FINAL

RECORD OF DECISION

SITE 2: GROUNDWATER AND SOIL
Operable Unit 12

at the

ALLEGANY BALLISTICS LABORATORY,
ROCKET CENTER WEST VIRGINIA

July 2008

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Acronyms and Abbreviations

ABL	Allegany Ballistics Laboratory
ATK	ATK Tactical Systems Company LLC
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
COC	constituent of concern
COPC	constituent of potential concern
CRP	Community Relations Plan
CS	confirmation study
CSM	conceptual site model
CTE	central tendency exposure
DoD	Department of Defense
EBS	Environmental Baseline Survey
ERA	Ecological Risk Assessment
HHRA	Human Health Risk Assessment
HI	hazard index
HQ	hazard quotient
IAS	Initial Assessment Study
IRP	installation restoration program
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
MCL	maximum contaminant level
mg	milligram
mg/kg-day	milligram per kilogram of body weight per day
msl	mean seal level
NACIP	Navy Assessment and Control of Installation Pollutants
Navy	U.S. Navy
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
PRAP	Proposed Remedial Action Plan
RAB	Restoration Advisory Board
RDA	recommended daily allowance
RI	remedial investigation
RME	reasonable maximum exposure
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act of 1986
SMP	Site Management Plan

SVOC	semivolatile organic compound
TCE	trichloroethene
TRC	Technical Review Committee
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound
WVDEP	West Virginia Department of Environmental Protection

SECTION 1

Declaration

1.1 Site Name and Location

Site 2: Groundwater and Soil (also know as Operable Unit 12)
Allegany Ballistics Laboratory ("ABL"), Rocket Center, West Virginia
National Superfund Database Identification Number: WV0170023691

1.2 Statement of Basis and Purpose

This decision document presents the selected remedy for Site 2 at ABL in Rocket Center, West Virginia ("the site"). Site 2 is also known as Operable Unit 12 ("OU 12"). The final selected remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 ("CERCLA"), as amended by Superfund Amendments and Reauthorization Act of 1986 ("SARA"), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"). This decision is based on the Administrative Record file for this site. The State of West Virginia concurs with the selected remedy.

1.3 Description of Selected Remedy

The U.S. Navy ("Navy"), as lead agency for Site 2 ("OU 12"), in conjunction with the U.S. Environmental Protection Agency ("USEPA") and the West Virginia Department of Environmental Protection ("WVDEP"), has determined that no further action is necessary for soil and groundwater at Site 2 ("OU 12"). This decision is based on the results of the human health and ecological risk assessments taking into account additional risk management decisions, which determined that there are no unacceptable current or future risks associated with soil and groundwater attributable to Site 2.

1.4 Statutory Determinations

The selected remedy for Site 2 ("OU 12") will not result in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure; consequently, five-year reviews will not be required for this remedy.

1.5 Authorizing Signatures

David W. Anderson
Director
Installations and Equipment Office,
by direction of Commander,
Naval Sea Systems Command

24 SEP 08
Date

James J. Burke, Director
Hazardous Site Cleanup Division
U.S. EPA, Region III

10/28/08
Date

The State of West Virginia has reviewed this Record of Decision ("ROD") and the materials on which it is based and concurs with the selected remedy.

Ken Ellison, Director
Division of Land Restoration
West Virginia Department of Environmental Protection

10/20/08
Date

SECTION 2

Decision Summary

2.1 Site Name, Location, and Description

Site 2: Groundwater and Soil (OU 12)
Allegany Ballistics Laboratory, Rocket Center, West Virginia
National Superfund Database Identification Number: WV0170023691
Lead Agency: Department of the Navy
Source of investigation funds: Environmental Restoration, Navy (ER, N)

Allegany Ballistics Laboratory ("ABL") is a research, development, and production facility located in Rocket Center, West Virginia, in the northern part of Mineral County. The facility is situated along a reach of the North Branch Potomac River, separating West Virginia and Maryland. The facility consists of two plants. Plant 1, owned by the Navy and operated by ATK Tactical Systems Company LLC ("ATK"), occupies approximately 1,577 acres of which only about 400 acres are within the developed floodplain of the North Branch Potomac River. The remaining acreage is primarily forested and mountainous. Plant 2, a 57-acre facility adjacent to Plant 1, is owned and operated by ATK.

In June 1993, the USEPA proposed the Plant 1 portion of the ABL facility for inclusion on the National Priorities List ("NPL") based upon potential risks to human health and the environment. The Plant 1 portion of ABL was added to the NPL as documented in the *Federal Register,* Volume 59, Number 27989, on May 31, 1994. Figure 2-1 shows the location of ABL (comprising Plant 1 and Plant 2) and the approximate locations of its CERCLA sites. Plant 2 is not listed on the NPL, nor does it contain any CERCLA sites.

Site 2 is located in the northeastern developed portion of Plant 1 (Figure 2-2). The groundwater and soil at Site 2 are defined as OU 12 and are addressed by this ROD.

2.2 Site History and Enforcement Activities

2.2.1 Site History

Historical information indicates that Site 2 (OU12) was utilized from approximately 1942 to 1949 as a waste-burning ground. Based upon aerial photographs dated 1947 and 1955 (USEPA, 1994), the former burn pad, measuring approximately 45 feet in diameter, is suspected to have been located southeast of the current location of Building 361 (Figure 2-2). The amount of wastes disposed at the site is unknown due to limited historical records about past disposal practices. Currently, there is no visual evidence of the former burn pad; the site consists of an open field that is periodically mowed.

2.2.2 Previous Investigations

Site 2 was included in a number of environmental investigations conducted at ABL in the mid-1980s and 1990s and a supplemental soil investigation in 2001. Investigations that included Site 2 are summarized below.

2.2.3 Initial Assessment Study/Confirmation Study (1983 through 1987)

The Initial Assessment Study ("IAS"), performed at ABL in 1983 under the Navy Assessment and Control of Installation Pollutants ("NACIP") program, identified and assessed sites that posed a potential threat to human health or the environment as a result of former hazardous materials handling and operations (ES&E, 1983). The Navy investigated Site 2 by analyzing information obtained from historical records, photographs, site inspections, and personnel interviews. The IAS concluded that Site 2 did not pose an immediate threat; however, a confirmation study ("CS") was conducted at Site 2 to assess potential contamination. The CS, initiated in June 1984 and completed in August 1987, focused on identifying the existence, concentration, and extent of contamination at Site 2.

As a result of the SARA, the Navy changed its NACIP terminology and scope under the installation restoration program ("IRP") to follow the rules, regulations, guidelines, and criteria established by the USEPA for the Superfund program. Accordingly, the results of the CS are documented in the Interim Remedial Investigation ("RI") Report, which recommended further RI activities for some sites, including Site 2, to identify a source of volatile organic compounds ("VOCs") detected in shallow groundwater during the CS and further evaluate the nature and extent of groundwater contamination (Roy F. Weston, 1989).

2.2.4 Remedial Investigation (1992) and NPL Listing

Based on the recommendations of the Interim RI Report and in accordance with the Navy's modified IRP policy, the Navy performed an RI following USEPA RI/Feasibility Study guidance under CERCLA (USEPA, 1988). The 1992 RI showed relatively low concentrations (with respect to screening criteria) of a few VOCs and metals in groundwater and soil at Site 2 (CH2M HILL, 1996a).

In June 1993, the USEPA proposed the inclusion of the Plant 1 portion of the ABL facility on the NPL. On May 31, 1994, the Plant 1 portion of ABL was added to the NPL, as documented in the *Federal Register Volume 59, Number 27989.*

2.2.5 Phase II Remedial Investigation (1994)

Pursuant to the 1992 RI recommendation, in 1994 the Navy conducted a Phase II RI to further define the nature and extent of contamination at several ABL sites, including Site 2 (CH2M HILL, 1996b). During the Phase II RI, baseline human health and ecological risk assessments were performed to evaluate potential risks posed by each site. The results of the Phase II RI supported the 1992 RI findings that the burn pad area is not a likely source of VOC groundwater contamination at the site.

2.2.6 Site 2 Supplemental Sampling/Risk Assessment (2001 and 2005)

Subsequent to the Phase II RI, the Navy determined that additional soil data were required to adequately assess potential risks associated with exposure to soil at Site 2. Therefore,

based on a review of historical data for Site 2, a soil sampling activity was conducted in 2001 to supplement existing data at Sites 2, 3, and 10 (CH2M HILL, 2005).

Soil samples collected at Site 2 during the RI, Phase II RI, and the supplemental soil-sampling activity were utilized to evaluate potential human health and ecological risks at the site. Potential human health risks associated with current and potential future exposures to surface soil and combined surface and subsurface soil at Site 2 were evaluated in the Human Health Risk Assessment ("HHRA"). In addition, potential ecological risks for both upper-trophic-level receptors (via food web exposures) and lower-trophic-level receptors (via direct exposure to surface soil) were evaluated in the Ecological Risk Assessment ("ERA").

Groundwater data from monitoring wells 2GW01, 2GW02, 2GW07, 2GW08, and 2GW09 were used to evaluate the nature and extent of contamination in groundwater at Site 2. Because the residual groundwater contamination at Site 2 was attributed to past releases at Site 10, the risk assessment report for Site 2 did not include an evaluation of groundwater. However, in order to determine if Site 2 can be closed to unrestricted land use, USEPA requested additional groundwater data be collected and a risk assessment of Site 2 groundwater completed as an addendum to the risk assessment report for Site 2.

2.2.7 Human Health Risk Assessment Addendum for Site 2 Groundwater Incorporating Additional Groundwater Investigation Data (2008)

Because an evaluation of potential risks associated with groundwater was not previously conducted, an HHRA addendum for groundwater was prepared for Site 2. In June 2008, additional characterization activities were conducted to confirm the arsenic concentrations in the alluvial aquifer, determine if arsenic concentrations in the vicinity of hybrid well 2GW01 were attributable to historic releases at Site 1, and to assess potential human health risks associated with exposure to alluvial groundwater at Site 2. Two monitoring wells (2GW10 and 2GW11) were installed in the alluvial aquifer at Site 2 and monitoring well 2GW01 was abandoned. Subsequent to well installation, the new wells (2GW10 and 2GW11) and one existing monitoring well (2GW02) were sampled and analyzed for total and dissolved arsenic. Arsenic was not detected in any of the June 2008 samples, which had an associated reporting limit of 1.6 micrograms per liter. The June 2008 arsenic samples were used in place of the April 2004 arsenic data and the risks for human exposure to groundwater was assessed.

The results of the Human Health Risk Assessment are described in detail in the *Revised Human Health Risk Assessment Addendum for Groundwater at Site 2* (CH2M HILL, 2008). Based on the results of the HHRA for groundwater, no unacceptable human health risks were identified and the report concluded that no action is necessary for groundwater. The arsenic data collected during the 2008 well abandonment and installation/sampling also suggested that the historical arsenic concentrations in the hybrid well were an anomaly and not associated with a release from Site 2.

2.2.8 CERCLA Enforcement Activities

No CERCLA enforcement actions have been taken at Site 2.

2.3 Community Participation

The Navy, as lead agency for Site 2, has met the public participation requirements of CERCLA Section 117(a) and the NCP at 40 CFR Section 300.430(f) (3) as follows:

- The notice of availability of the Proposed Remedial Action Plan ("PRAP") for Site 2 was published in the *Cumberland Times-News* and the *Mineral Daily News Tribune* on Friday July 21, 2006.
- A public comment period was held from July 24, 2006 through August 22, 2006.
- The Site 2 Administrative Record (i.e., the PRAP and supporting documents related to Site 2) was made available to the public at the following information repositories:

  LaVale Public Library
  815 National Highway
  LaVale, MD 21502

  Fort Ashby Public Library
  Lincoln Street, IGA Plaza
  P.O. Box 74
  Fort Ashby, WV 26719

- The Navy held a Public Meeting on August 8, 2006 to explain the PRAP and to address public comments. The meeting proceedings were transcribed by Word for Word Reporting of Swanton, Maryland. The meeting transcript was added to the Site 2 Administrative Record, located in the previously indicated repositories, and is included as Appendix A. The public meeting notice is presented in Appendix B.
- Verbal questions and comments were received and answered during the Public Meeting. No written comments were received during the public comment period. Based on the comments received, the public did not object to proceeding with the selected remedy.

In addition to the NCP public participation requirements, the Navy and ABL have had a comprehensive public involvement program for several years. Starting in 1993, a Technical Review Committee ("TRC") met on average twice a year to discuss issues related to investigative activities at ABL. The TRC comprised mostly governmental personnel; however, the meetings were open to the public and private citizens attended the meetings.

In early 1996, the Navy converted the TRC into a Restoration Advisory Board ("RAB") and 8 to 10 community representatives joined. The RAB is co-chaired by a community member and has held meetings, which are open to the public, approximately every six months since.

To assist the Navy in meeting the needs of the local community for information about, and participation in, the ongoing investigation and remedial processes at ABL, the Navy developed a Community Relations Plan ("CRP") in 1994 and an update in 2001. The CRP identifies community concerns about the investigation and restoration of potentially contaminated sites at ABL and outlines community relations activities to be conducted during the ongoing and anticipated future restoration activities. Recommendations for future community relations activities are based on information about community concerns

and the effectiveness of public participation activities to date, which were obtained during interviews with members of the local community.

2.4 Scope and Role of the Response Action

Site 2 is one of the sites identified in the Federal Facilities Agreement ("FFA") for ABL. A list of all ABL sites can be found in the Site Management Plan ("SMP") for ABL (CH2M HILL, 2007). Over the last 11 years, nine RODs (including one interim ROD) have been signed for six sites at ABL in accordance with the priorities established in the SMP.

As of the date of this ROD, remedies have been implemented at four of the twelve top priority sites at ABL. The designation, media, and remedial action for each site are listed below:

- Site 1 Groundwater, Surface Water, and Sediment ("OU 03"): site-wide groundwater extraction and treatment (ROD May 1997)
- Site 3 Former Burning Ground ("OU-13"): Groundwater and soil (NFA ROD March 2007)
- Site 4B Spent Photographic Developing Solutions Site ("OU-14"): Groundwater and soil (NFA ROD October 2007)
- Site 5 Landfill Contents and Surface Soil ("OU 01"): capping (ROD January 1997)
- Site 5 Groundwater, Surface Water, and Sediment ("OU 02"): installation of permeable reactive barrier, monitored natural attenuation, and long-term monitoring (ROD February 2006)
- Site 7 Former Beryllium Landfill ("OU 07"): landfill contents removal in 1997 (NFA ROD September 2001)
- Site 10 Groundwater ("OU 05"): focused groundwater extraction and treatment (Interim ROD June 1998; Final ROD September 2005)
- Site 10 Soil ("OU6"): (NFA ROD March 2007)

This ROD addresses Site 2 soil and groundwater. A risk assessment was performed for Site 2 that determined there was no unacceptable risk to human health and the environment based on current and potential future land use. Therefore, no further action for this site is selected for unrestricted land use.

2.5 Site Characteristics

2.5.1 Site Overview

Site 2 is located about 250 feet from the North Branch Potomac River in its 100-year floodplain. The most significant physiographic feature in the vicinity of ABL is Knobly Mountain, located south of Site 2 (Figure 2-1). The site is relatively flat, and there are no direct surface water conveyances (such as drainage ditches) from the site to the river.

The predominant hydrologic feature at ABL is the North Branch Potomac River, which borders the western and northern sides of the facility, and is the closest surface water body to Site 2. The elevation of the river ranges from about 645 feet above mean sea level (msl) at the eastern end of Plant 1 to about 655 feet above msl on the western border of ABL. The average river flow rate is estimated to be 886 cubic feet per second, as measured at the U.S. Geological Survey Pinto gauging station.

Two predominant geologic layers exist in the subsurface at ABL: a shallow alluvial layer and a deeper bedrock layer. Detailed descriptions of the Site 2 geology and hydrogeology are presented in the RI and Phase II RI (CH2M HILL, 1996a and 1996b, respectively). A brief description of the subsurface conditions at Site 2 is presented below.

The unconsolidated alluvial deposits overlying bedrock consist of two distinct layers of material: an upper, or surficial, silty clay that is likely floodplain deposits, and a deeper sand and gravel layer (alluvium), with variable but typically significant amounts of clay and silt, with an average thickness of 14.5 feet. It is this lower portion of the unconsolidated material that is saturated and represents the unconfined alluvial aquifer at the site. Groundwater in the alluvium at Site 2 has been calculated to flow toward the North Branch Potomac River at a rate of approximately 35 feet per year (CH2M HILL, 1996b).

Shale bedrock with some interbedded limestone underlies Plant 1. Groundwater flow in the bedrock aquifer is confined to the bedding planes, fractures, and solution channels at Plant 1. The Wills Mountain anticlinorium axis bisects Plant 1 in a north-northeasterly direction. Site 2 is believed to lie on the southeast limb where bedding planes dip gently to the southeast at approximately 30 degrees. Therefore, the southeastward trending dips of the bedrock bedding planes beneath Site 2 are believed to channel bedrock groundwater flow in an eastward to northeastward direction.

Figure 2-3 presents the conceptual site model ("CSM") showing potential exposure pathways identified under current and potential future conditions at Site 2. The CSM presents all potential routes of exposure; however, not all routes are complete exposure pathways, nor does any particular exposure pathway connote risk. Exposure pathways are simply the means by which various receptors could be exposed to environmental media, and the contaminants within those media, if present. The exposure assessment identifies the complete pathways and routes by which an individual may be exposed to constituents of potential concern ("COPCs"). It also estimates the magnitude, frequency, and duration of a potential exposure. The magnitude of exposure is determined by estimating the amount of a constituent that would be available at the exchange boundaries (i.e., the lungs, gastrointestinal tract, and skin) after an exposure. An HHRA quantifies constituent intakes and associated health risks only for complete exposure pathways. Figure 2-4 presents a CSM which includes information about the physical setting at the site and on the fate and transport of the constituents detected at the site.

2.5.2 Sampling Strategy

Information about Site 2 media has been gathered from soil samples and groundwater samples (see chronology of the investigation in Section 2.2.2). Five surface soil samples, six subsurface soil samples, and samples from seven groundwater monitoring wells have been collected at Site 2 to determine the nature and extent of environmental contamination and to

evaluate the associated risks to human health and the environment. Section 2.5.4 below provides a discussion of the sample results.

2.5.3 Source of Contamination

The site was investigated due to potential releases of contaminants to the environment caused by the burning of waste between 1942 and 1949. Probable constituent sources at Site 2 comprise the residue from the burning of propellants and explosives at the site (Navy, 2005).

2.5.4 Nature and Extent of Chemicals in Site 2 Groundwater and Soil

Data collected during the various investigations conducted (Section 2.2.2) defined constituent concentrations in groundwater and soil such that the nature and extent of contamination and potential risks have been adequately evaluated. The nature and extent of chemicals in Site 2 groundwater and soil is discussed below by media.

The discussion below focuses on COPCs identified during the HHRA and the constituents of concern ("COCs") identified during the ERA. It is important to note that the human health COPCs and ecological COCs are utilized in this section for descriptive purposes and do not reflect the risk assessment conclusions.

Surface Soil

Five surface soil samples were collected at Site 2 and analyzed to determine the concentration of semivolatile organic compounds ("SVOCs") and metals. Two of the five samples were also analyzed for dioxins/furans and explosives.

No explosives were detected in Site 2 surface soil. Fourteen SVOCs, 23 dioxins/furans, and 19 metals were detected in the surface soil. None of the organic constituents (SVOCs or dioxins/furans) were identified as COPCs in the HHRA (see Section 2.7 below). Four metals (arsenic, iron, manganese, and vanadium) were identified as COPCs for surface soil during the HHRA (see Section 2.7 below), based upon a comparison with USEPA Region III adjusted risk-based concentrations for residential soil. Sample locations as well as COPC/COC concentrations are presented on Figure 2-5.

Eight constituents (benzaldehyde, carbazole, aluminum, chromium, iron, manganese, vanadium, and zinc) were identified as COCs during the ERA (see Section 2.7 below). In addition, arsenic and 2, 3, 7, 8-tetrachlorodibenzofuran was identified as constituents contributing to food web exposures with a hazard quotient ("HQ") greater than 1.

Subsurface Soil

Subsurface soil samples were obtained from six locations at Site 2 to determine the concentrations of SVOCs and metals (Figure 2-6). Samples obtained from AS02-SB01 and AS02-SB02 were also analyzed for dioxins/furans. A sample was obtained from location S2-4/14 for VOC analysis. Samples were also obtained from AS02-SB01, AS02-SB02 and S2-5/6 for explosive residue analysis.

Sample locations as well as COPC concentrations are presented on Figure 2-6.

No explosives were detected in Site 2 subsurface soil. Four VOCs (acetone, carbon disulfide, trichloroethene ["TCE"], and total xylene), one SVOC (di-n-butylphthalate), and thirteen dioxin/furans were detected in the subsurface soil at estimated concentrations below human health risk screening levels.

Twenty-three metals were detected in one or more subsurface soil samples. Five of these constituents (aluminum, arsenic, iron, manganese, and vanadium) were identified as COPCs for combined surface and subsurface soil during the HHRA. All five of these constituents were detected in all six subsurface soil samples. No ecological COCs were identified for the subsurface soil because subsurface soil is not an ecologically significant habitat.

Background Soil Comparison

Statistical comparisons were performed to help determine if the metals concentrations of the soil COPCs and COCs at Site 2 are different from facility background metals concentrations (CH2M HILL, 2003).

The results of the statistical comparison indicate that there is no statistical difference between facility background concentrations and Site 2 surface soil data for six of the COPCs/COCs identified (aluminum, arsenic, chromium, iron, manganese, and zinc). Vanadium was the only surface soil COPC/COC identified during the HHRA/ERA that was statistically above its background concentration (see Section 2.7). The results of the statistical comparison for subsurface soil comparison indicate that there is a statistical difference between the facility background concentrations and Site 2 subsurface soil data for four of the five COPCs identified during the HHRA (aluminum, arsenic, manganese, and vanadium). The remaining COPC, iron, was not detected in subsurface soil statistically above its background concentration.

Three of the COPCs identified during the HHRA (aluminum, arsenic, and vanadium) were statistically compared to background concentrations for combined surface and subsurface soil. The comparison indicates that there is a statistical difference between facility background concentrations and Site 2 combined surface and subsurface soil data for arsenic and vanadium, but that there is no statistical difference between the facility background concentrations and combined Site 2 surface and subsurface soil data for aluminum.

Although the results of the statistical comparison indicate that there is a statistically significant difference between facility background and Site 2 surface soil concentrations for vanadium; subsurface soil concentrations of aluminum, arsenic, manganese, and vanadium; and arsenic and vanadium in the combined surface and subsurface. However, these metals are most likely attributable to the natural variations of metals in soil and are not likely to be site-related based upon known site history.

Groundwater

Groundwater data collected from Site 2 monitoring wells (2GW01, 2GW02, 2GW07, 2GW08, 2GW09, 2GW10 and 2GW11) in April 2004 and June 2008 were evaluated quantitatively in the risk assessment, as presented in the Revised HHRA (CH2M HILL, 2008). Well locations, presented in Figure 2-7, were used to evaluate the nature and extent of contamination in Site 2 groundwater. Monitoring wells 2GW02, 2GW07, and 2GW11 are located downgradient of

the site. Monitoring wells 2GW02 and 2GW11 are screened in the alluvium and 2GW07 is screened in the bedrock. Monitoring well 2GW01 was a hybrid well screened across the alluvium/bedrock contact, and was not located directly downgradient of the site. Monitoring wells 2GW08 and 2GW09 are located upgradient of the site and are screened in the alluvial groundwater; they are the background wells for the site. Groundwater samples collected from Site 2 in April 2004 were analyzed for VOCs, SVOCs, metals, and explosives and groundwater samples collected in June 2008 were analyzed for arsenic only.

Fourteen VOCs (1,1,1-trichloroethane; 1,1,2-trichloro-1,2,2-trifluoroethane; 1,2-dichloro-1,1,2-trifluroethene; 2-butanone; acetone; carbon disulfide; carbon tetrachloride; chlorotrifluoroethene; dichlorodifluoromethane; methylene chloride; TCE; vinyl chloride; cis- and trans-1,2-dichloroethene) were detected in the downgradient hybrid and alluvial monitoring wells 2GW01 and 2GW02, respectively. Many of these constituents were detected during the mid-1980s to early 1990s only and have not been detected above the USEPA maximum contaminant level (MCL) in Site 2 monitoring wells since.

Eight VOCs were detected in all of the wells sampled for Site 2 during the 2004 groundwater sampling event. However, none of these VOCs were detected above their respective MCLs, which are the maximum permissible level by federal regulation of a contaminant in drinking water. Six of these (1, 1, 2-trichloro-1, 2, 2-trifluoroethane, 1, 2, 3-trichlorobenzene, 1, 2, 4-trichlorobenzene, toluene, TCE, and cis-1, 2-dichloroethene) were also detected in the upgradient alluvial monitoring wells 2GW08 and 2GW09. The two remaining two constituents detected in the downgradient wells were vinyl chloride and dichlorodifluoromethane. Five VOCs (1, 1, 2-trichloro-1, 2, 2-trifluoroethane, acetone, dichlorodifluoromethane, toluene, and TCE) were detected in downgradient bedrock monitoring well 2GW07.

Following an evaluation of groundwater for the HHRA, two VOCs (TCE and vinyl chloride) were identified as COPCs for the alluvial aquifer and one VOC (TCE) was identified as a COPC for the bedrock aquifer.

One SVOC (bis [2-ethylhexyl] phthalate), a common laboratory contaminant, was detected (in 1987) in the hybrid monitoring well 2GW01 at a concentration of 11 micrograms per liter ("µg/L"), which exceeded the MCL. The constituent was detected again during the 2004 sampling event, but at a concentration of 5.3 µg/L, which is below the MCL. No SVOCs were identified as COPCs during the HHRA.

One explosive constituent, nitrocellulose, was detected in monitoring well 2GW01 during the 1984 sampling event, but not in subsequent sampling events. Perchlorate, also an explosive constituent, was detected during the June 2000 and April 2004 sampling events in monitoring well 2GW02, at concentrations of 10.6 µg/L and 0.0018 µg/L, respectively. No explosives constituents were identified as COPCs during the HHRA.

Fifteen total metals were detected (via unfiltered samples) in the groundwater at Site 2, and six of these constituents (aluminum, chromium, iron, lead, manganese, and vanadium) were identified as COPCs during the HHRA. Lead was detected in 2GW01 and 2GW02, with a maximum concentration of 18.7 µg/L in 2GW02, which exceeds the USEPA action level of 15 µg/L. Six of these metals were detected at their highest concentrations in the upgradient

background alluvial well 2GW08 (aluminum, chromium, iron, lead, manganese, and vanadium).

Arsenic was not detected in any of the June 2008 samples, which had method detection limits of 1.6 micrograms per liter. The June 2008 arsenic samples were used in place of the April 2004 arsenic analysis and the risks for human exposure to groundwater assessed. These data support the supposition that the historical arsenic concentrations in the hybrid well were an anomaly and not associated with a release from Site 2.

During the 2004 sampling event, 7 total metals were detected in bedrock monitoring well 2GW07 (aluminum, barium, calcium, chromium, cobalt, copper, iron, magnesium, manganese, potassium, sodium, and zinc). None of these metals was detected at concentrations above their respective MCLs, or were identified as COPCs in the HHRA.

Twelve dissolved metals were detected in alluvial groundwater samples collected from Site 2 in 2004. Of these, three constituents (antimony, iron, and manganese) were identified as COPCs in the HHRA. Manganese was detected at its highest concentration in the updgradient background alluvial well 2GW09.

Seven dissolved metals were detected in the bedrock monitoring well 2GW07 during the 2004 sampling event and iron was retained as a COPC.

2.6 Current and Potential Future Site and Resource Uses

2.6.1 Current Site Uses

As noted in Section 2.1, Site 2 is located in the northeastern developed portion of Plant 1. As such, the current use of the site and adjacent areas is industrial. The Navy anticipates that this area will remain under Navy ownership and will continue in the same capacity for the foreseeable future. Therefore, access to the site will continue to be restricted by fencing and security personnel.

2.6.2 Potential Future Site Uses

Site 2 is anticipated to remain an industrial area in the future. Therefore, currently exposed populations are also applicable as potential future site users.

The groundwater beneath Site 2 is not currently used and is not expected to be used as a future potable supply. However, future potable use of the groundwater was evaluated as a conservative scenario.

2.7 Summary of Site Risks

This section summarizes the results of the baseline HHRA and ERA for Site 2. A baseline risk assessment evaluates site data to determine potential risks to human health and/or the environment. The potential risks are evaluated for constituents in the media of concern and for each potential route of exposure.

No unacceptable risks to human health or to the environment were identified during the risk assessments prepared for Site 2, as described below.

2.7.1 Summary of Human Health Risk Assessment

A baseline HHRA was conducted to evaluate the potential human health risks from exposure to the COPCs detected in Site 2 soil (CH2M HILL, 2005) and Site 2 groundwater (CH2M HILL, 2008). The risk assessment report (CH2M HILL, 2005) and associated addendum (CH2M HILL, 2008) are available at the information repositories listed in Section 2.3. Site 2 soil and groundwater constituent concentrations were evaluated using current and future land use scenarios, and included conservative estimates of current and future human exposure to site contaminants.

As part of the Site 2 HHRA, a list of COPCs that may pose risks to human receptors defined for the site was developed and is presented in Table 2-1. The COPC identification process included collection of site soil and groundwater data and screening those data against constituent concentrations that could pose a risk to human health. All of the COPCs identified during the evaluation of Site 2 soil were metals in the surface soil and the combined surface and subsurface soil. COPCs identified in the Site 2 alluvial aquifer groundwater were metals and two VOCs. TCE was the only COPC identified in groundwater from the bedrock aquifer.

"Exposure" refers to the potential contact of an individual with a contaminant. A conceptual exposure model showing potential exposure pathways identified under current and potential future conditions at Site 2 is presented in Figure 2-3. The conceptual site model presents potential routes of exposure; however, not all of the routes are complete exposure pathways, nor does any particular exposure pathway connote risk. Exposure pathways are simply the means by which various receptors could be exposed to environmental media, and the contaminants within those media, if present.

The exposure assessment in Figure 2-3 identifies the complete pathways and routes by which an individual may be exposed to COPCs. It also estimates the magnitude, frequency, and duration of a potential exposure. The magnitude of exposure is determined by estimating the amount of a constituent that would be available at the exchange boundaries (i.e., the lungs, gastrointestinal tract, and skin) after an exposure. An HHRA quantifies constituent intakes and associated health risks only for complete exposure pathways.

The potential exposure pathways in Figure 2-3 were evaluated for five elements established by the USEPA to determine if an exposure pathway is complete. The five elements are:

- A source (e.g., chemical residues in soil)
- A mechanism for release and migration of chemicals (e.g., leaching)
- An environmental transport medium (e.g., soil or groundwater)
- A point or site of potential human contact (e.g., exposure point, such as contact with soil or drinking water)
- A route of intake (e.g., incidental ingestion of soil, ingestion of groundwater as a drinking water source)

Current use of the site and adjacent areas is industrial. The Navy anticipates that this area will remain under its ownership and continue in the same capacity for the foreseeable

future. Therefore, based on current land use, an industrial/site worker may be exposed to surface soil. Land access to the site is currently restricted to onsite workers by fences and security guards. Although unlikely due to security restrictions and the perimeter fencing around the facility, adolescent trespassers/visitors were conservatively evaluated as potentially exposed human receptors.

ABL currently obtains potable water from supply wells located over a mile from Site 2; therefore, groundwater is not used at Site 2 and is not expected to be used as a future potable supply. In addition, there are no offsite groundwater residential receptors downgradient of Site 2. Therefore, pathways associated with current groundwater use at the facility are incomplete. However, as a conservative assessment for Site 2, potential human health risks associated with groundwater at Site 2 were evaluated.

Of the potential future land use scenario, Site 2 is anticipated to remain an industrial area in the future, so the current industrial users are expected to be future site users as well. Additionally, it was assumed that if any construction activities occur at Site 2, a future construction worker could be exposed to the combined surface and subsurface soil and alluvial groundwater. Further, after any construction activities, a trespasser/visitor could be exposed to soil (combined surface and subsurface soil) assuming that subsurface soil may be placed on the surface during the construction activities.

Although unlikely, future residential exposure to soil (combined surface and subsurface soil) was evaluated in the Site 2 risk assessment as a conservative scenario. It was assumed that the subsurface soil may be placed on the surface if the site is converted for residential use or during future construction/excavation activities. Additionally, it was also assumed future residential potable use of groundwater at Site 2 could occur, and therefore, risks associated with potable use of the groundwater were estimated.

Human Health Risk Assessment Conclusions

The Site 2 baseline HHRA was conducted to evaluate the potential human health risks associated with exposure to site-related surface soil, combined surface and subsurface soil at the site. Risks were also evaluated for exposure to alluvial aquifer and bedrock aquifer groundwater, subsequent to the completion of the baseline HHRA. Tables 2-2 and 2-3 present the cancer risks and hazard indices determined for Site 2 under a reasonable maximum exposure ("RME") and a central tendency exposure ("CTE") scenario, respectively. The HHRA concluded that no unacceptable potential human health risks exist for current site use.

Potential future exposure to combined surface and subsurface soil by a child resident may result in a potential noncarcinogenic hazard above USEPA's target hazard index ("HI") of 1, primarily due to ingestion of iron and manganese. The CTE noncarcinogenic hazard is below USEPA's target HI. Although the potential RME hazards are associated with naturally occurring constituents, the concentrations of these constituents (iron and manganese) detected in the Site 2 soil are greater than the concentrations of these constituents in the background dataset (CH2M HILL, 2003). However, iron is an essential human nutrient, which complicates the derivation of a reference dose (USEPA, 1999). The reference dose is the toxicity factor used, along with the intake (amount of soil ingested and taken into the body through dermal contact), to calculate the noncarcinogenic HI. The estimated RME intake of iron via incidental ingestion of Site 2 soil for child residents

(0.3 milligram per kilogram of body weight per day ["mg/kg-day"]) is within the levels cited by the National Academy of Sciences recommended dietary allowance ("RDA") for children ages 6 months to 10 years (0.36 to 1.11 mg/kg-day) (RDA, 2003). Therefore, the concentration of iron in Site 2 soil is acceptable for ingestion by future child residents under conservative exposure scenario assumptions.

Like iron, manganese is an essential human nutrient and responsible for activating several enzymes (IRIS, 2004). Exposure to manganese in the Site 2 combined surface and subsurface soil results in a HQ above 1 for the future child resident. However, the recommended dietary intakes of manganese from the Food and Nutrition Board, Institute of Medicine, National Academies (National Academy of Sciences, 2004) for children 1 to 3 years of age and 4 to 8 years of age are 1.2 milligram ("mg")/day and 1.5 mg/day, respectively. Based on the average weight of children, this correlates to manganese intakes of 0.08 mg/kg-day and 0.1 mg/kg-day, respectively. The manganese intakes for child residents estimated in the risk assessment (0.014 mg/day) are below the estimated safe and adequate daily dietary intake doses. Therefore, the concentration of manganese in Site 2 soil is acceptable for ingestion by future child residents under conservative exposure scenario assumptions.

Potential future potable use of alluvial aquifer groundwater by a child resident may result in potential risks above USEPA's target levels, primarily due to manganese. As discussed above, manganese is a human nutrient. Intake of manganese by a child resident from Site 2 groundwater (0.03 mg/kg-day) is below the tolerable upper intake level for manganese (0.13 mg/kg-day for child [USDA, 2006]). Therefore, potable use of Site 2 alluvial aquifer groundwater would not result in any unacceptable site-related risks. Additionally, the CTE noncarcinogenic hazard to the adult resident is below USEPA's target HI, when separated by target organ, and the CTE carcinogenic risk to the lifetime resident is within USEPA's target carcinogenic risk range.

Potential future potable use of bedrock aquifer groundwater by an adult, child, and lifetime resident would result in potential risks below USEPA's target levels.

Potential exposure to alluvial aquifer groundwater by a construction worker during construction activities would result in an RME noncarcinogenic hazard below USEPA's target HI. The potential carcinogenic risk to a construction worker associated with exposure to the alluvial aquifer groundwater is below USEPA's target risk range.

Based on the results of the HHRA, no further action is needed for Site 2 to be protective of human health under industrial or residential use scenarios (i.e., unrestricted land use is applicable).

2.7.2 Summary of Ecological Risk Assessment

A baseline ERA was conducted to assess the potential ecological risks from exposure to the COCs detected at Site 2 (CH2M HILL, 2005).The ERA evaluated potential ecological risks for both upper-trophic-level receptors (via food web exposures) and lower-trophic-level receptors (via direct exposure to surface soil). Six metals detected in surface soils (aluminum, chromium, iron, manganese, vanadium, and zinc) were identified as COCs. The concentrations of all metal constituents except vanadium exceeding direct-exposure screening values were consistent with concentrations in facility-wide background soil; the

concentration of vanadium at Site 2 was not consistent with background levels but is not likely site-related based on site history.

The estimated food-web exposure to dioxins/furans does not exceed the screening values, which are based on the lowest observed adverse effect level of ingestion; thus, for any receptor, adverse population-level effects are unlikely. Two organic constituents, carbazole and benzaldehyde, were detected in surface soil. While there is little information regarding the potential toxicity of these two constituents to soil invertebrates and/or terrestrial plants, studies suggest that the maximum concentrations of carbazole detected in Site 2 soil is too low to elicit adverse effects (Sverdrup et al, 2001; Sverdrup et al, 2002). Furthermore, the limited frequency of benzaldehyde detection and the low concentration (detected in one of five soil samples at 140 µg/kg) suggest it does not present an unacceptable level of risk for soil-dwelling receptor populations. The small size of the site and the poor quality habitat due to periodic mowing at Site 2 also limit potential exposures because receptors are not likely abundant.

Based on the results of the ERA, no further action is needed for Site 2 to be protective of ecological health.

2.7.3 Selected Remedy

No further action is necessary for soil and groundwater for unrestricted land use at Site 2. This decision is based on the results of the human health and ecological risk assessments taking into account additional risk management decisions, which determined that there are no unacceptable current or future risks associated with soil and groundwater at Site 2.

2.8 Documentation of Significant Changes

The PRAP for Site 2 Soil and Groundwater was released for public comment on July 24, 2006. The PRAP recommended no further action as the preferred alternative for the site. No written comments were received during the public comment period; verbal comments were submitted and addressed during the public meeting on August 8, 2006. The Navy, USEPA, and WVDEP reviewed all verbal comments and determined that no significant changes to the proposed alternative, as originally identified in the PRAP, were necessary or appropriate in response to comments.

However, during preparation of the final ROD, the Navy, USEPA and WVDEP decided that additional groundwater data should be collected to confirm the supposition that the historic arsenic concentrations detected in hybrid well 2GW01 were not the result of a release from Site 2, and that the Site 2 groundwater data should be re-evaluated with the new arsenic data. In addition, the HHRA should be updated to clarify what risk, if any, is posed by the groundwater at the site. The update to the HHRA for groundwater, summarized in Section 2.7.1 in this ROD, is a change from the information presented in the PRAP and is, accordingly, explained here. Analysis of the groundwater data confirmed that the historic arsenic concentrations detected in hybrid well 2GW01 were not the result of a release from Site 2 and that the groundwater constituent concentrations at Site 2 pose no unacceptable risk to human health. Thus, no change in the preferred alternative is warranted.

Table 2-1
Summary of Constituents of Potential Concern for the HHRA
Record of Decision - Site 2
Allegany Ballistics Laboratory
Rocket Center, West Virginia

Surface Soil	Soil*	Groundwater
Site 2	**Site 2**	**Site 2**
Ingestion, Dermal, and Inhalation of Airborne Particulates	*Ingestion, Dermal, and Inhalation of Airborne Particulates*	*Ingestion, Dermal, and Inhalation of Volatile Emissions*
Arsenic	Aluminum	***Alluvial Aquifer:***
Iron	Arsenic	Antimony-dissolved (resident)
Manganese	Iron	Iron-dissolved (resident)
Vanadium	Manganese	Manganese-dissolved (resident)
	Vanadium	Aluminum (construction)
		Chromium (construction)
		Iron (construction)
		Lead (construction)
		Manganese (construction)
		Vanadium (construction)
		TCE
		Vinyl Chloride
		Bedrock Aquifer
		TCE
		Iron

* Combined surface and subsurface soil

** Filtered inorganic data used for residential scenario, unfiltered data used for construction worker scenario, as discussed in risk assessment.

Table 2-2
Summary of Reasonable Maximum Exposure Cancer Risks and Hazard Indices
Record of Decision - Site 2
Allegany Ballistics Laboratory
Rocket Center, West Virginia

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10^{-4}	Chemicals with Cancer Risks >10^{-5} and <10^{-4}	Chemicals with Cancer Risks >10^{-6} and <10^{-5}	Hazard Index	Chemicals with HI>1
Current/Future Industrial Worker	Surface Soil -	Ingestion	4.5E-06				1.6E-01	
		Dermal Contact	1.2E-06				1.8E-01	
		Inhalation	4.2E-09				6.3E-03	
		Total	5.7E-06				3.5E-01	
	All Media	Total	5.7E-06				3.5E-01	
Current/Future Adolescent Trespasser/Visitor	Surface Soil -	Ingestion	4.7E-07				4.5E-02	
		Dermal Contact	1.0E-07				4.5E-02	
		Inhalation	5.4E-11				2.3E-04	
		Total	5.7E-07				9.1E-02	
	All Media	Total	5.7E-07				9.1E-02	
Future Adult Resident	Soil* -	Ingestion	NA				2.7E-01	
		Dermal Contact	NA				1.1E-01	
		Inhalation	NA				1.9E-02	
		Total	NA				4.0E-01	
	Alluvial Groundwater	Ingestion	NA				1.1E+00	
		Dermal Contact	NA				9.8E-02	
		Inhalation	NA				1.0E-03	
		Total	NA				1.2E+00	
	Bedrock Groundwater	Ingestion	NA				5.6E-02	
		Dermal Contact	NA				1.1E-03	
		Inhalation	NA				NA	
		Total	NA				5.7E-02	
	All Media (includes Soil* and Alluvial Groundwater)	Total	NA				1.6E+00	
Future Child Resident	Soil* -	Ingestion	NA				2.3E+00	Manganese
		Dermal Contact	NA				6.2E-01	
		Inhalation	NA				5.8E-02	
		Total	NA				3.0E+00	Manganese
	Alluvial Groundwater	Ingestion	NA				2.7E+00	Manganese
		Dermal Contact	NA				2.9E-01	
		Inhalation	NA				NA	
		Total	NA				2.9E+00	Manganese
	Bedrock Groundwater	Ingestion	NA				1.3E-01	
		Dermal Contact	NA				2.7E-03	
		Inhalation	NA				NA	
		Total	NA				1.3E-01	
	All Media (includes Soil* and Alluvial Groundwater)	Total	NA				5.9E+00	Manganese

Table 2-2
Summary of Reasonable Maximum Exposure Cancer Risks and Hazard Indices
Record of Decision - Site 2
Allegany Ballistics Laboratory
Rocket Center, West Virginia

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10^{-4}	Chemicals with Cancer Risks >10^{-5} and <10^{-4}	Chemicals with Cancer Risks >10^{-6} and <10^{-5}	Hazard Index	Chemicals with HI>1
Future Child/Adult Resident	Soil* -	Ingestion	1.8E-05		Arsenic		NA	
		Dermal Contact	1.4E-06			Arsenic	NA	
		Inhalation	1.6E-08				NA	
		Total	1.9E-05				NA	
	Alluvial Groundwater	Ingestion	5.7E-05		Vinyl chloride		NA	
		Dermal Contact	3.1E-06			Vinyl chloride	NA	
		Inhalation	3.9E-07		Vinyl chloride		NA	
		Total	6.1E-05		Vinyl chloride		NA	
	Bedrock Groundwater	Ingestion	1.8E-07				NA	
		Dermal Contact	1.2E-08				NA	
		Inhalation	4.8E-08				NA	
		Total	2.4E-07				NA	
	All Media (includes Soil* and Alluvial Groundwater)	Total	8.0E-05		Vinyl chloride		NA	
Future Construction Worker	Soil* -	Ingestion	8.2E-07				9.3E-01	
		Dermal Contact	1.6E-08				5.5E-02	
		Inhalation	3.5E-10				1.8E-02	
		Total	8.4E-07				1.0E+00	
	Alluvial Groundwater	Ingestion	NA				NA	
		Dermal Contact	1.4E-08				2.0E-01	
		Inhalation	3.7E-10				3.7E-05	
		Total	1.4E-08				2.0E-01	
	All Media (includes Soil* and Alluvial Groundwater)	Total	8.6E-07				1.2E+00	
Future Adolescent Trespasser/Visitor	Soil* -	Ingestion	4.4E-07				5.5E-02	
		Dermal Contact	9.7E-08				5.0E-02	
		Inhalation	5.1E-11				2.9E-04	
		Total	5.4E-07				1.1E-01	
	All Media	Total	5.4E-07				1.1E-01	

* Combined surface and subsurface soil
HI - Hazard Index
NA - Not Applicable

Table 2-3
Summary of Central Tendency Cancer Risks and Hazard Indices
Record of Decision - Site 2
Allegany Ballistics Laboratory
Rocket Center, West Virginia

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10^{-4}	Chemicals with Cancer Risks >10^{-5} and <10^{-4}	Chemicals with Cancer Risks >10^{-6} and <10^{-5}	Hazard Index	Chemicals with HI>1
Future Resident Adult	Alluvial Groundwater	Ingestion	NA				3.0E-01	
		Dermal Contact	NA				1.5E-02	
		Inhalation	NA				4.4E-04	
		Total	NA				3.2E-01	
	All Media	Total	NA				3.2E-01	
Future Resident Child	Soil* -	Ingestion	NA				7.7E-01	
		Dermal Contact	NA				3.5E-01	
		Inhalation	NA				NA	
		Total	NA				1.1E+00	
	Alluvial Groundwater	Ingestion	NA				1.0E+00	
		Dermal Contact	NA				3.4E-02	
		Inhalation	NA				NA	
		Total	NA				1.0E+00	
	All Media	Total	NA				2.2E+00	
Future Resident Child/Adult	Alluvial Groundwater	Ingestion	3.2E-05			Vinyl chloride	NA	
		Dermal Contact	9.4E-07				NA	
		Inhalation	1.6E-07				NA	
		Total	3.3E-05			Vinyl chloride	NA	
	All Media	Total	8.5E-05			Vinyl chloride	NA	

* Combined surface and subsurface soil
HI - Hazard Index
NA - Not Applicable

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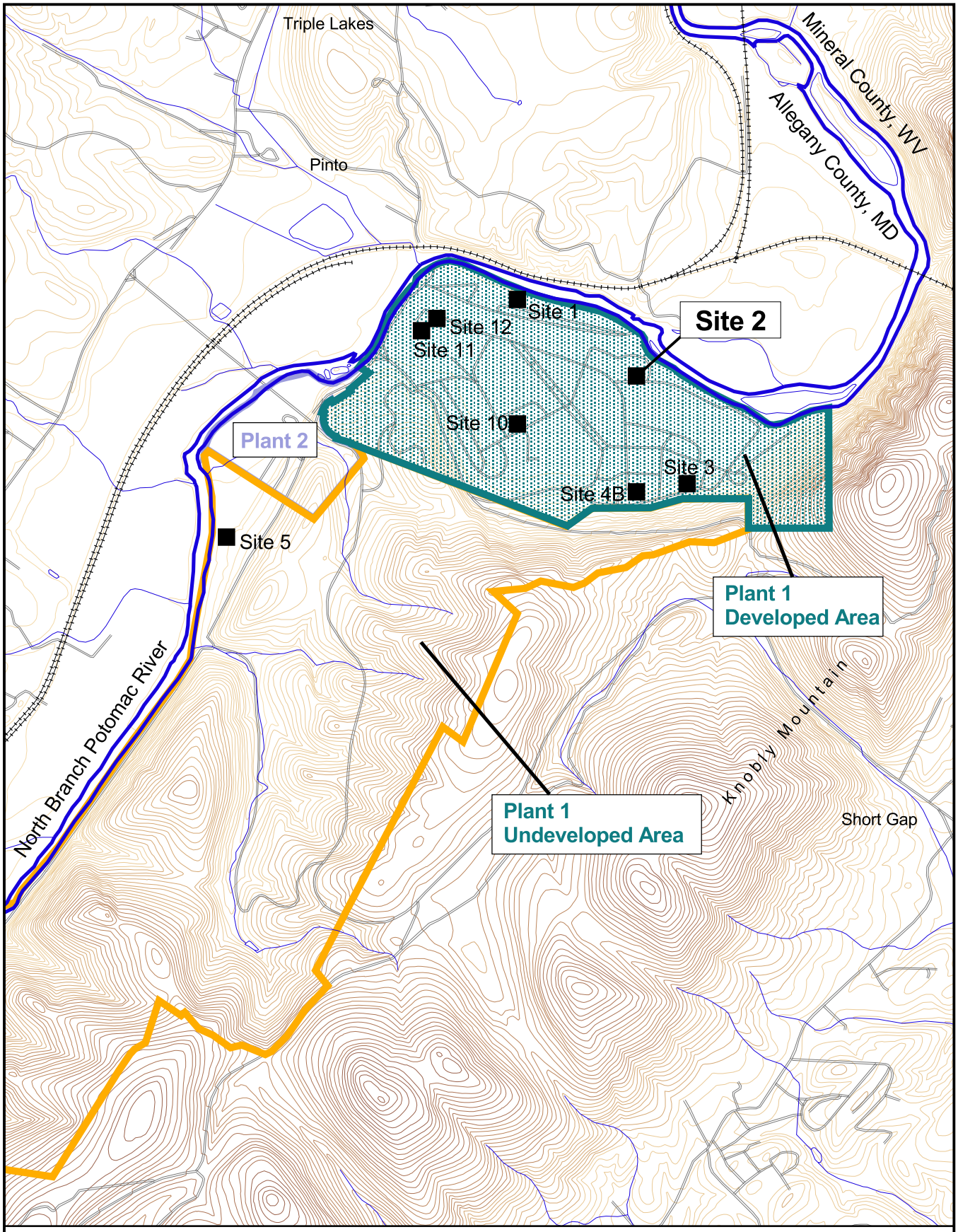


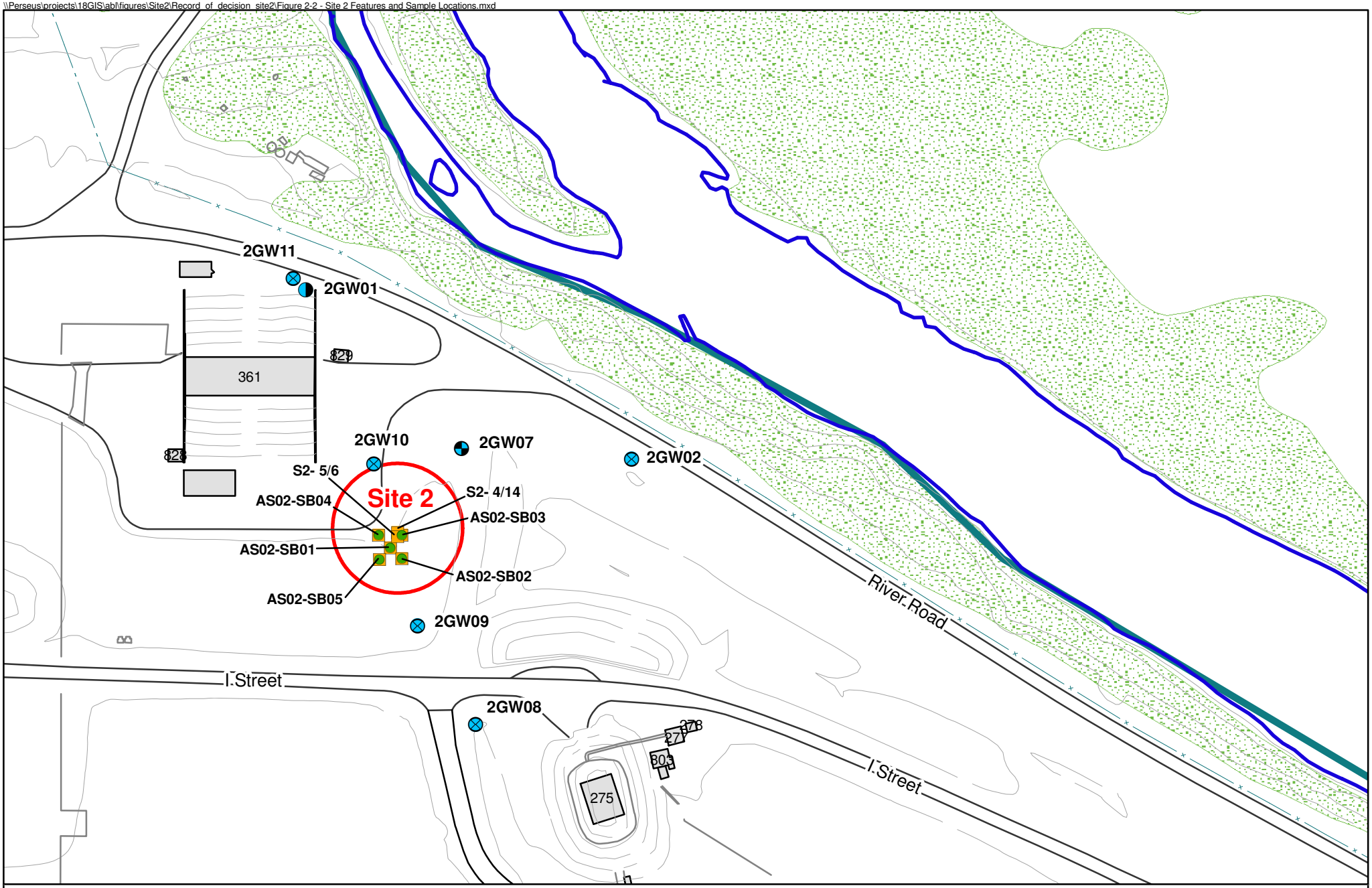
Source: USGS 7.5 minute Cresaptown, WV-MD digital quadrangle map

N
W E
S

One Inch Equals
Two Thousand Feet

Figure 2-1
Facility and Site Location Map
Record of Decision- Site 2
Allegany Ballistics Laboratory
Rocket Center, West Virginia

CH2MHILL



Legend

- Alluvial Monitoring Well
- Bedrock Monitoring Well
- Hybrid Monitoring Well
- Surface Soil Sample Location
- Subsurface Soil Sample Loaction
- Buildings
- Site 2

N

0 50 100 200 Feet

Figure 2-2
Site 2 Features and Sample Locations
Record of Decision - Site 2
Allegany Ballistics Laboratory
Rocket Center, West Virginia

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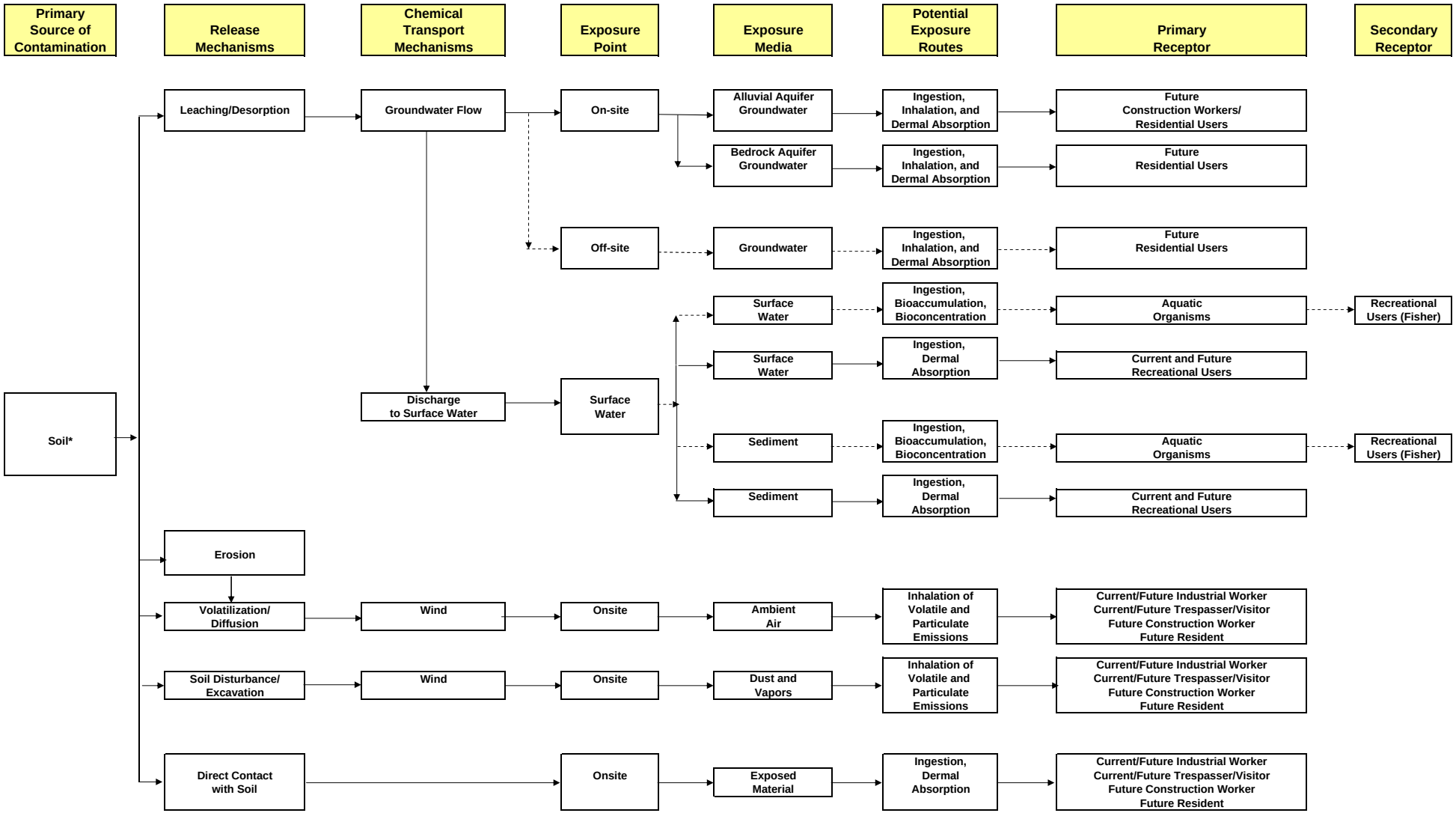

* Current scenarios are for exposure to surface soil as well as alluvial and bedrock groundwater

* future scenarios are for exposure to combined surface and subsurface soil as well as alluvial and bedrock groundwater

Figure 2-3
Conceptual Site Model for Potential Human Exposures
Record of Decision - Site 2
Allegany Ballistics Laboratory, Rocket Center, West Virginia

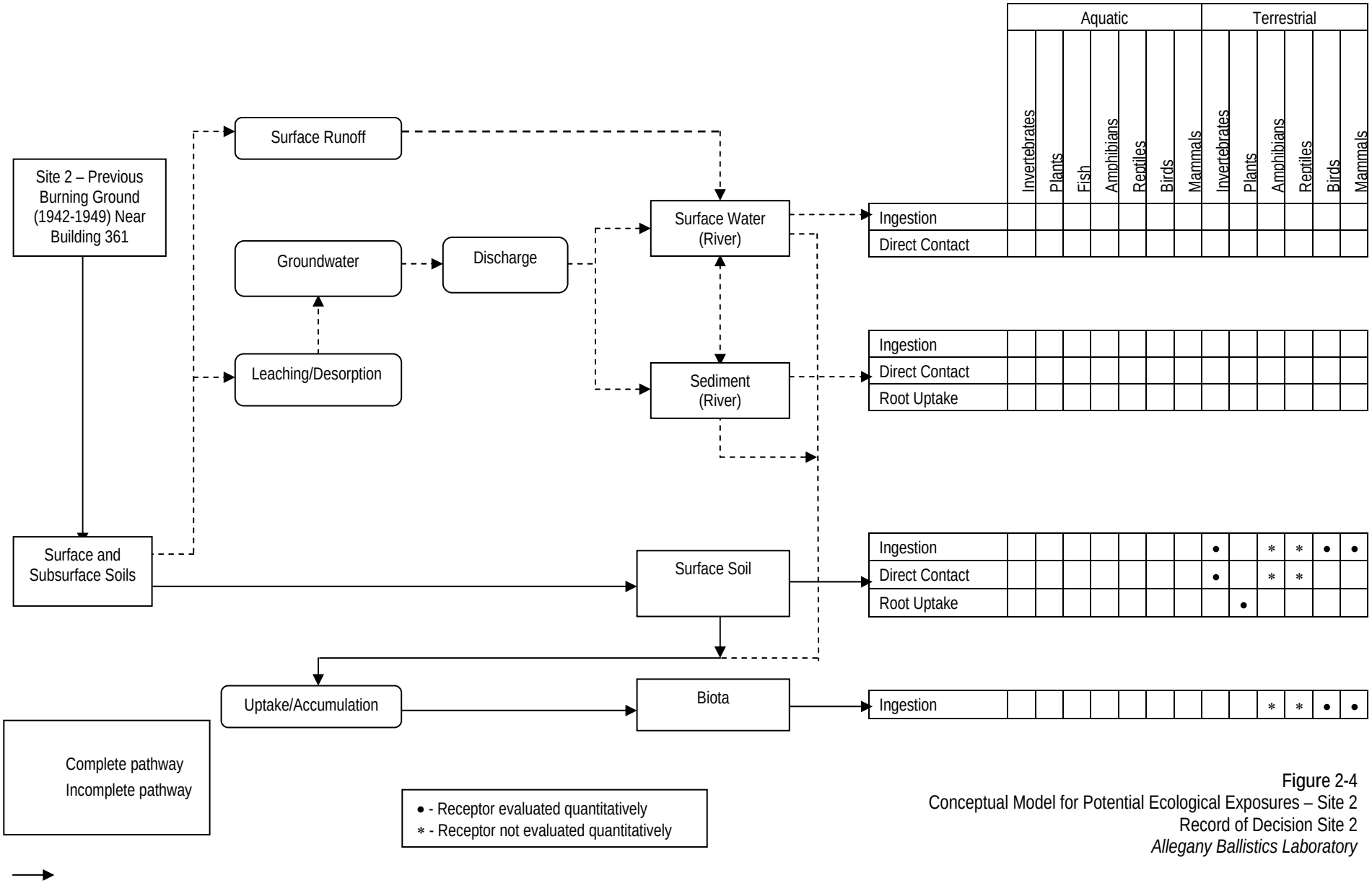

Figure 2-4
Conceptual Model for Potential Ecological Exposures – Site 2
Record of Decision Site 2
Allegany Ballistics Laboratory

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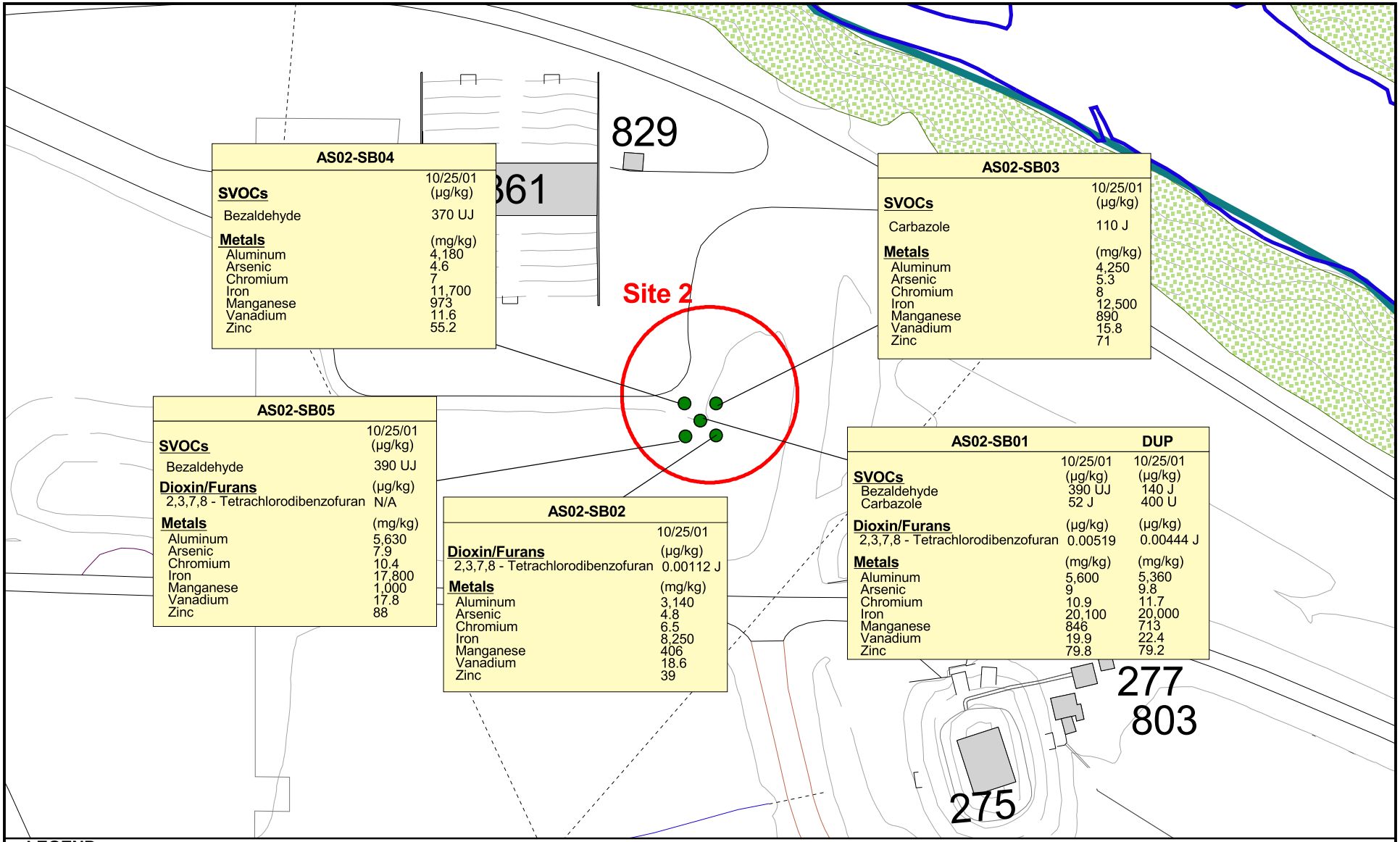

LEGEND

- Surface Soil Sample Location
- Site Boundary
- Buildings

Qualifiers:
U = Analyte Not Detected
UJ = Not Detected, quantitation limit may be inaccurate
J = Estimated
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram

Note: COC/COPC constituents depicted with "*"
Constituents that do not have "*" are stricly COCs.

N

40 0 40 80 Feet

Figure 2-5
COCs/COPCs Detected in Surface Soil Samples - Site 2
Record of Decision - Site 2
Allegany Ballistics Laboratory
Rocket Center, West Virginia

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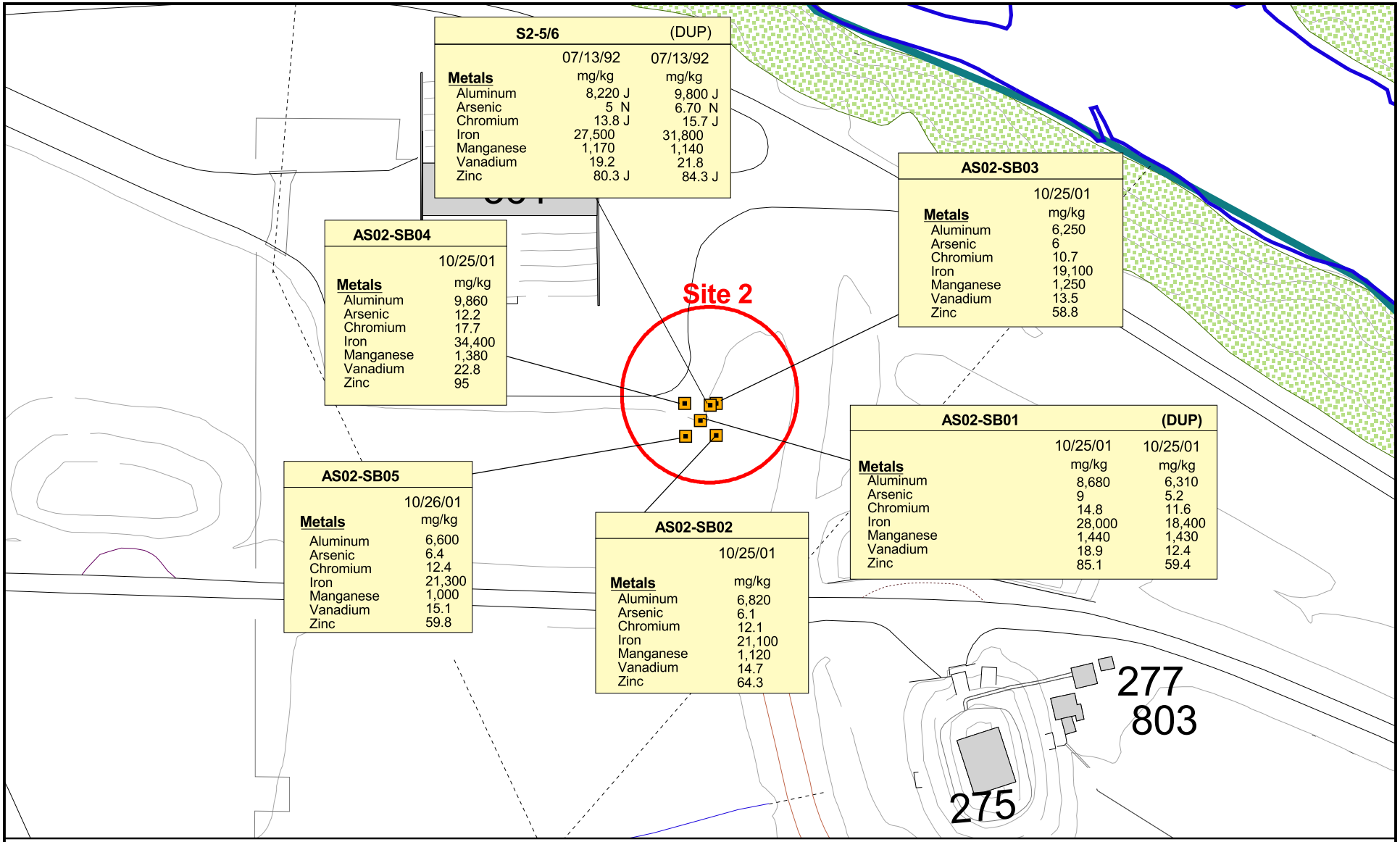

LEGEND

- Subsurface Soil Sample Location
- Site Boundary
- Buildings

Qualifiers:
U = Analyte Not Detected
J = Estimated
N = Tentative identification, consider present
NA = Not Analyzed
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram

N

40 0 40 80 Feet

Figure 2-6
COPCs Detected in Subsurface Soil Samples - Site 2
Record of Decision - Site 2
Allegany Ballistics Laboratory
Rocket Center, West Virginia

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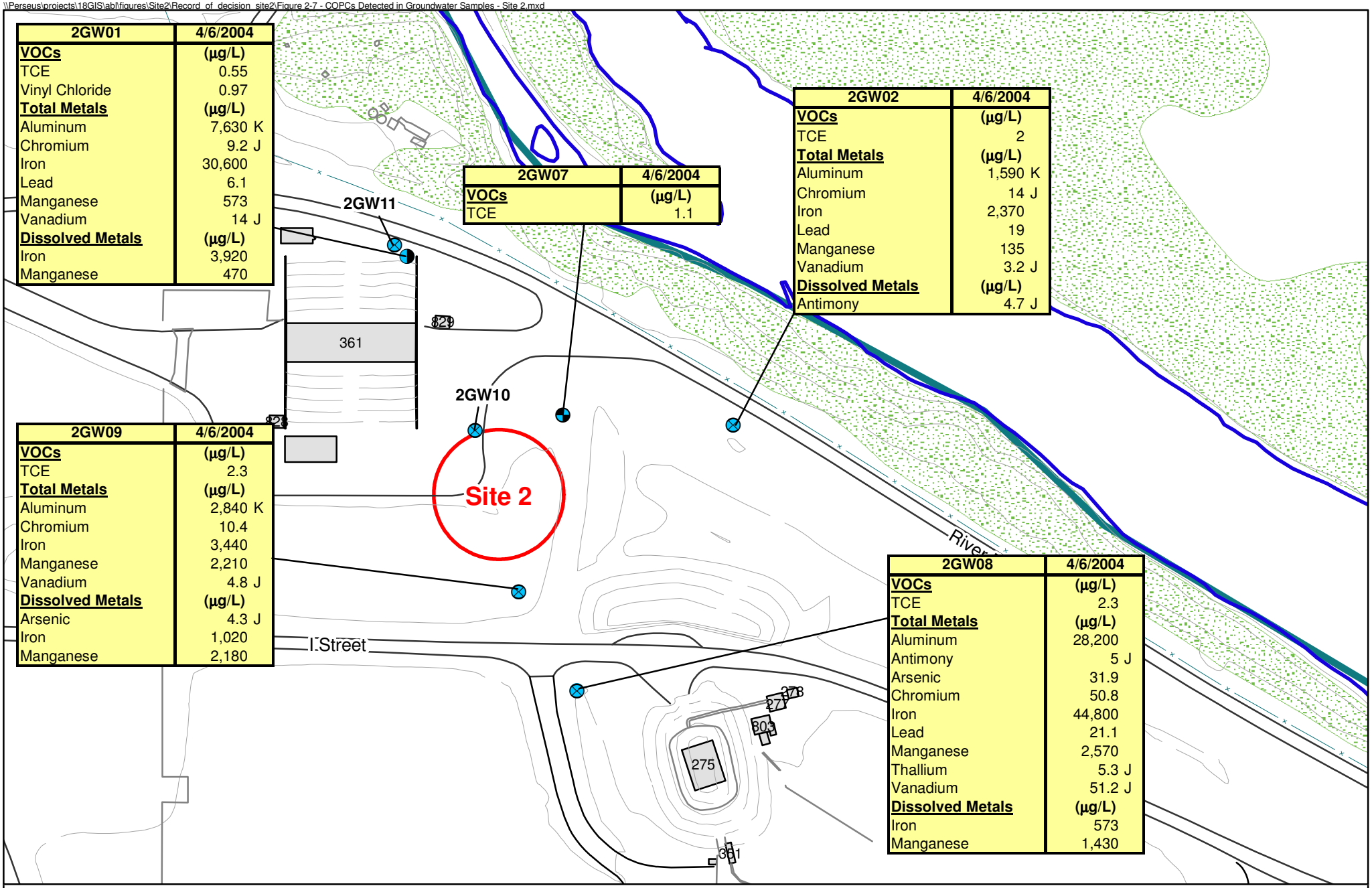
\\Perseus\projects\18GIS\abl\figures\Site2\Record_of_decision_site2\Figure 2-7 - COPCs Detected in Groundwater Samples - Site 2.mxd



2GW01	4/6/2004
VOCs	**(µg/L)**
TCE	0.55
Vinyl Chloride	0.97
Total Metals	**(µg/L)**
Aluminum	7,630 K
Chromium	9.2 J
Iron	30,600
Lead	6.1
Manganese	573
Vanadium	14 J
Dissolved Metals	**(µg/L)**
Iron	3,920
Manganese	470

2GW07	4/6/2004
VOCs	**(µg/L)**
TCE	1.1

2GW02	4/6/2004
VOCs	**(µg/L)**
TCE	2
Total Metals	**(µg/L)**
Aluminum	1,590 K
Chromium	14 J
Iron	2,370
Lead	19
Manganese	135
Vanadium	3.2 J
Dissolved Metals	**(µg/L)**
Antimony	4.7 J

2GW09	4/6/2004
VOCs	**(µg/L)**
TCE	2.3
Total Metals	**(µg/L)**
Aluminum	2,840 K
Chromium	10.4
Iron	3,440
Manganese	2,210
Vanadium	4.8 J
Dissolved Metals	**(µg/L)**
Arsenic	4.3 J
Iron	1,020
Manganese	2,180

2GW08	4/6/2004
VOCs	**(µg/L)**
TCE	2.3
Total Metals	**(µg/L)**
Aluminum	28,200
Antimony	5 J
Arsenic	31.9
Chromium	50.8
Iron	44,800
Lead	21.1
Manganese	2,570
Thallium	5.3 J
Vanadium	51.2 J
Dissolved Metals	**(µg/L)**
Iron	573
Manganese	1,430

Legend

- Alluvial Monitoring Well
- Bedrock Monitoring Well
- Hybrid Monitoring Well
- Buildings
- Site 2

N

0 50 100 200 Feet

Figure 2-7
COPCs Detected in Groundwater Samples - Site 2
Record of Decision - Site 2
Allegany Ballistics Laboratory
Rocket Center, West Virginia

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SECTION 3

Responsiveness Summary

The selected alternative for Site 2 is no further action. With the exception of the public meeting, no written or verbal comments, concerns, or questions were received by the Navy, USEPA, or the WVDEP during the public comment period, which was held from July 24, 2006 through August 22, 2006. A public meeting was held on August 8, 2006 to present the PRAP for Site 2 and address any questions or comments on the PRAP and on the documents in the information repositories. Four questions were asked and responded to during the meeting. The limited number of comments and the content of those comments suggests that the public does not disapprove of the selected alternative. The transcript of the public meeting is part of the Administrative Record for this site and a copy is included as Appendix A of this ROD.

3.1 Stakeholder Issues and Lead Agency Responses

A summary of the questions addressed during the public meeting is presented below. Clarifying annotations to the questions and responses are shown in parentheses.

1. How is unacceptable risk defined? Are there concentrations used by USEPA that define what is acceptable or unacceptable?

Navy Response: An overview of the HHRA process and how risk is defined was presented to the public during the public meeting. A HHRA estimates "baseline risk" which is an estimate of the likelihood of health problems occurring if no cleanup action were taken. The Navy undertakes a multi-step process to estimate baseline risk, which involves an analysis of the contamination; this is followed by consideration of the different ways that people might be exposed to contaminants identified at the site, the concentrations that people might be exposed to and the potential frequency and duration.

Using this information the Navy calculates an RME scenario, which portrays the highest level of human exposure reasonably expected to occur. The RME scenario is generally used to make human-health risk based decisions. However, the CTE scenario, which is based on the "average" exposure that may be expected to occur at the site and is probably more representative of the actual risk; this is often also presented to show the potential range of risks and assist with risk management decisions.

The Navy uses the exposure information with the information on the toxicity of each contaminant to assess potential health risks; and considers two types of risk: cancer and non-cancer. The likelihood of any kind of cancer resulting from a site is expressed as an upper-bound probability, for example 1 in 10,000 chance (which is expressed as a $1x10^{-4}$ risk), which means out of every 10,000 people that could be exposed , one extra cancer could occur than would otherwise be normally expected. For non-cancer health effects, the Navy calculates a HI, in which there is a threshold level of 1, below which non-cancer health effects are no longer predicted.

The results of these steps are combined and evaluated by the Navy, and the cancer and non-cancer risks generated are evaluated to determine whether site risks are great enough to cause health problems. Although exceeding the upper-bound probability of $1x10^{-4}$ for cancer risks and/or the threshold value of 1 for non-cancer health effects generally determines that an unacceptable risk exists, a risk management decision can be made based on site specific reasons that levels below these could also be considered as unacceptable risks.

2. What is the major chemical issue? (Which chemicals were risks calculated for?)

Navy Response: As part of the HHRA in which an analysis of the types of contamination found at the site is conducted, chemicals that have been detected are selected as COPCs if they exceed specific evaluation criteria determined by USEPA. These chemicals are then evaluated further in the human health risk assessment.

At Site 2, four metals (aluminum, iron, manganese, and vanadium) for surface soil and five metals (aluminum, arsenic, iron, manganese, and vanadium) for subsurface soil were selected as COPCs. No organic chemicals were identified as COPCs for the surface or subsurface soil.

3. Groundwater is not used as a potable source (at Site 2). What about future use of potable water at Site 2? Is the groundwater being treated at the treatment plant?

Navy Response: Groundwater at Site 2 is not currently used as a potable water source, and it is not anticipated that groundwater at Site 2 would be used as a potable supply in the future. An investigation of the groundwater at Site 2 was conducted and it was determined that residual concentrations of contaminants existed, and that they may be attributable to past releases from Site 10.

Furthermore, contaminated groundwater at Site 10 is currently being captured through a series of groundwater extraction wells and is subsequently treated at the groundwater treatment plant. Although groundwater at Site 2 is not being treated at the treatment plant, it was determined as the suspected source of the contamination is being treated, that residual contamination in groundwater at Site 2 would decline naturally over time.

The Navy further evaluated the human health risk of the groundwater at Site 2 and the evaluation is presented in Section 2.7.1, Summary of Human Health Risk Assessment.

4. Although sites are evaluated on an individual basis, in the future if the Navy wanted to close the facility and deed the property over to the community or sell it, would a complete assessment of the facility as a whole be conducted?

Navy Response: A comprehensive assessment of the entire facility would be conducted if the Navy wanted to dispose of the property in the future. Under the Base Realignment and Closure ("BRAC") process, the Department of Defense ("DoD") must be able to document that a property made available is environmentally suitable for transfer by deed under Section 120 (h) of CERCLA. DoD must first prepare an Environmental Baseline Survey ("EBS"), which is based on all existing environmental information relating to the storage, release, treatment, or disposal of hazardous substances or petroleum products on the property. In certain cases additional data or sampling may be required.

In addition to presenting this information, the EBS would contain an analysis of the intended property use and would include an evaluation of the environmental suitability of the property for transfer by deed for the intended purpose, including the rationale for the determination. The EBS would also contain a listing of the specific recommended restrictions on use of the property, if any, to protect human health and the environment or the environmental restoration process.

Following a review by the regulatory agencies and the public, DoD would sign a Finding of Suitability to Transfer ("FOST") and would proceed to convey the property by deed. Conditions would be included in the transfer deed to ensure that environmental investigation and remedial and oversight activities would not be disrupted, and could include limited use of the property.

SECTION 4

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Appendix A
Public Meeting Transcript

PUBLIC MEETING

PROPOSED REMEDIAL ACTION PLAN

FOR ABL SITES 2, 3 & 10

* * * * * *

TRANSCRIPT OF PROCEEDINGS

LaVale Public Library

815 National Highway

LaVale, Maryland 21502

August 8, 2006

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Word for Word Reporting
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301-387-8414

PRESENT:

John Aubert
Joshua Barber
Tom Bass
Cassandra Brown
Mark Callaghan
Ray Downs
Ginny Farris
Bill Hudson
Betsy Kagey
Steve Martin
John Waugaman

P R O C E E D I N G S

(The meeting was called to order at 6:30 p.m. by Steve Martin.)

MR. MARTIN: I'm Steve Martin. I work for the Navy, and I represent the lead agency on this clean-up at Allegany Ballistics Lab. I work for the Naval Facilities Engineering Command Mid-Atlantic, and we're here today to solicit public input on some proposed remedial action plans for three of our sites at Allegany Ballistics Lab.

I'd like to briefly introduce the team members who meet regularly for this work. Let's see, I'll begin with -- we have Tom Bass, in uniform back there, works for the State of West Virginia, Department of Environmental Protection, and we have a regulator from Philadelphia, Josh Barger, Environmental Protection Agency out of Region 3, and then we have John Aubert, who represents NAFSEA directly. His office is in California. He's sitting in the back next to Tom.

And then the private company that does most of our work is represented well tonight. We have Mark Callaghan, who will be going through the three

presentations on the proposed remedial action plans. Mark's from the Herndon Office of CH2M Hill, as well as Cassandra Brown in the front and Ginny Farris in the back. And then we also have another guest from EPA, Bill Hudson, as well, so without any further comments, let's begin, Mark.

MR. CALLAGHAN: Okay. Can everybody hear me okay from here? Normally, I'd stand up, but I'm going to remain here.

So this is the Proposed Remedial Action Plan for Site 2 at Allegany Ballistics. Presentation topic tonight, begin the PRAP for Site 2 Soil and Groundwater; its presentation followed by a Q&A session.

Why do we hold a public meeting? Well, it's part of the Navy's community relations program, and we do that to keep the public informed, provide an open forum for the public to ask questions, and it's also a component of CERCLA, which is the Comprehensive Environmental Response, Compensation and Liability Act, which the majority of the work of ABL is being conducted under.

Objectives of the Proposed Remedial Action

Plan: We document past investigations, we summarize the site risk, we describe the preferred alternative, and this is the opportunity for the public to provide input on that preferred alternative.

Here's ABL itself. You can see the big site here, this over here. You can see my pointer -- my little laser pointer ran out, so this is Site 2 itself, right over here.

MS. KAGEY: Would you walk through the site for the one person here who hasn't been here before?

MR. CALLAGHAN: Yeah, this is Plant 1. This is the developed portion of Plant 1 at least. In order, the sites here, Site 1, Site 2, Site 3, Site 4B, Site 10, Site 11, and Site 12 over here. Site 5 is closed landfill vats. That's actually further south in the undeveloped portion of Plant 1.

Okay, Site 2 history. Site 2 was a burning ground utilized from '42 to '49. Aerial photos indicated that there was a burn path approximately 45 feet in diameter southeast of the current location of Building 361, and it's suspected that the burning of energetic material at this pad caused a release of

contaminants into the environment. But currently the site is -- there's nothing there. It's an open field. It's periodically mowed. There's no visual evidence of contamination or the former burn pad.

A close-up of the site here you can see. That's it itself, right next to the river here, and this is the Building 361 that I was just alluding to.

I'm just going to whip through these site investigations here. We did an Initial Assessment Study from 1983 through 1987, which concluded that Site 2 did not pose an immediate threat; however a Confirmation Study was conducted to assess potential contamination.

In 1992, the facility was listed on the National Priorities List, sometimes known as Superfund, and a remedial investigation was conducted that showed low concentrations of volatile organic compounds and metals in the soil and groundwater.

This continued on in 1994 with a Phase II RI, which indicated that the burn pad was not likely a source of VOC groundwater contamination.

And then in 2001, we did some supplemental

sampling, where we collected additional soil data for risk assessments.

Continuing on in the investigations, the Risk Assessment Report, like I said, we collected soil samples during numerous investigations. Groundwater data from monitoring wells was also evaluated to determinate an extent.

An investigation of groundwater beneath Site 2 determined that low levels of contamination were attributable to releases from Site 10, which is upgradient of Site 2, and there's currently a remediation action to contain and treat the groundwater at Site 10.

A Human Health Risk Assessment was conducted. We evaluated potential receptors, current and future industrial workers, current and future adolescent trespassers and visitors to the site, future adult and child residents of the site -- it's a very conservative scenario -- and also, future construction workers.

This all indicated that there was no unacceptable risk under current or future conditions and that the results of the Human Health Risk

Assessment indicate that no remedial action is necessary at Site 2 to be protective of human health.

We also wanted to look after the bugs and bunnies, so we did an Ecological Risk Assessment. We evaluated upper-trophic-level receptors, via food web exposures, and lower-trophic-level receptors. Upper-trophic-level are generally things like badgers, shrews, eagles, that sort of stuff. Lower-trophic, we're talking more about benthic organisms, worms, things like that. And that indicated that there was no unacceptable risk to any ecological receptors.

So again, the results of the ERA indicate no remedial action is necessary to be protective of ecological health.

So, some of the important questions here, is there a risk to current or future ABL tenants? There is no -- there's no risk at all. No unacceptable risk from exposure to soil. Groundwater's not a potable source, so nobody's going to be drinking that. That's not anticipated to be so in the future, and as I alluded to before, groundwater contamination levels at Site 2 are very low, and there's a groundwater

containment and treatment remedy in place at Site 10. So any residual contaminant levels at Site 2 are anticipated to decline naturally over time.

So is action needed for soil and groundwater? The short answer is no. No further action is needed for Site 2 soil. The soil at the site does not pose a risk to humans, plants, animals, under any scenario, and the soil does not represent a continuing source of groundwater contamination.

Again, no further action is needed for Site 2 groundwater. It's not a potable source, and as I again allude to, residual contamination is attributed to Site 10.

So what is being proposed here tonight? No further action is the preferred alternative for soil and groundwater at Site 2. Navy, USEPA, and West Virginia Department of Environmental Protection have determined that there is no unacceptable risk at the site under any current or future land use exposure scenarios.

Community participation, why are we holding this public meeting here? It's part of the Preferred

Alternative Selection Process. That's why we do this. Your comments tonight and agency responses will be included in the record of decision, which is the document that is going to follow this Proposed Remedial Action Plan.

So, the Public Participation Process, July 24th through August 22nd, that's the public comment period. Obviously, we're holding a public meeting tonight. Any additional information that you need is in the Proposed Remedial Action Plan. There are copies of it over on the table there if you'd like to grab a copy, and also, there are historical documents available at the administrative record repositories.

MS. KAGEY: Which is here.

MR. CALLAGHAN: Which is here.

MS. KAGEY: At the LaVale Public Library.

MR. CALLAGHAN: Okay, so public comments? Verbal comments will be accepted tonight. Written comments must be postmarked by August 22nd, and they can be either mailed by U.S. postal mail to Robin Willis at the address you see there, or they can be e-mailed to Robin Willis at that address right there.

Also in the presentation and in the public -- in the Proposed Remedial Action Plan, you will see the same contact information.

Administrative record repositories, right here, LaVale Public Library, and also in the Fort Ashby Public Library in Fort Ashby, West Virginia.

Does anybody have --

MR. MARTIN: Can you go back to that one slide and just -- if anyone wanted to find that, what do we ask for?

MR. CALLAGHAN: If anybody wanted to find historical records, there are CDs in both libraries with the Site 2, 3, and 10 Risk Assessment Report and a copy of the Proposed Remedial Plans on those CDs. If anybody wanted additional information as to old historical documents or documents related to other sites, point of contact would be Ms. Robin Willis at NAVFAC. You could call her; you could send her an e-mail; you could send her a letter and request documents.

Does anybody have any questions or comments on the Proposed Remedial Action Plan for Site 2?

MR. DOWNS: Just a question as to the -- for information. Unacceptable risk, that is based on EPA levels?

MR. CALLAGHAN: Yes, that is -- unacceptable, did you say, what is no unacceptable risk?

MR. DOWNS: No, no, I mean what -- how is unacceptable risk defined? I mean, I assume that there are concentrations in EPA that define what is acceptable or unacceptable.

MR. CALLAGHAN: Yes. There are a few ways we do that Human Health Risk Assessment.

One is we look at reasonable maximum exposure, and that is where we take the soil and groundwater data together and, to not go into too much detail, we crunch the numbers with EPA guidance, using established toxicological data and cancer slope factors, etc. and we put all that data into a model which assumes the worst possible scenario, which is that's the reasonable maximum exposure. That would say that you are exposed to the worst or the highest level of contamination at a certain site. Everywhere you go, you're exposed to that, and if you exceed a hazard index of unity, which

is one for non-carcinogens, that would be an unacceptable risk. Or if you have --

MR. DOWNS: So this is a rolled up number?

MR. CALLAGHAN: It is a rolled up number. Basically there are -- what you do is you calculate hazard cautions for each individual chemical.

MR. DOWNS: What is the major chemical issue?

MR. CALLAGHAN: At this site would be low-level VOCs and metals, so low levels of TCE, low levels of arsenic, low levels of manganese, magnesium, iron, that sort of stuff -- common compounds that you find in soil, generally.

So all of those chemicals will be calculated together to create hazard cautions, and they will be rolled up into -- well, with the exception of carcinogens. Carcinogens use something called incremental lifetime cancer risk, where you look at the cancer slopes, and that comes out as a value of one times ten to the minus something, and an unacceptable risk would be something that exceeds one times ten to the minus four. And at this site, we have no unacceptable risks.

There is another phase that you can go on to

after that, which is a much more realistic phase. It's called a Central Tendency Exposure Scenario, and that is where you take the average across the site, because you assume that somebody who would be exposed to contaminant level at the site would not be exposed to the maximum contamination level everywhere they go. They're not going to permanently stay at that spot, so you take an average of all the contamination of the site, as though somebody was walking across the site, and you do exactly the same calculations, and that would be a more reasonable scenario. That's how it's done.

MR. DOWNS: Makes sense.

MR. CALLAGHAN: Any more questions?

Okay, with that, I'll conclude the Proposed Remedial Action Plan presentation for Site 2, and we will move on to the Proposed Remedial Action Plan presentation for Site 3.

Again, the Proposed Remedial Action Plan presentation for Site 3 soil and groundwater, the presentation is a very similar format, followed by a Q&A session.

I've already gone over this, so I won't delay too long on it, but it's part of the Navy community relations program, and it's a component of CERCLA. That's why we hold these public meetings.

The objectives of the PRAP, as you can see, past investigations, summarizing risk, describing the preferred alternative, and again, this opportunity to provide input.

Again the map of the facility, Site 3 is located over here, as you can see, in the southwest quadrant of the developed portion of the plant -- sorry, southeast quadrant of the developed portion of the Plant 1.

Let me run through the history. It was a burning grounds utilized from 1950 to '58. When it was active, it was 40 feet by 200 feet, and approximately 200 pounds of waste were burned daily at the site. Again, this burning of waste was suspected to have caused a release of contaminants.

Currently, the site consists of Building 362, which was constructed to cover most of the former burning ground, and there's grassy area around the

outside of the building, and there's no visual evidence of the burn pad.

This is a close-up of Site 3. As you can see, this building was constructed over a majority of it. The rest of this is low grassy area.

Previous investigations, the IAS and the CS from 1983 to 1987 concluded that it did not pose an immediate threat; however, a CS was conducted to assess contamination.

Again in 1992, the NPL listing for ABL and the RI, which recommended further investigation of Site 3 based upon detections of SVOCs, TCE, and several metals in soil and some low concentrations of VOCs in groundwater.

Phase II RI, 1994, supported the RI findings that low levels of VOCs in groundwater existed at Site 3. And again in 2001, additional soil data were required to adequately assess potential risks.

This was again all rolled up into the same Risk Assessment Report. The groundwater data from monitoring wells located around the site were used to evaluate human health as well, as well as the

supplemental soil sampling, and this report indicated no unacceptable human health or ecological risks.

Again, the same receptors as we've had previously in current and future industrial workers, adolescent trespassers, future adult and child residents, and construction workers. Looking at all these potential receptors indicated there was no unacceptable risk under current or future conditions, and the results of the HHRA indicated that no remedial action is necessary to be protective of human health.

Ecological Risk Assessment was also performed. Upper-trophic-level receptors and lower-trophic-level receptors were evaluated, and the report concluded that there was no unacceptable risk under current or future conditions and that no remedial action is necessary to be protective of ecological health.

So again, we throw out this question, is there a risk to current or future ABL tenants? And the answer is no, there is no risk, no unacceptable risk from exposure to soil, and there's no unacceptable risk for future potable groundwater use at Site 3.

Is there a risk to the surrounding community?

No, there's no risk to the surrounding community. There are no unacceptable risks for potable groundwater use at Site 3.

So do we need to do anything? Do we need to do anything further? No. No further action for Site 3 soil, as I've alluded to. The site does not pose a risk to humans, plants, animals under any land-use scenario, and it does not represent a source of groundwater contamination.

No further action for Site 3 groundwater, no unacceptable risk for potable groundwater use, and there are no off-site groundwater residential receptors that are downgradient of Site 3.

What is being proposed here tonight? Again, no further action is the preferred alternative for both soil and groundwater, and the Navy, the USEPA, and West Virginia Department of Environmental Protection have determined that the site does not pose an unacceptable risk to human health or the environment under current or future land use scenarios.

Community participation, again, is part of the preferred alternative selection, and any substantive

comments or responses, and they'll be included in the record of decision.

The public comment period is the same. The public meeting is obviously tonight. Again, additional information can be found in the Proposed Remedial Action Plan, and those documents are available at the administrative record repository. Public comments tonight or written and as to public contact, you can see that. The administrative record repositories remain the same, LaVale and Fort Ashby.

Does anybody have any questions or comments on Site 3? Betsy?

MS. KAGEY: On the Site 3, you talked about no remedial action for potable water. Did you do the same thing at Site 2? Was there a question of potable water at Site 2? I'm sorry --

MR. CALLAGHAN: It's not a problem. Let me refresh my memory.

MS. KAGEY: Somehow it went by me, and when you did it, it was like one of the last lines. Okay. Groundwater is not used as a potable source --

MR. CALLAGHAN: And is not anticipated to be

in the future.

MS. KAGEY: Okay, so there wasn't anything about future use of potable water at Site 2?

MR. CALLAGHAN: Right. Now the thing with Site 2 is that, as you can see on that third bullet there, there is groundwater contamination at Site 2.

MS. KAGEY: And it's being treated at the treatment plant?

MR. CALLAGHAN: Exactly.

MS. KAGEY: Okay.

MR. CALLAGHAN: It is not associated with Site 2 itself. The contamination under Site 2 is associated with contamination from Site 10, and that site itself has already gone through a proposed plan, record of decision, and there's a groundwater extraction treatment system in place.

MS. KAGEY: Okay.

MR. CALLAGHAN: So any residual contamination is being treated, and as we say here, any residual contamination of Site 2 is anticipated to decline naturally over time. So that's why we feel that, using the risk management's decision, no further action is

necessary because it will decline, and the source of contamination is actually being treated and captured.

MS. KAGEY: I have a question that's going to drive you nuts.

MR. CALLAGHAN: That's okay.

MS. KAGEY: I understand all the different sites, and I've been around this particular site for quite a while. Is there any future look at the entire site as one, when you're dealing with things like groundwater and potential -- I mean, I know there's a lot of treatment of groundwater. Site 1, I think it is --

MR. CALLAGHAN: You mean --

MS. KAGEY: I mean, but when you take a look at Site 2 and you see the proximity of the site, you know --

MR. CALLAGHAN: Right.

MS. KAGEY: I know there are sort of hotspots that came up when you started, when you've done all the testing, and I know there's been a lot of testing there, but is there any value, maybe, to look at the entire site as all -- I mean the entire area --

MR. CALLAGHAN: The entire facility?
MS. KAGEY: Facilities.
MR. CALLAGHAN: Okay.
MS. KAGEY: And looking and sort of doing risk assessment for the entire facility, based on the individual site?
MR. AUBERT: You've got two different owners there. Site -- Plant 1 is owned by the Navy.
MS. KAGEY: Uh-huh.
MR. AUBERT: Plant 2 is owned by ABL or ATK.
MS. KAGEY: Right.
MR. AUBERT: And, you know, in a scenario, they can look at the whole thing if they want to do that, but the clean-up of the sites are separate, and John's going to talk later on Plant 2. He has to have some time --
MS. KAGEY: But did you understand the question?
MR. AUBERT: What?
MS. KAGEY: Do you understand the question?
MR. AUBERT: Yeah, I understand the question. Is contaminant from Plant 2 coming into Plant 1 is what

your concern may be?

MS. KAGEY: No, no.

MR. CALLAGHAN: You're saying does anybody look, comprehensively, at the whole site to evaluate the risk.

MS. KAGEY: Right. Okay, if you were to sell the entire site, okay, for future use. I mean it's not going there at this point in time. Okay, the Navy owns all the land underneath all the buildings there?

MR. AUBERT: Yes.

MS. KAGEY: Okay, so the building that's owned by ABL or *(inaudible)* is a building; you own the property -- the Navy owns the property, the whole property underneath it. So future use, meaning if they close down the *(inaudible)* and everything closed and they went and the Navy wanted to deed the property over to the community or wanted to sell the property as a whole, at that point in time, would they do a complete assessment of this property?

MR. AUBERT: We wouldn't do Plant 2, but Plant 1 would have a -- you would have an assessment of the whole site of Plant 1 when they go to close it to make

sure that it's environmentally clean and safe to sell it, yes.

MS. KAGEY: Right.

MR. CALLAGHAN: I believe there's a document, and I may be misspeaking here, but I think it's called FAST, which is something like Finding of Suitability for Transfer.

MS. KAGEY: Finding of suitability, right, okay, which deals with the entire site then.

MR. CALLAGHAN: Which deals with the entire site. Now, all these individual sites are cleaned up and evaluated separately.

MS. KAGEY: And all of this information would go into that --

MR. CALLAGHAN: Exactly.

MS. KAGEY: -- if you got to the point where there's going to be a transfer.

MR. BARBER: Well, specifically, the FAST could cover the entire site that's -- it's a DOD specific document when it was created, but it can also be used for parcels. It was created for the BRAC Program, which was for all the bases which are closed

or realigned.

There's another document that can also be created or referenced, and it's called an ECOP, which is Environment Condition of Property, which is another type of assessment, which basically is used to summarize all the other information that has been pulled together on the site as well. It's something else that can be used.

MS. KAGEY: Okay.

MR. BARBER: So it can be done.

MR. CALLAGHAN: Does that answer your question?

MS. FARRIS: There was a facility-wide baseline survey done there, I think.

MR. CALLAGHAN: Are there any more questions on the Proposed Remedial Action Plan for Site 3? No?

That closes the presentation for Site 3, and we'll move on to the Proposed Remedial Action Plan for Site 10.

Presentation topic, the PRAP for Site 10 soil, followed by a question and answer session.

Why do we hold a public meeting? I've

explained before, part of the Navy's community relations program, and it's a component of CERCLA. We want to keep the public informed and provide that open forum to ask questions and submit comments.

Again the PRAP, we document past investigations, summarize site risks, and we describe the preferred alternative, and we solicit your comments.

Site 10 is actually over here. Here is Site 10 itself. Moving on to the history of Site 10. It's located in the south-central portion of Plant 1. A production well was located at Site 10. That was used in the past to supply potable, boiler, and firefighting water to the plant. And that Production Well A was discontinued in 1980 because TCE was detected in the well.

Historical soil and groundwater data were collected, and they indicated that the source of contamination was the Building 157 still, which was a TCE still at the building.

Here we go. Here is Site 10. So this was the approximate location of the former TCE still, a much

larger groundwater plume, which is currently being treated under the *(inaudible)*. And as I said, this PRAP is purely for Site 10 soil only. A remedy is already in place for the groundwater at Site 10.

Previous investigations, confirmation study from '84 through '87 was used to confirm or refute suspected contamination, and this recommended further investigation of Site 10 to identify the source of TCA and TCA -- sorry, TCE and TCA contamination in groundwater.

A remedial investigation and NPL listing, obviously in 1992, and this RI identified the former TCE still at Building 157 as the source of contamination in that PWA well, and it recommended further investigation of Site 10.

So in 1994, the Navy did a Phase II remedial investigation, and that determined contaminated groundwater posed a potential risk to future groundwater users.

And then in 2000, we did a supplemental sampling. We wanted to collect additional soil data for risk assessments, to actually evaluate the soil.

Site 10, as I mentioned, it was separated in two operable units. One operable unit 5 was to address the groundwater at Site 10, and operable unit 6 was to address the soil at Site 10. Tonight, obviously, we're talking about operable unit 6.

So, basically, subsequent to this Phase II RI, we collected additional soil data in the vicinity of the former TCE still, and we used this to assess potential risks, both human health and ecological. And this investigation of soil determined that there was no unacceptable risk to human health or ecological risks and that no action was necessary for Site 10 soil.

Just to go over Site 10 groundwater again, operable unit 5, the groundwater is being addressed in the record of decision that was signed in 2005 and groundwater treatment is in place, which involves site-wide groundwater extraction and treatment, and that water is then pumped to the treatment plant, which is located nearby Site 1.

So a Human Health Risk Assessment was conducted for the soil, evaluated current and future industrial workers, adolescent trespassers and

visitors, future adult and child residents who may live on the site, hypothetical scenario were very conservative, but we want to do that, out of future construction by the scenario. It indicated there was no unacceptable risk under current or future conditions and that no remedial action is necessary to be protective of human health.

Ecological risk assessment was also done, again the same species, upper-trophic-level and lower-trophic-level. This indicated that there was no unacceptable risk, and again, the results of the ERA, no remedial action is necessary to be protective of ecological health.

So you're asking, is there a risk for Site 10 soils? No, there's not. There's no unacceptable risk from exposure to soil to current or future ABL tenants, and there's no unacceptable risk from exposures to soil for future potential residents who may reside at the site.

Do we need to do anything further for the soil? No, we don't. As we allude to, it does not present an unacceptable risk to humans, plants, animals

under any land-use scenario and the soil does not represent a source of groundwater contamination.

What are we proposing? The Navy, USEPA and West Virginia Department of Environmental Protection have determined the site does not pose an unacceptable risk, and that is under -- for human health or the environment under current or future land-use scenarios.

Community participation, again I've gone over this slide. It's part of the preferred alternative selection, and your comments are solicited here and will be incorporated in the record of decision.

The public comment period is the same for this document, July 24th through August 22nd. The public meeting is obviously tonight. Additional information on this site for Site 10 soil can be found in the PRAP, which is -- there are copies of them over there on the table, and also these documents are available at the admin. record repositories in LaVale and Fort Ashby.

Public comments tonight at the conclusion of this presentation, written by August 22nd, and either mailed to Robin Willis at the address there or e-mailed to Robin Willis, or you can even call Robin Willis and

tell her your comments over the phone. The admin. record repositories, this library here, the Fort Ashby library in West Virginia.

Does anybody have any questions or comments on the PRAP for Site 10?

MR. DOWNS: Can you say a little bit more about the groundwater? I mean the soil is fine, but the groundwater is being remediated. Can you say exactly what that means and what's the basis for saying, we're done; we're not going to take any more water or soil? I mean, what's the end point and how's that attributed --

MR. CALLAGHAN: Well --

MR. DOWN: -- to sites when that's done?

MR. CALLAGHAN: Okay. So let me start first with the soil. The soil has been investigated. It's not a source of contamination to groundwater, so there's no residual contamination there that's contributed to groundwater, and there's no risk from exposure to soil at all.

Now there is groundwater contamination at Site 10. There is TCE, generally a much larger plume

of about 5 micrograms per liter. Let me go to a -- let me go to a slide so I can allude to this a little bit better.

Okay, here is Site 10 itself. This area here, that is -- that is the extent of groundwater contamination at 5 parts per billion.

MR. DOWNS: That circle is the plume?

MR. CALLAGHAN: That circle there is basically the extent of the plume. Five parts per billion is the drinking water standard for EPA, TCEs allowable in public drinking water. So that's the extent of the plume at Site 10.

There are -- it's a much higher level of contamination actually around Building 157 South. I believe the levels are 100, 150, something like that, so one order of magnitude larger than the drinking water standards actually surrounding the immediate building.

MR. DOWNS: So at the boundary of the plume, you said it was five?

MR. CALLAGHAN: The boundary of the plume is five, yes. Now what is being done there, obviously

investigations were conducted at the site. Risk assessments were conducted, very similar to this. A proposed plan was held. A pubic meeting was held. Comments were solicitated. The preferred alternative was determined to be continuation of the groundwater extraction system.

The Navy actually put in an interim groundwater extraction system. I'm not sure of the actual date. I think it might have been 1997 they actually started a pump and treat system to contain the groundwater and to extract it, and then they move it over to -- there is a treatment plant over here that actually has an air stripper in it, and it strips all the volatile organic compounds out of it.

MR. DOWNS: So that's everything, TCE and any other --

MR. CALLAGHAN: TCE is the --

MR. DOWNS: I assume that TCE is the only thing that's really exceeding --

MR. CALLAGHAN: There might be some associated donor compounds like vinyl chloride in very small levels, but that air stripper basically gets rid of all

the VOC contamination. So that's how it's treated, so that plume itself is being maintained. The groundwater's been extracted, and it's being treated at another site. So that is what is being done at Site 10.

MS. KAGEY: What you have to understand is that there is a solvent disposal pit at Site -- is it Site 1, where this treatment plant was built because the soil was so contaminated that it continues to this day to essentially contaminate the groundwater, and so the pump and treat station was built primarily for that, and the levels were huge. I mean, there were hundreds of thousands --

MR. DOWNS: At Site 1?

MS. KAGEY: At Site 1 and that was one of the --

MR. AUBERT: It's all along the river back here. See all the little dots?

MS. KAGEY: Site 1 is along the river. Do you see all those little dots? I'm assuming those are your sample wells?

MR. AUBERT: Those are all wells.

MR. CALLAGHAN: These are -- this line of wells here is the line of extraction wells.

MR. KAGEY: And what they did was, early on, was they took samples all over the site to essentially determine the groundwater flow, but also to determine contaminants before it hit the river or went under the river and, essentially, that treatment plant was built for that site because Site 10 looks like a, you know, a kid compared to what was going on with --

MR. DOWNS: Okay, just trying to get educated here.

MS. KAGEY: That's essentially the background of why --

MR. DOWNS: And I'm number two public; I can say that.

MS. KAGEY: -- well, why they have a treatment plant right there.

MR. CALLAGHAN: Okay. Are there any more comments on the Proposed Remedial Action Plan for Site 10 Soil?

MS. KAGEY: Can you just remind me what was in the soil? Are we looking at metals or organics or

both?

MR. CALLAGHAN: To be honest, I don't know.

MS. KAGEY: Okay.

MR. AUBERT: In the soil for risk assessment?

MS. KAGEY: Both?

MR. AUBERT: Both.

MR. CALLAGHAN: But obviously, I'll go back and --

MS. KAGEY: I don't remember either, but that's okay. I can look it up.

MR. CALLAGHAN: I will, I will --

MR. MARTIN: Well, look at the -- jump up to the use of the site, because it's -- if you look at the use or the source of the contamination, it'll suggest what we -- what was in there.

MS. KAGEY: It was a still, wasn't it?

MR. MARTIN: Yeah, it was a still, right.

MR. AUBERT: Cleaned up the solvents that were contaminated from, I think, greasing and things like that.

MS. KAGEY: Right.

MR. AUBERT: They reused the solid again.

MR. MARTIN: So they can still obviously have TCE and any other contaminants that were in the contaminated solvent.

MR. BARBER: I think low levels of TCE and probably metals were in the soil.

MS. KAGEY: But at one point we had talked about background, trying to figure out the background of the soil. I think that was another, earlier meeting we had.

MR. CALLAGHAN: But honestly, I will go back and I will look at that in more detail, and I'll present that in writing.

Are there any additional comments on the PRAP for Site 10? Okay, with that, I will close the presentation for Site 10 soil.

MR. MARTIN: Now, I have a comment. The RAB was scheduled -- was it 7:30?

MR. CALLAGHAN: It was presented in the public notice to immediately follow the proposed remedial --

MR. MARTIN: To immediately follow then?

MR. CALLAGHAN: To immediately following this meeting.

MR. MARTIN: Okay. Why don't we take just a few-minute break and reconvene on this table after we click the microphones; right? We don't -- we're not --

MR. CALLAGHAN: No, we don't need a court reporter for the RAP.

MR. MARTIN: Right.

MS. KAGEY: The RAP is Restoration Advisory Board. It's anybody who wants to come and essentially talk about what's going on next.

(Whereupon the meeting was concluded at 7:10 p.m.)

* * * * *

STATE OF MARYLAND, SS:

COUNTY OF GARRETT, to-wit:

I, Christina D. Pratt, a Notary Public of the State of Maryland, do hereby certify that I recorded the Proceedings of the Public Meeting held August 8, 2006, and this transcript is a true record of those proceedings.

Given under my hand and Notarial Seal this _____ day of August, 2006.

_____
Christina D. Pratt

My commission expires:
November 1, 2008

Appendix B
Public Comment Period and Public Meeting Notice

Missing: Woman didn't have

PUBLIC COMMENT PERIOD and PUBLIC MEETING
August 8, 2006
Allegany Ballistics Laboratory, Rocket Center, West Virginia

The Department of the Navy invites the public to comment on the Proposed Plans for Site 2, Site 3 and Site 10 Soil at Allegany Ballistics Laboratory (ABL). These documents were prepared as part of the Navy's Installation Restoration Program at ABL, in accordance with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

PUBLIC MEETING

The Navy will hold a public meeting to provide information, answer questions, and receive comments on the Proposed Plans for Site 2, Site 3 and Site 10 Soil.

WHEN: Tuesday August 08, 2006 from 6:30 pm until 8:00 pm

WHERE: La Vale Public Library, 815 National Highway, La Vale, MD, 21502.

For more information, or if you need special assistance to attend the meeting, please contact Ms. Robin Willis, NAVFAC Mid-Atlantic, at the address below.

Immediately following this meeting, the **Restoration Advisory Board (RAB)** will hold its regular meeting. The public is invited to stay for the RAB meeting. The RAB is looking for new members: people who would be interested in learning more about the Installation Restoration Program at ABL and providing feedback to the Navy. The RAB meets twice a year.

For more information, please visit our website http://public.lantops-ir.org/sites/public/ABL.

PUBLIC COMMENT PERIOD

The Proposed Plans describe the background and the Navy's reasons selecting the preferred action for each site. The public is encouraged to review and comment on the Proposed Plans. A final decision will be made after public comments are received. The preferred remedy may be modified, or another remedy may be selected, after public comments are considered.

Data and risk assessments, presented in a 2005 Final Risk Assessment Report, concluded that no further action is necessary to protect human health and the environment at Site 2, Site 3 and for soils at Site 10. Therefore, "No Further Action" is the Navy's preferred action at these sites.

The Proposed Plans for Site 2, Site 3 and Site 10 Soil, the 2005 Final Risk Assessment Report, as well as other documents about these sites, are available for public review at:

Fort Ashby Public Library
P.O. Box 74 Lincoln Street
Fort Ashby, WV 26719
Phone: 304-298-4493

La Vale Public Library
815 National Highway
La Vale, MD 21502
Phone: 301-729-0855

Public comments will be accepted from July 24, 2006, to August 22, 2006. Please send your written comments (postmarked by August 22, 2006) to:

NAVFAC Mid-Atlantic
9742 Maryland Ave.
Norfolk, Virginia 23511-3095
Attention: Public Affairs Officer (Ms. Robin Willis)
Phone: (757) 445-8732 ext. 3096

r. Philip Resnick, who ıated Yates about three ıs after the June 2001 rnings, said she knew ıctions were illegal but 't know they were ıg because she was try- to save the children going to hell.

f she did not intervene take their lives while were still innocent, would end up in hell," aid, testifying as a ıse rebuttal witness. ;. Yates knew what she doing was right for her ren."

tes, 42, is being retried ıse an appeals court urned her 2002 capital er conviction on the mine whether she should be released — although jurors are not allowed to know that.

Her attorneys say she suffered from severe postpartum psychosis and meets Texas' definition of insanity: that a severe mental illness prevents someone who is committing a crime from knowing it is wrong.

Again on Wednesday, jurors saw a 14-minute videotape of Resnick's interview with Yates in jail on July 14, 2001. She answered questions about the drownings after listing her children's names and ages: Noah, 7; John, 5; Paul, 3; Luke, 2; and Mary, 6 months.

When Resnick asked whether she loved them, she responded, "Yes. Not in the right way, though."

Resnick, a psychiatry professor at Case Western Reserve University in Cleveland, began testifying after the state rested its case Tuesday.

Under cross-examination, Resnick acknowledged that Yates' question during an interview with a jail psychiatrist the day after the drownings, "Are they in heaven?" could indicate doubts about what she had done. But Resnick said he thought she was questioning whether the children had arrived in heaven yet.

U.S. Supreme Court considered appeals. dismissed those claims.

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