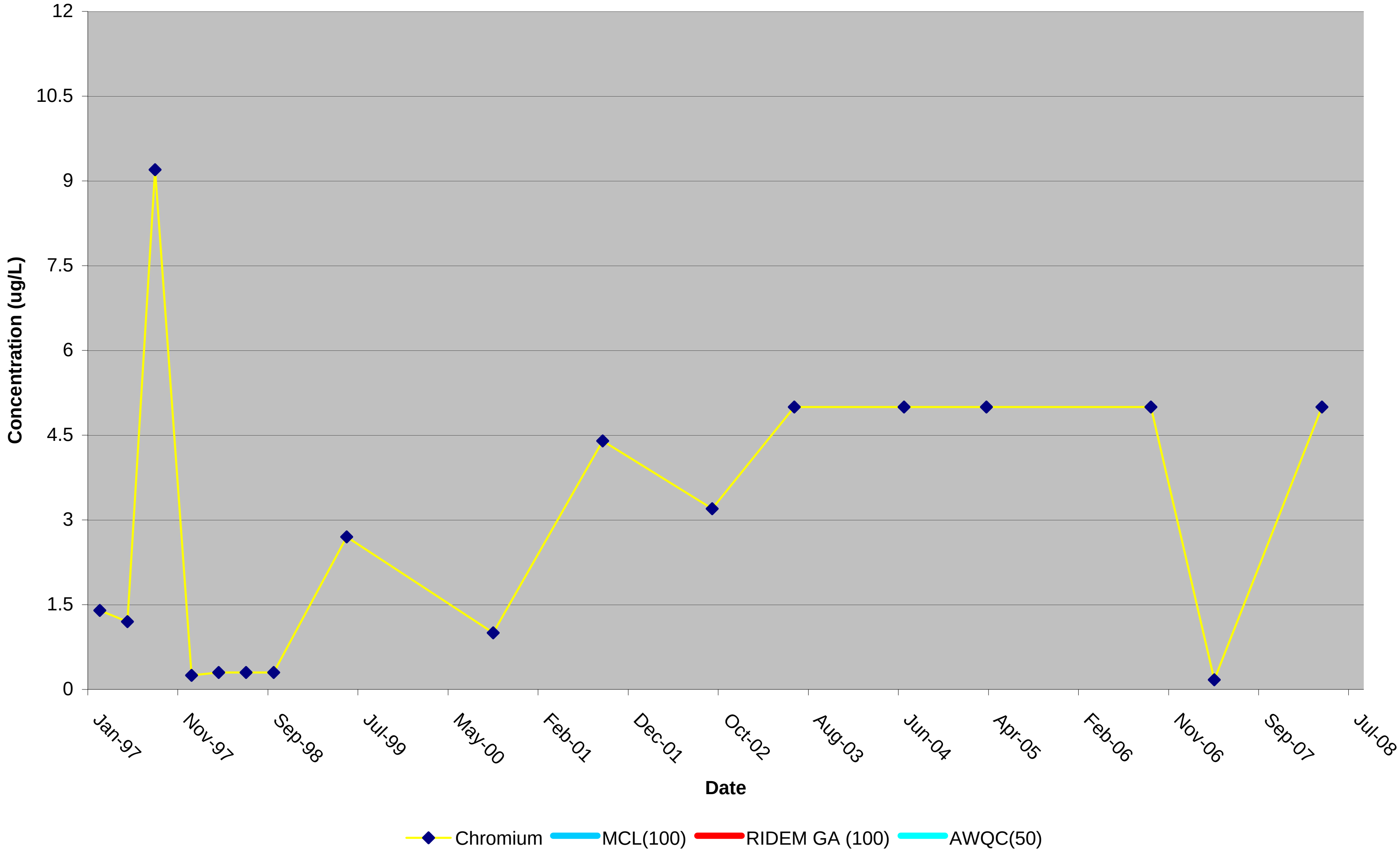
APPENDIX F-1: GROUNDWATER
FIGURE F-1.9-4

CADMIUM IN GROUNDWATER, MW111R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



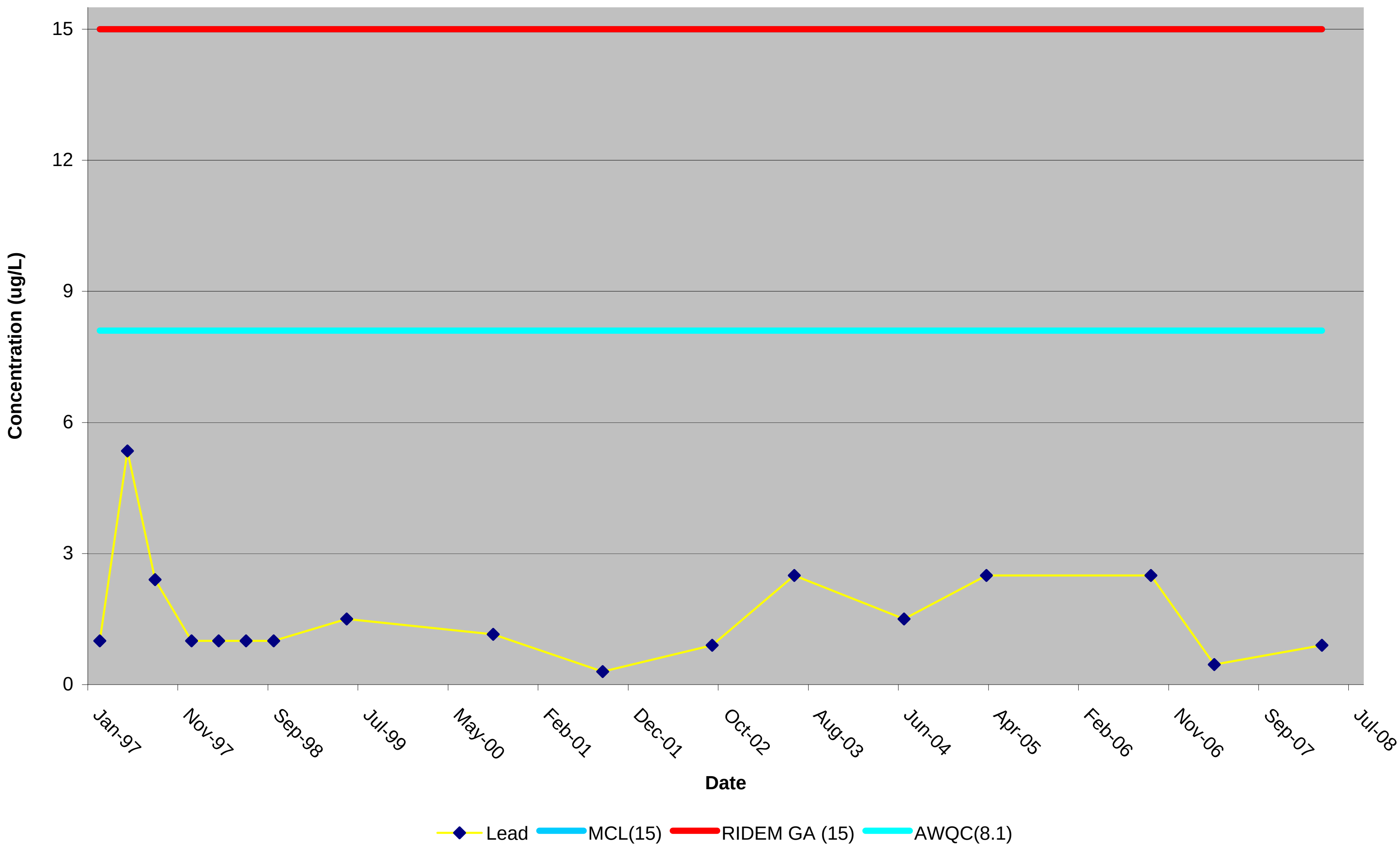
APPENDIX F-1: GROUNDWATER
FIGURE F-1.9-5

CHROMIUM IN GROUNDWATER, MW111R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



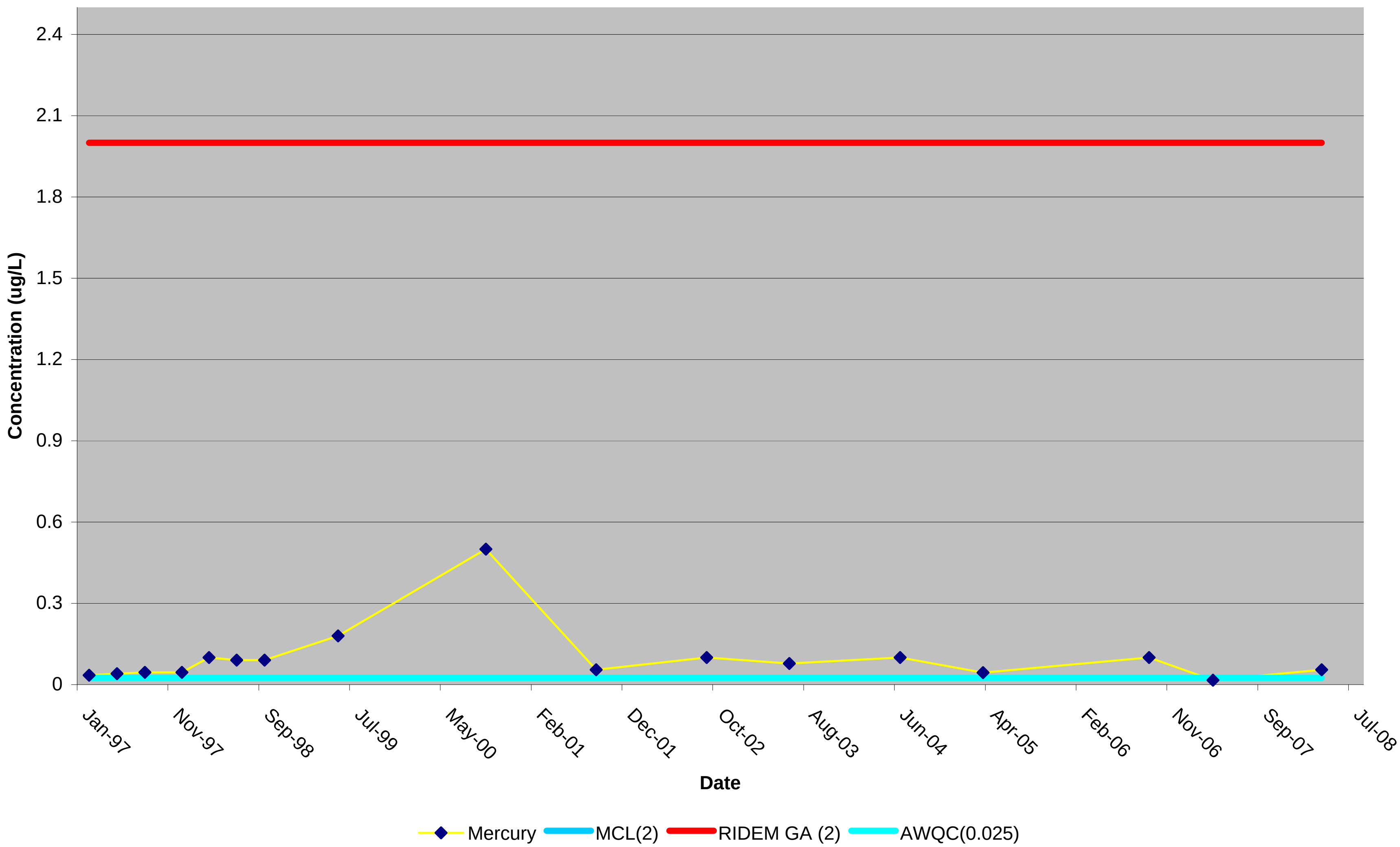
APPENDIX F-1: GROUNDWATER
FIGURE F-1.9-6

LEAD IN GROUNDWATER, MW111R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



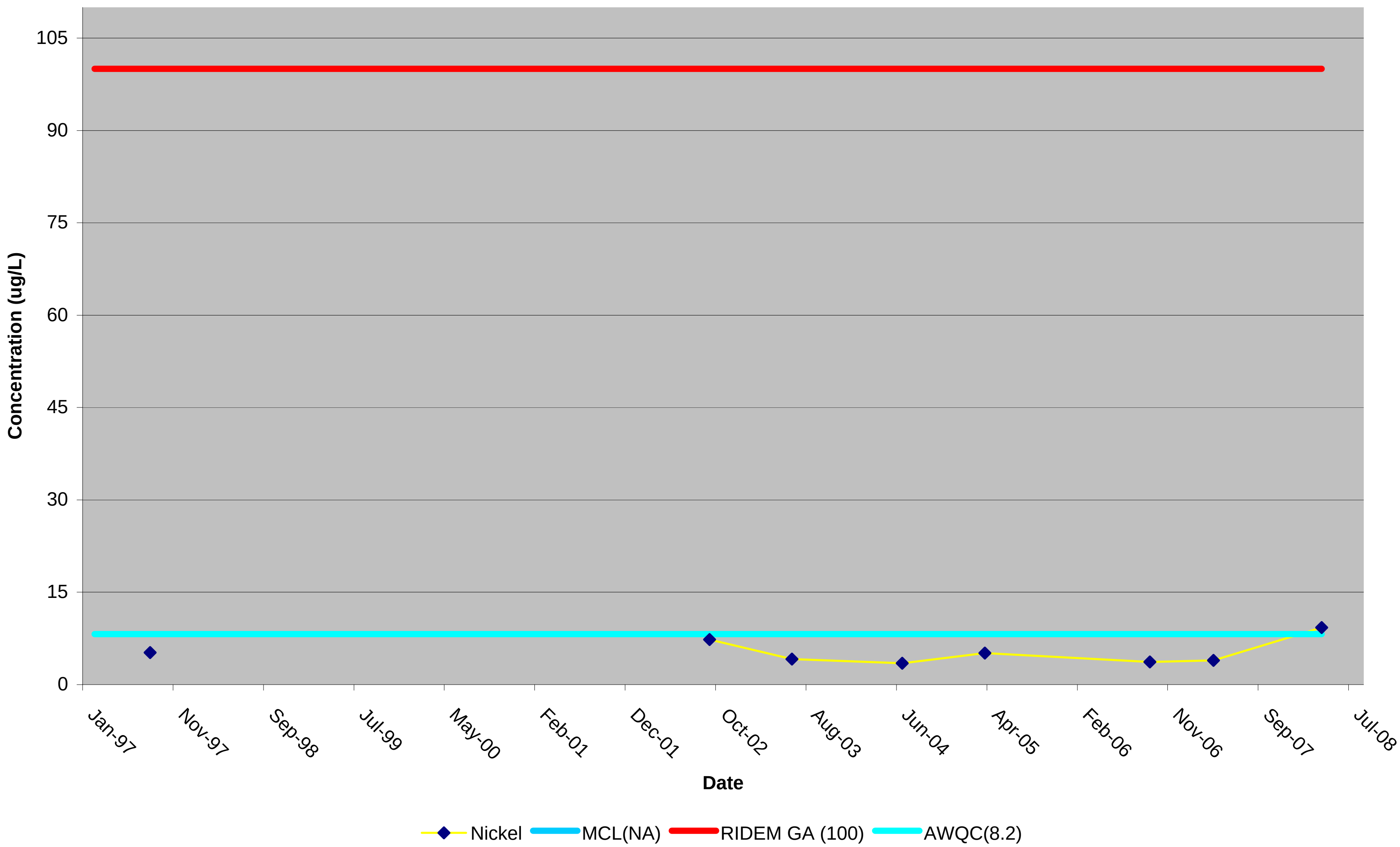
APPENDIX F-1: GROUNDWATER
FIGURE F-1.9-7

MERCURY IN GROUNDWATER, MW111R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



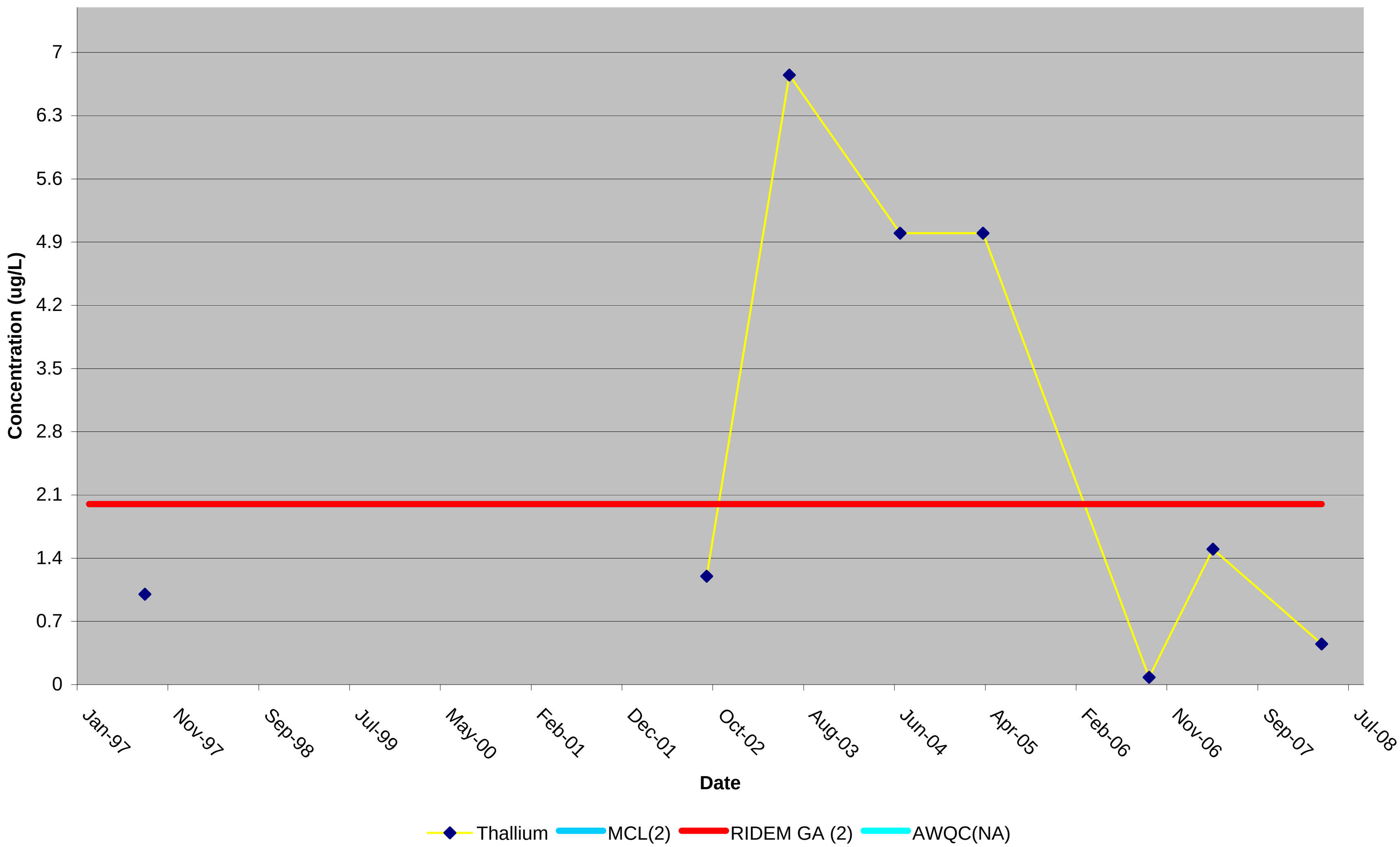
APPENDIX F-1: GROUNDWATER
FIGURE F-1.9-8

NICKEL IN GROUNDWATER, MW111R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



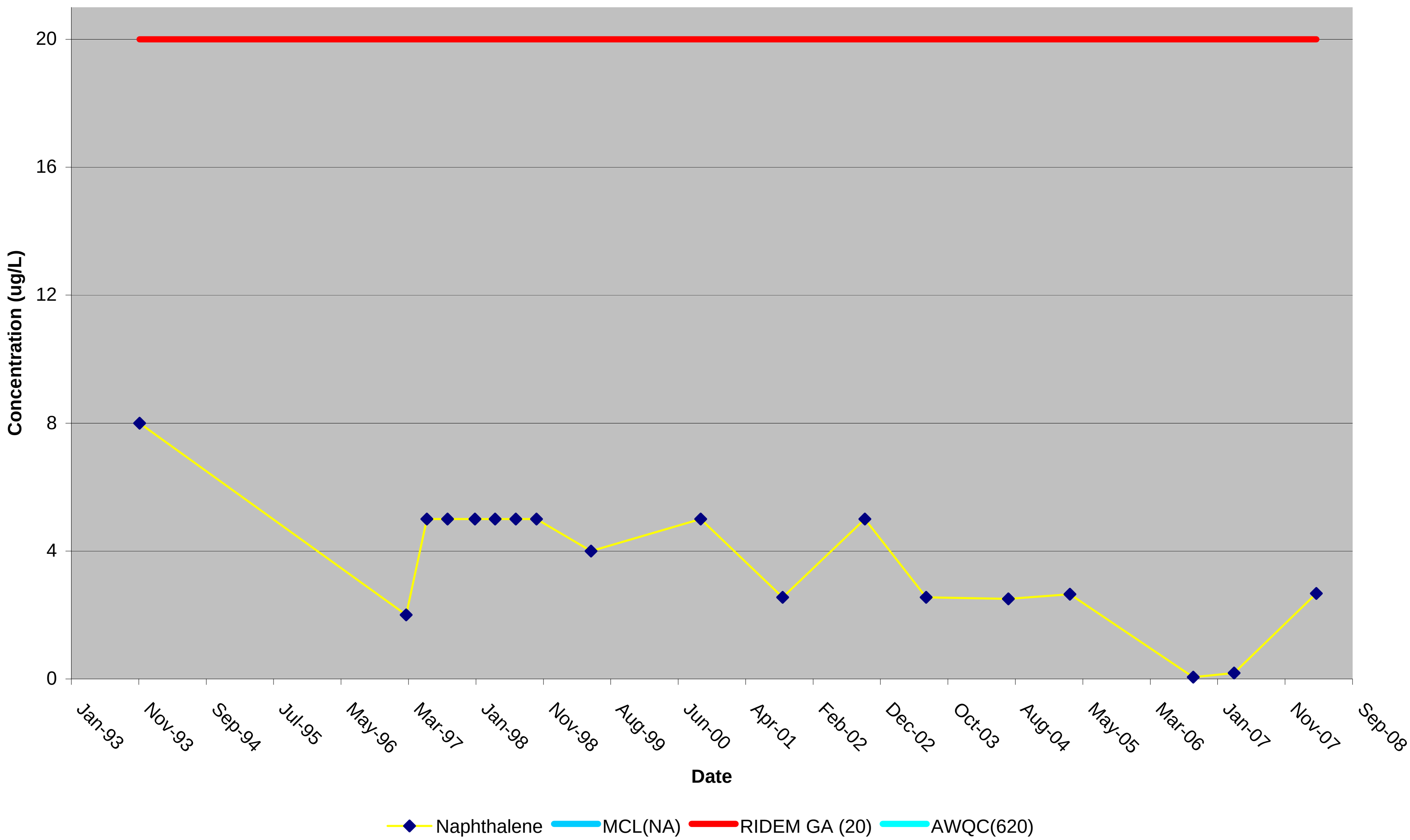
APPENDIX F-1: GROUNDWATER
FIGURE F-1.9-9

THALLIUM IN GROUNDWATER, MW111R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



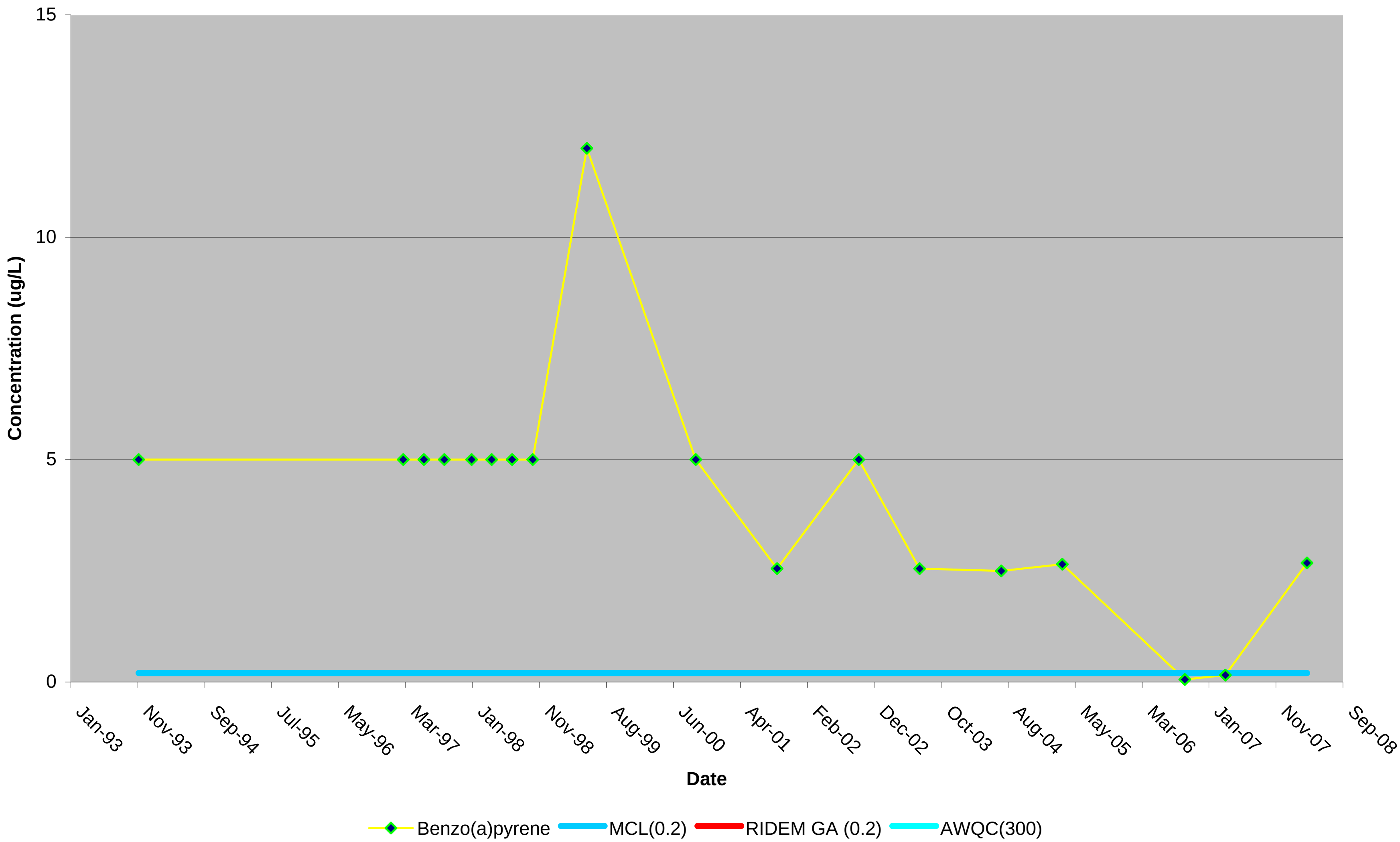
APPENDIX F-1: GROUNDWATER
FIGURE F-1.9-10

NAPHTHALENE IN GROUNDWATER, MW111R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



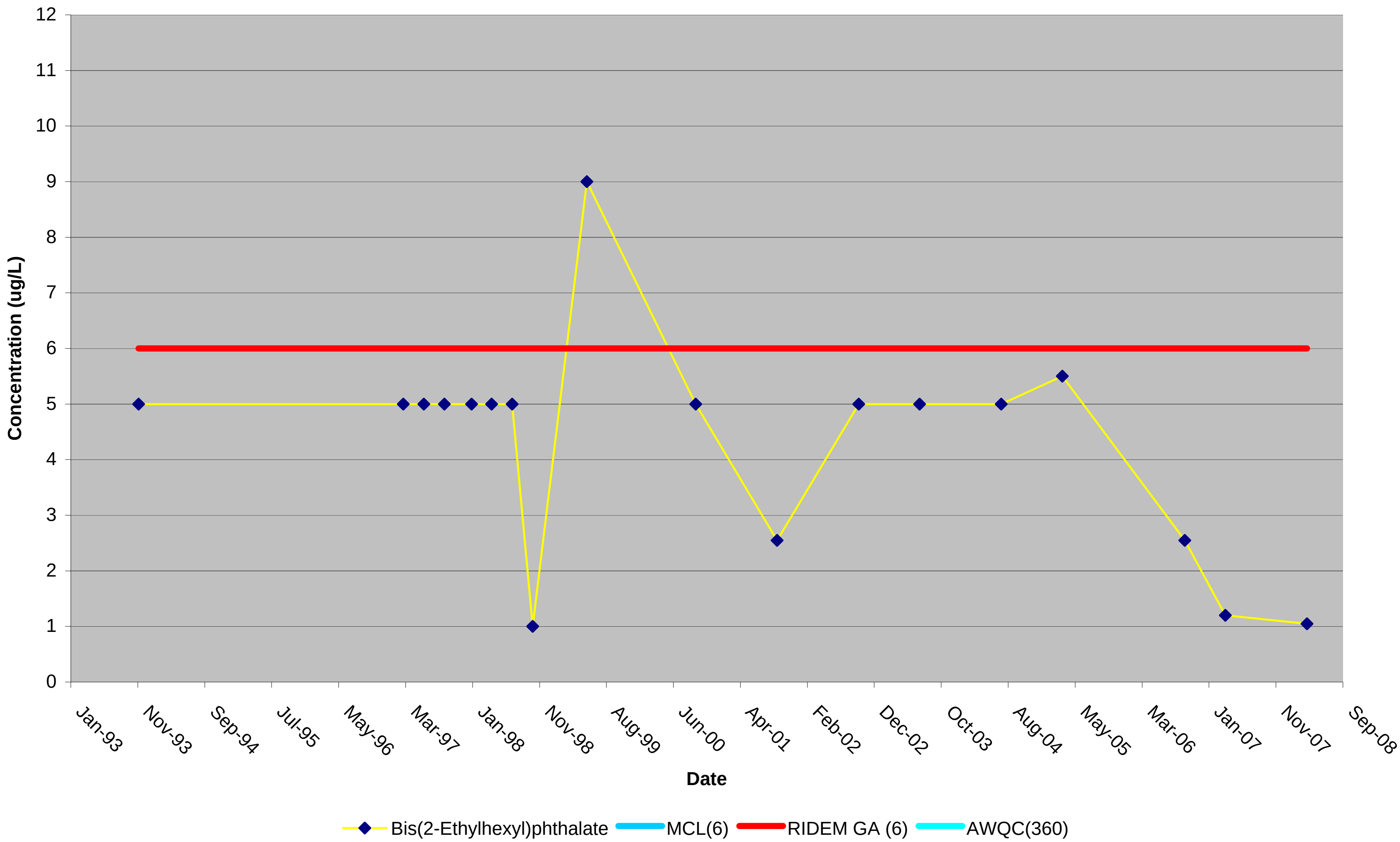
APPENDIX F-1: GROUNDWATER
FIGURE F-1.9-11

BENZO(A)PYRENE IN GROUNDWATER, MW111R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



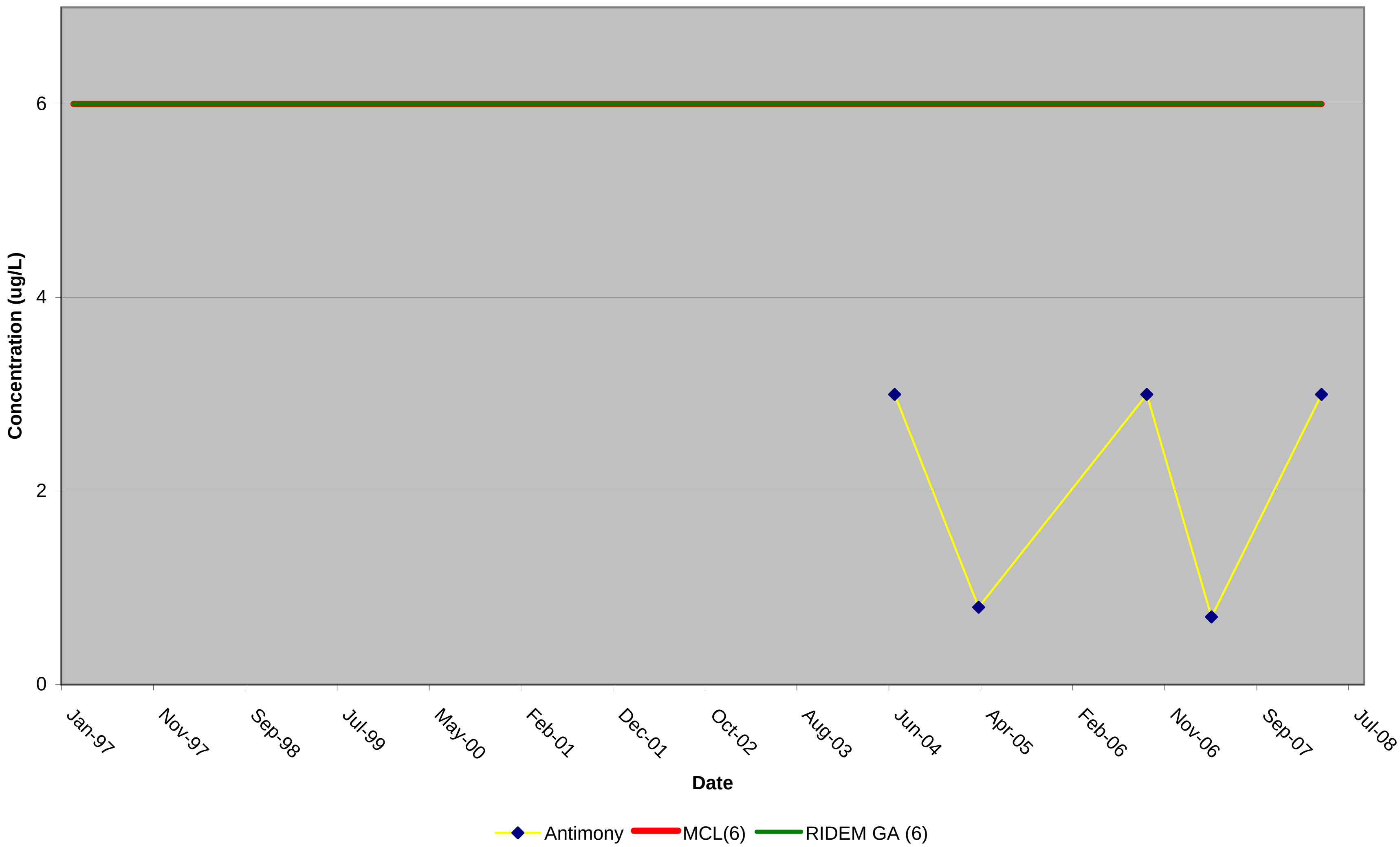
APPENDIX F-1: GROUNDWATER
FIGURE F-1.9-12

BIS(2-ETHYLHEXYL)PHTHALATE IN GROUNDWATER, MW111R
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



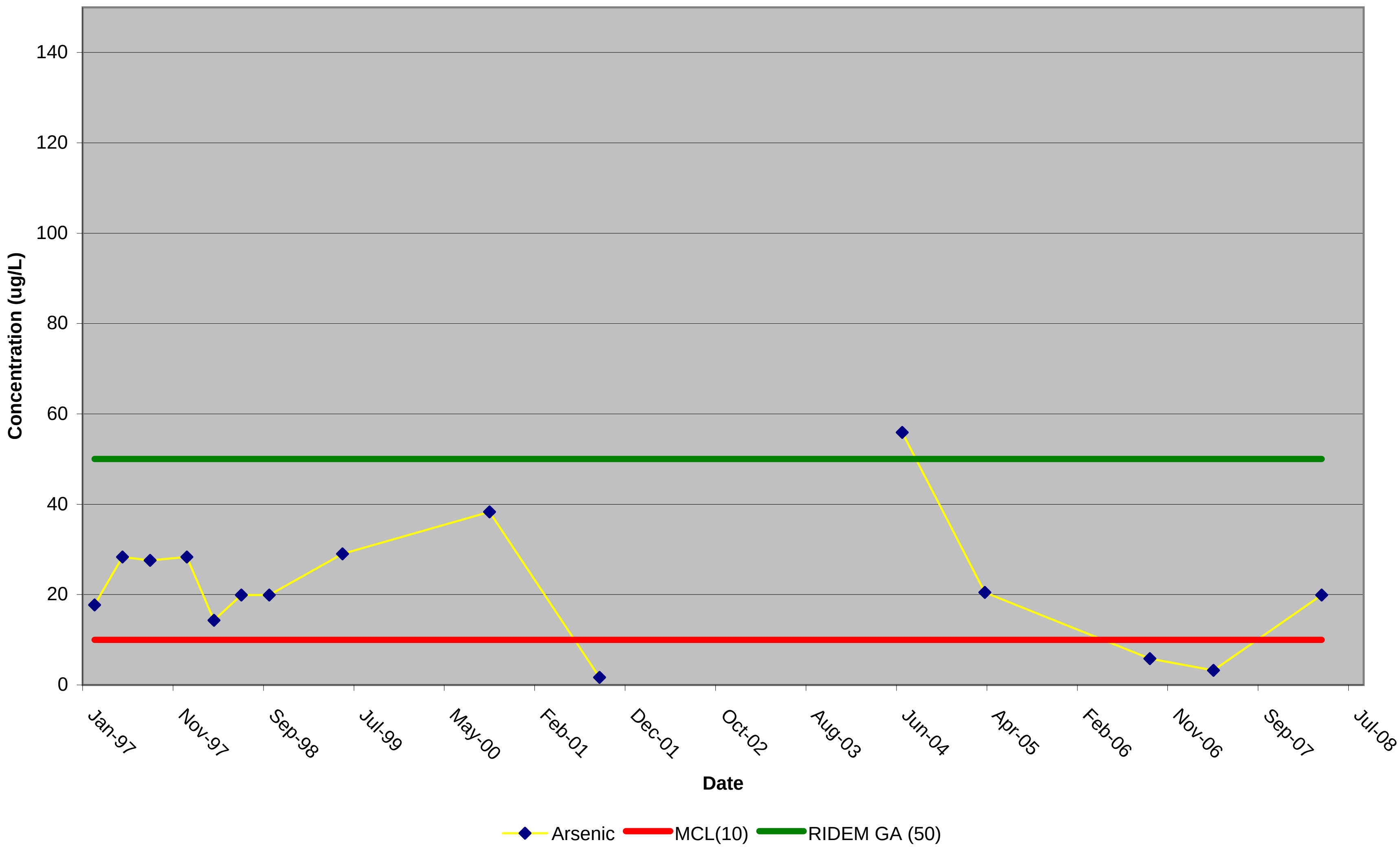
APPENDIX F-1: GROUNDWATER
FIGURE F-1.10-1

ANTIMONY IN GROUNDWATER, MW112S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



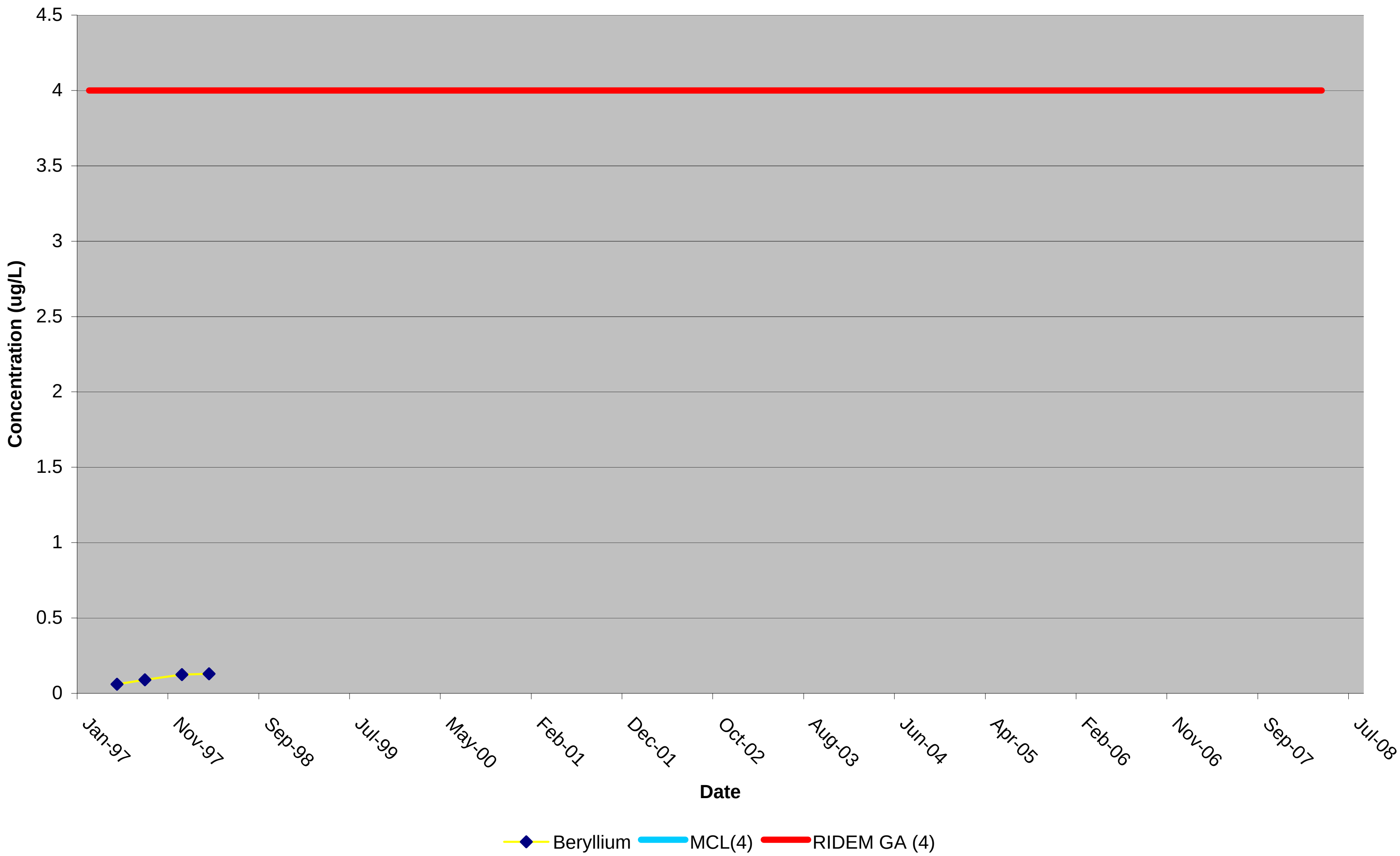
APPENDIX F-1: GROUNDWATER
FIGURE F-1.10-2

ARSENIC IN GROUNDWATER, MW112S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



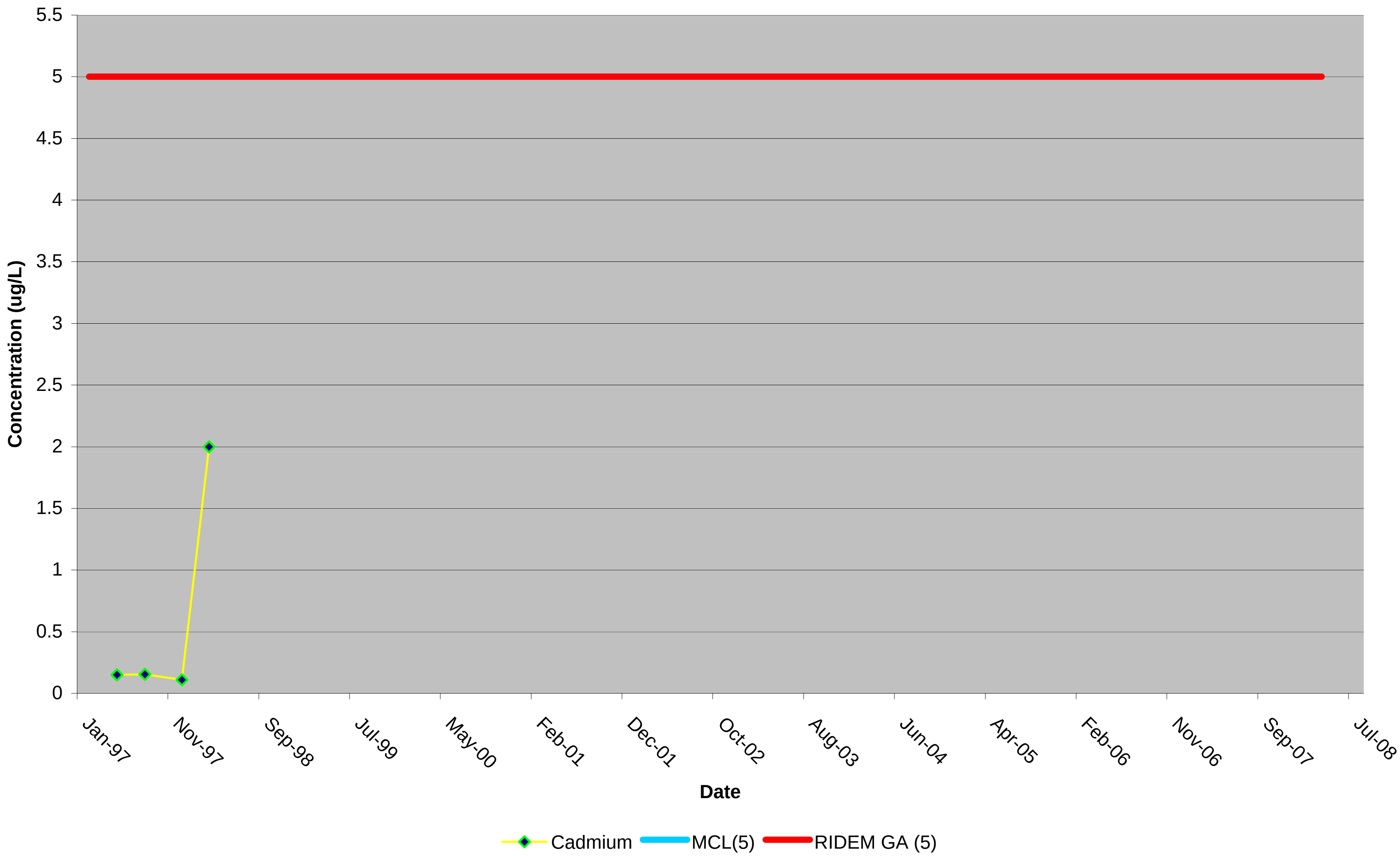
APPENDIX F-1: GROUNDWATER
FIGURE F-1.10-3

BERYLLIUM IN GROUNDWATER, MW112S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



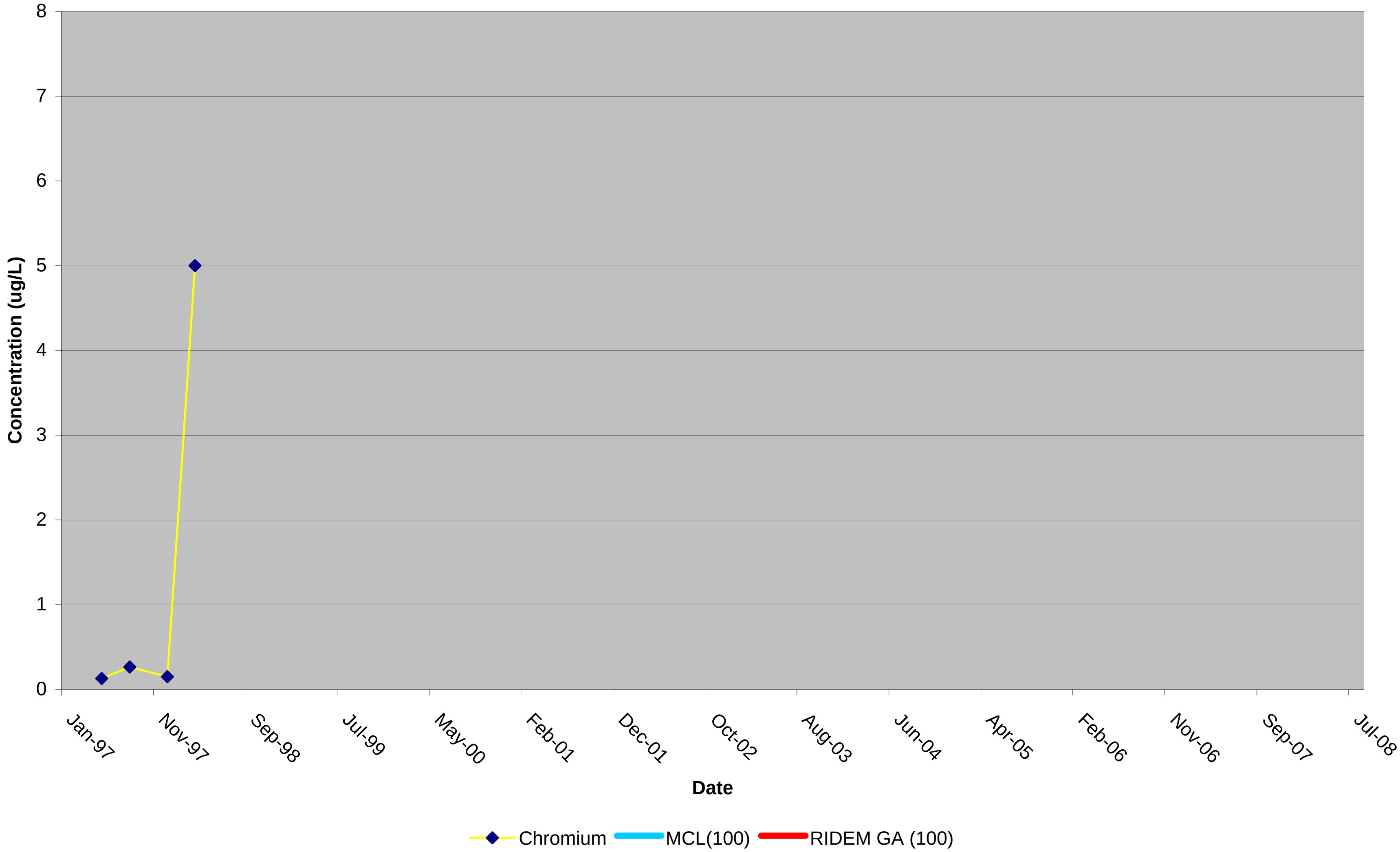
APPENDIX F-1: GROUNDWATER
FIGURE F-1.10-4

CADMIUM IN GROUNDWATER, MW112S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



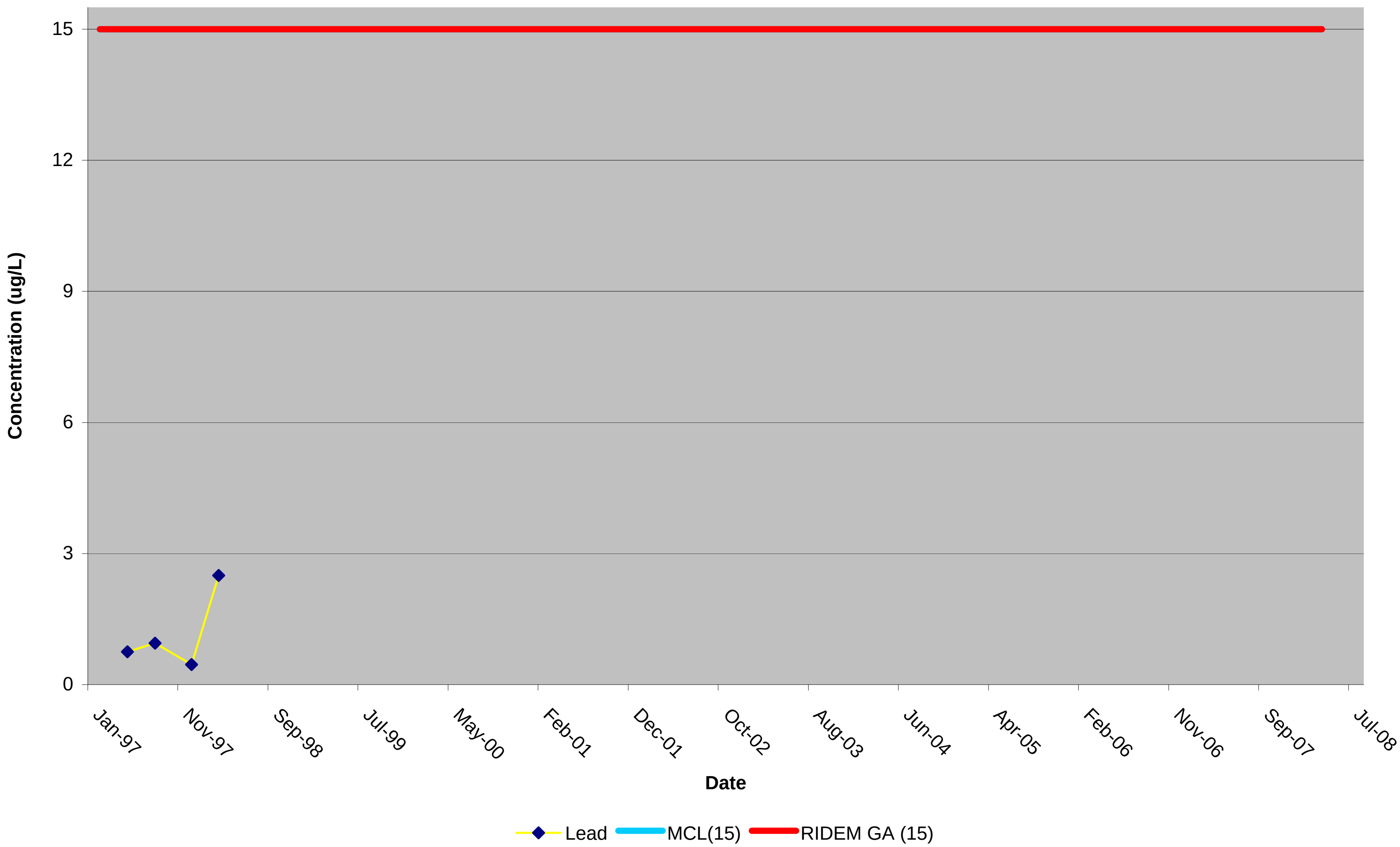
APPENDIX F-1: GROUNDWATER
FIGURE F-1.10-5

CHROMIUM IN GROUNDWATER, MW112S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



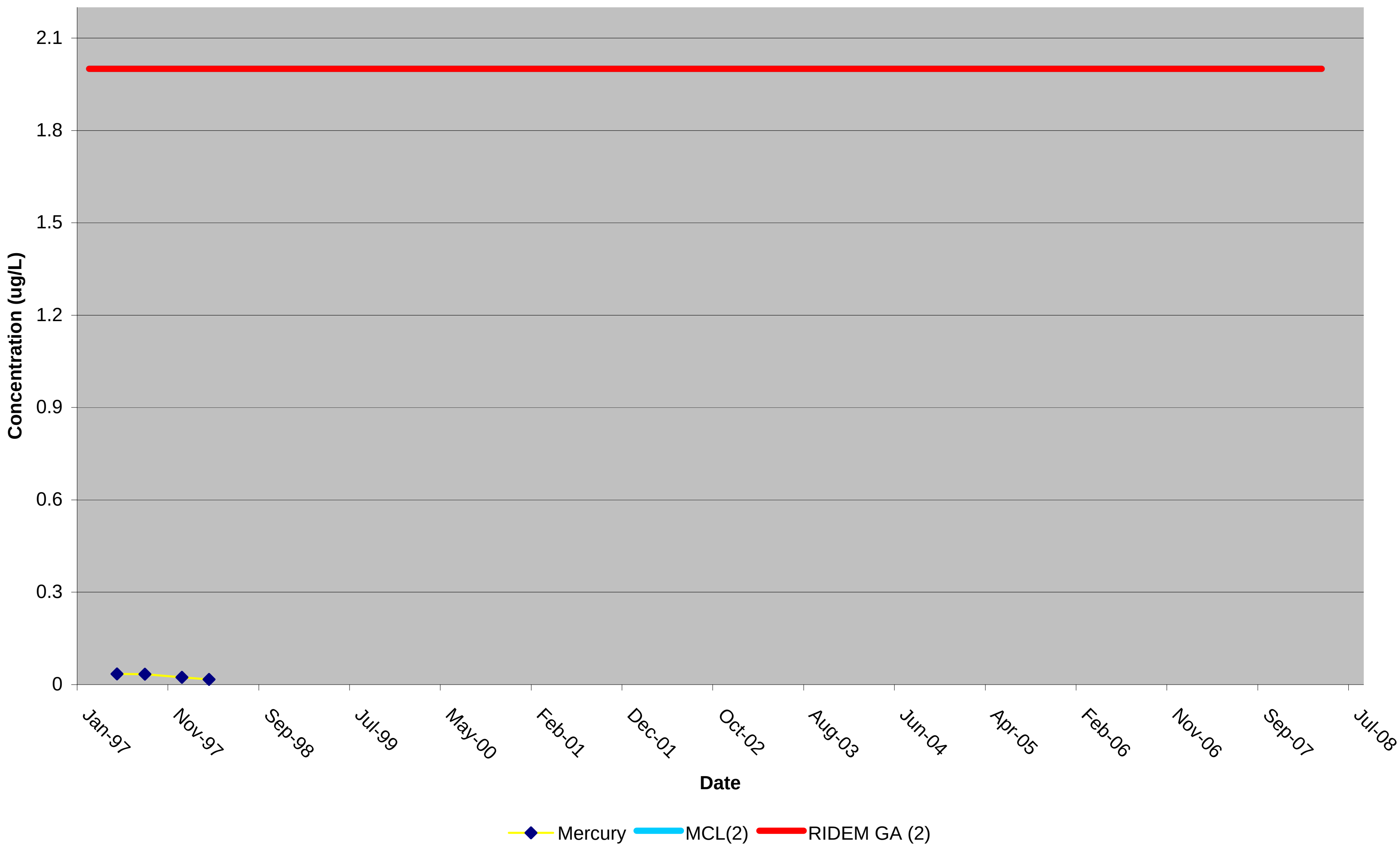
APPENDIX F-1: GROUNDWATER
FIGURE F-1.10-6

LEAD IN GROUNDWATER, MW112S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



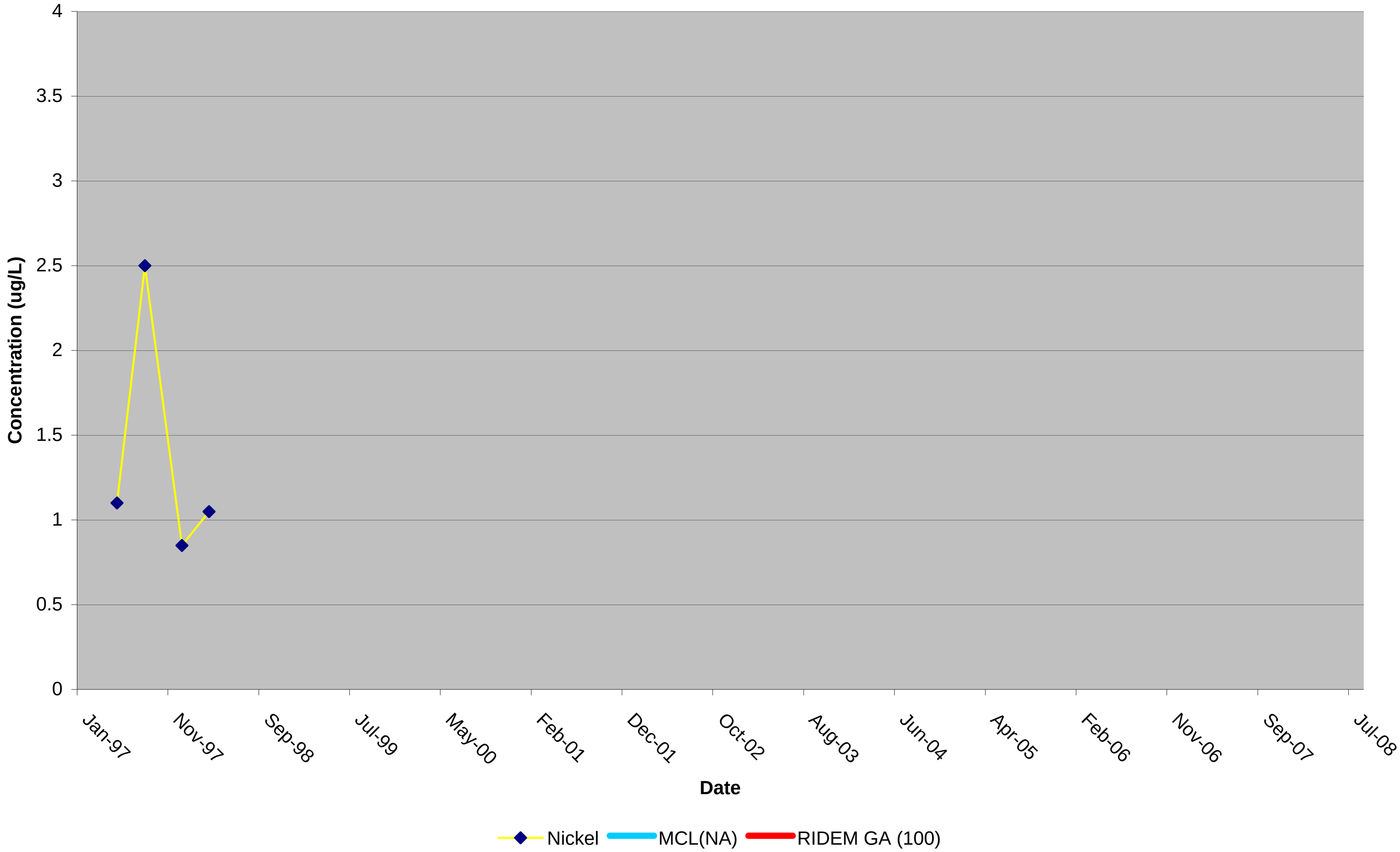
APPENDIX F-1: GROUNDWATER
FIGURE F-1.10-7

MERCURY IN GROUNDWATER, MW112S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



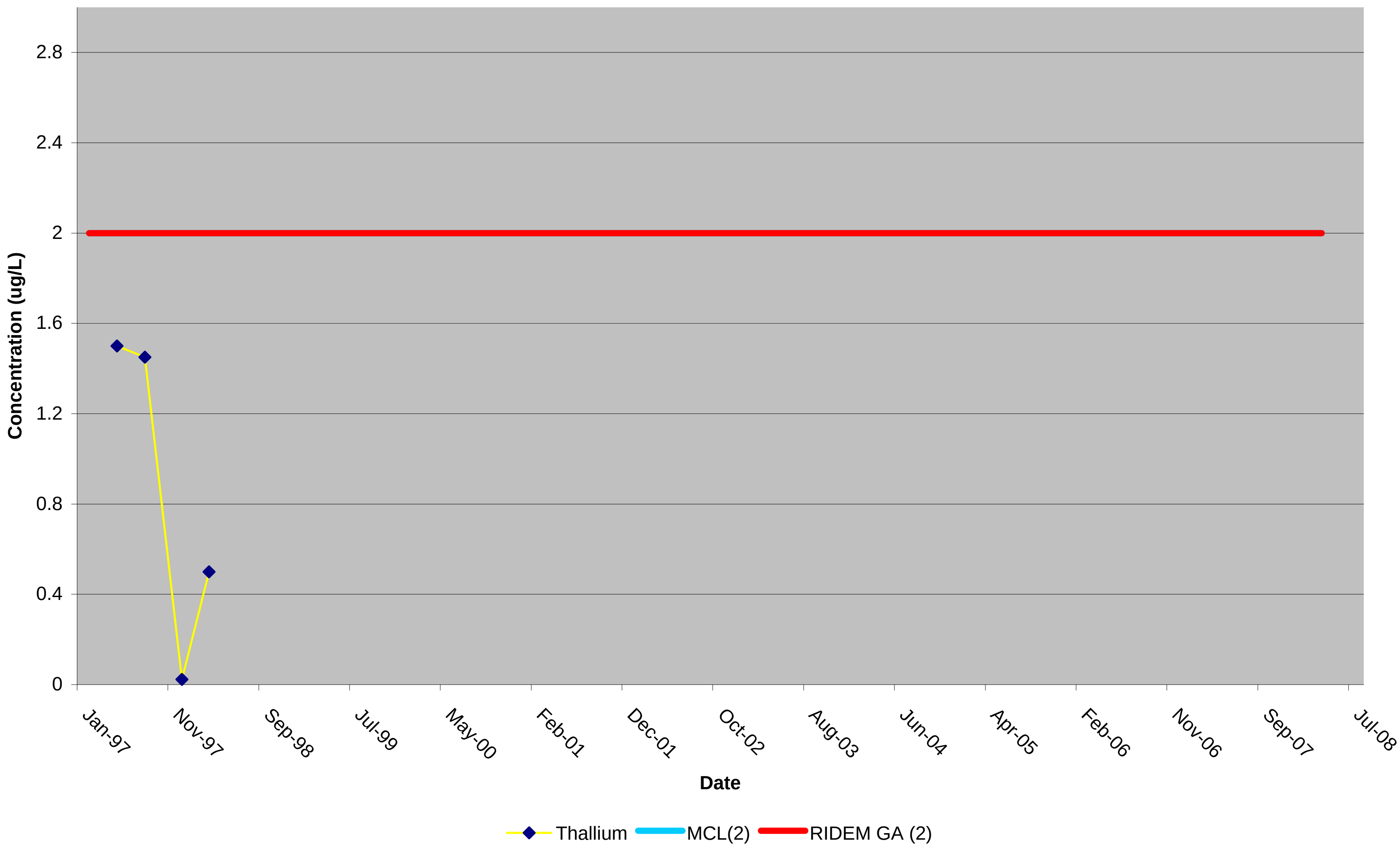
APPENDIX F-1: GROUNDWATER
FIGURE F-1.10-8

NICKEL IN GROUNDWATER, MW112S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



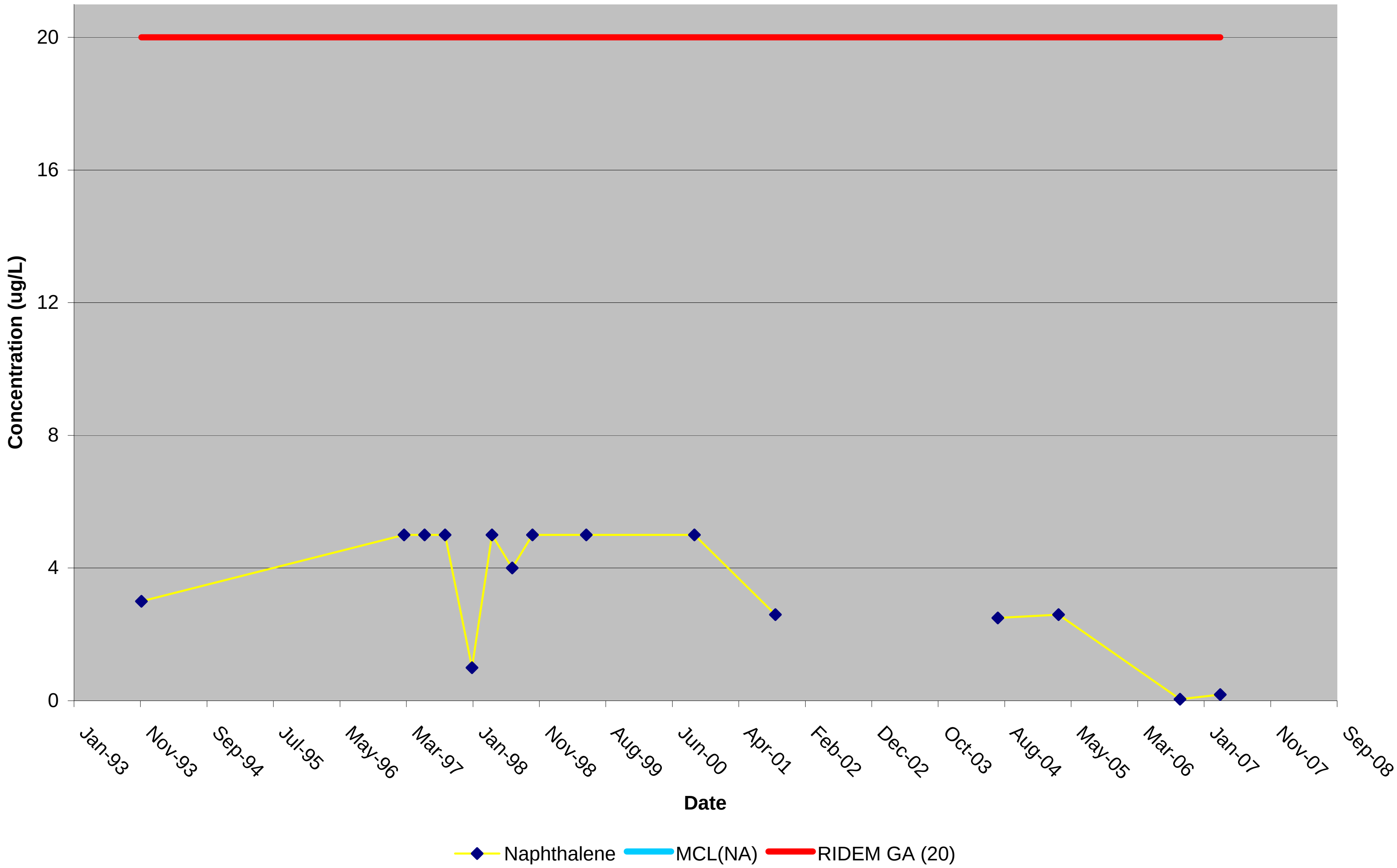
APPENDIX F-1: GROUNDWATER
FIGURE F-1.10-9

THALLIUM IN GROUNDWATER, MW112S
SITE 01 McALLISTER POINT LANDFILL
NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



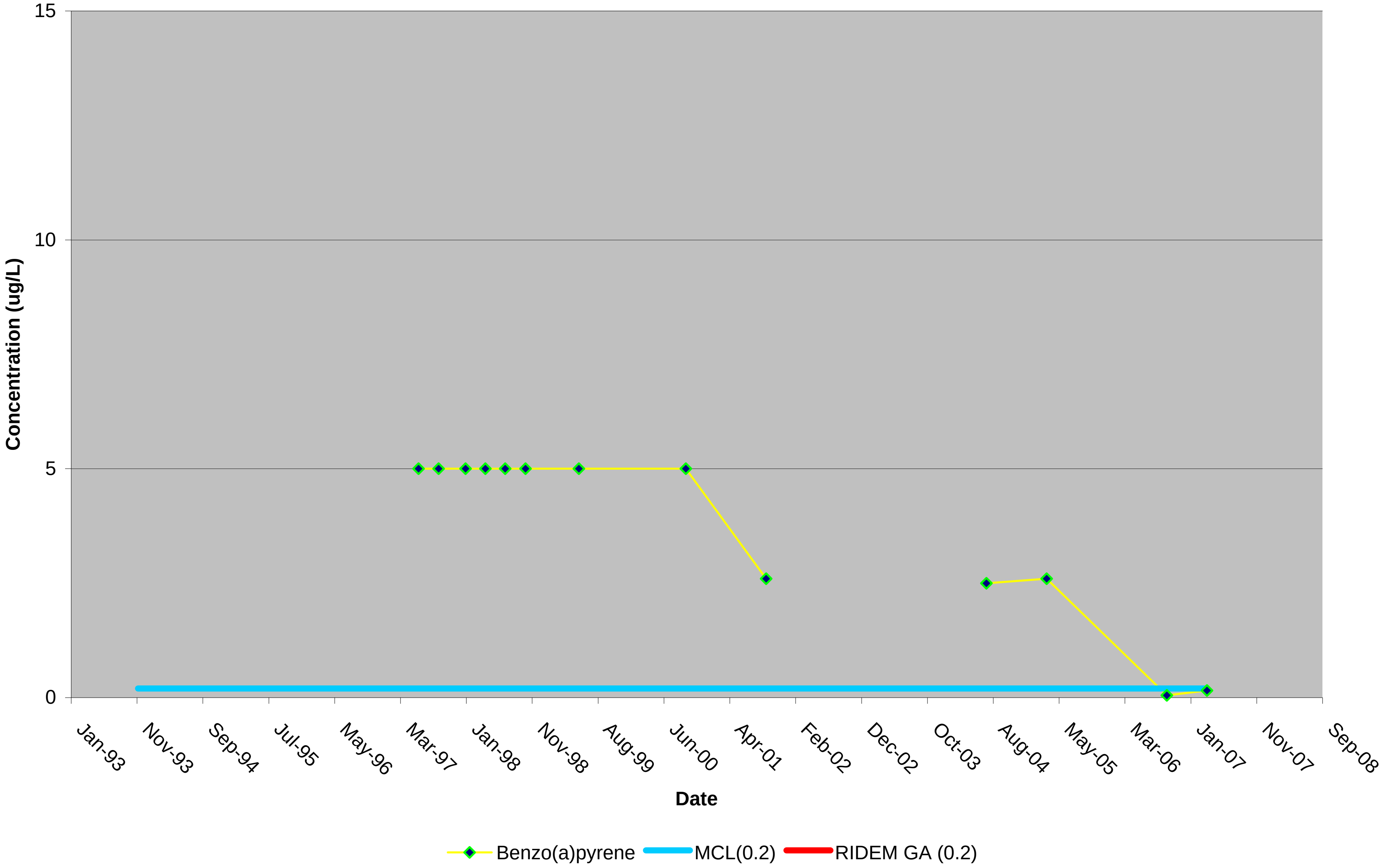
APPENDIX F-1: GROUNDWATER
FIGURE F-1.10-10

NAPTHALENE IN GROUNDWATER MW-112S
SITE 01 - MCALLISTER POINT LANDFILL, NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



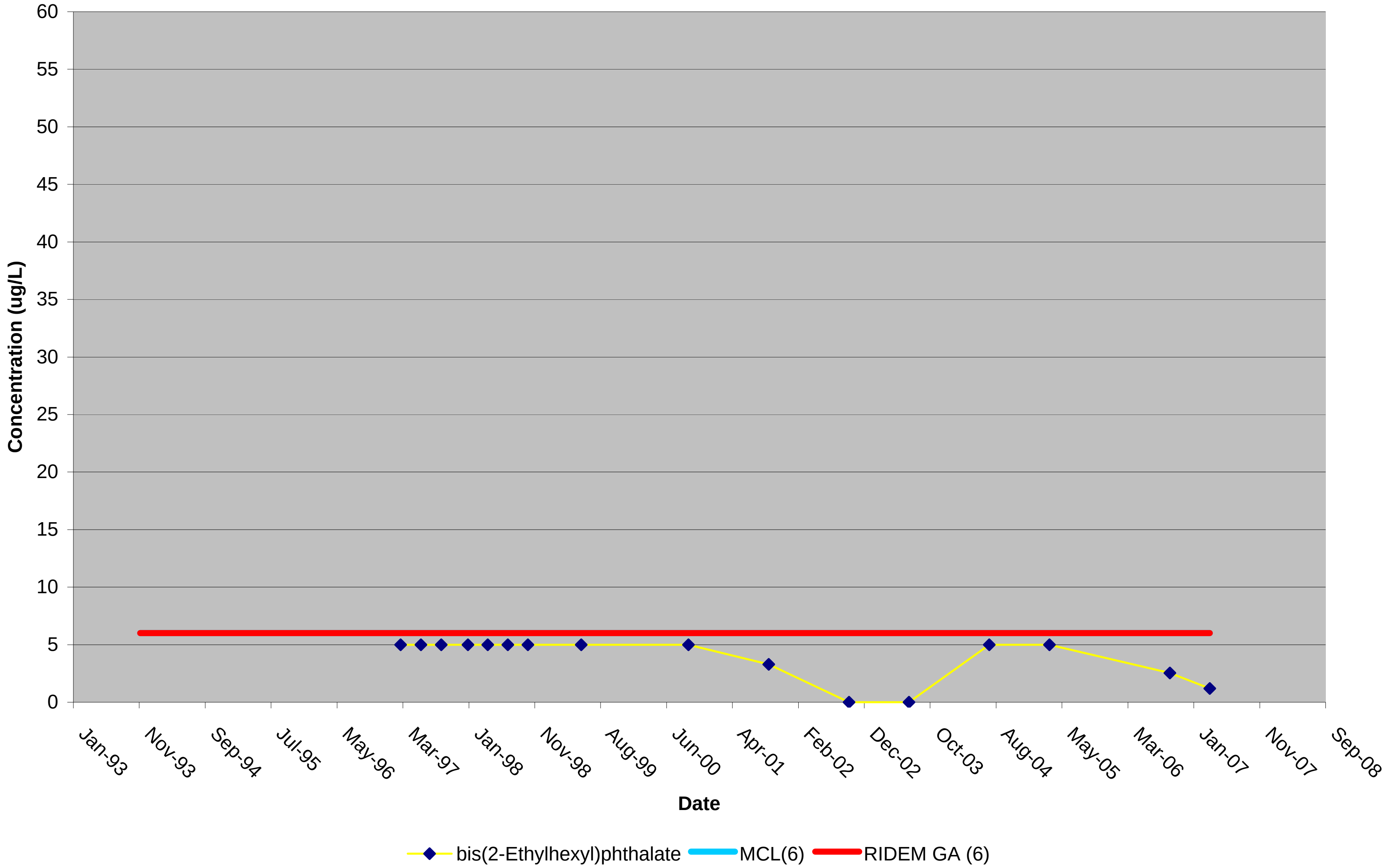
APPENDIX F-1: GROUNDWATER
FIGURE F-1.10-11

BENZO(A)PYRENE IN GROUNDWATER, MW-112S
SITE 01 - MCALLISTER POINT LANDFILL, NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



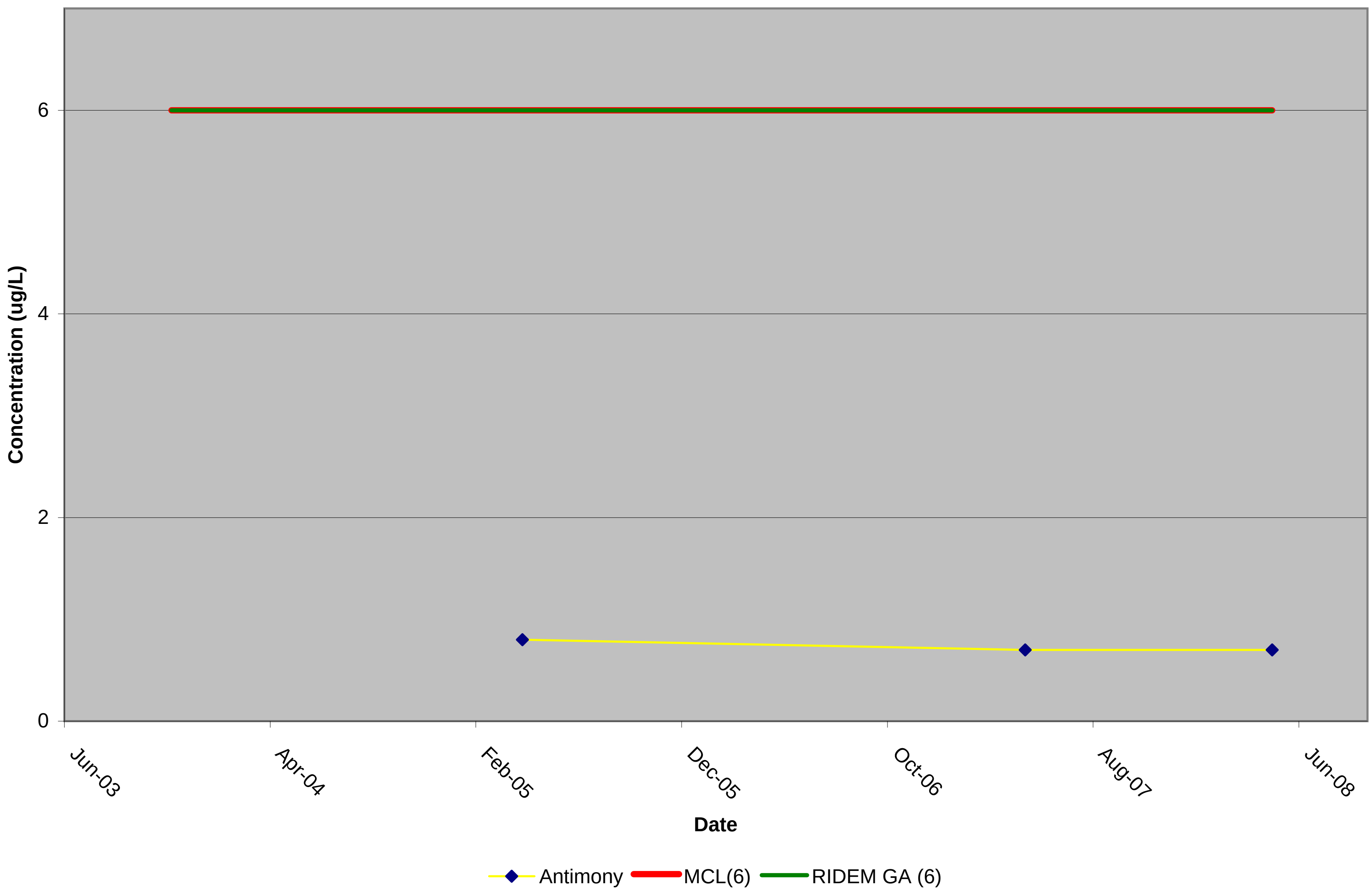
APPENDIX F-1: GROUNDWATER
FIGURE F-1.10-12

BIS(2-ETHYLHEXYL)PHTHALATE IN GROUNDWATER, MW-112S
SITE 01 - MCALLISTER POINT LANDFILL NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



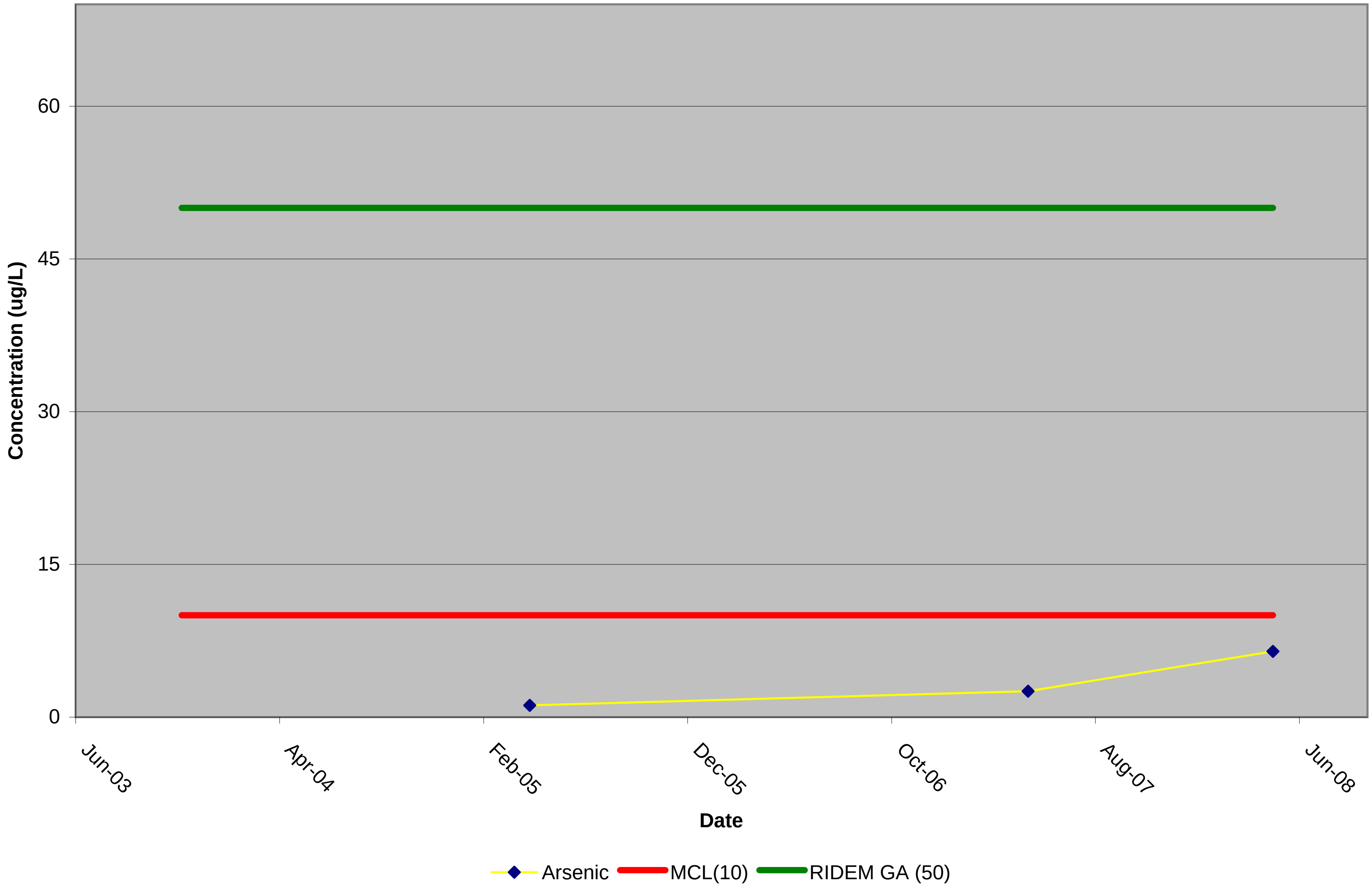
APPENDIX F-1: GROUNDWATER
FIGURE F-1.11-1

ANTIMONY IN GROUNDWATER, MW-113S
SITE 01 McALLISTER POINT LANDFILL, NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



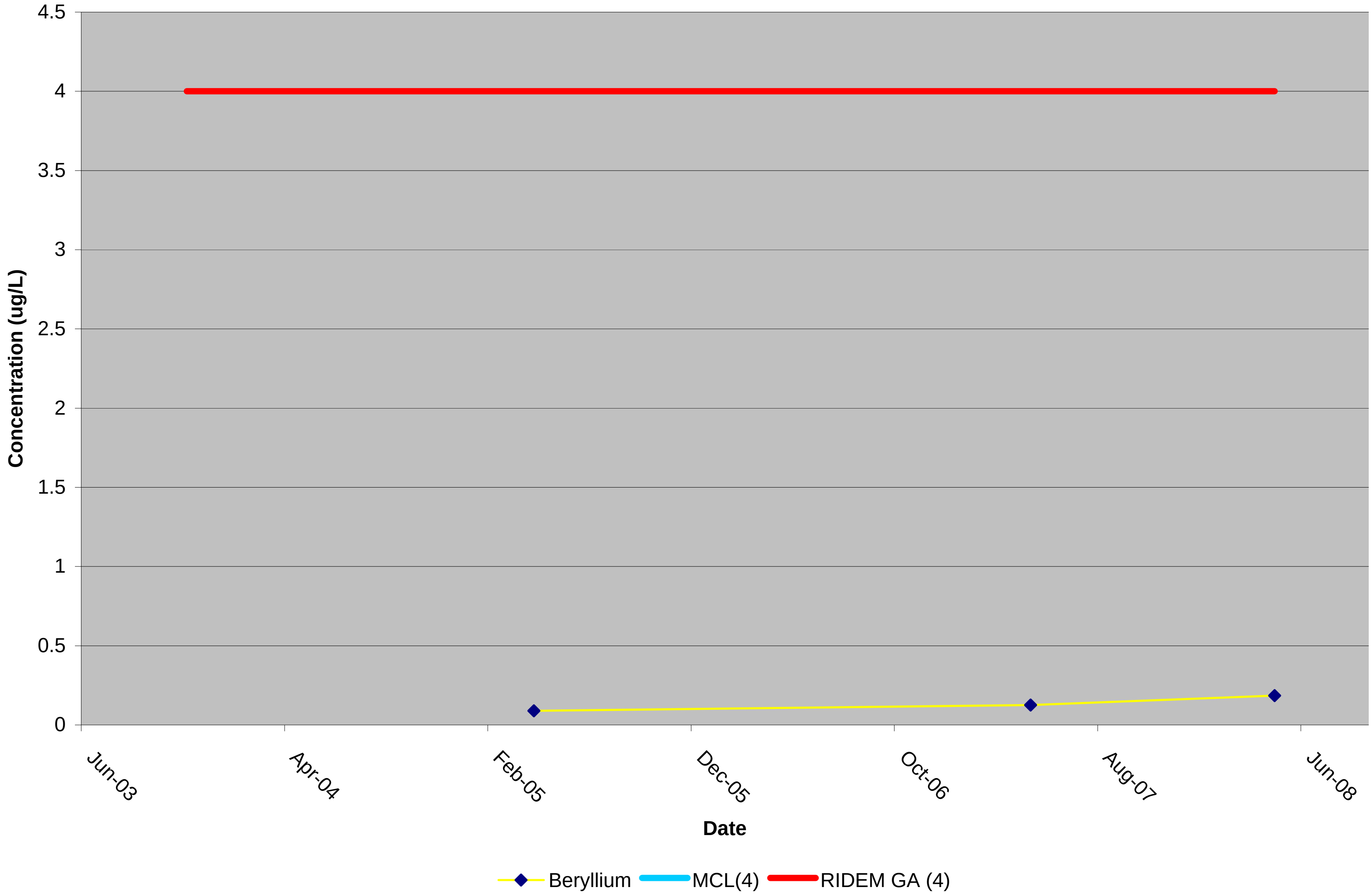
APPENDIX F-1: GROUNDWATER
FIGURE F-1.11-2

ARSENIC IN GROUNDWATER MW-113S
SITE 01, McALLISTER POINT LANDFILL, NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



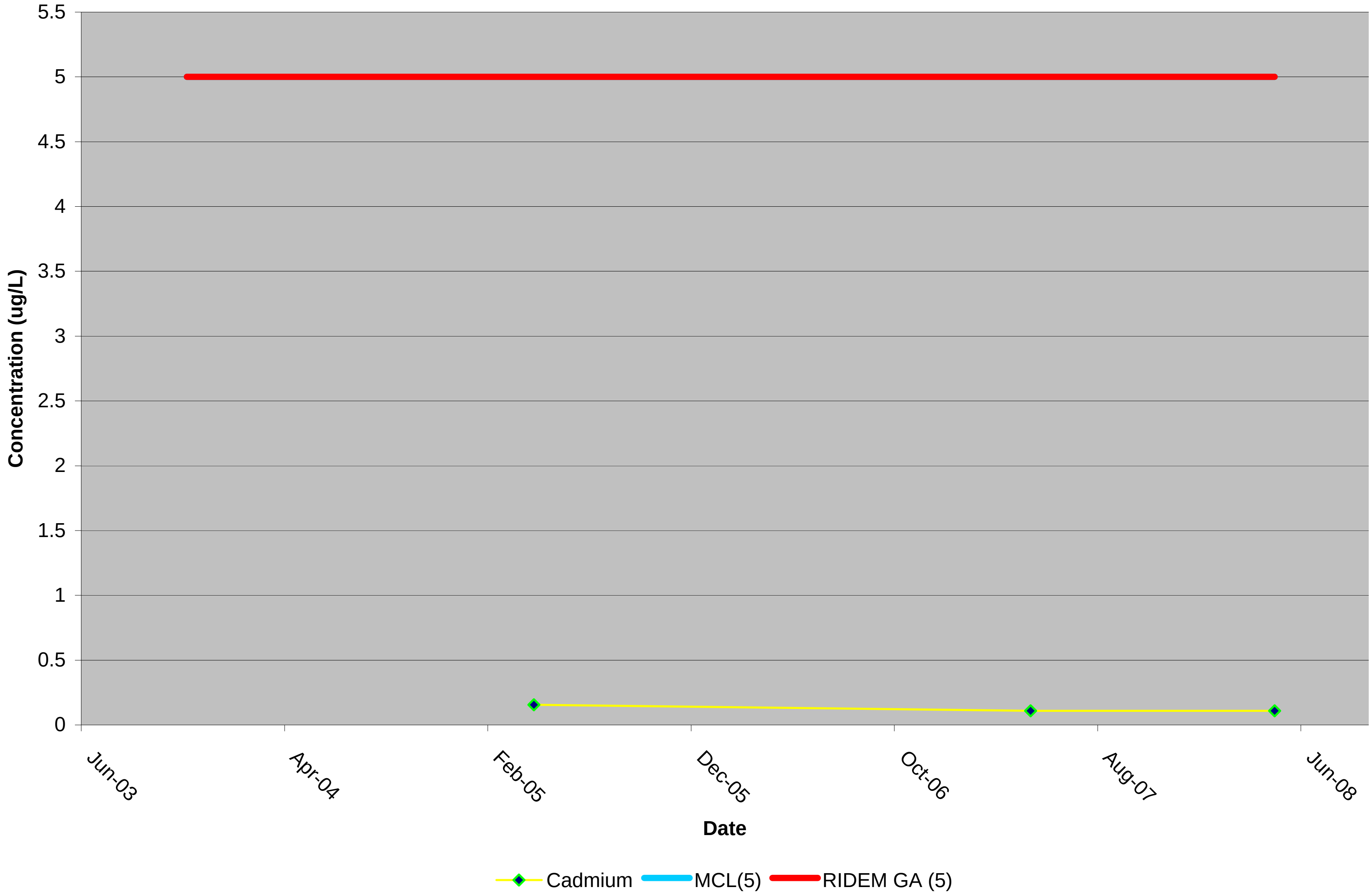
APPENDIX F-1: GROUNDWATER
FIGURE F-1.11-3

BERYLLIUM IN GROUNDWATER, MW-113S
SITE 01 McALLISTER POINT LANDFILL, NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



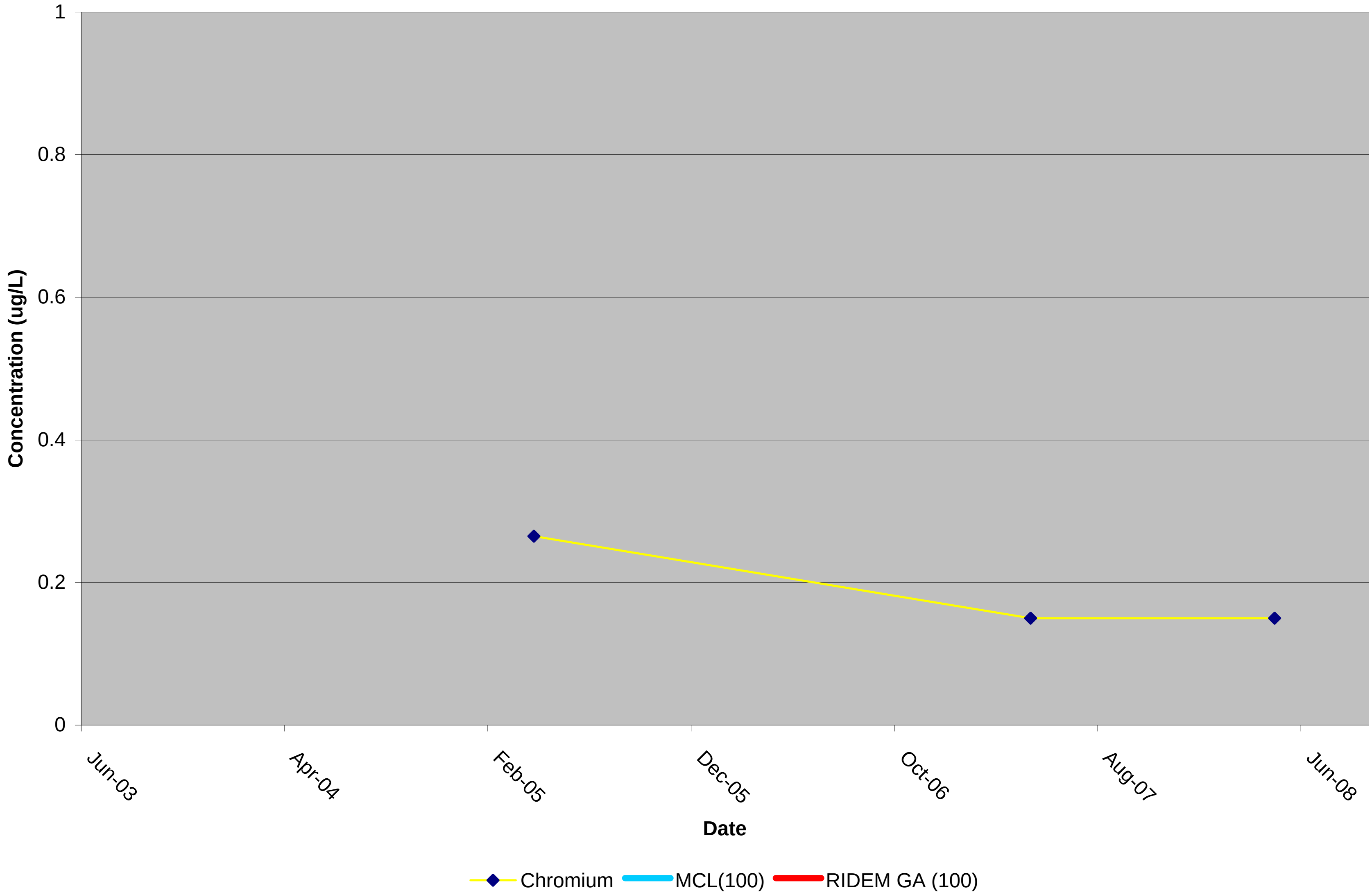
APPENDIX F-1: GROUNDWATER
FIGURE F-1.11-4

CADMIUM IN GROUNDWATER, MW-113S
SITE 01 McALLISTER POINT LANDFILL, NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



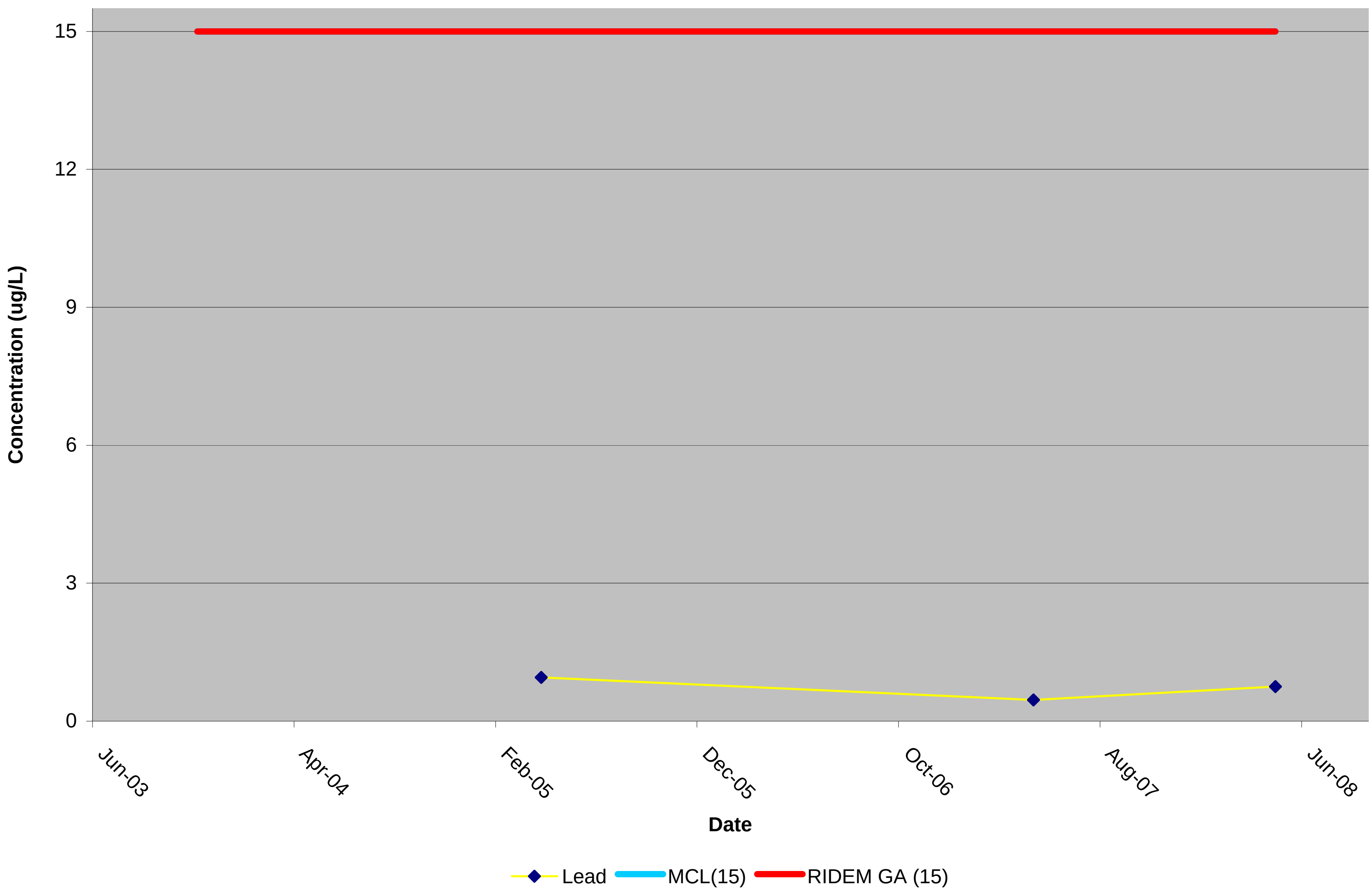
APPENDIX F-1: GROUNDWATER
FIGURE F-1.11-5

CHROMIUM IN GROUNDWATER MW-113S
SITE 01, McALLISTER POINT LANDFILL, NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



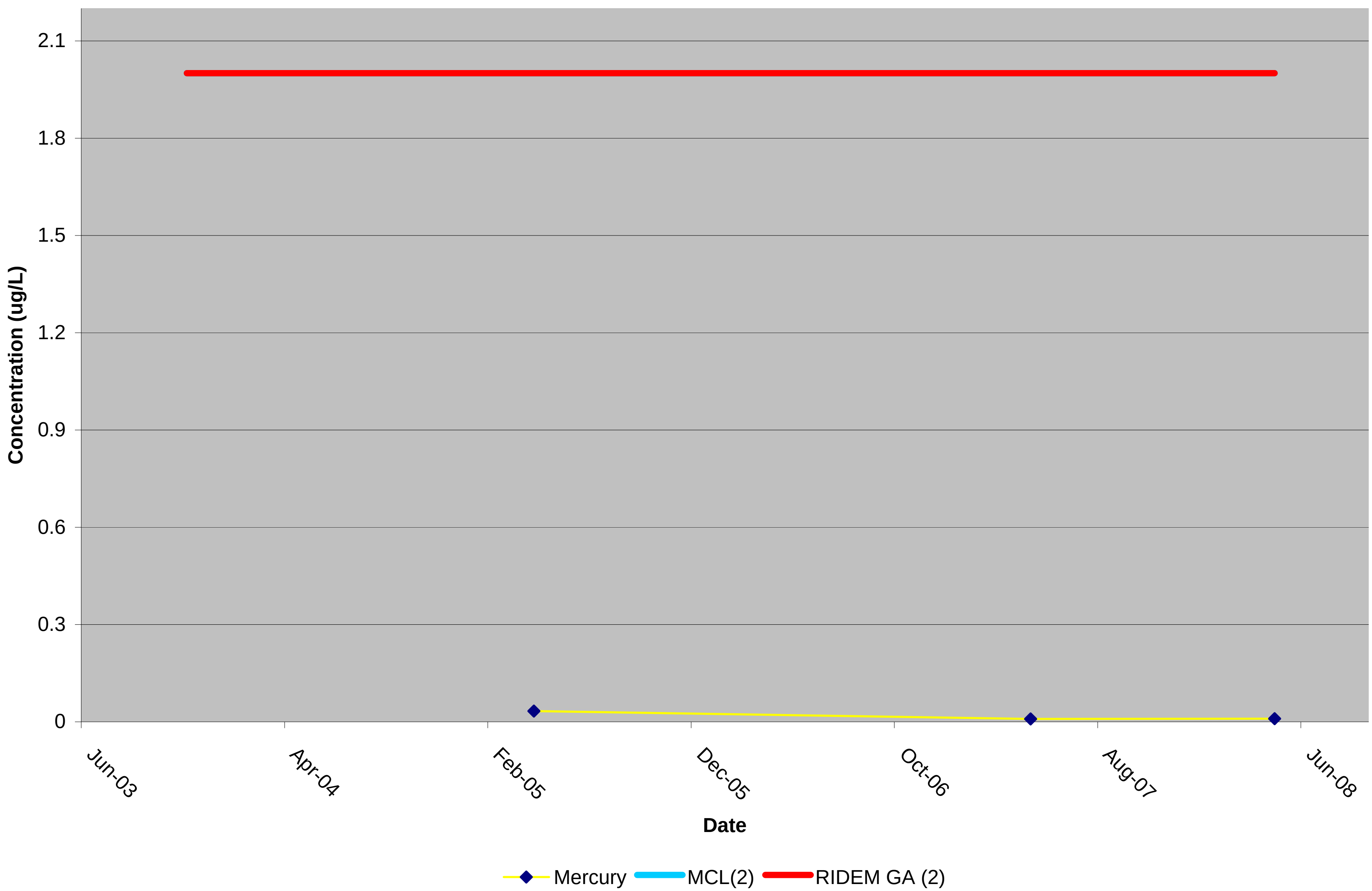
APPENDIX F-1: GROUNDWATER
FIGURE F-1.11-6

LEAD IN GROUNDWATER, MW-113S
SITE 01 McALLISTER POINT LANDFILL, NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



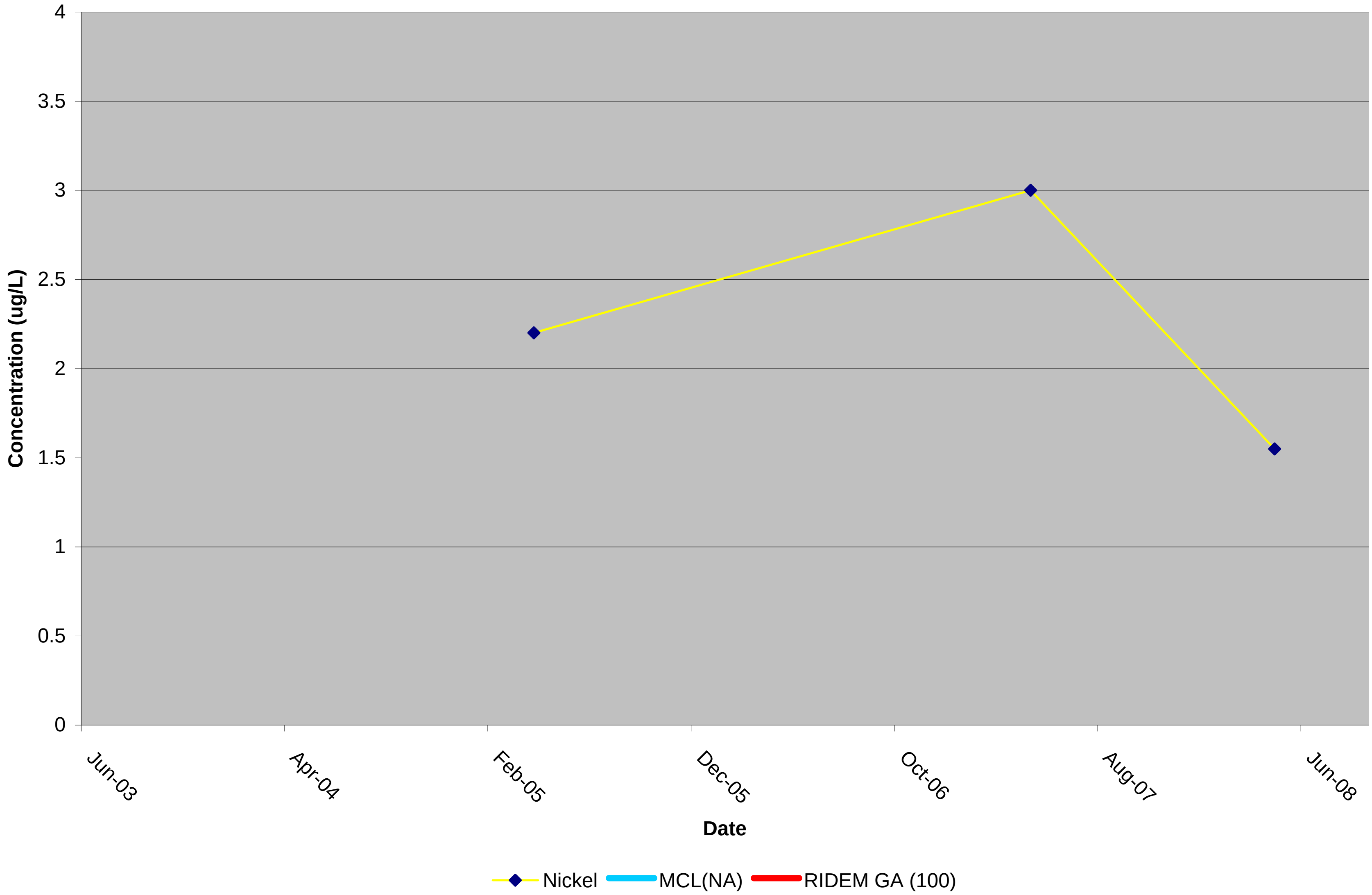
APPENDIX F-1: GROUNDWATER
FIGURE F-1.11-7

MERCURY IN GROUNDWATER MW-113S
SITE 01, McALLISTER POINT LANDFILL, NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



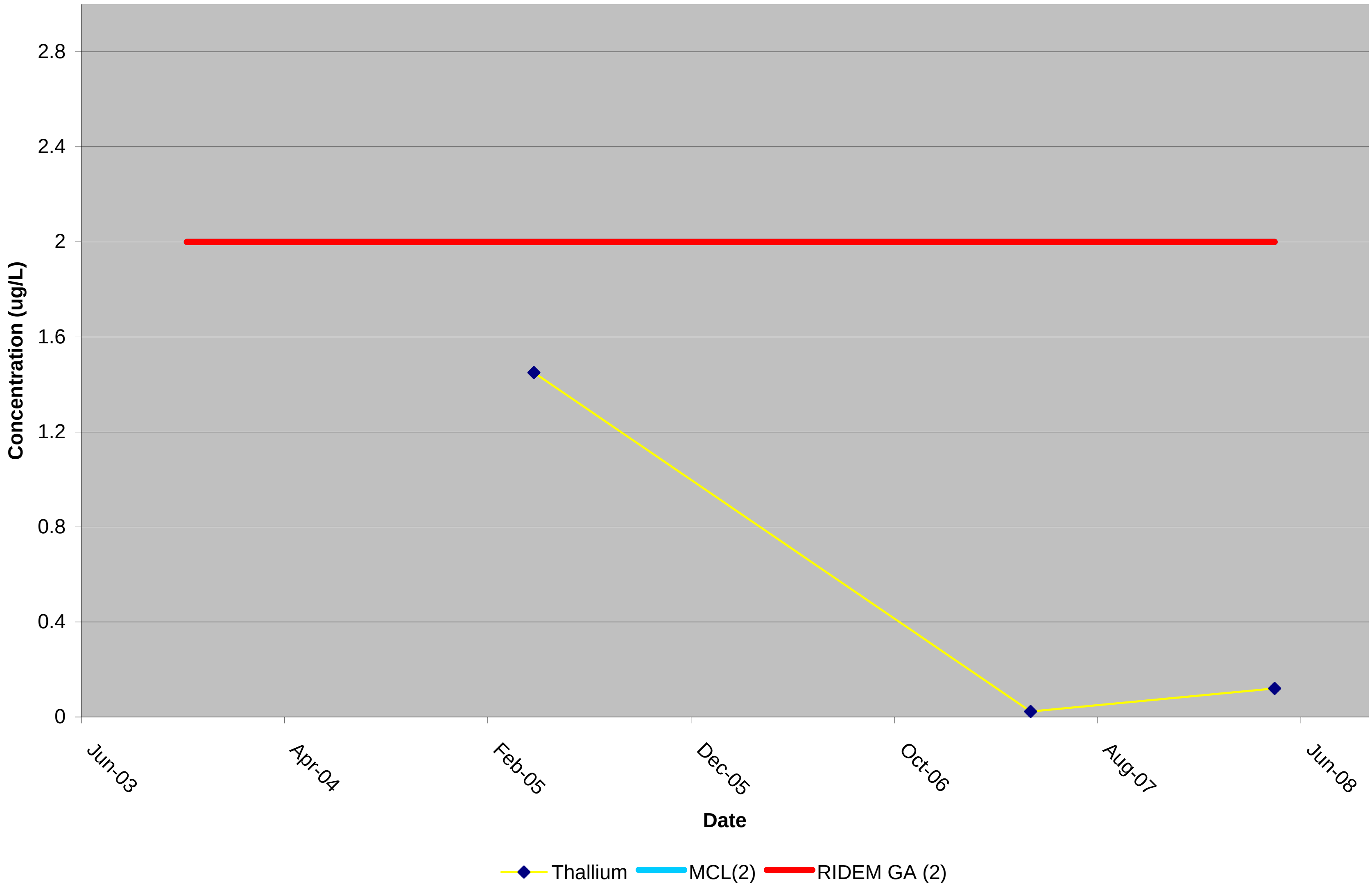
APPENDIX F-1, GROUNDWATER
FIGURE F-1.11-8

NICKEL IN GROUNDWATER, MW-113S
SITE 01, McALLISTER POINT LANDFILL, NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



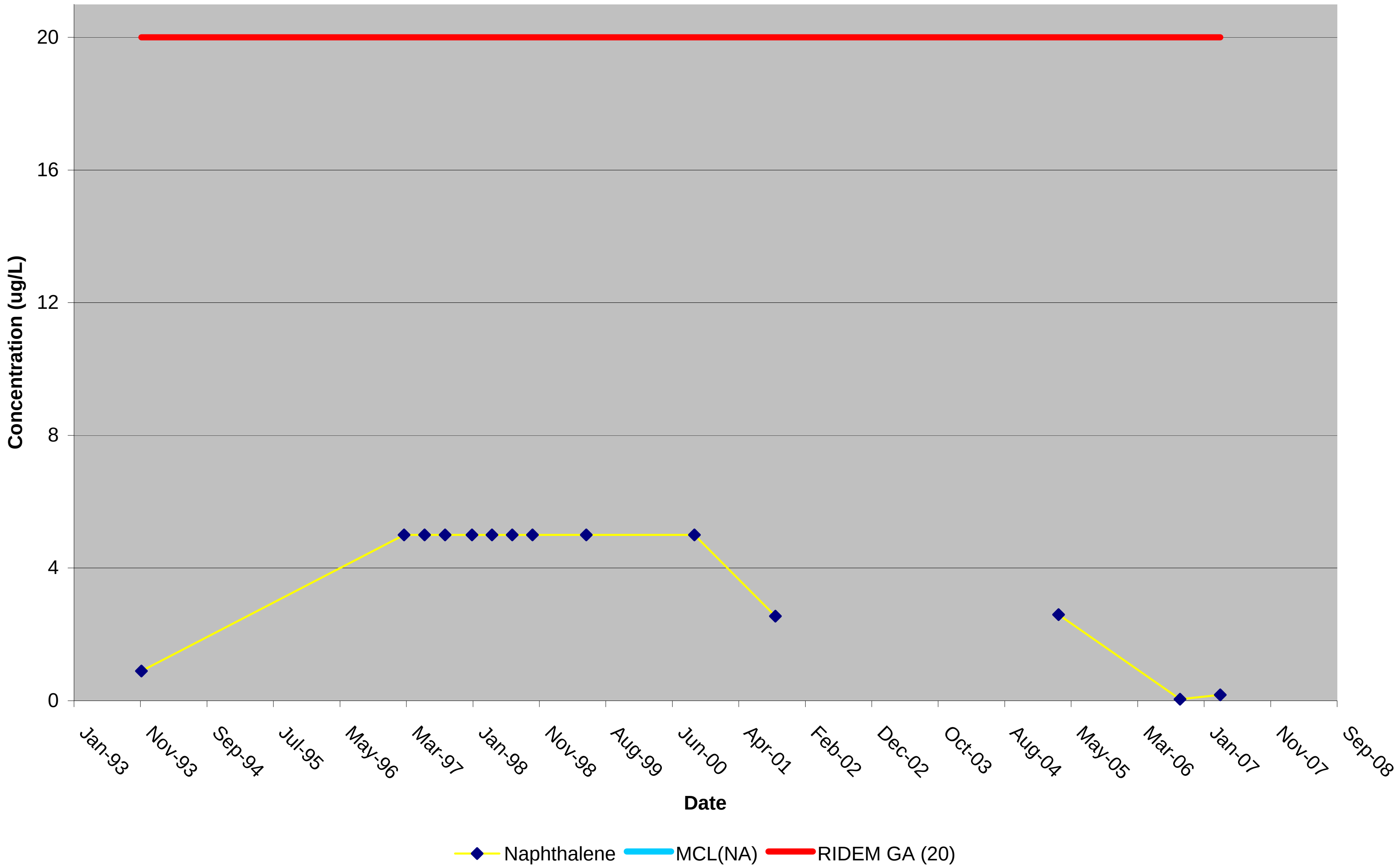
APPENDIX F-1, GROUNDWATER
FIGURE F-1.11-9

THALLIUM IN GROUNDWATER, MW-113S
SITE 01, McALLISTER POINT LANDFILL, NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



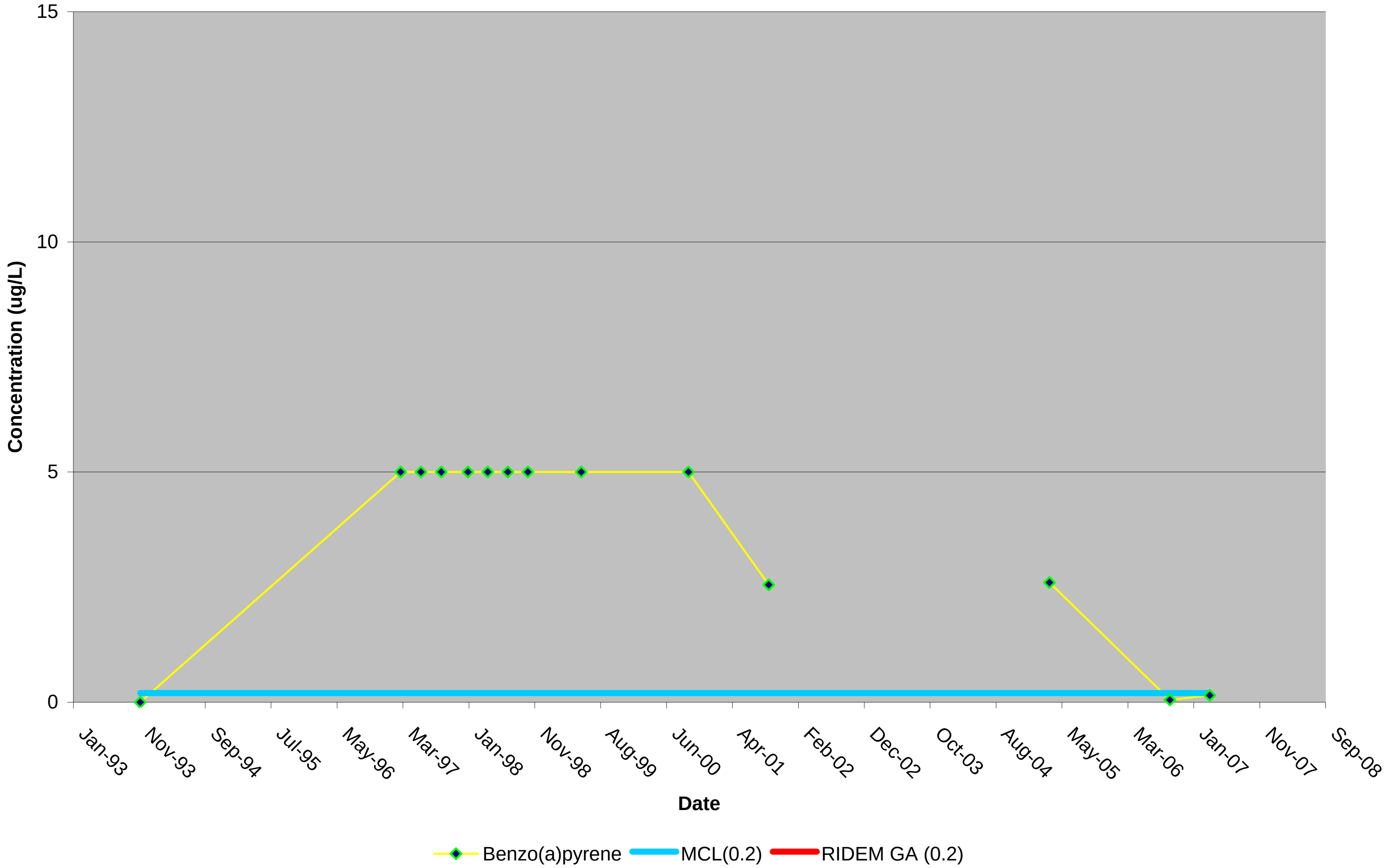
APPENDIX F-1: GROUNDWATER
FIGURE F-1.11-10

NAPTHALENE IN GROUNDWATER, MW 113S
SITE 01 - MCALLISTER POINT LANDFILL NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



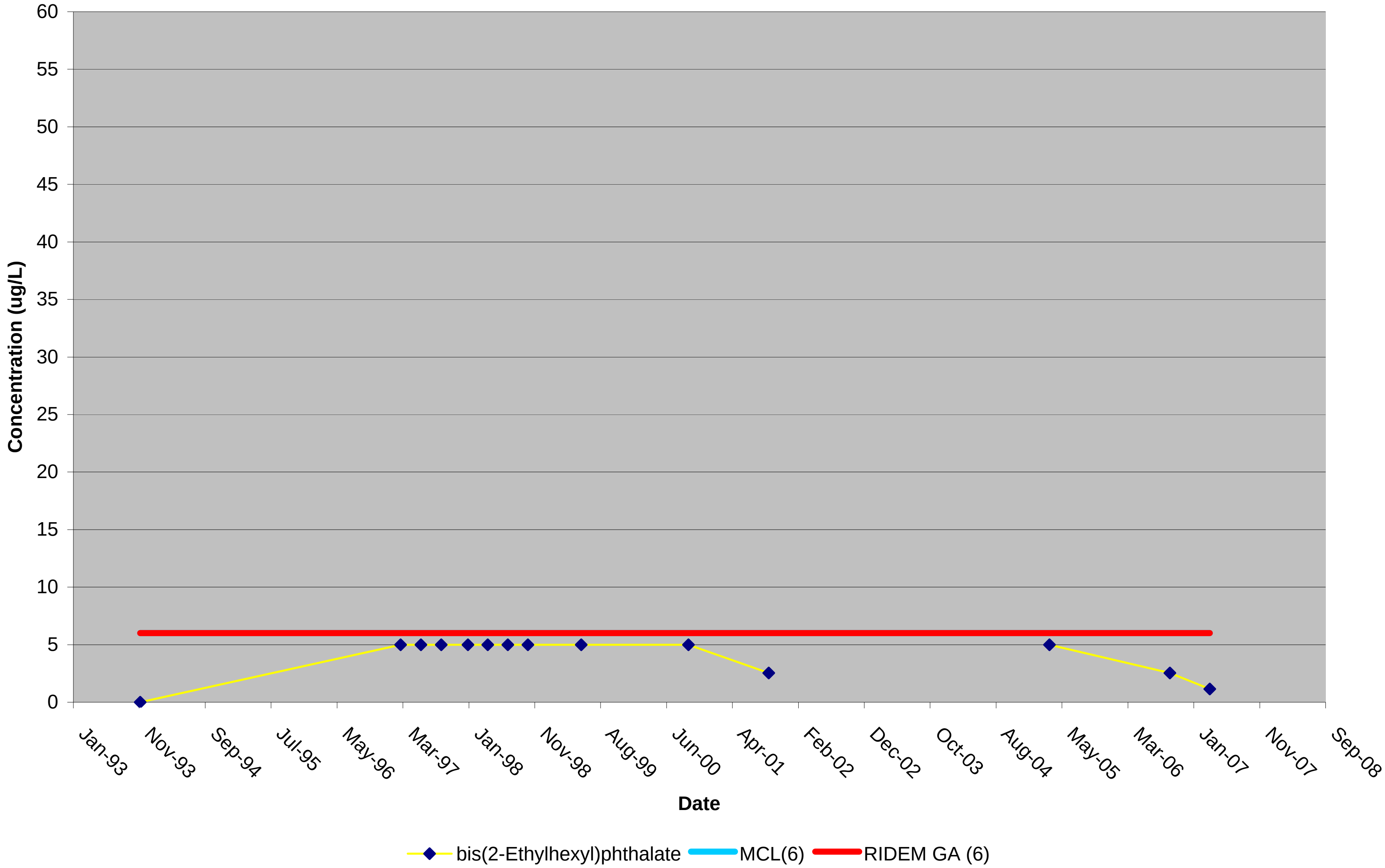
APPENDIX F-1: GROUNDWATER
FIGURE F-1.11-11

BENZO(A)PYRENE IN GROUNDWATER, MW-113S
SITE 01 - MCALLISTER POINT LANDFILL NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



APPENDIX F-1: GROUNDWATER
FIGURE F-1.11-12

BIS(2-ETHYLHEXYL)PHTHALATE IN GROUNDWATER, MW-113S
SITE 01 - MCALLISTER POINT LANDFILL, NAVAL STATION NEWPORT
FIVE YEAR REVIEW REPORT



APPENDIX F-2

McALLISTER LANDFILL – LANDFILL GAS SUMMARY

Table F-2.1-1
Summary Data for
Methane, Total Hydrocarbons, and Total VOCs, 1997 through 2003
McAllister Point Landfill
Five Year Review Report
NAVSTA Newport, Newport RI

parameter_adj	round_adj	units_adj	AMBIENT AIR 1	AMBIENT AIR 2	AMBIENT AIR 3	AMBIENT AIR 4	MCA-GV-05-25	MCA-GV-07-25	MCA-GV-09-25
METHANE	01-Jul-97	PPMV	2.46	2.46	2.46		70700	280000	204000
METHANE	01-Aug-98	PPMV	2.6	2.5	2.8		350000	400000	340000
METHANE	01-Mar-99	PPMV	2.3	2.6	2		250000	290000	110000
METHANE	01-Apr-99	PPMV		2.7					
METHANE	01-Aug-99	PPMV	2.9	2.4	2.4		45000	140000	340000
METHANE	01-Aug-00	PPMV	2.6		3.1	2.6	530000	570000	520000
METHANE	01-Aug-01	PPMV	2.8		3.7	3.8	420000	490000	300000
METHANE	01-Oct-02	PPMV					89000	85000	4900
METHANE	01-Jul-03	PPMV	2		2	2	200000	7000	11000
TOTAL HYDROCARBONS	01-Aug-98	PPMV	0.041	0.027	0.066		62	67	52
TOTAL HYDROCARBONS	01-Mar-99	PPMV	0.0098		0.0098		16	22	6.8
TOTAL HYDROCARBONS	01-Apr-99	PPMV		0.0098					
TOTAL HYDROCARBONS	01-Aug-99	PPMV	0.066	0.078	0.1		35	51	99
TOTAL HYDROCARBONS	01-Aug-00	PPMV	0.081		0.039	0.049	120	86	100
TOTAL HYDROCARBONS	01-Aug-01	PPMV	0.2		0.15	0.18	120	96	39
TOTAL HYDROCARBONS	01-Oct-02	PPMV					14	22	1.5
TOTAL HYDROCARBONS	01-Jul-03	PPMV	0.027		0.051	0.059	36	8.9	2.9
TOTAL VOCS	01-Aug-98	PPMV	0.056	0.034	0.07		7.1	7.1	6.1
TOTAL VOCS	01-Mar-99	PPMV	0.021	0.024	0.059		1.7	2	1.4
TOTAL VOCS	01-Aug-99	PPMV	0.055	0.05	0.049		3.5	4.4	15
TOTAL VOCS	01-Aug-00	PPMV	0.17		0.048	0.035	7	6.8	11
TOTAL VOCS	01-Aug-01	PPMV	0.042		0.031	0.047	7.4	5.4	3.5

Ambient air is only presented for information.
These data points are not used for average emissions calculations.

Table F-2.1-1
Summary Data for
Methane, Total Hydrocarbons, and Total VOCs, 1997 through 2003
McAllister Point Landfill
Five Year Review Report
NAVSTA Newport, Newport RI

parameter_adj	round_adj	units_adj	MCA-GV-11-25	MCA-GV-13-25	MCA-GV-15-25	MCA-GV-17-25	MCA-GV-19-25	MCA-GV-21-25	MCA-GVR_101
METHANE	01-Jul-97	PPMV	10100	90900	124000	102000	389	8.9	113000
METHANE	01-Aug-98	PPMV	360000	330000	47000	720	23	0.935	540000
METHANE	01-Mar-99	PPMV	71000	32000	17000	19000	13000		150000
METHANE	01-Apr-99	PPMV						140	
METHANE	01-Aug-99	PPMV	9.4	420000	440000	4800	600	27	320000
METHANE	01-Aug-00	PPMV	560000	530000	560000	510000	180000	84000	530000
METHANE	01-Aug-01	PPMV	320000	240000	110000	70000	42000	8400	460000
METHANE	01-Oct-02	PPMV	6800	780	180	0.8		1.9	980
METHANE	01-Jul-03	PPMV	1100	360	650	2	56	2	130000
TOTAL HYDROCARBONS	01-Aug-98	PPMV	55	50	4.1	1.2	0.63	0.24	26
TOTAL HYDROCARBONS	01-Mar-99	PPMV	4.2	3.3	2.2	4.2	2		6.5
TOTAL HYDROCARBONS	01-Apr-99	PPMV						0.64	
TOTAL HYDROCARBONS	01-Aug-99	PPMV	0.053	63	44	1.9	1.4	0.36	29
TOTAL HYDROCARBONS	01-Aug-00	PPMV	110	100	88	80	26	11	92
TOTAL HYDROCARBONS	01-Aug-01	PPMV	43	33	13	8.7	5.5	1.6	40
TOTAL HYDROCARBONS	01-Oct-02	PPMV	1.2	0.44	0.25	0.14		0.14	4
TOTAL HYDROCARBONS	01-Jul-03	PPMV	0.28	0.36	0.3	0.052	0.042	0.12	
TOTAL VOCS	01-Aug-98	PPMV	7.9	7.6	5.4	1.3	0.77	0.62	5.4
TOTAL VOCS	01-Mar-99	PPMV	0.75	0.94	0.55	0.58	0.51	0.78	0.56
TOTAL VOCS	01-Aug-99	PPMV	0.035	9	9.6	0.56	0.73	0.65	2.4
TOTAL VOCS	01-Aug-00	PPMV	14	13	15	11	3.4	1.9	5.5
TOTAL VOCS	01-Aug-01	PPMV	4.4	3.3	1.3	1	1.4	3.3	2.6

Table F-2.1-1
Summary Data for
Methane, Total Hydrocarbons, and Total VOCs, 1997 through 2003
McAllister Point Landfill
Five Year Review Report
NAVSTA Newport, Newport RI

parameter_adj	round_adj	units_adj	MCA-GVR_102	MCA-GVR_103	MCA-GVR_104	MCA-GVR_105	MCA-GVR_106	MCA-GVR_107	MCA-GVR_108
METHANE	01-Jul-97	PPMV	160000	282000	256000	277000	315000	296000	290000
METHANE	01-Aug-98	PPMV	580000	760000	680000	330000	200000	280000	90000
METHANE	01-Mar-99	PPMV	320000	240000	420000	270000	140000		110000
METHANE	01-Apr-99	PPMV						570000	220000
METHANE	01-Aug-99	PPMV	380000	410000	450000	540000	610000	550000	470000
METHANE	01-Aug-00	PPMV	560000	730000	650000	620000	740000	580000	690000
METHANE	01-Aug-01	PPMV	550000	590000	500000	290000	590000	460000	450000
METHANE	01-Oct-02	PPMV	2.8	7.2	7	3.9	2.2	4.6	4.7
METHANE	01-Jul-03	PPMV	110000	305000	33000	320000	560000	170000	530000
TOTAL HYDROCARBONS	01-Aug-98	PPMV	14	18	19				10
TOTAL HYDROCARBONS	01-Mar-99	PPMV	8.2	2.5	14	5	2		0.98
TOTAL HYDROCARBONS	01-Apr-99	PPMV						6.6	2.4
TOTAL HYDROCARBONS	01-Aug-99	PPMV	21	13	27	21	30	12	17
TOTAL HYDROCARBONS	01-Aug-00	PPMV	82	89	96	80	97	63	76
TOTAL HYDROCARBONS	01-Aug-01	PPMV	38	26	29	13	35	10	16
TOTAL HYDROCARBONS	01-Oct-02	PPMV	0.004	0.38	0.37	0.087	0.021	0.11	0.097
TOTAL HYDROCARBONS	01-Jul-03	PPMV	9.3	15	2.3	16	33	2.5	25.5
TOTAL VOCS	01-Aug-98	PPMV	4.3	6.1	5.9	1.6	1.1	1.1	0.44
TOTAL VOCS	01-Mar-99	PPMV	1.2	0.42	1.2	0.43	0.2	0.81	0.65
TOTAL VOCS	01-Aug-99	PPMV	1.5	2.6	3.1	7.2	12	5.2	2.7
TOTAL VOCS	01-Aug-00	PPMV	5.4	16	9.8	12	13	5.2	11
TOTAL VOCS	01-Aug-01	PPMV	3.5	3.8	2.3	2.1	2.8	1.8	2

Table F-2.1-1
Summary Data for
Methane, Total Hydrocarbons, and Total VOCs, 1997 through 2003
McAllister Point Landfill
Five Year Review Report
NAVSTA Newport, Newport RI

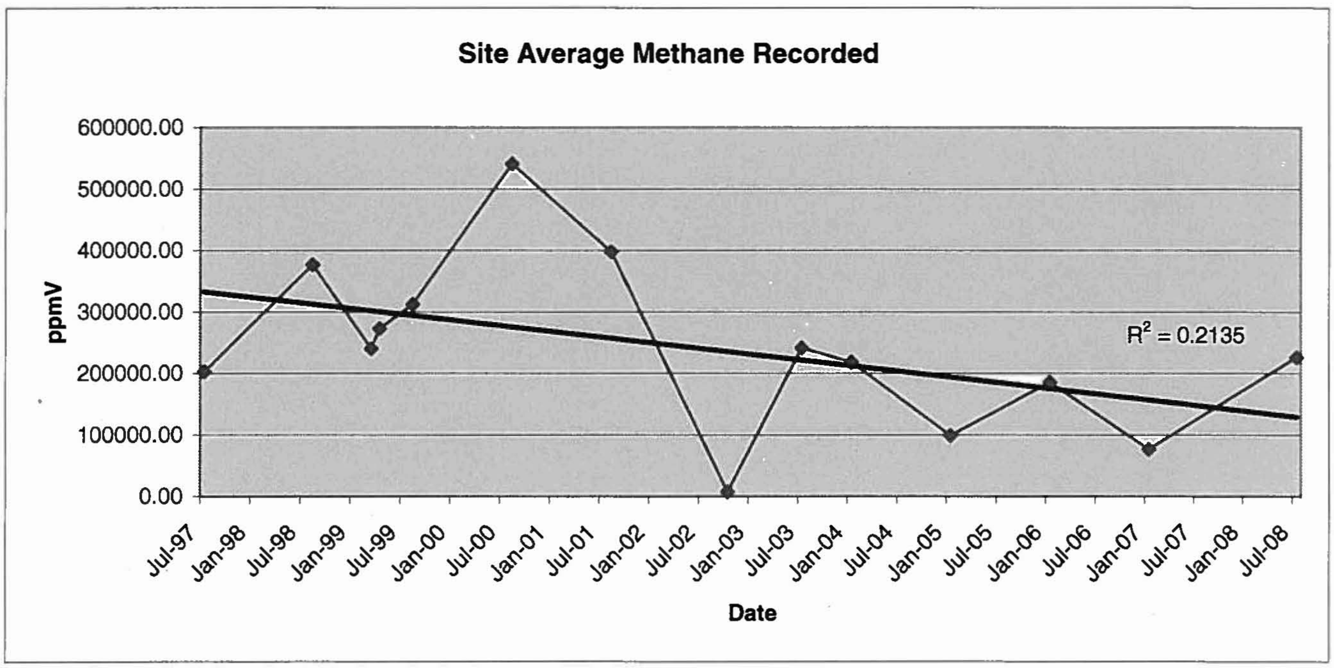
parameter_adj	round_adj	units_adj	MCA-GVR_109	MCA-GVR_110	MCA-GVR_111	MCA-GVR_112	MCA-GVR_113	MCA-GVR_114	MCA-GVR_115
METHANE	01-Jul-97	PPMV	431000	112000	387000	112000	379000	429000	152000
METHANE	01-Aug-98	PPMV	740000	770000	790000	520000	650000	800000	230000
METHANE	01-Mar-99	PPMV	60000		760000		600000	690000	
METHANE	01-Apr-99	PPMV	290000	370000		150000			160000
METHANE	01-Aug-99	PPMV		94000	610000	250000	570000	710000	4.1
METHANE	01-Aug-00	PPMV	750000	780000	820000	72000	590000	790000	440000
METHANE	01-Aug-01	PPMV	590000	630000	690000	410000	470000	620000	360000
METHANE	01-Oct-02	PPMV	18	13	3.7	5.5	5.8	5.7	2.8
METHANE	01-Jul-03	PPMV	590000	700000	720000	310000	380000	560000	190000
TOTAL HYDROCARBONS	01-Aug-98	PPMV	42	36	45	16	23	88	5.2
TOTAL HYDROCARBONS	01-Mar-99	PPMV	2.1		13		13	59	
TOTAL HYDROCARBONS	01-Apr-99	PPMV	1.6	3.3		0.44			2.4
TOTAL HYDROCARBONS	01-Aug-99	PPMV		1.6	21	3.5	20	76	0.043
TOTAL HYDROCARBONS	01-Aug-00	PPMV	96	100	91	6.2	60	140	48
TOTAL HYDROCARBONS	01-Aug-01	PPMV	28	29	24	13	21	83	12
TOTAL HYDROCARBONS	01-Oct-02	PPMV	0.74	0.19	0.082	0.15	0.57	0.55	0.11
TOTAL HYDROCARBONS	01-Jul-03	PPMV	30	31	24	9.4	24	60	4.9
TOTAL VOCS	01-Aug-98	PPMV	4.9	3.3	3.6	5.1	5.2	20	1.9
TOTAL VOCS	01-Mar-99	PPMV	2.1	1.2	2.1	0.2	0.98	2.7	0.35
TOTAL VOCS	01-Aug-99	PPMV		0.19	1.2	6	3.8	2.9	0.024
TOTAL VOCS	01-Aug-00	PPMV	14	5.2	7.9	0.29	3.4	5	3.5
TOTAL VOCS	01-Aug-01	PPMV	2	1.4	2.3	0.79	1.4	1.5	4.9

Table F-2.1-1
Summary Data for
Methane, Total Hydrocarbons, and Total VOCs, 1997 through 2003
McAllister Point Landfill
Five Year Review Report
NAVSTA Newport, Newport RI

parameter_adj	round_adj	units_adj	MCA-GVR_116	MCA-GVR_117	MCA-GVR_118	QC	average
METHANE	01-Jul-97	PPMV	152000	34100	406000		202414.74
METHANE	01-Aug-98	PPMV	220000	30000	130000		376583.11
METHANE	01-Mar-99	PPMV					240105.26
METHANE	01-Apr-99	PPMV	300000	28000	640000		272814.00
METHANE	01-Aug-99	PPMV	24000	76000	660000		312093.87
METHANE	01-Aug-00	PPMV	330000	160000	720000		540592.59
METHANE	01-Aug-01	PPMV	350000	180000	560000	0.5	398162.96
METHANE	01-Oct-02	PPMV	36	250	11		7231.79
METHANE	01-Jul-03	PPMV	340000	130000	230000		241784.07
TOTAL HYDROCARBONS	01-Aug-98	PPMV	1.9	0.9	51		28.67
TOTAL HYDROCARBONS	01-Mar-99	PPMV					9.84
TOTAL HYDROCARBONS	01-Apr-99	PPMV	2.4	1.1	7.5		2.84
TOTAL HYDROCARBONS	01-Aug-99	PPMV	0.58	2.5	12		23.19
TOTAL HYDROCARBONS	01-Aug-00	PPMV	30	12	75		76.08
TOTAL HYDROCARBONS	01-Aug-01	PPMV	5	4.5	16	0.005	29.71
TOTAL HYDROCARBONS	01-Oct-02	PPMV	0.39	0.41	0.27		1.85
TOTAL HYDROCARBONS	01-Jul-03	PPMV	5.9	2.9	11		13.68
TOTAL VOCS	01-Aug-98	PPMV	0.97	0.72	0.86		4.31
TOTAL VOCS	01-Mar-99	PPMV	0.61	0.19	2.1		1.01
TOTAL VOCS	01-Aug-99	PPMV	0.28	1	6.9		3.94
TOTAL VOCS	01-Aug-00	PPMV	1.7	0.96	4.7		7.69
TOTAL VOCS	01-Aug-01	PPMV	2	3.4	1.9	0.008	2.72

Figure F-2-1
Total Methane in Gas Vent Samples
McAllister Point Landfill
Five Year Review Report
NAVSTA Newport, Rhode Island

Methane ASTM Method	01-Jul-97	202414.74	ppmv Average all measured points
Methane ASTM Method	01-Aug-98	376583.11	ppmv Average all measured points
Methane ASTM Method	01-Mar-99	240105.26	ppmv Average all measured points
Methane ASTM Method	01-Apr-99	272814.00	ppmv Average all measured points
Methane ASTM Method	01-Aug-99	312093.87	ppmv Average all measured points
Methane ASTM Method	01-Aug-00	540592.59	ppmv Average all measured points
Methane ASTM Method	01-Aug-01	398162.96	ppmv Average all measured points
Methane ASTM Method	01-Oct-02	7231.79	ppmv Average all measured points
Methane ASTM Method	01-Jul-03	241784.07	ppmv Average all measured points
Methane ASTM Method	01-Jan-04	218249.52	ppmv Average all measured points
Methane ASTM Method	01-Jan-05	98616.10	ppmv Average all measured points
Methane ASTM Method	01-Jan-06	185370.37	ppmv Average all measured points
Methane ASTM Method	01-Jan-07	76148.36	ppmv Average all measured points
Methane ASTM Method	29-Jul-08	226111.00	ppmv Average all measured points



ppmV = parts per million by volume

Figure F-2-2
Total VOCs in Vent Gas Samples - Average of All Stations
McAllister Point Landfill
Five Year Review Report, NAVSTA Newport, RI

Total VOCs	01-Aug-98	4310.00	ppmV average of all stations	From 2005 submittal
Total VOCs	01-Mar-99	1007.00	ppmV average of all stations	From 2005 submittal
Total VOCs	01-Aug-99	3941.00	ppmV average of all stations	From 2005 submittal
Total VOCs	01-Aug-00	7691.00	ppmV average of all stations	From 2005 submittal
Total VOCs	01-Aug-01	2722.00	ppmV average of all stations	From 2005 submittal
Total VOCs	01-Aug-02		ppmV average of all stations	not Quantified
Total VOCs	01-Aug-03		ppmV average of all stations	not Quantified
Total VOCs	01-Aug-04		ppmV average of all stations	not Quantified
Total VOCs	01-Aug-05		ppmV average of all stations	not Quantified
Total VOCs	01-Aug-06		ppmV average of all stations	not Quantified
Total VOCs	01-Aug-07		ppmV average of all stations	not Quantified
Total VOCs	28-Jul-08	988.2	ppmV average of all stations	ECC 2008

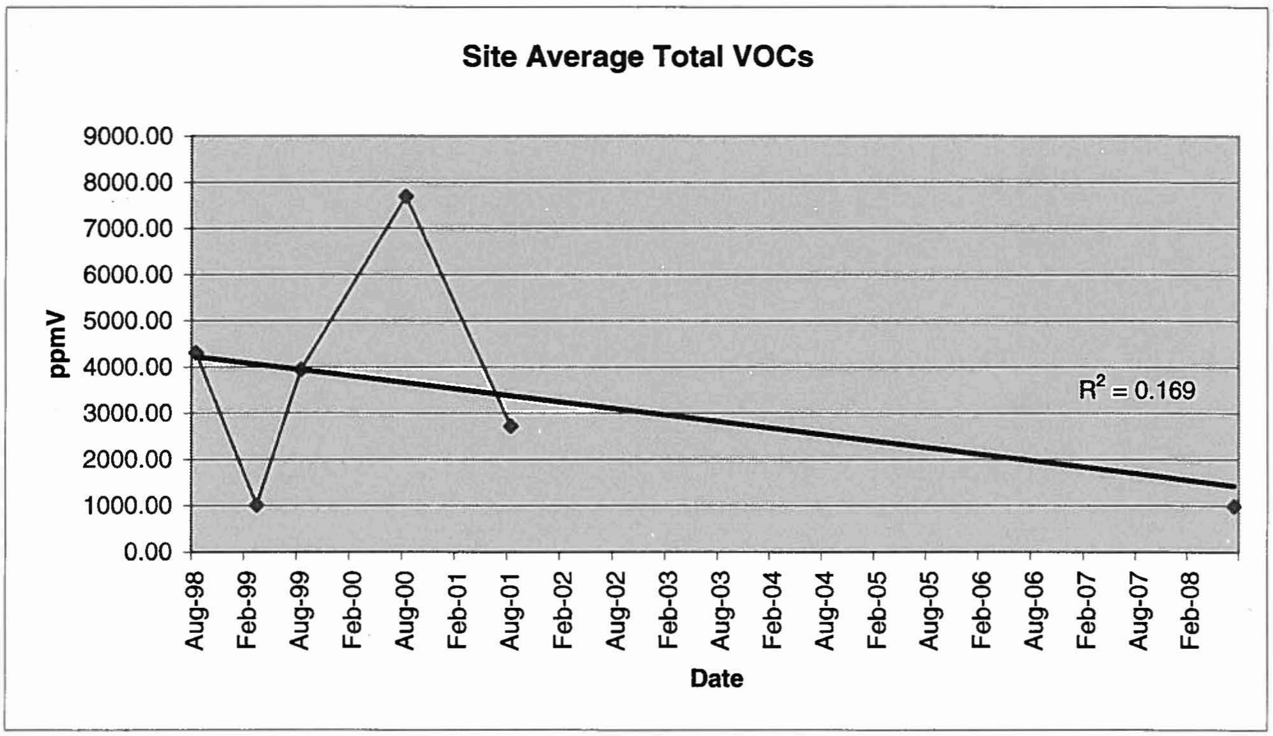
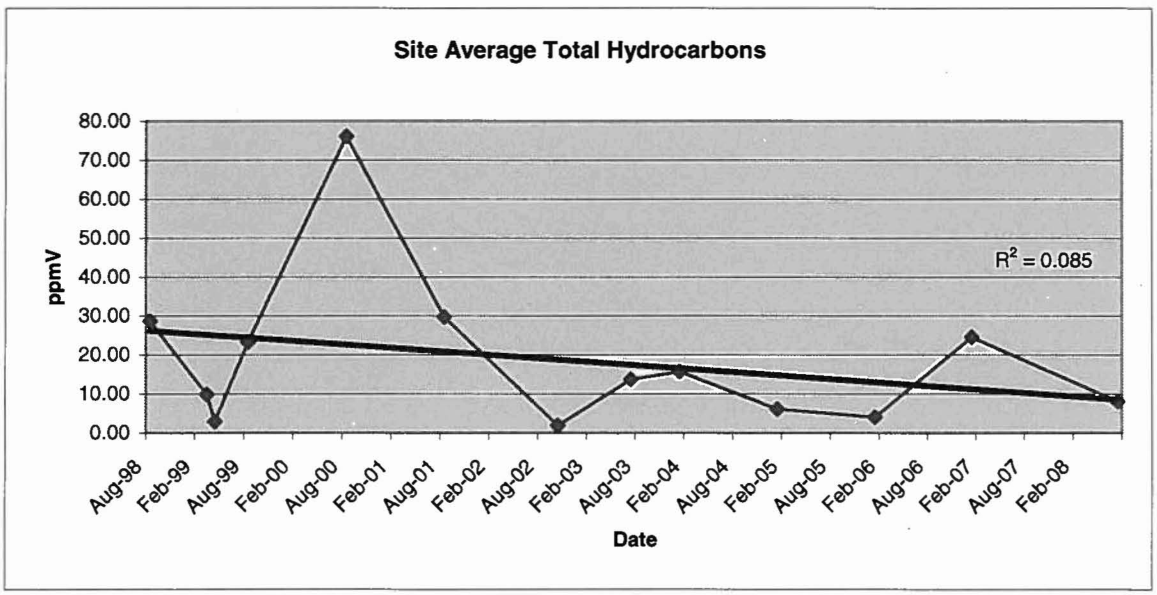


Figure F-2-3
Total Hydrocarbons in Gas Vent Samples
McAllister Point Landfill
Five Year Review Report,
NAVSTA Newport, Rhode Island

TOTAL HYDROCARBONS	01-Aug-98	28.67 ppmv Average all measured points
TOTAL HYDROCARBONS	01-Mar-99	9.84 ppmv Average all measured points
TOTAL HYDROCARBONS	01-Apr-99	2.84 ppmv Average all measured points
TOTAL HYDROCARBONS	01-Aug-99	23.19 ppmv Average all measured points
TOTAL HYDROCARBONS	01-Aug-00	76.08 ppmv Average all measured points
TOTAL HYDROCARBONS	01-Aug-01	29.71 ppmv Average all measured points
TOTAL HYDROCARBONS	01-Oct-02	1.85 ppmv Average all measured points
TOTAL HYDROCARBONS	01-Jul-03	13.68 ppmv Average all measured points
TOTAL HYDROCARBONS	01-Jan-04	15.68 ppmv Average all measured points
TOTAL HYDROCARBONS	01-Jan-05	6.06 ppmv Average all measured points
TOTAL HYDROCARBONS	01-Jan-06	4.02 ppmv Average all measured points
TOTAL HYDROCARBONS	01-Jan-07	24.57 ppmv Average all measured points
TOTAL HYDROCARBONS	28-Jul-08	8.04 ppmv Average all measured points



ppmv = parts per million by volume

APPENDIX F-3

McALLISTER LANDFILL – SEDIMENT DATA SUMMARY

TABLE F7-3A
ANALYTICAL RESULTS - POREWATER
MCALLISTER POINT LANDFILL, NAVAL STATION NEWPORT, PORTSMOUTH, RHODE ISLAND

SAMPLE ID		MCA-SD-08-01-PW	MCA-PW-08-02	MCA-PW-08-03	MCA-PW-08-05	MCA-SD-09-01-PW	MCA-PW-09-02	MCA-PW-09-03	MCA-PW-09-04	MCA-PW-09-05	MCA-SD-11-01-PW	MCA-SD-11-01-PW-D
LOCATION ID		MCA-08	MCA-08	MCA-08	MCA-08	MCA-09	MCA-09	MCA-09	MCA-09	MCA-09	MCA-11	MCA-11
SAMPLE DATE		12/21/04	11/07/05	10/23/06	10/14/08	12/21/04	11/07/05	10/23/06	10/12/07	10/14/08	12/21/04	12/21/04
TOP DEPTH												
BOTTOM DEPTH												
SACODE		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP
QC TYPE	BASELINE PRG	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	FD
METALS (UG/L)												
COPPER	17.6	0.739 U	3.2 J	5.1 J	1 U	2.21 U	10.5 J	2 U	1.2 U	2 U	3.17 U	0.739 U
NICKEL	11.1	5.55 U	5.1 J	1.5 U	3.4 U	5.55 U	2040	1.5 U	2 U	5.7 J	5.55 U	5.55 U

BLACK SHADING-EXCEEDS BASELINE PRG; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE F7-3A
ANALYTICAL RESULTS - POREWATER
MCALLISTER POINT LANDFILL, NAVAL STATION NEWPORT, PORTSMOUTH, RHODE ISLAND

SAMPLE ID		MCA-SD-08-01-PW	MCA-PW-11-02	MCA-PW-11-03	MCA-PW-11-04	MCA-SD-12-01-PW	MCA-PW-12-05	MCA-16-01-121304-PW	MCA-PW-16-03	MCA-PW-16-04	MCA-PW-16-05	MCA-JCC-02-01-121304-PW
LOCATION ID		MCA-08	MCA-11	MCA-11	MCA-11	MCA-12	MCA-12	MCA-16	MCA-16	MCA-16	MCA-16	MCA-JCC-02
SAMPLE DATE		12/21/04	11/07/05	10/23/06	10/12/07	12/22/04	10/14/08	12/13/04	10/23/06	10/12/07	10/13/08	12/13/04
TOP DEPTH												
BOTTOM DEPTH												
SACODE		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	BASELINE PRG	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
METALS (UG/L)												
COPPER	17.6	0.739 U	23.5 J	5.6 J	0.5 U	0.739 U	1.9 U	11 UJ	2 UJ	0.5 U	2.4 U	23 J
NICKEL	11.1	5.55 U	28.7 J	1.6 J	3 U	5.55 U	0.81 U	5.55 U	2.1 J	3.3 U	6.1 U	5.55 U

BLACK SHADING-EXCEEDS BASELINE PRG; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

SAMPLE ID		MCA-SD-08-01-PW	MCA-PW-JCC-02-03	MCA-PW-JCC-02-04	MCA-PW-JCC-02-05	MCA-JCC-03-01-121404-PW	MCA-PW-JCC-M-03-02	MCA-PW-JCC-03-03	MCA-PW-JCC-03-04	MCA-PW-JCC-03-05	MCA-SD-JCC-04-01-PW	MCA-PW-JCC-04-02
LOCATION ID		MCA-08	MCA-JCC-02	MCA-JCC-02	MCA-JCC-02	MCA-JCC-03	MCA-JCC-03	MCA-JCC-03	MCA-JCC-03	MCA-JCC-03	MCA-JCC-04	MCA-JCC-04
SAMPLE DATE		12/21/04	10/23/06	10/12/07	10/14/08	12/14/04	11/07/05	10/23/06	10/12/07	10/14/08	12/15/04	11/07/05
TOP DEPTH												
BOTTOM DEPTH												
SACODE		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	BASELINE PRG	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
METALS (UG/L)												
COPPER	17.6	0.739 U	4.6 J	1.8 U	2.9 U	6.97 UJ	8 J	9.6 J	0.5 U	1.1 U	9.07 UJ	4.4 J
NICKEL	11.1	5.55 U	5.9 J	4.3 J	4.7 U	5.55 U	6.7 J	2.4 J	5.3 J	7.5 U	4.5 J^	5.2 J

TABLE F7-3A
ANALYTICAL RESULTS - POREWATER
MCALLISTER POINT LANDFILL, NAVAL STATION NEWPORT, PORTSMOUTH, RHODE ISLAND

SAMPLE ID		MCA-SD-08-01-PW	MCA-PW-JCC-04-03	MCA-PW-JCC-04-04	MCA-PW-JCC-04-05	MCA-JCC-M-01-01-121304-PW	MCA-PW-JCC-M-01-02	MCA-PW-JCC-M-01-03	MCA-PW-JCC-M-01-04	MCA-PW-JCC-M-01-05	MCA-JCC-S-01-01-121304-PW	MCA-PW-JCC-S-01-03
LOCATION ID		MCA-08	MCA-JCC-04	MCA-JCC-04	MCA-JCC-04	MCA-JCC-M-01	MCA-JCC-M-01	MCA-JCC-M-01	MCA-JCC-M-01	MCA-JCC-M-01	MCA-JCC-S-01	MCA-JCC-S-01
SAMPLE DATE		12/21/04	10/23/06	10/12/07	10/14/08	12/13/04	11/07/05	10/23/06	10/12/07	10/14/08	12/13/04	10/23/06
TOP DEPTH												
BOTTOM DEPTH												
SACODE		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	BASELINE PRG	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
METALS (UG/L)												
COPPER	17.6	0.739 U	2.8 J	0.5 U	0.88 U	7.02 UJ	4.1 J	3.6 J	0.5 U	0.86 U	8.6 UJ	6.6 J
NICKEL	11.1	5.55 U	1.5 U	2.9 U	8.6 U	5.55 U	4.1 J	2.3 J	2.7 U	4.8 U	5.55 U	1.5 U

BLACK SHADING-EXCEEDS BASELINE PRG; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

SAMPLE ID		MCA-SD-08-01-PW	MCA-PW-JCC-S-01-04	MCA-PW-JCC-S-01-05	MCA-SD-NSB-01-01-PW	MCA-PW-NSB-01-05	MCA-NSB-01-PW	MCA-SD-NSB-02-01-PW	MCA-PW-NSB-02-05	MCA-NSB-02-PW	MCA-SD-NSB-03-01-PW	MCA-PW-NSB-03-05
LOCATION ID		MCA-08	MCA-JCC-S-01	MCA-JCC-S-01	MCA-NSB-01	MCA-NSB-01	MCA-NSB-01	MCA-NSB-02	MCA-NSB-02	MCA-NSB-02	MCA-NSB-03	MCA-NSB-03
SAMPLE DATE		12/21/04	10/12/07	10/14/08	12/22/04	10/14/08	UNKNOWN	12/15/04	10/14/08	UNKNOWN	12/22/04	10/14/08
TOP DEPTH												
BOTTOM DEPTH												
SACODE		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	BASELINE PRG	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
METALS (UG/L)												
COPPER	17.6	0.739 U	5.4 U	2 U	128 J	6.3 J	10.2	27.7 J	2.6 U	53.2	0.739 U	2.9 U
NICKEL	11.1	5.55 U	3 U	5.8 U	8.96 J	9.6 J	23.4	3.1 J^	3.1 J	26.6	5.55 U	5.2 J

BLACK SHADING-EXCEEDS BASELINE PRG; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE F7-3A
ANALYTICAL RESULTS - POREWATER
MCALLISTER POINT LANDFILL, NAVAL STATION NEWPORT, PORTSMOUTH, RHODE ISLAND

SAMPLE ID		MCA-SD-08-01-PW	MCA-NSB-03-PW	MCA-NSB-04-01-121304-PW	MCA-NSB-04-01-121304-PW-D	MCA-PW-NSB-04-05	MCA-NSB-04-PW	MCA-NSB-05-01-121304-PW	MCA-PW-NSB-05-05	MCA-NSB-05-PW	MCA-NSB-06-PW	MCA-NSB-07-PW
LOCATION ID		MCA-08	MCA-NSB-03	MCA-NSB-04	MCA-NSB-04	MCA-NSB-04	MCA-NSB-04	MCA-NSB-05	MCA-NSB-05	MCA-NSB-05	MCA-NSB-06	MCA-NSB-07
SAMPLE DATE		12/21/04	UNKNOWN	12/13/04	12/13/04	10/14/08	UNKNOWN	12/13/04	10/14/08	UNKNOWN	UNKNOWN	UNKNOWN
TOP DEPTH												
BOTTOM DEPTH												
SACODE		NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	BASELINE PRG	NM	NM	NM	FD	NM	NM	NM	NM	NM	NM	NM
METALS (UG/L)												
COPPER	17.6	0.739 U	5.8	32.6 J	96.7 J	28.5	4.8	52.1 J	5.4 J	27.2	5.4	28.4
NICKEL	11.1	5.55 U	26.6	5.89 J	14.2 J	7.4 J	34.2	15.2 J	4.6 J	48.8	8	20.2

BLACK SHADING-EXCEEDS BASELINE PRG; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE F7-3A
ANALYTICAL RESULTS - POREWATER
MCALLISTER POINT LANDFILL, NAVAL STATION NEWPORT, PORTSMOUTH, RHODE ISLAND

SAMPLE ID		MCA-SD-08-01-PW	MCA-SD-OS27-01-PW	MCA-PW-OS-27-02	MCA-PW-OS-27-04	MCA-PW-OS-27-05	MCA-PW-OS-27-03	MCA-SD-OS28-01-PW	MCA-PW-OS-28-02	MCA-PW-OS-28-05	MCA-SD-OS29-01-PW	MCA-PW-OS-29-02
LOCATION ID		MCA-08	MCA-OS-27	MCA-OS-27	MCA-OS-27	MCA-OS-27	MCA-OS-27	MCA-OS-28	MCA-OS-28	MCA-OS-28	MCA-OS-29	MCA-OS-29
SAMPLE DATE		12/21/04	12/21/04	11/07/05	10/12/07	10/13/08	10/23/26	12/22/04	11/07/05	10/14/08	12/22/04	11/07/05
TOP DEPTH												
BOTTOM DEPTH												
SACODE		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	BASELINE PRG	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
METALS (UG/L)												
COPPER	17.6	0.739 U	0.739 U	3.1 J	0.5 U	1.3 U	2.8 J	0.739 U	9 J	0.7 U	0.739 U	6.2 J
NICKEL	11.1	5.55 U	5.55 U	1170	3.4 U	7.3 U	1.5 U	5.55 U	1330	1.6 U	5.55 U	5.5 J

BLACK SHADING-EXCEEDS BASELINE PRG; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE F7-3A
ANALYTICAL RESULTS - POREWATER
MCALLISTER POINT LANDFILL, NAVAL STATION NEWPORT, PORTSMOUTH, RHODE ISLAND

SAMPLE ID		MCA-SD-08-01-PW	MCA-PW-OS-29-03	MCA-PW-OS-29-04	MCA-PW-OS-29-05	MCA-SD-OS-30-01-PW	MCA-PW-OS-30-03	MCA-PW-OS-30-04	MCA-PW-OS-30-05	MCA-SD-SDA-D-01-01-PW	MCA-PW-SDA-D-01-02	MCA-PW-SDA-D-01-03
LOCATION ID		MCA-08	MCA-OS-29	MCA-OS-29	MCA-OS-29	MCA-OS-30	MCA-OS-30	MCA-OS-30	MCA-OS-30	MCA-SDA-D-01	MCA-SDA-D-01	MCA-SDA-D-01
SAMPLE DATE		12/21/04	10/23/06	10/12/07	10/13/08	12/16/04	10/23/06	10/12/07	10/13/08	12/16/04	11/07/05	10/23/06
TOP DEPTH												
BOTTOM DEPTH												
SACODE		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	BASELINE PRG	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
METALS (UG/L)												
COPPER	17.6	0.739 U	2 U	0.5 U	3.2 U	4.19 UJ	2 UJ	0.5 U	3.3 U	3.3 UJ	2.7 J	2 U
NICKEL	11.1	5.55 U	1.5 U	3 UJ	7.3 U	7.3 J^	1.5 U	1.7 U	10.2 U	5.6 J^	4.2 J	1.5 U

BLACK SHADING-EXCEEDS BASELINE PRG; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE F7-3A
ANALYTICAL RESULTS - POREWATER
MCALLISTER POINT LANDFILL, NAVAL STATION NEWPORT, PORTSMOUTH, RHODE ISLAND

SAMPLE ID		MCA-SD-08-01-PW	MCA-PW-SDA-D-01-04	MCA-PW-SDA-D-01-05	MCA-SDA-M-02-01-121304-PW	MCA-PW-SDA-M-02-03	MCA-PW-SDA-M-02-04	MCA-PW-SDA-M-02-05	MCA-PW-SDA-S-02-B-02	MCA-SD-SDA-S02B/C-01-PW	MCA-PW-SDA-02-B-05	MCA-PW-SDA-02-C-02
LOCATION ID		MCA-08	MCA-SDA-D-01	MCA-SDA-D-01	MCA-SDA-M-02	MCA-SDA-M-02	MCA-SDA-M-02	MCA-SDA-M-02	MCA-SDA-S-02	MCA-SDA-S-02-B/C	MCA-SDA-S-02-B/C	MCA-SDA-S-02-C
SAMPLE DATE		12/21/04	10/12/07	10/13/08	12/13/04	10/23/06	10/12/07	10/13/08	11/07/05	12/22/04	10/14/08	11/07/05
TOP DEPTH												
BOTTOM DEPTH												
SACODE		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	BASELINE PRG	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
METALS (UG/L)												
COPPER	17.6	0.739 U	1 U	0.7 U	6.67 UJ	2 U	0.84 U	1.2 U	3.9 J	0.739 U	2.2 U	3.4 J
NICKEL	11.1	5.55 U	3.1 J	0.46 U	5.55 U	1.5 U	4.1 J	3.8 J	1670	5.55 U	4.5 J	870

BLACK SHADING-EXCEEDS BASELINE PRG; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE F7-3A
ANALYTICAL RESULTS - POREWATER
MCALLISTER POINT LANDFILL, NAVAL STATION NEWPORT, PORTSMOUTH, RHODE ISLAND

SAMPLE ID		MCA-SD-08-01-PW	MCA-PW-SDA-S-02-C-05	MCA-SDA-S-04-01-121404-PW	MCA-PW-S-04-03	MCA-PW-S-04-04	MCA-PW-SDA-04-05	MCA-PW-11-DUP-02	MCA-PW-OS-27-DUP-02	MCA-DUP05-03	MCA-DUP06-03	MCA-PW-DUP03-04
LOCATION ID		MCA-08	MCA-SDA-S-02-C	MCA-SDA-S-04	MCA-SDA-S-04	MCA-SDA-S-04	MCA-SDA-S-04	UNDEFINED_MCA	UNDEFINED_MCA	UNDEFINED_MCA	UNDEFINED_MCA	UNDEFINED_MCA
SAMPLE DATE		12/21/04	10/14/08	12/14/04	10/23/06	10/12/07	10/13/08	11/07/05	11/07/05	10/23/06	10/23/06	10/12/07
TOP DEPTH												
BOTTOM DEPTH												
SACODE		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	DUP	DUP	DUP	DUP	DUP
QC TYPE	BASELINE PRG	NM	NM	NM	NM	NM	NM	FD	FD	FD	FD	FD
METALS (UG/L)												
COPPER	17.6	0.739 U	1.1 U	9.49 UJ	2 U	0.5 U	0.7 U	9.6 J	4.3 J	2.5 J	8 J	0.5 U
NICKEL	11.1	5.55 U	1.2 U	5.56 J	4.8 J	3.1 U	0.46 U	4.7 J	1240	1.6 J	1.5 U	3.4 UJ

BLACK SHADING-EXCEEDS BASELINE PRG; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE F7-3A
ANALYTICAL RESULTS - POREWATER
MCALLISTER POINT LANDFILL, NAVAL STATION NEWPORT, PORTSMOUTH, RHODE ISLAND

SAMPLE ID		MCA-SD-08-01-PW	MCA-PW-DUP04-04	MCA-PW-DUP01-05	MCA-PW-DUP02-05	MCA-PW-DUP03-05
LOCATION ID		MCA-08	UNDEFINED_MCA	UNDEFINED_MCA	UNDEFINED_MCA	UNDEFINED_MCA
SAMPLE DATE		12/21/04	10/12/07	10/13/08	10/13/08	10/14/08
TOP DEPTH						
BOTTOM DEPTH						
SACODE		NORMAL	DUP	DUP	DUP	DUP
QC TYPE	BASELINE PRG	NM	FD	FD	FD	FD
METALS (UG/L)						
COPPER	17.6	0.739 U	1 U	2.4 U	1.1 U	9.1 J
NICKEL	11.1	5.55 U	4.2 J	4.8 U	2.2 U	4.8 J

W_

BLACK SHADING-EXCEEDS BASELINE PRG; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

SAMPLE ID		MCA-SD-08-01	MCA-SD-08-02	MCA-SD-08-03	MCA-SD-08-05	MCA-SD-09-01	MCA-SD-09-02	MCA-SD-09-03	MCA-SD-09-04	MCA-SD-09-05	MCA-SD-11-01	MCA-SD-11-02	MCA-SD-11-03	MCA-SD-11-04	MCA-SD-11-05	MCA-SD-12-01	MCA-SD-12-02	MCA-SD-12-05	MCA-16-01-121304
LOCATION ID		MCA-08	MCA-08	MCA-08	MCA-08	MCA-09	MCA-09	MCA-09	MCA-09	MCA-09	MCA-11	MCA-11	MCA-11	MCA-11	MCA-11	MCA-12	MCA-12	MCA-12	MCA-16
SAMPLE DATE		12/21/04	10/31/05	10/17/06	10/08/08	12/21/04	10/31/05	10/17/06	10/10/07	10/09/08	12/21/04	11/07/05	10/17/06	10/10/07	10/08/08	12/22/04	10/19/05	10/08/08	12/13/04
TOP DEPTH		0 FT				0 FT					0 FT					0 FT			0 FT
BOTTOM DEPTH		0.5 FT				0.5 FT					0.5 FT					0.5 FT			0.5 FT
SACODE		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	BASELINE PRG	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																			
ANTHRACENE	171	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	67.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)																			
ANTHRACENE	171	1.7 U	0.033	15 J	37 J	1.8 U	0.000041	40 J	55 J	24 J	300	4.9 J	100	310 J	120 J	6.3	31.5 U	2.9 U	15
FLUORENE	67.7	2.3	3.1 U	6.9 J	17	1.8 U	0.0013 J	19 J	25 J	10	61	7.2 J	45	150 J	66	2.4	18.9 U	2.9 U	7.5
PYRENE	997	1.7 U	1.8	130 J	190 J	8.8	0.0019	260 J	440 J	150 J	150	7.4 J	450	1200 J	820 J	28	155 J	12	41
POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
ANTHRACENE	0.171	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	0.0677	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	0.997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PESTICIDES/PCBS (UG/KG)																			
SUM OF PCB CONGENERS X 2	1211	NA	63.68	104.21272	121.74188	NA	55.64	122.89842	116.3622	69.9662	NA	43.02	60.83878	69.29988	315.95724	NA	NA	12.619372	NA
PCB CONGENERS (UG/KG)																			
SUM OF PCB CONGENERS X 2	1211	8.9136	NA	NA	NA	7.4636	NA	NA	NA	NA	42.8	NA	NA	NA	NA	3.95228	NA	NA	243.574

w_

BLACK SHADING-EXCEEDS BASELINE PRG; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

TABLE F7-3B
ANALYTICAL RESULTS - SEDIMENT
MCALLISTER POINT LANDFILL, NAVAL STATION NEWPORT, PORTSMOUTH, RHODE ISLAND

SAMPLE ID		MCA-SD-16-02	MCA-SD-16-03	MCA-SD-16-04	MCA-SD-16-05	MCA-JCC-02-01-121304	MCA-SD-JCC-02-02	MCA-SD-JCC-02-03	MCA-SD-JCC-02-04	MCA-SD-JCC-02-05	MCA-JCC-03-01-121404	MCA-SD-JCC-M-03-02	MCA-SD-JCC-03-03	MCA-SD-JCC-03-04	MCA-SD-JCC-03-05	MCA-SD-JCC-04-01	MCA-SD-JCC-04-02	MCA-SD-JCC-04-03	MCA-SD-JCC-04-04
LOCATION ID		MCA-16	MCA-16	MCA-16	MCA-16	MCA-JCC-02	MCA-JCC-02	MCA-JCC-02	MCA-JCC-02	MCA-JCC-02	MCA-JCC-03	MCA-JCC-03	MCA-JCC-03	MCA-JCC-03	MCA-JCC-03	MCA-JCC-04	MCA-JCC-04	MCA-JCC-04	MCA-JCC-04
SAMPLE DATE		10/19/05	10/17/06	10/10/07	10/07/08	12/13/04	10/18/05	10/19/06	10/11/07	10/08/08	12/14/04	11/07/05	10/19/06	10/11/07	10/08/08	12/15/04	10/31/05	10/19/06	10/11/07
TOP DEPTH						0 FT					0 FT					0 FT			
BOTTOM DEPTH						0.5 FT					0.5 FT					0.5 FT			
SACODE		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	BASELINE PRG	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																			
ANTHRACENE	171	NA	NA	NA	NA	1.2 U	NA	NA	NA	NA	1.3 UJ	NA	NA	NA	NA	1.2 U	NA	NA	NA
FLUORENE	67.7	NA	NA	NA	NA	1.2 U	NA	NA	NA	NA	1.3 UJ	NA	NA	NA	NA	1.2 U	NA	NA	NA
PYRENE	997	NA	NA	NA	NA	9.3	NA	NA	NA	NA	1.3 UJ	NA	NA	NA	NA	4.1	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)																			
ANTHRACENE	171	70.7 J	54 J	110	58 J	NA	67.5 J	2300	32 J	28 J	NA	2.9 U	9.6	9.3	2.5 U	NA	5.3 J	5.9	3.5
FLUORENE	67.7	39.6 J	20 J	53	25	NA	30.1 U	830	12 J	11	NA	2.3 U	3.5	3.7	2.5 U	NA	7.6 J	2.4	1.4
PYRENE	997	262 J	200 J	610	270 J	NA	362 J	9700	320 J	170 J	NA	2.2	50	95	21	NA	32	45	47
POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
ANTHRACENE	0.171	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	0.0677	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	0.997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PESTICIDES/PCBS (UG/KG)																			
SUM OF PCB CONGENERS X 2	1211	NA	44.18436	39.80013	27.24928	NA	NA	21.24224	5.917592	21.35814	NA	0.61 U	21.79062	18.66082	7.74026	NA	40.3	26.97366	15.92544
PCB CONGENERS (UG/KG)																			
SUM OF PCB CONGENERS X 2	1211	NA	NA	NA	NA	2.10548	NA	NA	NA	NA	2.04394	NA	NA	NA	NA	2.52048	NA	NA	NA

BLACK SHADING-EXCEEDS BASELINE PRG; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

SAMPLE ID		MCA-SD-JCC-04-05	DSY-SD-CC01-082604	MCA-JCC-M-01-01-121304	MCA-SD-JCC-M-01-02	MCA-SD-JCC-M-01-03	MCA-SD-JCC-M-01-04	MCA-SD-JCC-M-01-05	MCA-JCC-S-01-01-121304	MCA-SD-JCC-S-01-02	MCA-SD-JCC-S-01-03	MCA-SD-JCC-S-01-04	MCA-SD-JCC-S-01-05	MCA-NRL-SD12R-200404	MCA-NRL-SD13M-200404	NRL-SD14M-200404	NRL-SD15M-200404	MCA-SD-NSB-01-01	MCA-SD-NSB-01-02
LOCATION ID		MCA-JCC-04	MCA-JCC-D-01	MCA-JCC-M-01	MCA-JCC-M-01	MCA-JCC-M-01	MCA-JCC-M-01	MCA-JCC-M-01	MCA-JCC-S-01	MCA-JCC-S-01	MCA-JCC-S-01	MCA-JCC-S-01	MCA-JCC-S-01	MCA-NRL-SD12R	MCA-NRL-SD13M	MCA-NRL-SD14M	MCA-NRL-SD15M	MCA-NSB-01	MCA-NSB-01
SAMPLE DATE		10/08/08	08/26/04	12/13/04	10/31/05	10/19/06	10/11/07	10/08/08	12/13/04	10/18/05	10/19/06	10/11/07	10/08/08	04/01/04	04/01/04	04/01/04	04/01/04	12/22/04	10/20/05
TOP DEPTH			0 FT	0 FT					0 FT					0 FT	0 FT	0 FT	0 FT	0 FT	
BOTTOM DEPTH			0.5 FT	0.5 FT					0.5 FT					0.5 FT	0.5 FT	0.5 FT	0.5 FT	0.5 FT	
SACODE		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	BASELINE PRG	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																			
ANTHRACENE	171	NA	59	1.4 U	NA	NA	NA	NA	13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	67.7	NA	11	1.4 U	NA	NA	NA	NA	1.4 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	997	NA	540 *	1.4 U	NA	NA	NA	NA	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)																			
ANTHRACENE	171	6.2	NA	NA	3.8	56 J	2600 J	28	NA	56.1 J	31 J	110 J	6.2	NA	NA	NA	NA	1.2 U	38.6
FLUORENE	67.7	3.3 U	NA	NA	2.3 U	14 J	1200 J	11	NA	19.3 U	14 J	47 J	2.6 U	NA	NA	NA	NA	1.2 U	7.6
PYRENE	997	59	NA	NA	5.8	410 J	12000 J	220	NA	379 J	230 J	1000 J	64	NA	NA	NA	NA	5.6	252
POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
ANTHRACENE	0.171	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.051	0.028	0.026	0.001	NA	NA
FLUORENE	0.0677	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.029	0.0 U	0.0 U	0.009	NA	NA
PYRENE	0.997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.37	0.20	0.18	0.19	NA	NA
PESTICIDES/PCBS (UG/KG)																			
SUM OF PCB CONGENERS X 2	1211	11.06358	NA	NA	37.64	23.301428	17.86768	18.279278	NA	NA	16.11024	15.443444	12.70913	NA	NA	NA	NA	NA	NA
PCB CONGENERS (UG/KG)																			
SUM OF PCB CONGENERS X 2	1211	NA	5.89	2.7463	NA	NA	NA	NA	2.4688	NA	NA	NA	NA	NA	NA	NA	NA	5.7472	NA

BLACK SHADING-EXCEEDS BASELINE PRG; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

SAMPLE ID		MCA-SD-NSB-01-05	MCA-SD-NSB-02-01	MCA-SD-NSB-02-02	MCA-SD-NSB-02-05	MCA-SD-NSB-03-01	MCA-SD-NSB-03-02	MCA-SD-NSB-03-05	MCA-NSB-04-01-121304	MCA-NSB-04-01-121304-D	MCA-SD-NSB-04-02	MCA-SD-NSB-04-05	MCA-NSB-05-01-121304	MCA-SD-NSB-05-02	MCA-SD-NSB-05-05	MCA-SD-OS27-01	MCA-SD-OS27-01-D	MCA-SD-OS-27-02	MCA-SD-OS-27-03
LOCATION ID		MCA-NSB-01	MCA-NSB-02	MCA-NSB-02	MCA-NSB-02	MCA-NSB-03	MCA-NSB-03	MCA-NSB-03	MCA-NSB-04	MCA-NSB-04	MCA-NSB-04	MCA-NSB-04	MCA-NSB-05	MCA-NSB-05	MCA-NSB-05	MCA-OS-27	MCA-OS-27	MCA-OS-27	MCA-OS-27
SAMPLE DATE		10/09/08	12/15/04	10/20/05	10/09/08	12/22/04	10/20/05	10/09/08	12/13/04	12/13/04	10/20/05	10/09/08	12/13/04	10/20/05	10/09/08	12/21/04	12/21/04	11/01/05	10/17/06
TOP DEPTH			0 FT			0 FT			0 FT	0 FT			0 FT			0 FT	0 FT		
BOTTOM DEPTH			0.5 FT			0.5 FT			0.5 FT	0.5 FT			0.5 FT			0.5 FT	0.5 FT		
SACODE		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	DUP	ORIG	NORMAL
QC TYPE	BASELINE PRG	NM	NM	NM	NM	NM	NM	NM	NM	FD	NM	NM	NM	NM	NM	NM	FD	NM	NM
SEMIVOLATILES (UG/KG)																			
ANTHRACENE	171	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	67.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)																			
ANTHRACENE	171	4.6	1.2 UJ	2.4 U	2.2 U	1.1 U	2.3 U	2.1 U	1.3 U	1.4 UJ	3.8 J	2.4	1.1 U	2.5 U	2.3 UJ	9.9 J	1.9 J	31.3	31 J
FLUORENE	67.7	2.7 U	1.2 U	1.9 U	2.2 U	1.1 U	1.8 U	2.1 U	1.3 U	1.4 UJ	1.8 U	2.3 U	1.1 U	2 U	2.3 U	3.4 J	1.2 UJ	17	11 J
PYRENE	997	31	25 J	5.8	2.2 U	5	30.4	2.3	8.3 J	1.4 UJ	5.1 J	32	1.1 U	4.2 J	2.3 UJ	60 J	6.6 J	154	180 J
POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
ANTHRACENE	0.171	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	0.0677	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	0.997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PESTICIDES/PCBS (UG/KG)																			
SUM OF PCB CONGENERS X 2	1211	64.024182	NA	NA	5.696536	NA	NA	3.492482	NA	NA	NA	14.547384	NA	NA	1.677222	NA	NA	41.24	134.1753
PCB CONGENERS (UG/KG)																			
SUM OF PCB CONGENERS X 2	1211	NA	2.07028	NA	NA	1.7324	NA	NA	6.4852	10.911	NA	NA	1.935	NA	NA	6.7214	5.689	NA	NA

BLACK SHADING-EXCEEDS BASELINE PRG; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED

SAMPLE ID		MCA-SD-OS-27-04	MCA-SD-OS-27-05	MCA-SD-OS28-01	MCA-SD-OS-28-02	MCA-SD-OS-28-05	MCA-SD-OS29-01	MCA-SD-OS-29-02	MCA-SD-OS-29-03	MCA-SD-OS-29-04	MCA-SD-OS-29-05	MCA-SD-OS-30-01	MCA-SD-OS-30-02	MCA-SD-OS-30-03	MCA-SD-OS-30-04	MCA-SD-OS-30-05	MCA-SD-SDA-D-01-01	MCA-SD-SDA-D-01-02	MCA-SD-SDA-D-01-03
LOCATION ID		MCA-OS-27	MCA-OS-27	MCA-OS-28	MCA-OS-28	MCA-OS-28	MCA-OS-29	MCA-OS-29	MCA-OS-29	MCA-OS-29	MCA-OS-29	MCA-OS-30	MCA-OS-30	MCA-OS-30	MCA-OS-30	MCA-OS-30	MCA-SDA-D-01	MCA-SDA-D-01	MCA-SDA-D-01
SAMPLE DATE		10/10/07	10/07/08	12/22/04	11/03/05	10/08/08	12/22/04	11/07/05	10/17/06	10/10/07	10/07/08	12/16/04	10/19/05	10/17/06	10/10/07	10/07/08	12/16/04	11/07/05	10/17/06
TOP DEPTH				0 FT			0 FT					0 FT					0 FT		
BOTTOM DEPTH				0.5 FT			0.5 FT					0.5 FT					0.5 FT		
SACODE		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
QC TYPE	BASELINE PRG	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
SEMIVOLATILES (UG/KG)																			
ANTHRACENE	171	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	67.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)																			
ANTHRACENE	171	69 J	33 J	7.7	0.0013	440 J	7	0.072	89 J	520 J	54 J	1.3 U	107 J	36 J	410 J	63 J	1.4 U	0.000035	28 J
FLUORENE	67.7	39 J	17	4.4	3.2 J	240	2.5	1.7	75 J	230 J	27	1.3 U	50.3 J	17 J	170 J	28	1.4 U	0.0014 J	11 J
PYRENE	997	510 J	160 J	11	0.00003	1600 J	17	0.035	600 J	2500 J	320 J	11	368 J	190 J	2400 J	350 J	1.4 U	0.0016	160 J
POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
ANTHRACENE	0.171	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	0.0677	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	0.997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PESTICIDES/PCBS (UG/KG)																			
SUM OF PCB CONGENERS X 2	1211	43.30976	55.81118	NA	1.36	185.7963	NA	22.6	107.594814	131.17402	94.66736	NA	NA	90.93786	93.61644	91.43524	NA	42.14	42.36796
PCB CONGENERS (UG/KG)																			
SUM OF PCB CONGENERS X 2	1211	NA	NA	3.64298	NA	NA	33.774	NA	NA	NA	NA	14.3778	NA	NA	NA	NA	7.512	NA	NA

SAMPLE ID		MCA-SD-SDA-D-01-04	MCA-SD-SDA-D-01-05	MCA-SDA-M-02-01-121304	MCA-SD-SDA-M-02	MCA-SD-SDA-M-02-03	MCA-SD-SDA-M-02-04	MCA-SD-SDA-M-02-05	MCA-SD-SDA-S02B/C-01	MCA-SD-SDA-S-02-B-02	MCA-SD-SDA-S-02-B-05	MCA-SD-SDA-02-C-02	MCA-SD-SDA-S-02-C-05	MCA-SD-S-04-03	MCA-SDA-S-04-01-121404	MCA-SD-SDA-S-04-02	MCA-SD-S-04-04	MCA-SD-SDA-04-05	MCA-SD-DUP02
LOCATION ID		MCA-SDA-D-01	MCA-SDA-D-01	MCA-SDA-M-02	MCA-SDA-M-02	MCA-SDA-M-02	MCA-SDA-M-02	MCA-SDA-M-02	MCA-SDA-S-02-B/C	MCA-SDA-S-02-B/C	MCA-SDA-S-02-B/C	MCA-SDA-S-02-C	MCA-SDA-S-02-C	MCA-SDA-S-03	MCA-SDA-S-04	MCA-SDA-S-04	MCA-SDA-S-04	MCA-SDA-S-04	UNDEFINED_MCA
SAMPLE DATE		10/10/07	10/07/08	12/13/04	10/19/05	10/17/06	10/10/07	10/07/08	12/22/04	11/03/05	10/09/08	11/07/05	10/08/08	10/17/06	12/14/04	10/19/05	10/10/07	10/07/08	10/20/05
TOP DEPTH				0 FT					0 FT						0 FT				
BOTTOM DEPTH				0.5 FT					0.5 FT						0.5 FT				
SACODE		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	DUP
QC TYPE	BASELINE PRG	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	FD
SEMIVOLATILES (UG/KG)																			
ANTHRACENE	171	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	67.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)																			
ANTHRACENE	171	200	19 J	1.5 U	41.3 J	900	140 J	38 J	1.3 U	0.02 J	7.2	4.2 J	4.6 J	23 J	1.3 UJ	23.6 U	8.3	3.8	5.9
FLUORENE	67.7	56	8 J	1.5 U	21.2 J	700	56 J	15	1.3 U	2.3 U	3.1	2.3 U	2.7 U	11 J	1.3 U	7.9 U	2.8	2.6 U	5.7
PYRENE	997	1500	130 J	17 J	187 J	2200	730 J	200 J	1.3 U	0.026	51	15.2	34 J	90 J	24 J	130 J	45	43	19.7 J
POLYCYCLIC AROMATIC HYDROCARBONS (MG/KG)																			
ANTHRACENE	0.171	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FLUORENE	0.0677	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PYRENE	0.997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PESTICIDES/PCBS (UG/KG)																			
SUM OF PCB CONGENERS X 2	1211	45.01928	40.466684	NA	NA	47.2482	48.25456	48.10414	NA	37.2	19.711624	37.64	88.3068	32.20364	NA	NA	32.0022	24.154732	NA
PCB CONGENERS (UG/KG)																			
SUM OF PCB CONGENERS X 2	1211	NA	NA	5.3954	NA	NA	NA	NA	4.5492	NA	NA	NA	NA	NA	7.2486	NA	NA	NA	NA

BLACK SHADING-EXCEEDS BASELINE PRG; GRAY SHADING-DETECTED;
U-NOT DETECTED; J-QUANTITATION APPROXIMATE; R-REJECTED; NA-NOT ANALYZED