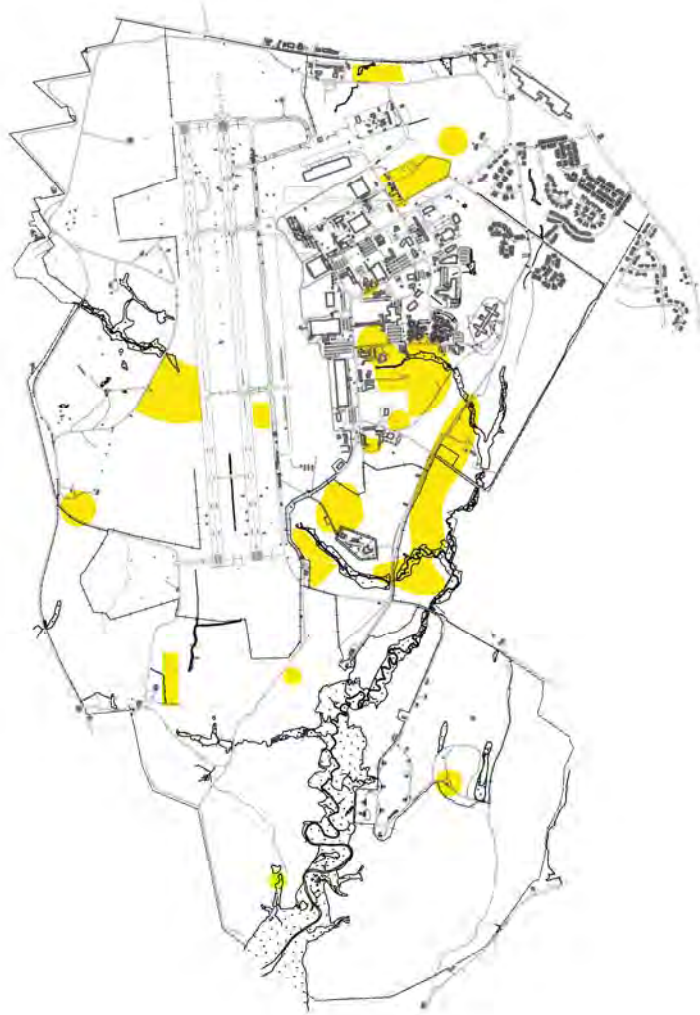


STATUS OF REMEDIATION AT THE FORMER BRUNSWICK MAINE NAVAL AIR STATION

[September 2011 Interim Report]

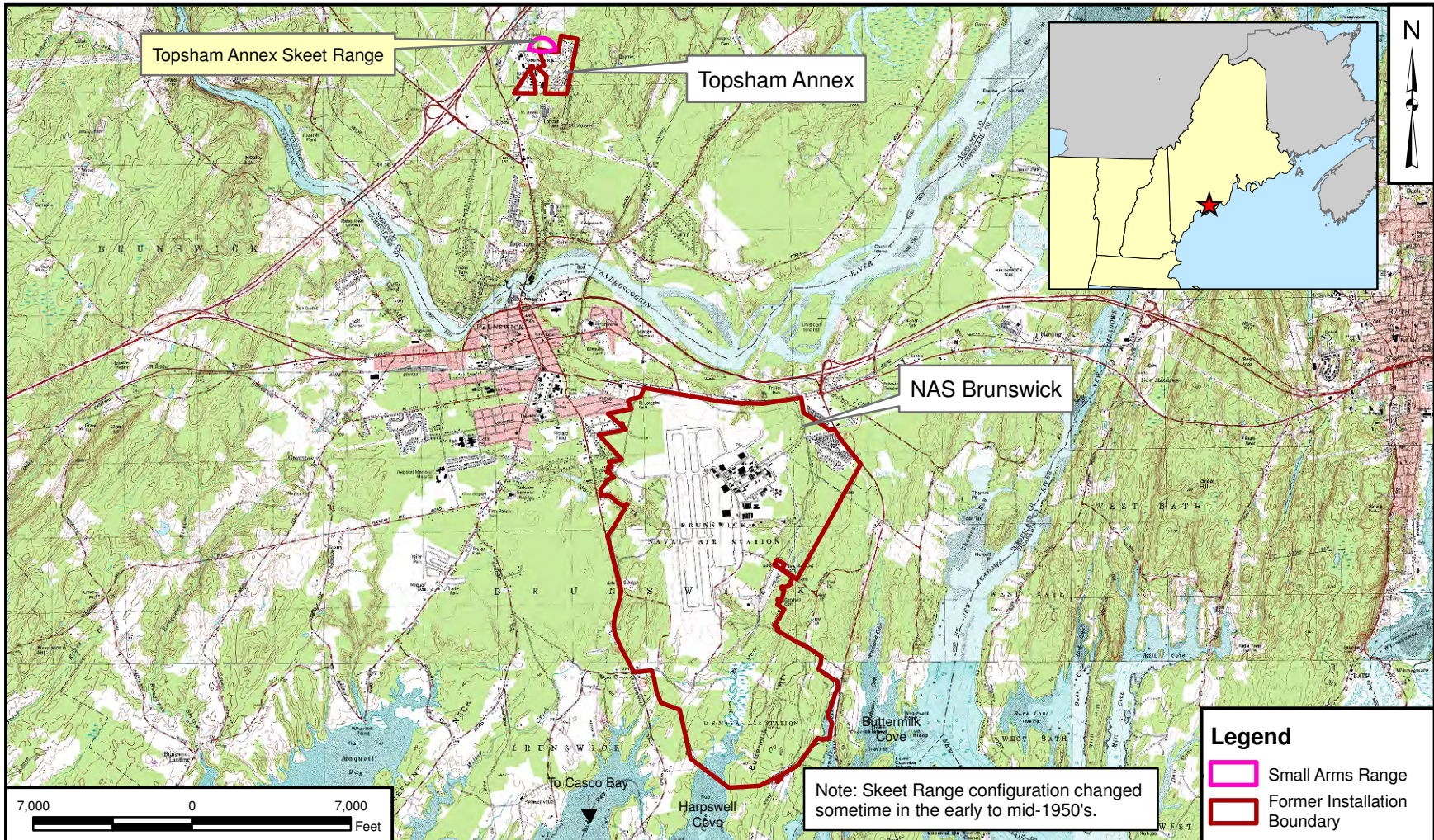


Prepared by the

Brunswick Area Citizens for a Safe Environment

A State of Maine and IRS certified 501-c-3 non-profit corporation.


that receives funding from community groups, members, the US EPA, and from Maine Initiatives, Inc.



Legend

- Small Arms Range
- Former Installation Boundary

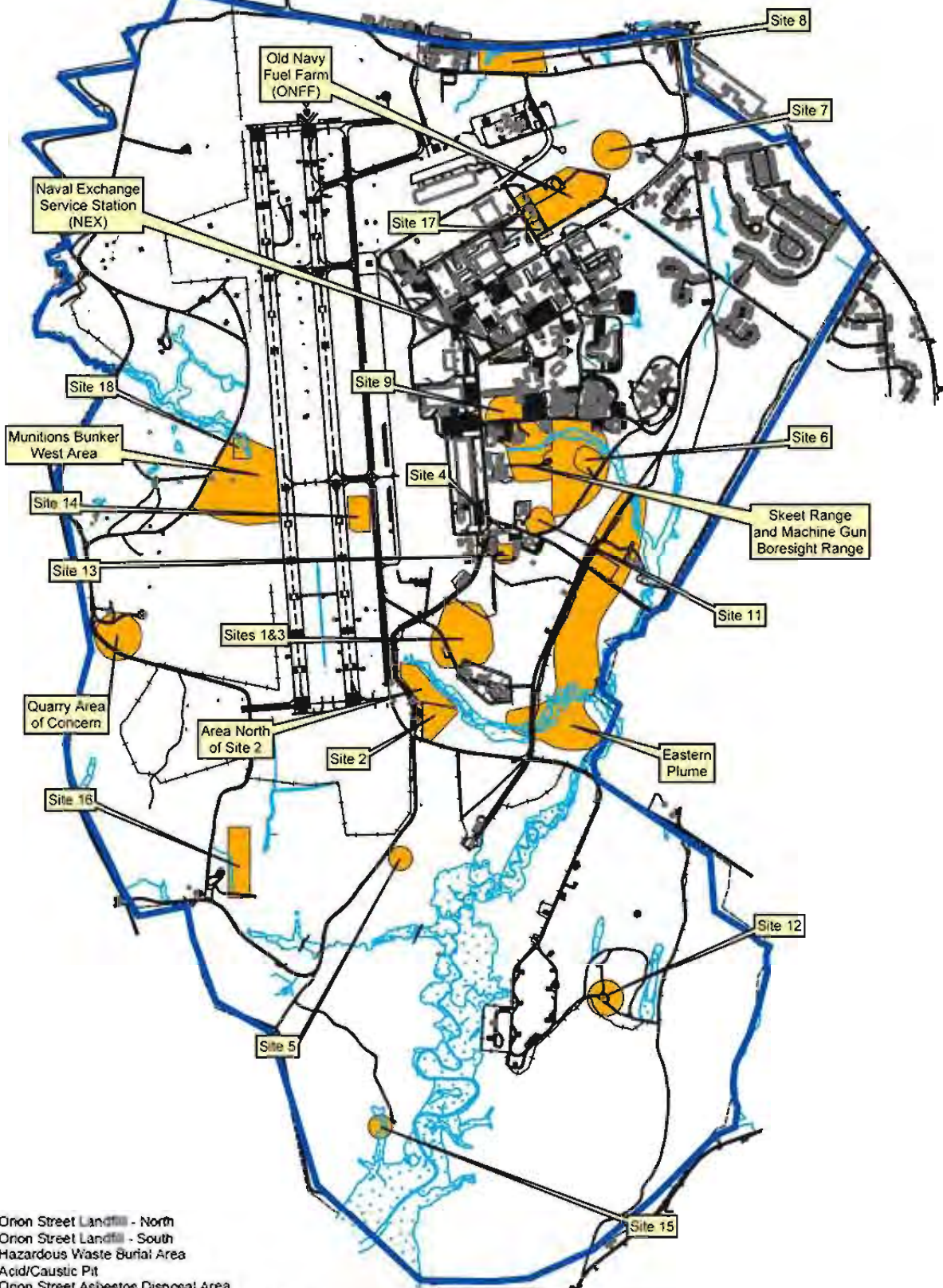
| | |
|-------------------|----------|
| DRAWN BY | DATE |
| J. ENGLISH | 06/12/09 |
| CHECKED BY | DATE |
| M. COFFMAN | 6/22/11 |
| REVISED BY | DATE |
| S. STROZ | 6/22/11 |
| SCALE AS NOTED | |



TETRA TECH

SITE LOCATION MAP
TOPSHAM ANNEX SKEET RANGE
BRUNSWICK, MAINE

| | |
|-----------------------------------|------|
| CONTRACT NUMBER | |
| N62472-02-D-1300/N62472-03-D-0057 | |
| APPROVED BY | DATE |
| | |
| APPROVED BY | DATE |
| | |
| FIGURE NO. | REV |
| FIGURE 1-1 | 0 |



- Site 1 - Orion Street Landfill - North
- Site 2 - Orion Street Landfill - South
- Site 3 - Hazardous Waste Burial Area
- Site 4 - Acid/Caustic Pit
- Site 5 - Orion Street Asbestos Disposal Area
- Site 6 - Sandy Road Rubble and Asbestos Disposal Site
- Site 7 - Old Acid/Caustic Pit
- Site 8 - Pennerter Road Disposal Site
- Site 9 - Neptune Drive Disposal Site
- Site 11 - Fire Training Area (FTA)
- Site 12 - Explosive Ordnance Training Area (EOO)
- Site 13 - Defense Reuse and Marketing Office (DRMO)
- Site 14 - Old Dump Number 3
- Site 15 - Memiconeag Extension Debris Area
- Site 16 - Swampy Road Debris Area
- Site 17 - Building 95 Site
- Site 18 - West Runway Study Area
- Eastern Plume
- ONFF - Old Navy Fuel Farm
- NEX - Naval Exchange Service Station
- Skeet Range and Machine Gun Boresight Range
- Area North of Site 2
- Quarry Area of Concern
- Munitions Bunker West Area

Legend

-  Base Boundary
-  Building
-  Road
-  Fenceline
-  Stream & Wetland

**Basewide Map
Environmental
Restoration Areas
Naval Air Station
Brunswick, Maine**

ECC Marlborough, MA
 C:\WAVY_GIS\T007_Brunswick\GISData\MapDocuments\NewLetter_BasewideMap.mxd

0 2,500 5,000 10,000 Feet



""
" "

INTRODUCTION"

This report is a community group’s assessment of 20 years of identification and “clean-up” of contaminants at the former Brunswick and Topsham US Navy facility, more typically referred to as the Naval Air Station Brunswick or “NASB”.

" "

STATUS OF REMEDIATION AT THE FORMER NAVAL AIR STATION"

The attached tabulation of Site information prepared by Brunswick Area Citizens for a Safe Environment (BACSE) presents in laymen’s language a summary of the Superfund and other remediation activities which are complete or currently taking place at the former Brunswick Naval Air Station.

It is apparent from a glance at the “What’s Next” column in the table that the level of remediation activity varies from site to site. Note that some areas of the former Base remain contaminated. The remediation process which the US Navy is undertaking is such that it can take place on contaminated sites concurrently with base redevelopment on other non-contaminated sites. This is facilitated by the application of Land Use Controls (LUC) to exclude activities and development from the sites not yet remediated.

"

The decision to undertake active remediation rather than to rely on “natural attenuation” for a given site involves the economics of redevelopment. Active remediation will restore a site to a condition appropriate for development more rapidly than “natural attenuation” which may take decades or longer. The US Navy retains the responsibility for remediation at this time.

" "

WHY THIS REPORT IS NECESSARY AT THIS TIME."

BACSE recognizes that most information on the former Naval Air Station environmental conditions is available to the public in both printed and digital format at the Curtis Memorial Library in Brunswick, but believes that the information is difficult to understand because of its technical content and specific information is difficult to find due to the large number of documents. ""

This initiative for keeping the public and municipal officials informed consist of a simplified summary of all known and suspected contamination sites in a single reference booklet.

In 2000, the Maine Department of Environmental Protection undertook such a summary, and this is listed with a link on our WEB site. However it was never updated.

Several years ago, the US Navy Restoration Advisory Board (RAB) recommended that this type of summary should be undertaken but no action was actually initiated.

BACSE considers it essential to undertake this project now, because of the initiation of transfer and leasing of properties which began in 2010.

""
""

ACKNOWLEDGEMENT OF THE IMPORTANCE OF “TEAM” WORK."

The public should know that the current progress is the result of 20+ years of cooperation between the State and Federal environmental regulatory agencies, the U.S. Navy, the various Base Commanding Officers, the Restoration Advisory Board and BACSE. Without this cooperative working relationship, progress in property re-use would be much slower and similar to other sites. ""

Please address questions to BACSE at PO Box 245, Brunswick, ME 04011""

""

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INTRO TO SITE SUMMARY TABLE

"

Site Summary Table for Brunswick Naval Air Station

"

This summary is an attempt to condense important information about environmental issues on the Brunswick Naval Air Station (NASB) property, which includes 18 Superfund (CERCLA) sites. Of special concern to residents is a 71-acre site known as the *Eastern Plume*, which has significant groundwater contamination. We discuss concerns about the BNAS site, including contaminants and potential unexploded munitions, attempts to mitigate the problems and potential next steps in a summary understandable by the general public.

"

Thus far, the US Navy has prepared three Five-Year Review Reports for the property, the third of which was released in September 2010.

The purpose of the *Third Five-Year Review* is to determine if the remedial actions conducted so far are protective of human health and the environment, to identify issues, and present recommendations to address any issues. Previous *Five-Year Review Reports* were completed in 2000 and 2005. The attached map (Figure 1-2 from the Third Five-Year Review and US Navy Winter 2008-09 Newsletter) shows the location of the eighteen sites at NASB that fall under the Superfund (or CERCLA) program. However, only five of these sites, plus the *Eastern Plume*, have *Records of Decision*, so they are the only sites or areas covered in detail in the *2010 Third Five-Year Review*.

"

While eighteen sites might seem like a lot, they do not include the entire array of areas at NASB having known or potential contamination problems. For example, petroleum products, such as gasoline and jet fuel, are specifically excluded from *Superfund*, and so are not covered in the *Third Five-Year Review*. Known petroleum-contaminated sites on-base include the former *Fuel Farm*, and the *NEX*. Areas with potential petroleum problems include the on-base portion of the pipeline from the former (Site 10) Town of Harpswell *Fuel Farm*.

"

The US Navy is also investigating potential contamination at four former munitions sites, which are listed at the end of the *Site Summary Table*. Additional areas of concern have been identified by former Navy personnel and civilian employees. Initial investigations have been conducted at four sites so far, and the information is summarized in the table below. Several other potential sites have not been subjected to site screenings yet.

"

One area that is not covered by the *Site Summary Table* is surface water quality and testing. Some surface water bodies on the base, such as the Picnic Pond, show the impact of polluted runoff over time. Once the Naval Air Station closure is complete, the Navy will no longer be responsible for surface water (i.e. stormwater) management on the base. As of December 2010, the Navy terminated its long-standing surface water testing program. It is not clear at this time how stormwater will be managed in the future.

"

The intent of the *Site Summary Table* is to summarize what is known so far about sites, and what the next steps will be. Additional information and detail can be found in the *Third Five-Year Review Report* and in the key references identified for each site. Many of these documents are included in a US Navy *Administrative Record*, and are available at the Curtis Memorial Library in Brunswick. A list of terminology, abbreviations, and definitions is attached to explain terms and acronyms commonly used in these environmental reports.

"

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"

TABLE OF CONTENTS

Table Of Content with Summary Status

| <u>Site Name & ID.</u> | <u>Status of ROD</u> (As of June 2011) | <u>Comment</u> | <u>Page</u> |
|----------------------------|---|--|--------------------|
| Eastern Plume: | active | has operational treatment plant | 3 |
| Site 1 & 3(single site): | active | Includes contaminated soil relocated from other sites | 3 |
| Site 2 : | active | | 4 |
| Site 4 : | NFA* | | 5 |
| Site 5 : | NFA | contaminated soil was relocated to sites 1& 3 | 5 |
| Site 6 : | NFA | | 5 |
| Site 7 : | active | | 6 |
| Site 8 : | NFA | | 6 |
| Site 9 : | active | | 7 |
| Site 10 : | none | Former Navy Fuel Depot in Harpswell | 8 |
| Site 11 : | NFA* | | 8 |
| Site 12: | Unknown | decision on creating a ROD under discussion | 9 |
| Site 13 : | NFA* | | 9 |
| Sites 14, 15&16: | none | NFA | 10 |
| Site 17 : | Unknown | decision on creating a ROD under discussion | 11 |
| Site 18 : | none | NFA | 11 |
| AOPI | none | mercury, fire training, helipad, former building sites | 12 |
| NEX & ONFF | none | petroleum contamination sites | 13 |
| Munitions sites | none | includes active radiological material | 13 & 14 |
| Misc. issues | none | sites recommended by BACSE for further investigation | 14-15 |
| Topsham Annex: | none | NFA | 16 |
| Radio Tower site | none | Brunswick site only | 17 |

*NFA refers to soils only. **Contaminated ground water treatment is part of the Eastern Plume remediation**

***AOPI: Five other areas of potential interest**

2011 Status of Remediation at the Former Brunswick Naval Air Station
Site Summary Table

**BACSE Site Summary Table as of June, 2011 based on the US Navy
September 2010 "Third Five Year Review" and other references**

| Site# | What it is | Why it's a problem | What's been done so far | What's next | References |
|---|--|--|---|---|----------------------------|
| | <p>71 acre "Eastern Plume" site A groundwater and soil contamination site that is the result of consolidating excavated material from sites 4,11 &13 plus groundwater seepage from Sites 1 &3 See letter to the Brunswick Times-Record Editor of 6/13/2011</p> | <p>Contains chlorinated volatile organic compounds, 1-4 Dioxane and other chemicals at elevated levels</p> <p>The contaminated ground water migration may pose a threat to commercial fisheries and adjacent homeowners wells.</p> | <p>A ground water extraction and Treatment system has been in place since 1995 with a system upgrades in 2000.</p> <p><i>FS</i> to include treatment of 1-4 Dioxane and improve efficiency is under discussion.</p> | <p>Develop a " Long Term Monitoring Plan" with an optimized ground water extraction well system in conjunction with a improved treatment system to accelerate remediation.</p> | <p>Third 5 Year Review</p> |
| <p>1 & 3 (see note)</p> | <p>Orion Street Landfill Was used 1955-1975 to dispose garbage, waste oil, solvents, pesticides, petroleum products, paint wastes, aircraft & automobile parts, & various chemicals.</p> <p>Hazardous Waste Burial Area Was used 1960-1973 for disposal of solvents, paints, and isopropyl alcohol.</p> <p><u>Note: There is no clear delineation between the sites, so they have been grouped together.</u></p> | <p>Water soaking the buried waste picks up contaminants that make their way to the environment, including Mere Brook, via seeps.</p> <p>There's too much waste buried at the two sites to remove in a cost-effective way. Plus digging up waste poses safety hazards to workers. Decision was made in early 1990s to leave the buried waste in place.</p> <p>When the base was active, sites were within the fenced-in secure "Weapons Compound", preventing access and potential public exposure.</p> | <p>A cap was installed in 1995 over both landfills to prevent infiltration of precipitation.</p> <p>A buried <i>slurry wall barrier</i> installed in 1995 diverts ground water away from buried waste.</p> <p>Water within the buried waste was then pumped out until the water level reached below the bottom of the buried waste.</p> <p>Water levels within the landfill are monitored quarterly to ensure the buried waste stays dewatered.</p> <p>Long-term monitoring of groundwater, seeps, and Mere Brook conducted bi-annually to verify no increase in contamination migration.</p> | <p>The 1992 <i>ROD</i> did not factor in closure of the base, so the Land Use Control part of the remedy must be revised.</p> <p>Part of landfill waste at Site 1 may not be under the cap, so a test pit investigation will determine presence/extent of any waste outside the cap.</p> <p><i>Vapor intrusion</i> could be a problem for structures. <i>LUC</i> provisions must require investigation & possible mitigation of vapors if any buildings go up in the future.</p> <p>Navy revisit & evaluate the <i>ROD</i> due to base closure.</p> | <p>1992 <i>ROD</i></p> |

**ROD*: Record of Decision

**LUC*: Land Use Control

2011 Status of Remediation at the Former Brunswick Naval Air Station
Site Summary Table

| Site# | What it is | Why it's a problem | What's been done so far | What's next | References |
|-------|---|---|--|---|---|
| 2 | <p>Orion Street Landfill South Was primary base landfill 1945-1955. Wastes reportedly disposed include solvents, paint oil, toluene, methyl ethyl ketone, and medical supplies. Also ash from incinerator located at site.</p> | <p>Water soaking the buried waste picks up contaminants that make their way to environment, including Mere Brook, by way of seeps.</p> <p>There's too much waste buried at the site to remove in a cost-effective way. Plus digging up waste poses safety hazards to workers. Decision was made in 1990s to leave the buried waste in place.</p> <p>When the base was active, site was within fenced-in secure Weapons Compound, preventing access, potential exposure.</p> <p>Nature and extent of buried waste was never defined, so actual site boundaries are unknown.</p> <p>Potential <i>UXO</i> (a "marker") found during 1999 refuse removal.</p> <p>Buried drums may rupture and release contaminants.</p> | <p>Refuse exposed along eastern side of landfill, including drums, small containers, and furniture was removed in 1999.</p> <p>Soil was placed on previously uncovered portion of landfill in 1999 to prevent contact with material remaining in landfill.</p> <p>In 2008, area north of Site 2 Investigated, & found to contain landfilled material.</p> <p>Long-term monitoring of groundwater, seeps, and <i>Mere Brook</i> conducted bi-annually to verify no increase in contamination migration.</p> | <p>The 1998 ROD did not factor in closure of the base, so the <i>LUC</i> part of the remedy must be revised.</p> <p>Based on 2008 investigation, expand Site 2 <i>LUC</i> boundary to include area north of Site 2.</p> <p>Fully evaluate area north of Site #2 so site boundary can be accurately delineated.</p> <p>Continue long-term monitoring.</p> <p>Navy re-evaluate the <i>ROD</i> due to base closure administrative changes.</p> | <p>1990 Draft Final RI & 1998 ROD & 2009 Invest. Report</p> |

*UXO: Unexploded Ordnance

2011 Status of Remediation at the Former Brunswick Naval Air Station
Site Summary Table

| Site# | What it is | Why it's a problem | What's been done so far | What's next | References |
|-------|---|--|--|---|------------|
| 4 | <p>Acid/Caustic Pit Used 1969-1974 for disposal of liquid wastes, including caustics, transformer oil, battery acid, solvents and paint thinners. Building 584 currently covers the pit.</p> <p>One of 3 sources of groundwater contamination in the Eastern Plume</p> | <p>Waste liquids poured into the ground contributed to the area of groundwater contamination known as the <i>Eastern Plume</i>.</p> <p>The actual pit has not been investigated because it is covered by Building 584.</p> | <p>Groundwater contamination from Site# 4 is addressed by the "<i>Eastern Plume</i>" Groundwater Extraction and Treatment System.</p> | <p>If Building 584 is ever removed, the soils in the pit must be evaluated for remediation.</p> <p>Continue addressing groundwater contamination from Site# 4 via remediation of the <i>Eastern Plume</i>.</p> <p>Navy re- evaluate <i>ROD</i> due to base closure changes.</p> | 1998 ROD |
| 5 | <p>Orion Street Asbestos Disposal Site Asbestos-lined pipes from a demolished building were buried on-site in 1979.</p> | <p>No longer considered a problem because hazardous material was removed from the site.</p> | <p>Asbestos-containing material and construction debris was excavated in 1993 and placed beneath the low-permeability landfill cap at Sites 1 and 3.</p> | <p>"<i>No further action</i>" designated</p> <p>Navy re- evaluate <i>ROD</i> due to base closure changes.</p> | 1993 ROD |
| 6 | <p>Sandy Road Rubble and Asbestos Disposal Site Used for disposal of construction debris, aircraft parts, and asbestos-lined pipes until late 1970s.</p> | <p>No longer considered a problem because hazardous material was removed from the site.</p> | <p>Asbestos-containing material and construction debris was excavated in 1993 and placed beneath the low-permeability landfill cap at Sites #1 and# 3.</p> | <p>"<i>No further action</i>" designated</p> <p>Navy re- evaluate the <i>ROD</i> due to base closure administrative changes.</p> | 1993 ROD |

2011 Status of Remediation at the Former Brunswick Naval Air Station
Site Summary Table

| Site# | What it is | Why it's a problem | What's been done so far | What's next | References |
|-------|--|--|---|--|---|
| 7 | <p>Old Acid Caustic Pit An unlined pit used 1952-1969 to dispose unknown quantities of transformer oils, battery acids, solvents, and other liquid waste.</p> <p>No records of exact location.</p> <p>Area also used as <i>DRMO</i> and equipment "laydown" area.</p> | <p>Groundwater contamination by cadmium and manganese.</p> <p><i>PAHs</i> and <i>DDT</i> detected in soils in early 1990s may have been covered by soil spread over site in 2002.</p> <p>Groundwater contamination extent is unknown.</p> <p>2000 & 2002 investigations did not identify source in soil for high cadmium in groundwater.</p> <p>Risks due to surface & subsurface soil contamination exceed State standards for residential development.</p> | <p>Environmental monitoring since spring 2002.</p> <p>Limited soil removal in 2002.</p> <p>Additional investigation in 2008.</p> | <p>2002 <i>ROD</i> did not factor in closure of the base so the Land Use Control part of the remedy must be revised.</p> <p>Leaching potential of cadmium into groundwater will be evaluated, leading to next step in remediation.</p> <p>Potential off site migration must be evaluated based on leaching study results.</p> <p>Soil remediation of cancer-causing <i>PAHs</i> required for unrestricted land use.</p> <p>Continue environmental monitoring.</p> <p>Navy will revisit the <i>ROD</i> as part of the base closure process.</p> | <p>1990 Draft Final RI</p> <p>1991 Draft Final Supplemental RI</p> <p>2002 <i>ROD</i></p> |
| 8 | <p>Perimeter Road Disposal Area 0.5 Acre site located north of Perimeter Road used for disposal for rubble, debris, and trash, 1964-1974.</p> | <p>Surface and shallow soils were contaminated with <i>PAHs</i>.</p> <p>No longer considered a problem because hazardous material was removed from the site.</p> | <p>Per the 1993 <i>ROD</i>, soil contaminated with <i>PAHs</i>, construction rubble & debris was excavated from Site 8 and placed under the Sites 1 & 3 landfill cover in 1995.</p> <p>Soil sampling after excavation showed removal of waste was complete.</p> <p>Site was regraded to minimize erosion and reseeded to re-establish vegetation.</p> | <p>"No Further Action" because contaminated soil and debris was removed from the site.</p> | <p>1993 <i>ROD</i></p> |

**DRMO*: Defense Reutilization & Marketing Organization

2011 Status of Remediation at the Former Brunswick Naval Air Station
Site Summary Table

| Site# | What it is | Why it's a problem | What's been done so far | What's next | References |
|-------|---|--|--|--|---|
| 9 | <p>Neptune Drive Disposal Site 20 Acres in central portion of base, includes incinerator used 1942-1946, maybe 1953, and associated ash landfill/dump where solvents, paint, sludges, maybe metal-shop wastes were disposed.</p> <p>In 1953, landfill area was covered with soil and Buildings 218 & 219 were constructed on top.</p> <p>Site also includes a solvent-burning or dumping area south of Avenue C.</p> | <p>Concentrations of VOCs in ground water exceed risk levels, but no source has been found.</p> <p>Barracks constructed on top of the landfill were torn down, so contact with underlying landfilled material was no longer prevented.</p> <p>Ash & ash-impacted soil extends beyond the area excavated from 2006 through 2010, and also outside the LUC boundary.</p> <p><i>Vinyl Chloride</i> found in 2009 to exceed surface water & sediment limit.</p> <p>Vapor intrusion was not addressed as a potential pathway for VOCs detected in groundwater, but is scheduled to be investigated.</p> <p>Impoundments at south end of site repeatedly show impacts of pollutants (sheens, stressed vegetation). However, the Navy terminated surface water testing since December 2010.</p> | <p>Long-term monitoring since 1995</p> <p>1995-1996 Investigation was unsuccessful locating source of vinyl chloride.</p> <p>Surface water impoundments at south end of site created in 1997 to capture runoff from central part of base, including runways, parking lots, & roads.</p> <p>2003-2004 Surface water, soil & groundwater investigation.</p> <p>2006 Started excavating ash & ash-containing soil. Over 42,000 tons excavated/disposed off-site. Excavated area filled & seeded.</p> <p>2008 Investigation to find extent of ash north & south of Neptune Drive, and further study Building 201</p> <p>2009 Impoundment pond testing.</p> | <p>Continue environmental monitoring to evaluate effectiveness of natural attenuation and verify no off-site migration of contamination.</p> <p>1998 ROD did not factor in base closure, so LUC part of the remedy must be revised.</p> <p>Determine extent of remaining ash & ash-impacted soil so associated risks and site boundary can be redefined.</p> <p>Evaluate vapor intrusion pathway and risk.</p> <p>Investigate extent of groundwater contamination at south west edge of site and potential sources.</p> <p>Impoundment ponds should be inspected periodically for impacts on surface water.</p> <p>Stormwater permit management of impoundment ponds must be taken over after Navy leaves.</p> <p>Navy will revisit the ROD as part of the base closure process.</p> | <p>1994 Interim ROD</p> <p>1998 ROD</p> |

*VOC: Volatile Organic Compound

2011 Status of Remediation at the Former Brunswick Naval Air Station
Site Summary Table

| Site# | What it is | Why it's a problem | What's been done so far | What's next | References |
|-------|---|---|---|---|------------|
| 10 | Harpwell Fuel Depot Originally part of the Superfund site listing but dropped because The <i>CERCLA</i> program excludes petroleum contamination | Leakage of fuel could have occurred and spread to soil and groundwater. | No longer controlled by the Navy, so we have no information . BACSE has not been able track conditions at this site or along its distribution pipeline. | Unknown. | |
| 11 | Fire Training Area Used regularly between 1950s and 1990 with waste fuels, oils, and solvents for fire-training exercises. One of 3 sources of groundwater contamination in the Eastern Plume The site is the current location of the GWETS effluent "infiltration gallery". | Until 1987, combustible liquids were poured directly on the ground surface, resulting in soil contamination, which then leached in to groundwater, contributing to the large area of VOC contamination know as the Eastern Plume. | 1987 Installed a concrete liner & berm to control materials during fire training. 1994 Removed buried drums & other debris from several areas around site. 1995 Removed 6-10 feet of soil from below the 0,5-acre site. Excavation was backfilled with clean soil & planted with grass. 1995 Installed <i>GWETS</i> to collect & treat contaminated groundwater in the Eastern Plume. 1998 <i>ROD</i> states <i>No Further Action</i> for soils at Site 11. | Continue addressing groundwater contamination from Site# 11 via remediation of the Eastern Plume. Navy re- evaluate the <i>ROD</i> due to base closure administrative changes. | 1998 ROD |

"CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act

*GWETS: Groundwater Extraction & Treatment System

2011 Status of Remediation at the Former Brunswick Naval Air Station
Site Summary Table

| Site | What it is | Why it's a problem | What's been done so far | What's next | References |
|------|---|---|---|--|--|
| 12 | <p>Explosive Ordnance Disposal (EOD) Area</p> <p>Area was used 1981 through June 2004 for disposal of small quantities of ordnance, privately manufactured explosive devices, pyrotechnics, and war souvenirs.</p> <p>Site is located in southeastern portion of Weapons Compound.</p> | <p>Explosions of materials in the past spread potential contaminants.</p> <p>Unexploded munitions that may still be there present a risk of explosion.</p> <p>Land-filling of other, non-munitions material may also result in spread of contamination.</p> <p>When the base was active, sites were within fenced-in secure Weapons Compound, preventing access and potential exposure.</p> | <p>Not much done after 1991 FS & Supplemental <i>RI</i> Reports because the site was active intermittently until 2004.</p> <p>2006 - Visual sweep & evaluation of historical evidence found entire Site 12 area suspected to have <i>MEC</i> and <i>MC</i>. Site Inspection recommended to determine if true.</p> <p>2008 - UXO surface sweep & geophysics survey to flag possible <i>MEC</i> for future removal.</p> <p>2010 - Clearance of 23 acres to remove explosive hazards from ground surface to provide protection during construction of nearby Reserve Center.</p> | <p>Majority of site subsurface has not been investigated or cleared.</p> <p>Pond, wetland, & steep slope may contain munitions material.</p> <p>Subsurface of known berm areas may contain material that needs remediation.</p> <p>Sampling is needed to address any munitions and other material disposed.</p> <p>Navy develop/implement way to control site access until <i>ROD</i> gets signed.</p> | 1/2011 Draft Interim After Action Report |
| 13 | <p>Defense Re-utilization and Marketing Office (DRMO)</p> <p>Small site adjacent to Site 4 that had 3 <i>UST</i>s until late 1980s for fuel oil, waste oil, & solvent storage.</p> <p>One of 3 sources of ground-water contamination in the <i>Eastern Plume</i>.</p> | <p>Spills and leaks leached into groundwater, resulting in <i>VOC</i> plume flowing from the site.</p> | <p><i>UST</i>'s removed in late 1980s. No soil removed.</p> <p>1995 - <i>GWETS</i> to address groundwater contamination in the Eastern Plume.</p> <p>1998 <i>ROD</i> - No Further Action for soils at Site 13.</p> | <p>Risk assessment assumed pavement prevents exposure to contamination in soil, so need a <i>LUC</i> to keep pavement intact or otherwise prevent exposure.</p> <p>Continue addressing ground-water contamination via remediation of <i>Eastern Plume</i>.</p> <p>Navy revisit <i>ROD</i>.</p> | 1998 <i>ROD</i> |

**UST*: Underground Storage Tank
 **MEC*: Munitions & Explosives of Concern
 **MC*: Munitions Constituents

2011 Status of Remediation at the Former Brunswick Naval Air Station
Site Summary Table

| Site | What it is | Why it's a problem | What's been done so far | What's next | References |
|------|--|--|---|--|---|
| 14 | <p>Old Dump No. 3</p> <p>Location is based on an area identified on a 1946 map of the base. Location is next to Runway 1-19 and Taxiways A & D.</p> | <p>If there was an old dump, pollutant could leach into groundwater, causing contamination.</p> | <p>1990 - Magnetometer survey over 6 acres found no evidence of buried waste.</p> <p>1991 - Determined no further action needed.</p> | <p>No Further Action - Either the former dump doesn't exist, or construction of runways in 1951 resulted in its removal.</p> | <p>1990 Draft. Final Supplemental RI</p> <p>1991 Draft Final FS</p> |
| 15 | <p>Merriconeag Stream Extens. Debris Site</p> <p>Located southeast of the golf course near Harpswell Cove, site consists of a concrete rubble and soil dam that creates a 0.75 acre pond.</p> | <p>Wastes disposed at the site might contaminate soil, groundwater, & surface water.</p> | <p>1992 Magnetometer survey, test pitting, & environmental sampling</p> <p>1999 All asbestos cement pipe sections & scrap metal found was removed from site and disposed.</p> | <p>Revisit <i>NFA</i> when Navy evaluates all existing <i>RODs</i>. Determine if <i>LUC</i> is needed</p> | <p>1993 Site Inspection Report</p> |
| 16 | <p>Swampy Road Debris Site</p> <p>Located along a 1,700-foot section of an unnamed stream on the golf course.</p> <p>No Navy records of historical dumping at the site.</p> | <p>Wastes disposed at the site might contaminate soil, groundwater, & surface water and sediment in the adjacent stream.</p> | <p>1992 Magnetometer survey, test pitting, & environmental sampling</p> <p>2000 Removal of debris exposed at the ground surface.</p> | <p>Revisit <i>NFA</i> when Navy evaluates all existing <i>RODs</i>. Determine if <i>LUC</i> is needed?</p> | |

*NFA: No Further Action

*FS: Feasibility Study

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| Site | What it is | Why it's a problem | What's been done so far | What's next | References |
|------|--|---|---|---|------------------------------------|
| 17 | <p>Former Building 95</p> <p>From 1955 until 1985, Building 95 housed pesticide control operations that included storage, mixing, and disposal of pesticides and herbicides.</p> | <p>Sampling in 1990 & 1992 found concentrations of <i>DDT</i> and other compounds in soil that posed an unacceptable risk to humans and ecological receptors.</p> | <p>1994 Removed the most highly contaminated soil (1,260 cubic yards) that exceeded Preliminary Remediation Goals.</p> <p>Groundwater monitored since March 1995.</p> <p>2008 Remedial Investigation. 2009 Additional soil removal (118 tons) for off-site disposal.</p> | <p>Limited environmental tests to fill <i>RI</i> data gaps and evaluate the need for long-term groundwater monitoring.</p> <p>Conduct an <i>FS</i> to evaluate remedial alternatives.</p> <p>Prepare a <i>ROD</i> with <i>LUCs</i>.</p> | |
| 18 | <p>West Runway Site</p> <p>In 1992, a NAS employee saw a sheen on water seeping from a hillside along Ordnance Road 3, about 650 feet west of Runway I-19, near <i>Mere Brook</i>. A sample was collected which was analyzed at a field lab at Site 17. Results showed elevated levels of several <i>VOC</i>'s.</p> | <p>Initial field lab results indicated groundwater emerging at the seep was contaminated by <i>VOCs</i>. However, the sample was not collected in a "clean" container by a proper sampling method, so additional investigation should be conducted.</p> | <p>Seep was sampled 3 additional times and elevated <i>VOC</i> results were not reproduced.</p> <p>No historical records or evidence on air photos of dumping.</p> <p>1993 Geophysical survey, test pits, and sampling.</p> <p>1994 Additional seep sampling at 3 locations. Nothing found to verify contamination found in original bottle sample.</p> | <p>Navy has recommended that <i>No Further Action</i> needed.</p> | <p>1995 Site Inspection Report</p> |

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Other Areas of Potential Interest,(abbr: AOPI)

The Navy conducted screening-level investigations during the fall of 2010 to determine if additional, more detailed environmental studies are warranted. The latest reference for these sites is the April 2011 Draft Site Investigation Report for “*Four Areas of Potential Interest....*” BACSE interpretation of the report and its subsequent public discussion forums follows.

| Site | What it is | Why it's a problem | What's been done so far | What's next | References |
|------|---|--|--|--|---------------------------------------|
| AOPI | <p>Mercury Disposal Site</p> <p>Located near the northwestern edge of the base. Reported by a local resident who observed a pool of a shiny metallic liquid in a shallow depression in 1967.</p> | <p>Mercury can be highly toxic to humans and other organisms.</p> <p>Liquid mercury left on the ground surface could seep into the ground contaminating soil & groundwater.</p> | <p>2010 Site screening performed. No mercury visible on ground or in soil samples. Soil & groundwater samples collected. Only one soil sample contained mercury.</p> | <p>Navy recommending “<i>No Further Action</i>” because no mercury found in groundwater & the one detection in a soil sample was below risk level for residential development.</p> | <p>2011 Site Investigation Report</p> |
| | <p>West Fire Training Area</p> <p>Located about 300 feet west of the runway. Tank of waste solvents & fuels would be set on fire to test response time of base fire department.</p> | <p>Waste liquids burned at the site might spread beyond the concrete pad and seep into the ground, contaminating soil & groundwater.</p> | <p>2010 Site screening performed. Ten soil borings and one well sampled. Low concentrations of VOCs and SVOCs detected.</p> | <p>Navy recommending <i>No Further Action</i> because the concentrations were detected infrequently and below risk level for residential development.</p> | <p>2011 Site Investigation Report</p> |
| | <p>Helipad Area</p> <p>Located along west edge of taxiway B. A concrete pad reportedly used for sandblasting.</p> | <p>Paint chips resulting from sandblasting might contain lead and other chemicals that could contaminate soil and possibly leach into groundwater.</p> | <p>2010 Site screening performed. Soil samples contained low concentrations of metals & PCBs.</p> | <p>Navy recommending <i>No Further Action</i> because the concentrations were detected infrequently and below risk level for residential development.</p> | <p>2011 Site Investigation Report</p> |
| | <p>Former Buildings 7 & 10</p> <p>Building 7 was a garage with tanks until demolished in 1992. Building 10 was a garage with a paint shop, battery service area, and large air conditioner service shop. It also was demolished in 1992.</p> | <p>Fuels, paints, solvents, acids, and other chemicals used and disposed at the site may have leaked into subsurface soil and groundwater.</p> <p>The site had a battery acid pit, floor drains, and underground tanks, as well as transformers.</p> | <p>2010 Site screening performed.</p> | | <p>2011 Site Investigation Report</p> |

*SVOC: Semi-Volatile Organic Compound

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Petroleum, radiological active material and munitions Sites

Petroleum sites are excluded from the CERCLA, (i.e. Superfund) programs, and are not addressed in the "Third Five Year Review" report. However, there are several locations with known or potential contamination from fuel leaks and spills. The Navy is also in the process of investigating several sites where munitions were known to be used or disposed and where radiologically active material is present.

| Site | What it is | Why it's a problem | What's been done so far | What's next | References |
|------|--|---|--|---|--|
| | <p>Navy Exchange Service Station (NEX)</p> <p>Served as the retail gas station on the base for a number of years.</p> | <p>Leaks from the underground tanks and from fuel lines resulted in a large area where soil & ground-water were contaminated by gasoline.</p> <p>Vapors seeped from the underground contamination into a nearby building.</p> | <p>1992 Excavated & removed 440 tons of contaminated soil.</p> <p>1993-2003 Treated remaining soil using soil vapor extraction.</p> <p>2002 & 2004 pilot chemical oxidation and bio-degradation projects were not successful.</p> <p>2009 Major soil removal action completed (7,506 tons removed). Vapor control measures installed</p> | <p>Re-evaluate & monitor groundwater contamination.</p> <p>Monitor for potential vapors in <i>Family Services</i> Building.</p> | <p>12/2010 Final Project Completion Report</p> |
| | <p>Old Navy Fuel Farm</p> <p>Located in the northeast portion of the base, was a petroleum bulk storage facility until 1993.</p> <p>Site is currently covered by a Ball Field built in 2002-2003.</p> | <p>Over time, leaks from tanks and piping resulted in fuel-contaminated soil and groundwater.</p> | <p>1993 Tanks and piping removed</p> <p>1993-1997 Treated site using soil vapor extraction.</p> <p>2000 15,000 tons of petroleum-impacted soil excavated & removed.</p> | <p>Evaluate current groundwater conditions and determine the need for long-term monitoring.</p> | |
| | <p>Additional Munitions Sites</p> | <p>Explosions of materials in the past spread potential contaminants.</p> | <p>2 "Skeet Shooting" ranges are under investigation</p> | <p>Unknown</p> | |
| | <p>Radiologically Active materials</p> | <p>Possibility of human health risk</p> | <p>under investigation by Navy</p> | <p>Unknown</p> | |
| | <p>"On-Base" portion of Site 10 abandoned fuel pipelines</p> | <p>Leaks from the pipeline pose a potential risk of contamination</p> | <p>BACSE has not been able to monitor this pipeline leak issue.</p> | <p>Unknown</p> | |

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Miscellaneous (un-numbered) Navy documented Sites

| Site | What it is | Why it's a problem | What's been done so far | What's next | References |
|------|--|--|--|--|---|
| | <p>Machine Gun Bore Site</p> <p>Located where current Building 55 is. Used to test accuracy of guns mounted on airplanes.</p> | <p>The principal concern is with the lead that would accumulate in the berm the pilots fired into. The estimated amount of lead fired is 43 tons.</p> | <p>The berm that formed the back-stop was removed in the past.</p> <p>2010 Site Investigation found only two "hot spots" of concern.</p> | <p>Remediation of two small "hot spots".</p> <p>Evaluate impact of new <i>MEG</i> for chromium.</p> | |
| | <p>Skeet Range</p> <p>The former skeet range covers 73 acres south of the Site# 9 impoundment ponds.</p> | <p>Lead and other metals deposited within the arc of the shot fall area are potential soil and groundwater contaminants, as well as possible risk to humans, wildlife and other organisms.</p> | <p>2010 Site Investigation found metals and <i>PAHs</i> in soil exceeded standards.</p> | <p>Conduct additional soil sampling to refine area of contamination before starting remediation.</p> | |
| | <p>Former Munitions Bunker West Area</p> <p>Approximately 29 acres west of runways used sporadically in 1980s thru 2000 for munitions-related security training.</p> | <p>Training exercises may have resulted in contamination from munitions or materials used on site.</p> | <p>2008 Site Inspection geophysical survey identified 110 spots to check further.</p> <p>2010: All anomalies verified as not containing munitions or explosives. Wipe samples in the bunker detected lead.</p> | <p>Conduct limited soil sampling to test for metals adjacent to the bunker where lead was found inside.</p> | <p>2/2011 Draft After Action Report</p> |
| | <p>Quarry Site</p> <p>Located on the west edge of the base, was reported to be used as an explosive ordnance disposal area.</p> <p>Area was used to "land spread" petroleum-contaminated soil</p> | <p>Unexploded munitions that may still be there and present a risk of explosion.</p> <p>Land filling of other, non-munitions material may also result in spread of contamination.</p> | <p>2008 Surface sweep found a rocket motor & possible buried trash, debris, or munitions.</p> <p>2010 Investigation found low level, mostly petroleum-related contamination across the site.</p> | <p>Site area will be expanded for next phase of investigation.</p> <p>Additional sampling is planned</p> <p>develop/implement way to control site access until a <i>ROD</i> gets signed.</p> | |
| | <p>Mound on Fitch Avenue Residential housing site</p> <p>Located near rear boundary</p> | <p>May cover a object that poses a human health risk</p> | <p>area may have been re-mediated or fenced in</p> | <p>unidentified</p> | <p>RAB meeting notes</p> |

*MEG: Maximum Exposure Guideline

*RAB: Restoration Advisory Board

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Miscellaneous issues and sites that BACSE recommends for further discussion and investigation

| Site | What it is | Why it's a problem | What's been done so far | What's next | References |
|------|--|--|---|---|--|
| | Stormwater Management | System is old. New requirements focus on "industrial" use only. | Unknown | BACSE recommends a single property wide system | |
| | Ongoing Environmental Management | Environmental hazards require supervision and maintenance | The Navy will continue to operate the treatment plant | undefined | |
| | Former Sewer Plant (1943 & 1954 construction) | Contamination from leakage may still be in soil which presents a risk | | evaluate if remediation or <i>LUC</i> is needed. | |
| | Building 225 & 252 sites (Equip. Maintenance Facilities) | Trace levels of contaminants have been found in soil & groundwater | monitoring wells have been installed and a <i>SI</i> conducted Navy has recommended <i>NFA</i> | Regulators have to evaluate recommendation including the a former location for Bldg 252 | Navy (TtNUS) report of April 2011 |
| | Upper Retention Pond (also discussed under Site #9 & Stormwater Management) | Contamination from stormwater discharge has produced oil sheen's | oil booms have been deployed. | source of sheen has to be located and the stormwater entry point identified. | RAB meeting & EPA report |
| | Marsh along Androscoggin River near site of former base Sewage Treatment Plant | Soil may have absorbed contaminants resulting from 63,000 gallon spill & sewer plant breakdowns | On site remediation terminated in 1994 and testing was limited to hydrocarbons | Sample soil to determine if remediation or <i>LUC</i> is needed | MEDEP spill Report P-187-1993 |
| | Waste Oil tank in proposed 474 acre(FOST) parcel transfer planned for 2011 | Contamination from leakage may be there which present a risk . Waste oil is more toxic than new oil | no specific testing identified | perform soil sampling adjacent to Waste Oil tank | |
| | Existing Aviation Fuel Tank(s) | Over time, leaks from tanks and piping can result in fuel contaminated soil and groundwater | The "Redevelopment Authority" has identified soil testing as a need. They are requesting funds to remove the tanks. | Sample soil & groundwater. Determine if remediation or <i>LUC</i> is needed | concern identified from 9/2009 listing by MRRA |

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Radio, Radar and observation tower Sites

Five towers have existed at various times in the region to service either WW II Allied Armed Forces, the US Air Force or the US Navy. All five have been removed or dismantled.

| Site | What it is | Why it's a problem | What's been done so far | What's next | References |
|------|---|--|---|---|--|
| | Regarding the Phippsburg facility | no longer a problem | Remediation has been initiated and completed as part of the "BRAC" program. | | |
| | Regarding the "East Brunswick" facility | no longer a problem | Remediation has been initiated and completed as part of the "BRAC" program. | | |
| | Regarding the Topsham Annex Facility | The site was part of a previous "no-cost" public conveyance. There have been rumors that hazardous material were mixed in with buried construction debris. The location of the construction debris is unknown. | Concern was noted by US Navy Program Manager | | 2006 RAB RAB and Technical Review Meetings |
| | Regarding the West Bath facility | no one has identified a problem | Support structure is still in place. Radar has been removed. | | visual observation |
| | Regarding the Maine Base (Brunswick) facility | Groundwater may have been impacted by the US Air Force when they were operating a radio communications facility. | 3 groundwater monitoring wells have been installed. | US Navy has agreed to a limited groundwater investigation | Draft-FOST 2011-3 |

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Topsham Annex 74 Acres 4 miles North of Maine Base

| Site# | What it is | Why it's a problem | What's been done so far | What's next | References |
|----------------------|--|---|--|---|--------------------------|
| Topsham Annex | <p>Skeet Range & petroleum residue Sites on the 74 acre parcel.</p> <p>Please note that lead shot is not a "munition of concern" and the US Navy investigation is being conducted under the MMR Program.</p> <p>Burried debris has been identified at the 51 acre parcel previously transferred to School Administrative District #75, so there is some public concern regarding subsurface soil conditions.</p> | <p>Residue remains from lead from shotgun ammunition and PAH's from clay targets</p> <p>Residual petroleum constituents are present in soil and groundwater at various locations.</p> | <p>A number of Site Inspections have been conducted and the boundaries of the lead, PAH and petroleum contamination have been defined.</p> | <p>The Navy has proposed "LONG-TERM" LUC's.</p> | <p>Draft-FOST 2011-3</p> |

PAH: polycyclic aromatic hydrocarbons
MMRP:US Navy's " Military Munitions Response Program"

TERMINOLOGY

BACSE: Brunswick Area Citizens for a Safe Environment

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act

DDT: A highly toxic pesticide, dichlorodiphenaltrichloroethane

DRMO: Defense Reutilization & Marketing Organization

DRO: “Diesel-Range” Organics

Eastern Plume: A 71 acre area of soil and groundwater contamination

FS: Feasibility Study; the document where options for site remediation are presented

GWETS : Groundwater Extraction & Treatment System (for the “*Eastern Plume*”)

LUC: Land Use Controls, such as deed restrictions, fences, and warning signs

NFA: No Further Action

Natural Attenuation: Reduction in mass or concentration of a compound in groundwater over time or distance from the source of constituents of concern due to naturally occurring physical, chemical, and biological processes (per ASTM)

PAH: Polynuclear Aromatic Hydrocarbon;
(Often the result of combustion of petroleum)

RAB: Restoration Advisory Board (an advisory review board mandated by federal regulations)

ROD: Record of Decision (a contractual document defining remediation goals)

Slurry wall: A subsurface barrier installed around buried waste to divert groundwater

UST: Underground (Liquid) Storage Tank

Vapor Intrusion: Seepage of gaseous compounds into buildings or other structures

VOC, SVOC: Volatile (or Semi-volatile) Organic Compound; (includes solvents, such as benzene, that evaporate easily)

1. References listed in the Site Summary Table are available at the Curtis Memorial Public Library in the Town of Brunswick and at the Maine Department of Environmental Protection in Augusta, Maine.

2. Topsham Annex Site location map enclosed is a reprint from a Site Inspection Report of June 2011 prepared by TETRA TECH NUS, Inc and issued by the Naval Facilities Engineering Command under contract N62472-03-D-0057.

3. Brunswick Site location map enclosed is a modified reprint from a “NASB ENVIRONMENTAL NEWSLETTER (WINTER 2008-9)” issued by the NASB Public Affairs Officer. It only shows the primary environmental contamination sites.

ABOUT BACSE

BACSE was formed in 1991 as a non-profit organization and in accordance with requirements of DOD Regulations as specified in the Code of the Federal Regulations the specific purpose of keeping the public informed and providing public input to “Regulators”. We have over 20 years experience in participating in oversight of remediation at the Naval Air Station in Brunswick. To accomplish our mission, BACSE routinely testifies, issues comment letters, summary memoranda and reports to the US Navy and local officials that identify outstanding concerns about the site that are under investigation.

The US Navy and other government officials have acknowledged our role as beneficial and we maintain a WEB site at;

<http://Community.curtislibrary.com/BACSE/>
to provide general information to the public.

Interesting (but undocumented) comments have also been provided by government and non-government sources at conferences and group discussions with representatives from similar contaminated property sites.

BNAS has made more progress in remediation than other Defense Department facilities to the point that civilian re-use is occurring 6 months after US Navy departure. This reflects progress in remediation that is substantially the result of effective advocacy by our organization and members for the past 20 years.

Please Note:

- Members of BACSE draw no salary or expense vouchers. Much of their effort involves expenses that are donated.
- BACSE is a State of Maine and IRS certified 501-c-3 non profit corporation.
- Currently, BACSE receives technical assistance funding from the US EPA to contract with a geological technical expert and from the philanthropy “Maine Initiatives” (of Augusta, ME) to publish this report

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