DON RAB/TRC
Training Workshop

Site Closeout

Presenters:
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Michelle Brown, Booz·Allen

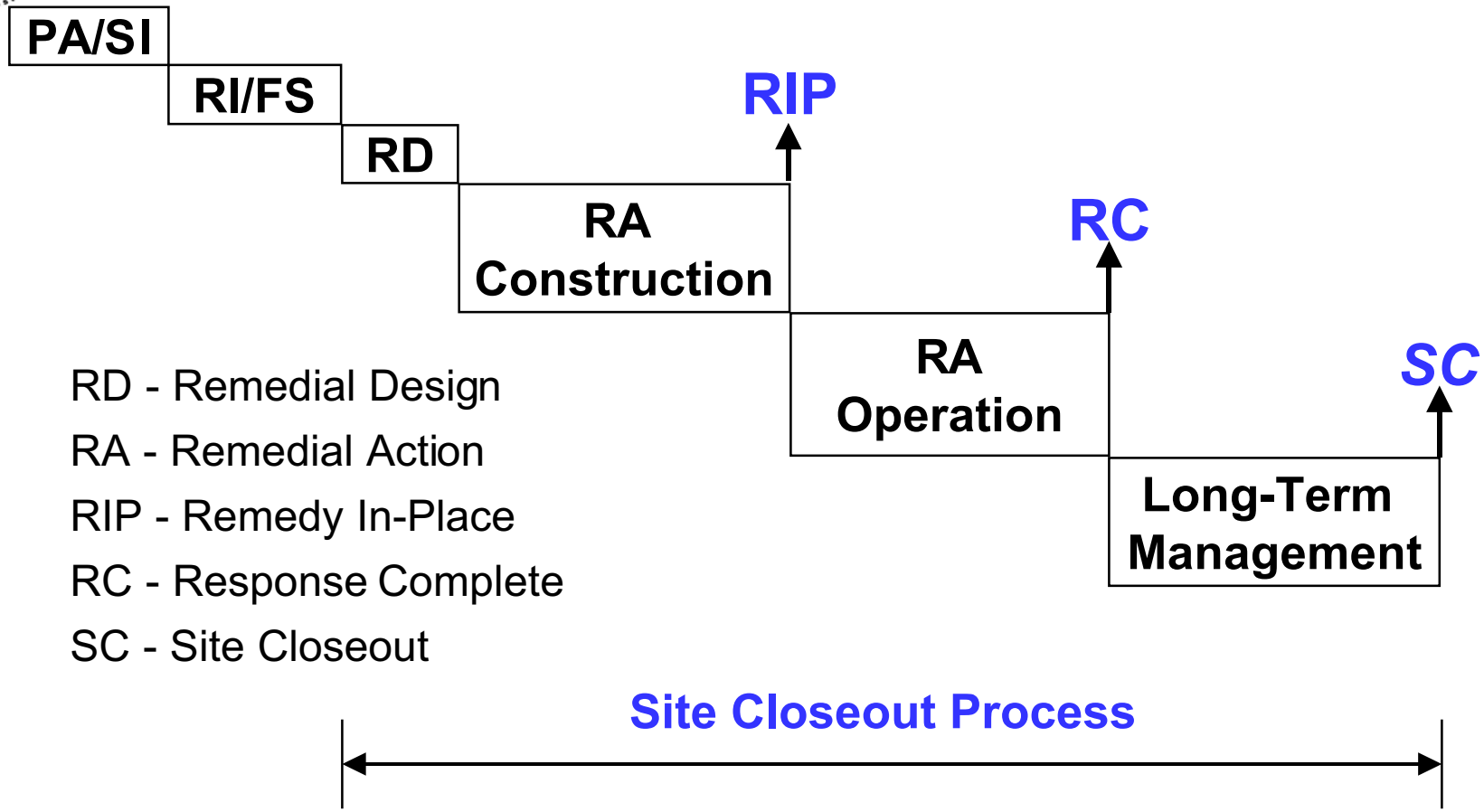
Navy Environmental Restoration Program Goals

- Achieve environmentally protective, expeditious, and cost effective Site Closeouts

Outline/Purpose

- Terminology/Become familiar with words
- Elements and Phases of the Site Closeout (SC) Process/Understand the major phases and elements in the SC process
- SC Optimization/Identify how RAB and Community can improve SC process
- LUCIS Demo/Understand role of LUCIS in implementing land use controls
- Q's & A's/Clarify understanding overall

Terminology – IR Program Phases



RD - Remedial Design
RA - Remedial Action
RIP - Remedy In-Place
RC - Response Complete
SC - Site Closeout

Site Closeout (SC)

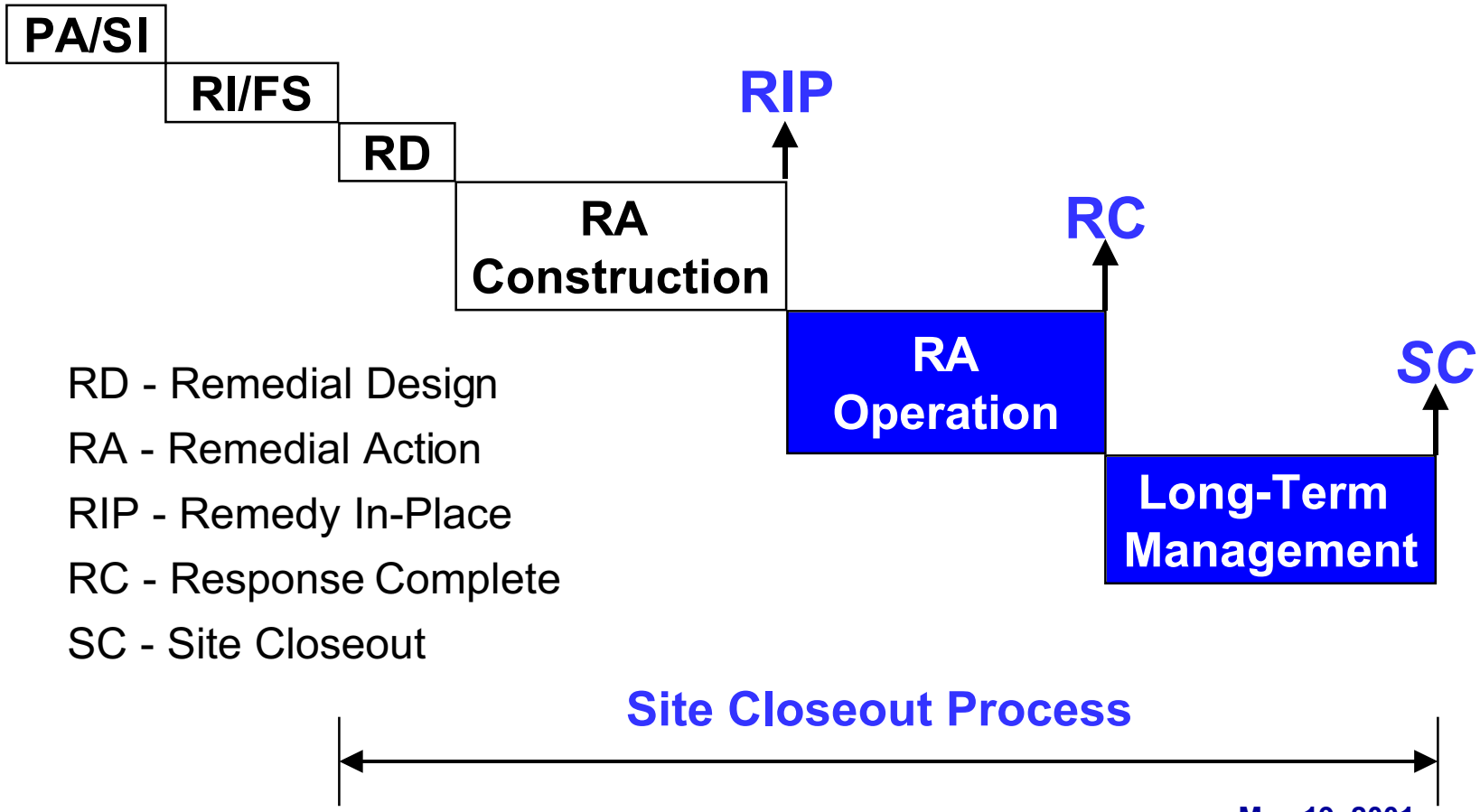
- SC implies active management (e.g. operation of in-place groundwater systems) and monitoring at a site is completed, and no additional funds are expected to be expended at the site (unless the need for additional remedial action is demonstrated; e.g. change in land use, new more effective technology)
- Distinction between site closeout for site versus installation

Program Focus is Shifting

Program Emphasis:

- To date: Achieve Remedy in Place (RIP) and Identify requirements beyond RIP
- Moving Toward: Complete cleanup (Response Complete) and closeout sites (Site Closeout)

RAO/LTMgt Components of Process



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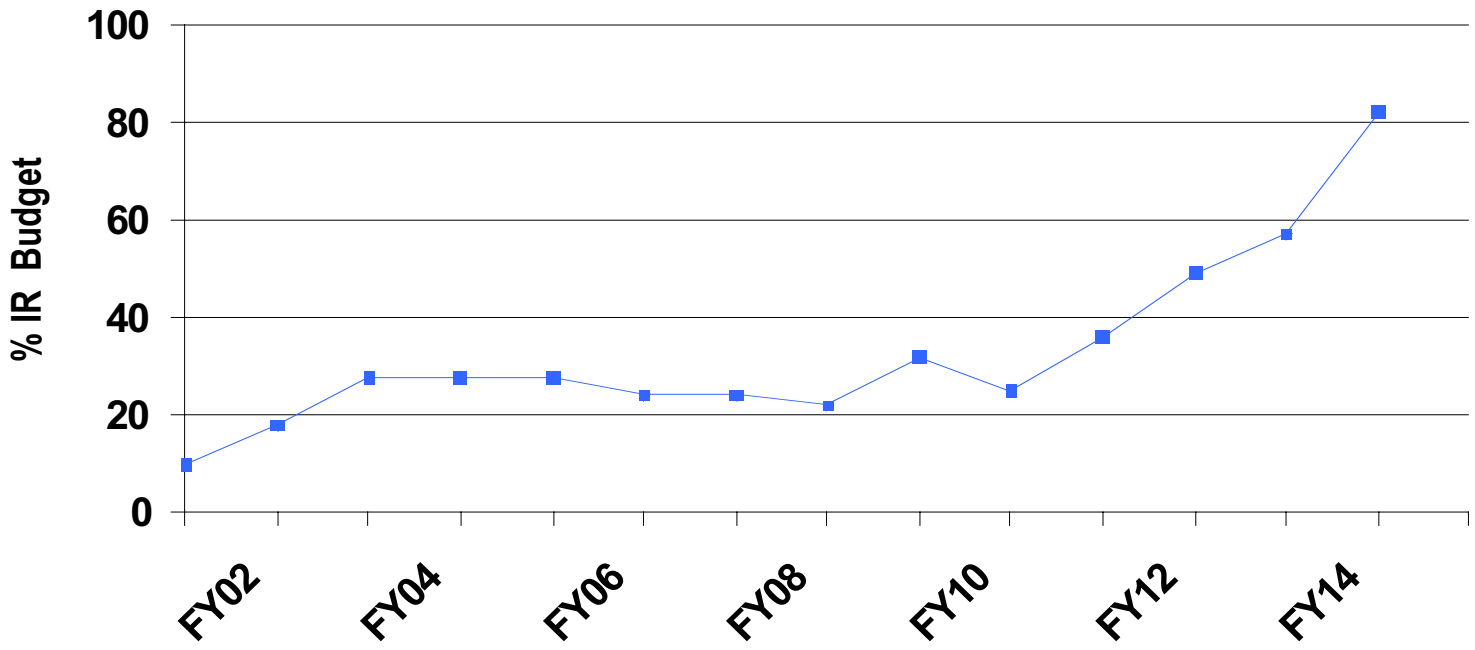
RAO+LTMgt as Percent of Budget



FY=Fiscal Year; starts in October

Issues and Challenges

- **What we thought**
  - Everyone will be happy after RIP is achieved
- **What we now know**
  - Requirements to reach site closeout extend beyond RIP and raise new types of issues and challenges

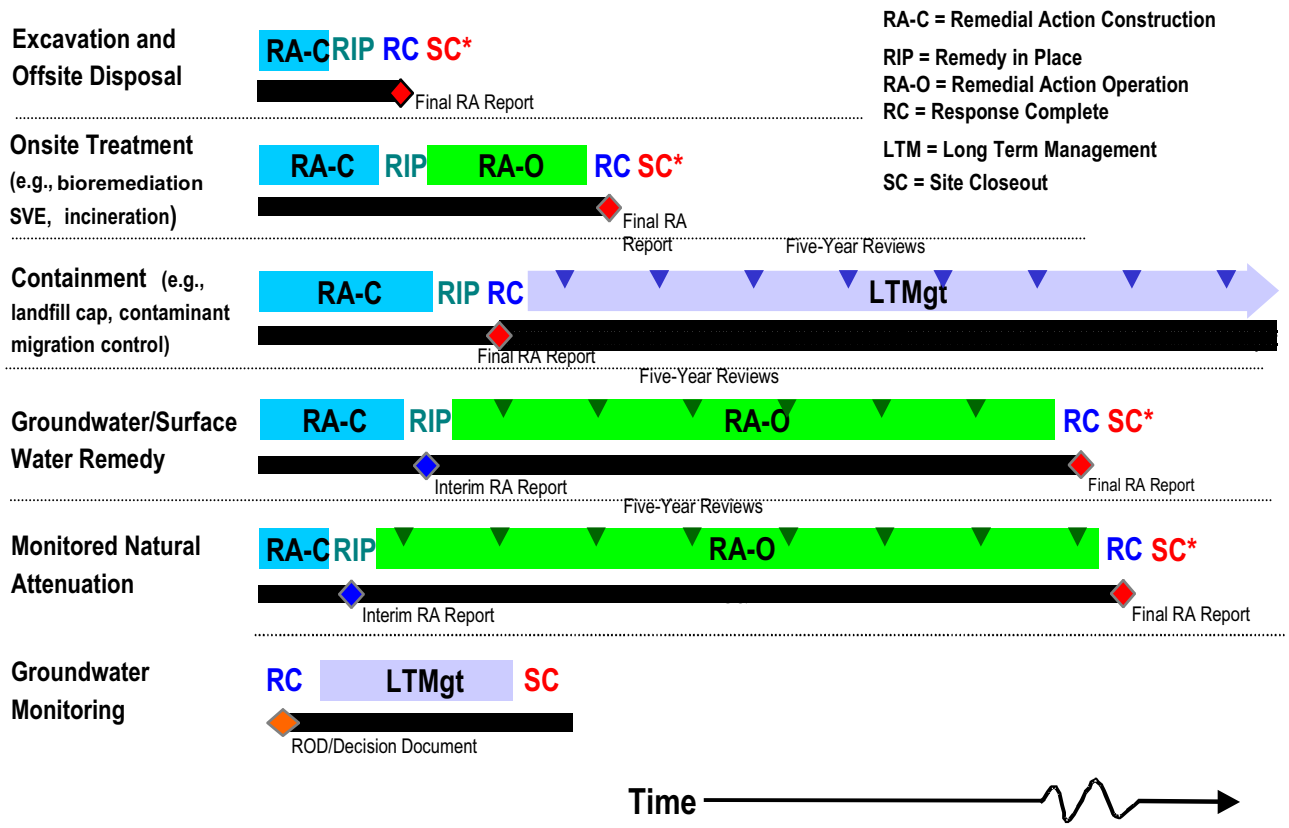
Site Closeout Challenges

- Leaving contamination in place
- Ineffective cleanup systems
- Security/integrity of cleanup systems
- Effectiveness of LUCs
- Future changes in land use and continued protectiveness
- Discovery of additional contamination

Site Closeout Process Requirements: What Remains?

- Operation and maintenance of cleanup systems
- Implementing/monitoring LUCs
- Performance reviews for cleanup systems
- Cleanup system modifications/upgrades
- Final close out reports for installations
- Long-term management/monitoring
- Cleanup system/monitoring well decommissioning
- Deletion from National Priorities List
- Community involvement
- Findings of Suitability to Transfer (FOSTs), Deeds

Typical Remedy Scenarios



RA-C = Remedial Action Construction
RIP = Remedy in Place
RA-O = Remedial Action Operation
RC = Response Complete
LTM = Long Term Management
SC = Site Closeout

RAO/LTMgt in Site Closeout

- RAO and LTMgt data provide the justification for site closeout
- RAO/LTMgt data facilitate the assessment of:
  - **Remedial Effectiveness**: progress toward cleanup criteria
  - **Program Efficiency**: cost effectiveness

RAO/LTMgt Optimization in Site Closeout

- What is RAO/LTMgt optimization?
  - An iterative evaluation process to achieve optimal cost while maintaining or enhancing data quality and protectiveness

RAO/LTMgt Optimization

Why Optimize?

- Bottom Line: “If we keep doing what we’re doing, we’re going to keep getting what we’re getting.” (Steven Covey)
- Must focus on cost effective site closeouts
  - Monitoring programs
  - Need to ensure systems are making progress toward remedial objectives

Elements of RAO

- Operate and maintain active remediation systems:
  - Pump and Treat, AS/SVE, Bioslurper, etc.
- Monitor passive remedies (e.g. MNA)
- Monitor, evaluate, and optimize system(s):
  - Extraction system
  - Treatment system
  - Monitoring network/system
- Perform progress reviews: annual, five-year

RAO Optimization Process

- Step 1: **Review and Evaluate Remedial Action Objectives**
- Step 2: **Evaluate Remedial System**
  - Remediation effectiveness - contaminant removal
  - Operates as designed?
- Step 3: **Evaluate Cost Effectiveness of Existing System**
- Step 4: **Identify System Modifications /Alternatives**
- Step 5: **Develop and Prioritize Optimization Strategies**
- Step 6: **Develop Optimization Report**
- Step 7: **Implement Optimization Strategy**

Case Study #1—OU 1 North

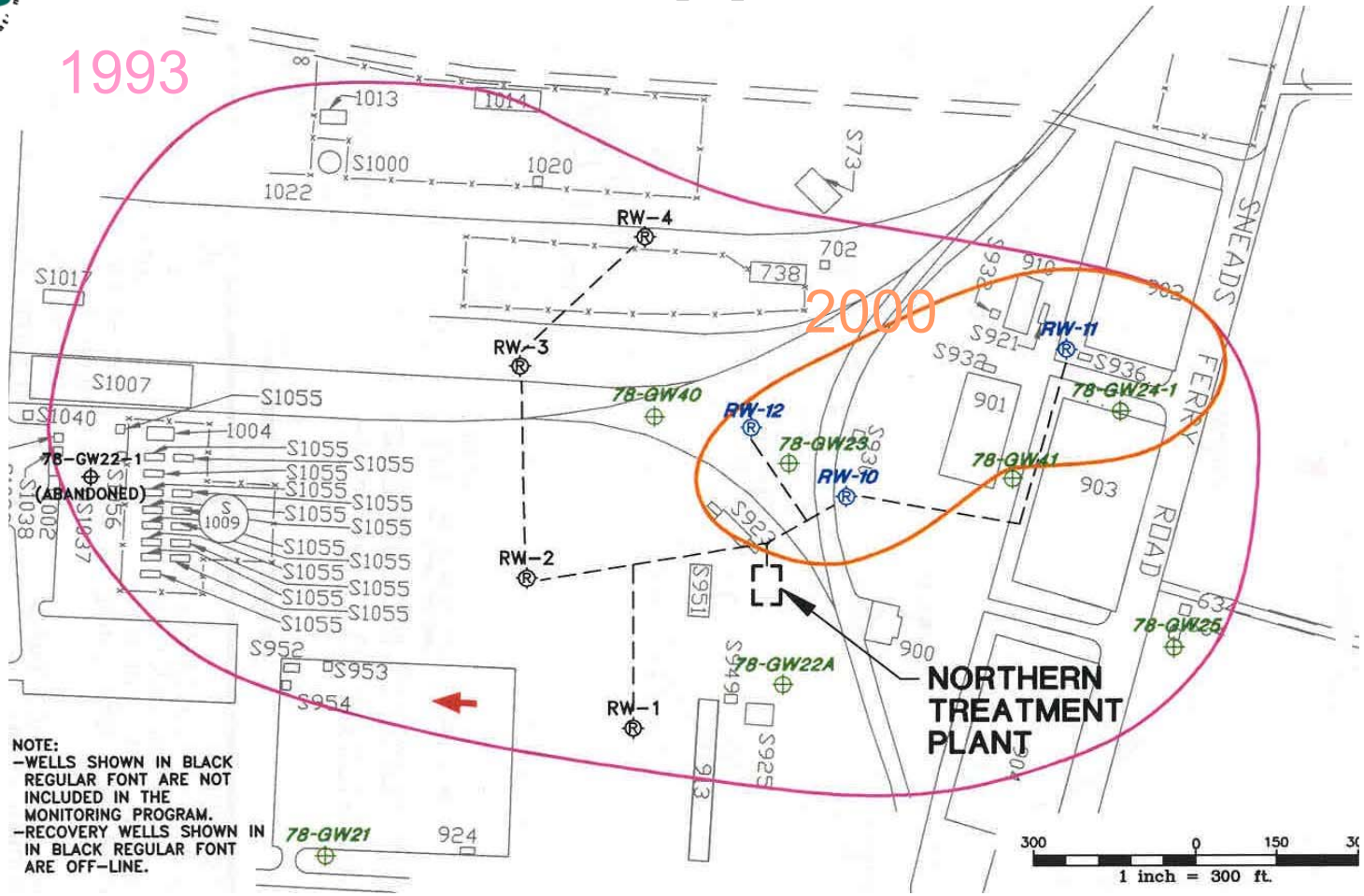
- Industrial Area, 690 acres
- Contaminants are chlorinated solvents and fuel hydrocarbons
- ROD signed September 1994
- Pump & Treat systems operating since 1995
- Treatment system—pretreatment, air stripping and GAC
- Cleanup levels—MCLs, State standards & risk based standards with residential land use scenario

Case Study #1—OU 1 P&T Performance Observations

- VOC plume has reduced in size since 1993
- Low mass removal—12.5 lbs removed in first three years; additional 8.5 lbs removed during last year from three new wells
- High cost for VOC removal—$25K to $30k per pound of VOCs
- Low GW extraction rate—average influent flow rate of 3 gpm
- There is little evidence that P&T can achieve aquifer restoration to the stringent standards at OU 1

Site Closeout

Case Study #1—OU 1 North Total VOC 10 ppb Plume



Case Study #1—Optimization Recommendations

- Prepare data plots showing mass removal & O&M costs
- Continue pumping from current wells until contaminant concentration levels off
- Assess alternative remediation approaches such as MNA, AS/SVE, enhanced bio., etc.
- Conduct risk assessment using industrial land use scenario, that may allow higher cleanup limits
- Monitoring optimization

Monitoring Optimization Strategy

- Six Elements
  1. Reducing number of monitoring points
  2. Reducing monitoring frequency
  3. Simplifying list of monitoring parameters
  4. Ensuring efficient field sampling procedures
  5. Streamlining data evaluation and reporting
  6. Performing annual evaluation

Case Study #2—Monitoring Optimization at Groundwater Plume

- What prompted Navy to review monitoring program?
  - Data review and geostat showed redundant and predictable data
  - High cost
    - $550K per year
- How were optimization decisions made?
  - Navy, U.S. Environmental Protection Agency (EPA), and State Department of Environmental Protection met for three days
  - Reviewed trends at each sampling location, using DQO

Case Study #2—Monitoring Optimization at Groundwater Plume

- What was achieved?
  - Monitoring frequency reduced from three to two times per year
  - Number of wells reduced from 36 to 22
  - Five new wells installed to fill data gaps
  - Reports streamlined
    - Monitoring reports contain mostly data
    - Annual report includes detailed discussion
    - Monitoring reports on CD-ROM – reduced number of hard copies
  - Cost reduction ~ $225,000

RAO/LTMgt Summary

- Anticipate Navy's RAO and monitoring budget requirements will increase
- Conduct detailed evaluation and annual follow-ups to review progress and to identify optimization opportunities
- Include cost and performance plots, time series plots and other data visualization approaches
- RAO optimization should consider technology substitution (at technology limits)

RAO/LTMgt Summary (Cont.)

- Optimization will reduce long-term costs and provide focus for Site Closeout
- Navy Guidance provides details of how to optimize monitoring and RAO

RAO/LTMgt Tools

- DON Working Group Web site
  - **http://erb.nfesc.navy.mil/support/work_grp/raoltm/main.html**
  - Contains:
    - Optimization Case Studies
    - Interim Final Guide to Optimal Groundwater Monitoring
    - Interim Final RAO Optimization Guidance
- Environmental Site Closeout Process website
  - **http://www.afbca.hq.af.mil/closeout/**

Five Year Reviews

NCP, Code of Federal Regulations, Part 300.430(f)(4)(ii)

"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 than every five years after the initiation of the selected remedial action."

What Triggers Five-Year Reviews?

- Contaminants left onsite after RC
- Restricted land use
- RA types
  - Landfill cap/cover
  - Slurry walls
  - Land Use Controls

Five-Year Review Purpose

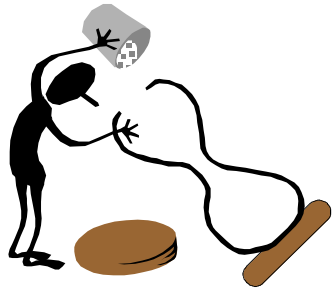
- Determine whether the remedy is protective of human health and environment
- Evaluate performance of the remedy
- Identify remedy deficiencies
- Recommend corrective actions
- If needed, recommend to re-evaluate remedy selection

Five-Year Review Report

- The Five-Year Review Report Should:
  - Clearly state whether the remedy is expected to be protective
  - Document any deficiencies identified during the review
  - Recommend specific actions to ensure a remedy is protective

Example Deficiencies

- Remedy not properly implemented
- Remedy not expected to attain cleanup levels
- Early indications of potential remedy failure
  - Aquifer conditions
  - Excessive equipment replacement
- Sampling schedule not followed
- Inadequate maintenance
- Land use change



Five-Year Review Ticker

- The trigger date is normally the date of onsite mobilization for RA-C
- The first site remedial action is the trigger for the entire installation
- When no RA-C is required, the trigger is the ROD signature date
- Five-year review report is to be completed and signed no later than five years after the trigger date

Land Use Controls

- What is a LUC?

Engineering Controls
(landfill caps, gw pump & treat, fences, signs, guards)

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Institutional Controls
(zoning, permits, easements, deed covenants, agreements with regulators, LUCIS)

Land Use Controls

- Appropriate Uses of LUCs
  - When full treatment is financially or technically infeasible
  - When unrestricted cleanup is not required to support proposed land use, and
  - When use of property can be reasonably controlled

Land Use Controls

- Considerations
  - Protective of human health and environment
  - Life-cycle (long term) cost
  - Practical and legally enforceable
  - Tried and true approaches

Land Use Controls

- Active Bases vs. Closing Bases
  - At active bases, Navy controls land use: different protection mechanisms are appropriate
  - Base Master Plans and engineering controls (fencing, monuments, signs) are effective tools
  - At closing bases the use of legally binding deed restrictions are more appropriate

Land Use Controls

- On-Going Navy obligations
  - Maintain detailed records on LUCs, indefinitely
  - Ongoing cleanup obligations
  - Terms, conditions, boundaries recorded on base maps, master plans, real estate records and geographical information systems (GIS)

LUCIS

- Navy's Land Use Control Information System (LUCIS) is a type of institutional control
- Purpose
  - Protect future owners
  - Publicly accessible and easily useable
- Booz·Allen & Hamilton overview of LUCIS capabilities
  - http://63.88.245.106/navybrac/

What is LUCIS?

- An information system that tracks property locations and environmental LUCs on Navy BRAC property
- Web-based internet system on a publicly accessible website
- Geographical data and associated documents
- Site is not intended to be an official data repository

LUCIS
Land Use Control Information System

Why is LUCIS needed?

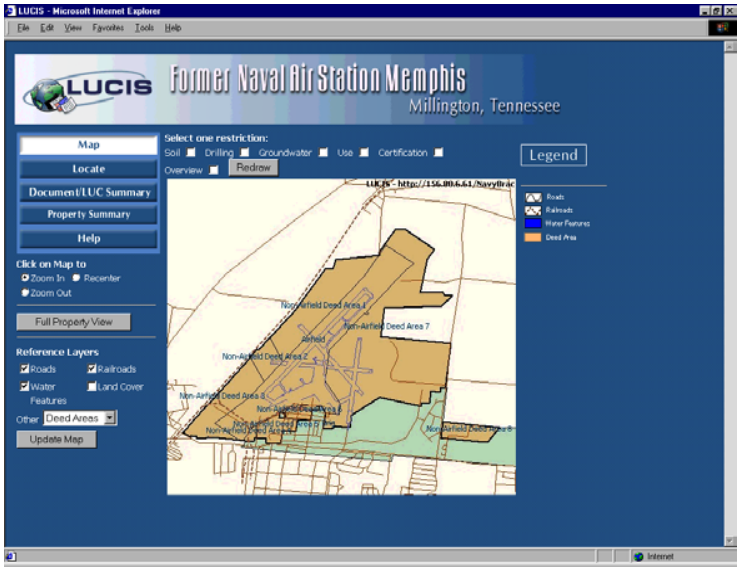
- Document environmental condition of property at the time of transfer
- Document and track Navy/Marine Corps environmental LUCs put in place on property to be transferred
- Provide public access to environmental LUC information

What is the Benefit to the Public?

- Information is easily accessible from Navy BRAC LUC database on a central location on the Web
- Future property owners can view original property boundaries through interatice maps
- The public can easily view and download property-specific documents

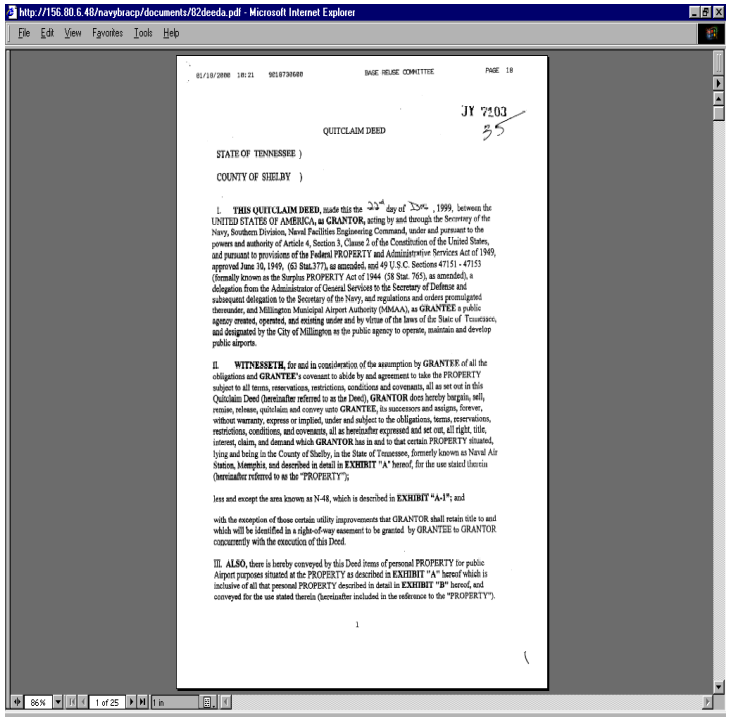
What can you see online?

- View interactive maps with land use restrictions
  - Soil
  - Groundwater
  - Use (Residential, Industrial)
  - Drilling
  - Certification Required



What can you see online?

- Associated Documents
  - Environmental Baseline Surveys
  - Finding of Suitability to Transfer
  - Deed Map
  - Deed or assignment letter
  - Covenant Deferral Request
  - Other Relevant Documents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JY 7103

QUITCLAIM DEED

STATE OF TENNESSEE)

COUNTY OF SHELBY)

I. **THIS QUITCLAIM DEED**, made this the 22nd day of June, 1999, between the UNITED STATES OF AMERICA, **as GRANTOR**, acting by and through the Secretary of the Navy, Southern Division, Naval Facilities Engineering Command, under and pursuant to the powers and authority of Article 4, Section 3, Clause 2 of the Constitution of the United States, and pursuant to provisions of the Federal PROPERTY and Administrative Services Act of 1949, approved June 30, 1949, (63 Stat.377), as amended, and 49 U.S.C. Sections 47151 - 47153 (formally known as the Surplus PROPERTY Act of 1944 (58 Stat. 765), as amended), a delegation from the Administrator of General Services to the Secretary of Defense and subsequent delegation to the Secretary of the Navy, and regulations and orders promulgated thereunder, and Millington Municipal Airport Authority (MMAA), as **GRANTEE** a public agency created, operated, and existing under and by virtue of the laws of the State of Tennessee, and designated by the City of Millington as the public agency to operate, maintain and develop public airports.

II. **WITNESSETH**, for and in consideration of the assumption by **GRANTEE** of all the obligations and **GRANTEE's** covenant to abide by and agreement to take the PROPERTY subject to all terms, reservations, restrictions, conditions and covenants, all as set out in this Quitclaim Deed (hereinafter referred to as the Deed), **GRANTOR** does hereby bargain, sell, remise, release, quitclaim and convey unto **GRANTEE**, its successors and assigns, forever, without warranty, express or implied, under and subject to the obligations, terms, reservations, restrictions, conditions, and covenants, all as hereinafter expressed and set out, all right, title, interest, claim, and demand which **GRANTOR** has in and to that certain PROPERTY situated, lying and being in the County of Shelby, in the State of Tennessee, formerly known as Naval Air Station, Memphis, and described in detail in **EXHIBIT** "A" hereof, for the use stated therein (hereinafter referred to as the "PROPERTY");

less and except the area known as N-48, which is described in **EXHIBIT "A-1"**; and

with the exception of those certain utility improvements that GRANTOR shall retain title to and which will be identified in a right-of-way easement to be granted by GRANTEE to GRANTOR concurrently with the execution of this Deed.

III. **ALSO**, there is hereby conveyed by this Deed items of personal PROPERTY for public Airport purposes situated at the PROPERTY as described in **EXHIBIT** "A" hereof which is inclusive of all that personal PROPERTY described in detail in **EXHIBIT** "B" hereof, and conveyed for the use stated therein (hereinafter included in the reference to the "PROPERTY").

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LUCIS Development Progress

- Phase One has been completed
  - Developed Prototype LUCIS Web Site
  - Utilized NAS Memphis Data
- Phase Two
  - Implement Changes and recommended enhancements
  - Expand the database
- Next Steps
  - Finalize data collection and the Web Site

Demonstration

LUCIS

Land Use Control Information System

Demonstration

- Web address

http://63.88.245.106/navybrac/

- Viewing LUCIS currently requires Internet Explorer version 5.0 or higher (IE5)
- Final Version of LUCIS currently scheduled to be completed by the end of the Fiscal Year (Sept 2001)

LUCIS
Land Use Control Information System

Questions?

Backup Slides

How was LUCIS developed?

- NAVFAC chose Booz·Allen & Hamilton to develop a LUC tracking system
- Requirements
  - Provide stakeholders access to real estate, legal, and environmental LUC documents
  - Widespread and easy public access
- Data Gathering
  - Worked with DON HQ, NAVFAC, EFAs & EFDs, LRAs, Contractors
  - Determined essential data elements

How was LUCIS developed?

- Existing data was converted to the different format
- LUC documents were scanned into web-enabled PDF format
- Interactive, GIS-enabled web application