SPRING VALLEY FORMERLY USED DEFENSE SITE PROJECT
RAB Meeting

November 12, 2013
7:00 – 8:30 p.m.

UNDERCROFT MEETING ROOM
ST. DAVID'S EPISCOPAL CHURCH
5150 MACOMB ST. NW, WASHINGTON, DC

Agenda

7:00 p.m. **I.** **Administrative Items**

Co-Chair Updates
- Introductions, Announcements

Task Group Updates

7:10 p.m. **II.** **USACE Program Updates**

Funding
Glenbrook Road
Groundwater Study: 2013 Sampling Results

7:40 p.m. **III.** **Community Items**

Johns Hopkins University Follow-On Health Study and Survey

8:15 p.m. **IV.** **Open Discussion & Future RAB Agenda Development**

Upcoming Meeting Topics:
- (Suggestions?)
- Report on Pre-2005 Human Health Risk Assessment Review (ERT)
- Community Relations Plan Update
- 4825 Glenbrook Road Health Consultation Update (ATSDR)

*Next meeting: January 14, 2014

8:20 p.m. **V.** **Public Comments**

8:30 p.m. **VI.** **Adjourn**

Note: The RAB meets every odd month.

Spring Valley

Formerly Used Defense Site

Restoration Advisory Board Meeting

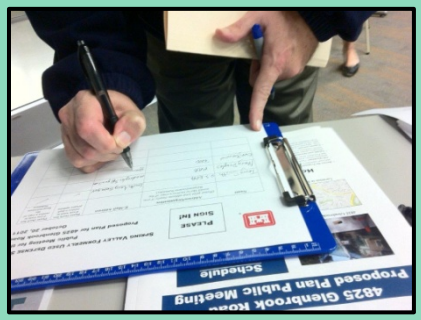
November 12, 2013

"The USACE Mission in Spring Valley is to identify, investigate and remove or remediate threats to human health, safety or to the environment resulting from past Department of Defense activities in the area."

US Army Corps of Engineers

BUILDING STRONG®

Agenda Review



- **Co-Chair Updates**
  - Introductions, Announcements
- **USACE Updates**
  - Funding
  - Glenbrook Road
  - Groundwater: April 2013 Sampling Results
- **Community Items**
  - JHU Follow-On Health Study and Survey
- **Open Discussion & Agenda Development**
- **Public Comments**

Co-Chair Updates

Introductions

Co-Chair Updates

- **Announcements**
  - **Website Updates:**
    - Monthly Site-wide Project Update
    - Weekly 4825 Glenbrook Rd Project Updates with photos
    - August Partnering meeting minutes
    - September RAB meeting minutes
    - September 2013 Special Corps'pondent website edition
    - Updated groundwater results map

Co-Chair Updates

❖ Announcements

➢ * Information Repository Updates:

- Final Pre-2005 Human Health Risk Assessment Review
- Final Remedial Investigation Report of 4835 Glenbrook Road
- Final Risk Assessment of Public Safety Building American University
- Site Specific Investigation Report – American University Public Safety Building (Phase 1 and Phase 2 Investigations)
- Updated Binder: Corps'pondents 1998-Present

*** These documents are also available on the SharePoint site. The SharePoint site will be transferring to a new platform within the next month, and the new link will be emailed to everyone once it is established. The current SharePoint site will remain active in the interim.**

Task Group Updates

Spring Valley Schedule and Funding Summary

- **FY13 ($9.21M)**
  - ► **Military Munitions Response Program ($8.6 M)**
    - Site-Wide RI/FS Report
    - 4825 Glenbrook Road House Demolition
    - Complete Remedial Design at 4825 Glenbrook Road
    - Complete Remedial Action at 4825 Glenbrook Road
    - Stakeholder Outreach
    - Site Security
  - ► **Hazardous Toxic Waste ($0.58 M)**
    - Site-Wide RI/FS Report
    - Groundwater Investigation
    - Area of Interest Sampling (1 residential property)
    - Landscape Reimbursement
  - ► **Potentially Responsible Party ($0.02 M)**
    - Conduct PRP Investigation

Spring Valley Schedule and Funding Summary

- **FY14 ($3.97M)**
  - **Military Munitions Response Program**
    - Site-Wide RI/FS Report and Proposed Plan
    - Complete Remedial Action at 4825 Glenbrook Road
    - Remedial Action Closeout Report for 4825 Glenbrook Road
    - Residential Anomaly Investigation (1 residential property planned)
    - Landscape Reimbursement
    - Stakeholder Outreach
    - Site Security
  - **Hazardous Toxic Waste**
    - Site-Wide RI/FS Report and Proposed Plan
    - Groundwater Investigation
    - Arsenic Soil Removal (1 residential property planned)
    - Landscape Reimbursement
  - **Potentially Responsible Party**
    - Complete PRP Investigation

4825 Glenbrook Road

4825 Glenbrook Road

High Probability Operations

By mid-October, the crew completed the removal of the retaining wall between the driveway and the front yard to provide unobstructed access to the front yard area

In addition to excavation, crews continued to remove soil/debris from the site

To date, 20 roll-offs of soil and 6 roll-offs of rubble have been removed

Over the next several months, crews will continue to excavate the front yard area.

Excavation underway in the front yard area

Area where arsenic trichloride was found in 2010

Removal of the hardscape (i.e. retaining wall and stairs) in the front yard, as well as a small portion of the front basement wall


11/06/2013 16:09


11/06/2013 16:06


11/06/2013 16:12

4825 Glenbrook Road

High Probability Operations

Seven pounds of glassware have been removed to date.

All the glassware tested negative for chemical agent and there have been no air monitoring detections of chemicals during our work.

4825 Glenbrook Road

Schedule Update

- **Upcoming days of non-intrusive work:**
  - **November 12-13: Not intrusive after 12 PM (working1/2 day in the mornings)**
  - **November 27: Not intrusive after 12 PM (working1/2 day in the morning)**
  - **November 28-29 Thanksgiving break: No intrusive work**
  - **The site work will pause for the holiday season: December 20 - January 7: No intrusive work will be conducted until January 7**
- **The crews will start a work week schedule of 4 ten-hour days per week on November 18, and will continue through the holiday break.**

4825 Glenbrook Road

Schedule Update

✓ **December 2012 through May 2013**

Site Preparation/ Initial Low Probability Work

- **Test pits in backyard and re-locating utilities**
- **Install soldier piles to support embankments**

✓ **May 2013 through September 2013**

ECS Set Up, High Probability training, and Pre-Operational Exercises

→ **September 2013 through September 2014**

High Probability Excavation

October 2014 through November 2014

Final Low Probability Excavation

December 2014

Site Restoration

Potentially Responsible Party (PRP)
Investigation Underway

The U. S. Army Corps of Engineers continues with the investigation regarding the post-AUES development of certain properties, focusing on 4825 Glenbrook Rd., 4835 Glenbrook Rd., and the Public Safety Building at 4400 Massachusetts Avenue.

- The Corps is seeking information regarding the development of these properties, and encourages those who have information about this matter to contact the PRP investigation contractor:

  Watermark, Inc. **[Toll free number: (866) 383-7327].**

- **Jon Owens**, Assistant District Counsel for USACE Baltimore: (410) 962-3385

Groundwater

Groundwater

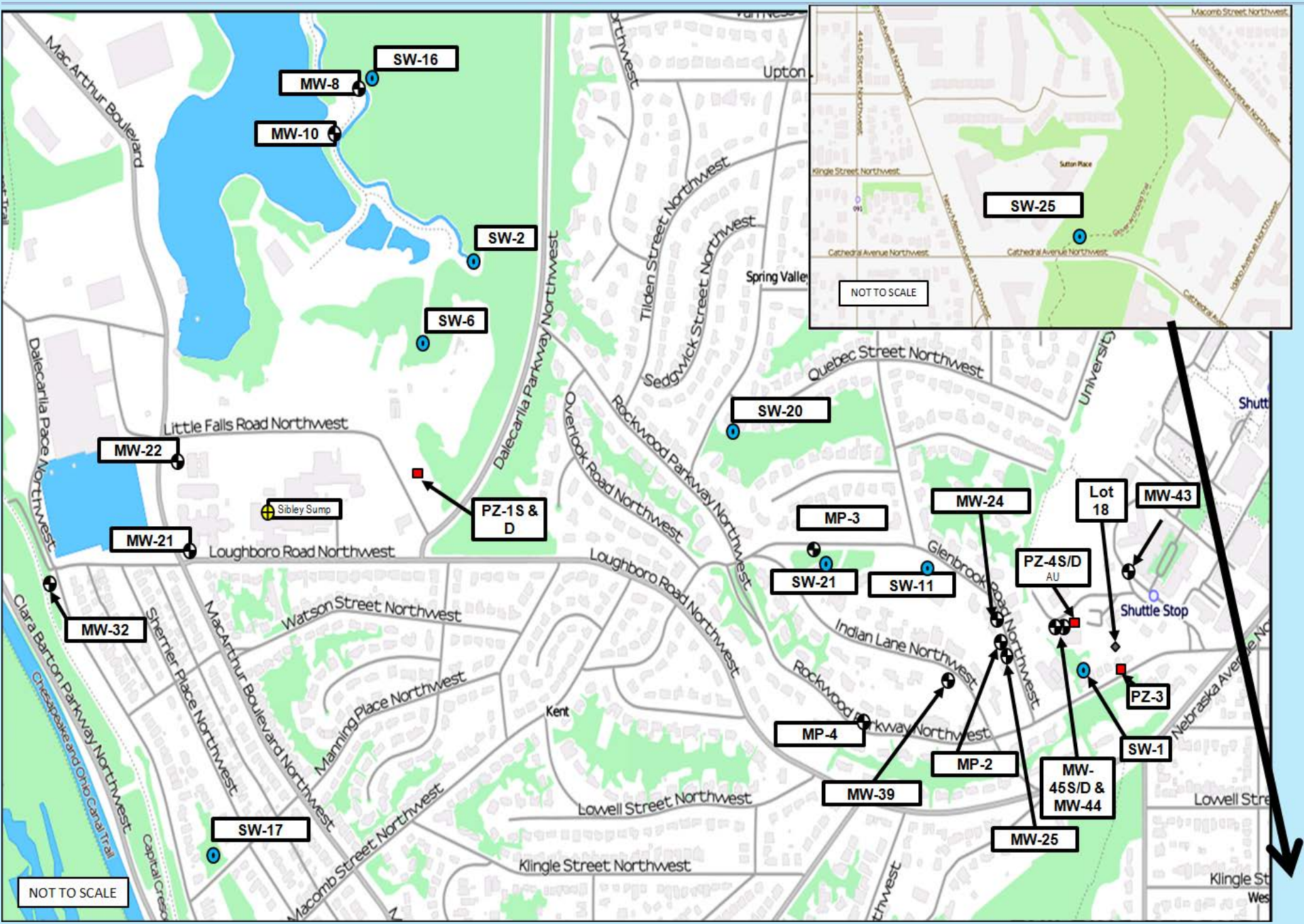
FY 2013 Groundwater Monitoring Scope

- In April/May 2013, crews sampled 20 existing monitoring wells and 10 surface water locations
- In July 2013, crews sampled two wells near Kreeger Hall on American University, and the Sibley Hospital Sump

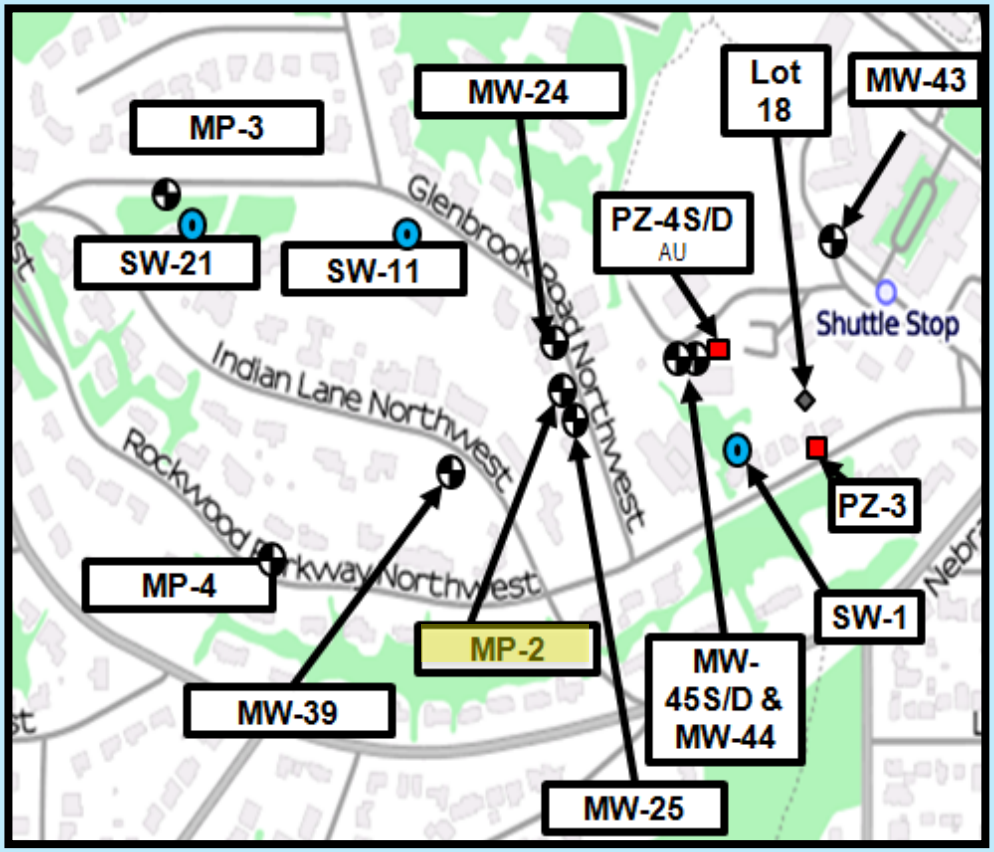
Groundwater

Summary of May 2013 Groundwater Sampling Results

- **Groundwater concentrations were mostly consistent with past sampling results**
  - **MP-2, MW-44, MW-45D, MW-45S, Sibley Sump, MW-22, and SW-25: Perchlorate concentrations above drinking water advisory level of 15 parts per billion (ppb)**
  - **MP2 and MW-24: Arsenic concentrations above drinking water standard of 10 ppb**
  - **Notable results at Kreeger Hall wells: Deeper wells had higher perchlorate concentrations than shallow wells**


SW-16
MW-8
MW-10
SW-2
SW-6
SW-20
MW-22
PZ-1S & D
Sibley Sump
MW-21
MW-32
SW-17
MP-3
SW-21
SW-11
MW-24
Lot 18
MW-43
PZ-4S/D
AU
Shuttle Stop
PZ-3
SW-1
MP-4
MP-2
MW-39
MW-45S/D & MW-44
MW-25
SW-25
NOT TO SCALE
NOT TO SCALE
Mac Arthur Boulevard
Dalecarlia Parkway Northwest
Tilden Street Northwest
Sedgwick Street Northwest
Quebec Street Northwest
Little Falls Road Northwest
Dalecarlia Pace Northwest
Overlook Road Northwest
Rockwood Parkway Northwest
Loughboro Road Northwest
Glenbrook Road Northwest
Indian Lane Northwest
Watson Street Northwest
Sherrier Place Northwest
MacArthur Boulevard Northwest
Manning Place Northwest
Clara Barton Parkway Northwest
Chesapeake and Ohio Canal Trail
Capital Crescent Trail
Lowell Street Northwest
Klingle Street Northwest
Macomb Street Northwest
Upton
Spring Valley
Kent
Shuttle
University
Nebraska Avenue
Lowell Stre
Klingle St
Wes
Macomb Street Northwest
Massachusetts Avenue Northwest
Klingle Street Northwest
Sutton Place
New Mexico Avenue Northwest
Cathedral Avenue Northwest
Cathedral Avenue Northwest
Idaho Avenue Northwest
Cathedral Ave

4800 Block of Glenbrook Road
MP2



Perchlorate And Arsenic Sampling Results

4800 Block of Glenbrook Rd

MP-2

MP2 – 1 Depth: 35-44 ft

Date	Arsenic	Perchlorate
04/30/13	7.6	5.82
07/20/12	8.4	6.3
05/03/12	7.4	4.5
03/30/12	7.5	5.8
3/30/2012 FD	7.6	7

MP2 – 2 Depth: 49-54 ft

Date	Arsenic	Perchlorate
05/13/13	12.6	9.74
07/20/12	16	12
05/03/12	15	12
03/30/12	15	12

MP2 – 3 Depth: 56-71 ft

Date	Arsenic	Perchlorate
05/13/13	11	2.57
07/20/12	18	18
05/03/12	18	17
03/30/12	15	17

MP2 – 4 Depth: 73-77 ft

Date	Arsenic	Perchlorate
05/13/13	9.2	1.57 J
07/20/12	12	25
05/03/12	15	25
03/30/12	12	21

MP2 – 5 Depth: 96-102 ft

Date	Arsenic	Perchlorate
05/13/13	9.1	2.67
07/20/12	14	26
7/20/12 FD	15	24
05/03/12	15	26
03/30/12	13	24

MP2 – 6 Depth: 105-114 ft

Date	Arsenic	Perchlorate
05/13/13	11	9.05
07/20/12	16	25
05/03/12	17	25
5/3/2012 FD	17	26
03/30/12	15	27

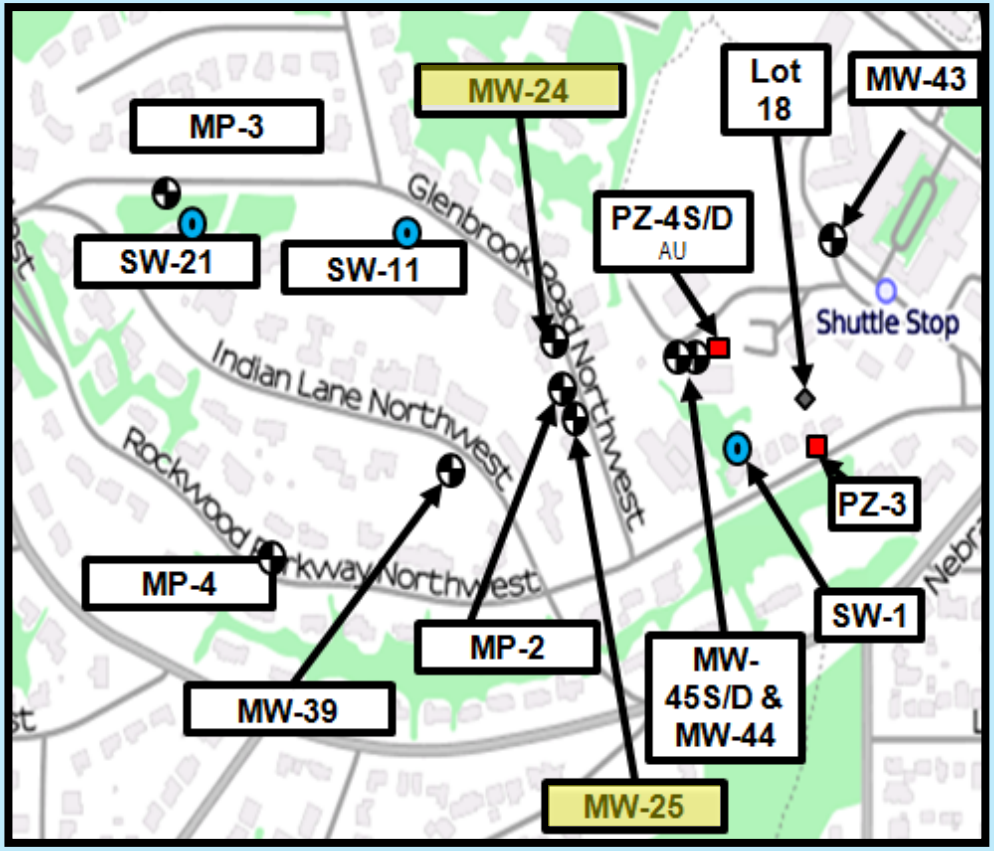
MP2 – 7 Depth: 123-129 ft

Date	Arsenic	Perchlorate
05/03/13	12	16.6
07/20/12	16	24
05/03/12	17	25
03/30/12	14	20

MP2 – 8 Depth: 145-160 ft

Date	Arsenic	Perchlorate
05/13/13	12.6	17.9
07/20/12	15	25
05/03/12	16	24
03/30/12	14	24

4800 Block of Glenbrook Road MW-24 and MW-25



MW-24		
Date	Arsenic	Perchlorate
04/30/13	16.8	ND
02/06/12	7.9	1.6 J
11/07/11	3.9	2.4
08/02/11	4.6	3
05/17/11	3.7	2.3
11/02/09	5 J	3.1
06/13/07	9.3 J	18.5
07/11/06	10.5	62.6
12/22/05	10.4	70

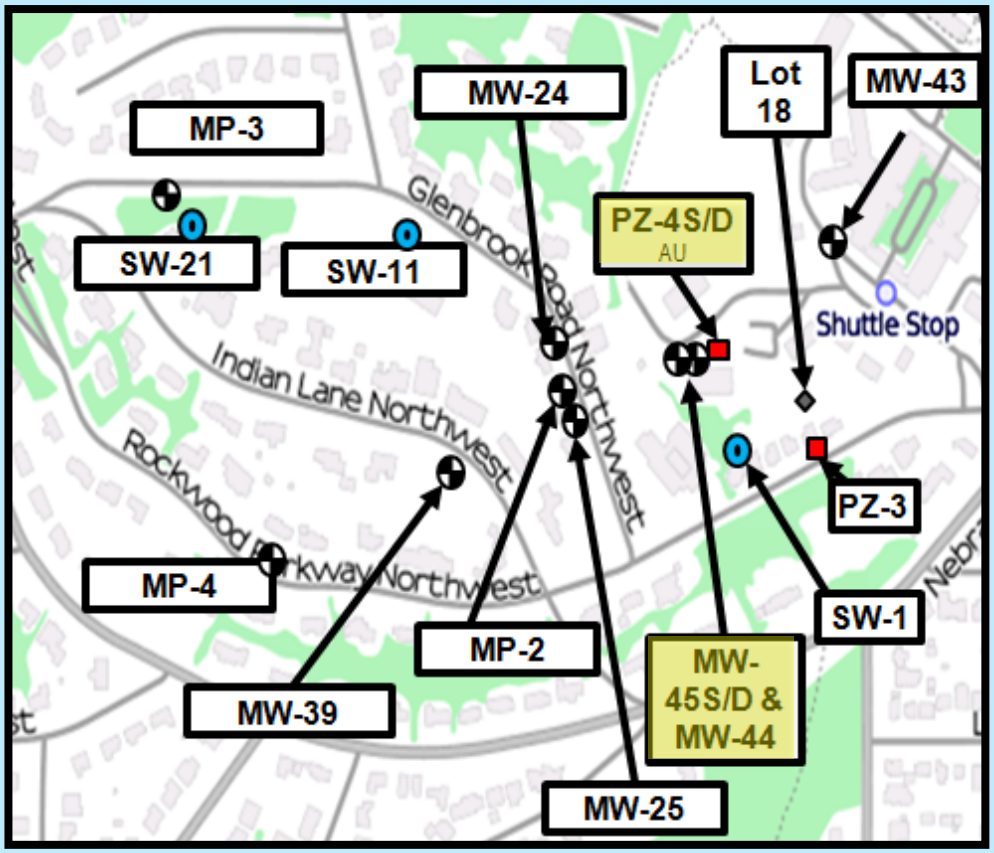
MW-25		
Date	Arsenic	Perchlorate
04/30/13	4.5	3.12
02/06/12	2.2 J	ND
11/07/11	3	2.5
08/02/11	3	2.8
05/10/11	3.1	2.9
11/03/09	8.4 J	25
11/03/09 FD	8.2 J	23
06/13/07	8.1 J	74.1
07/11/06	9.5 J	124
12/22/05	5 J	60

Perchlorate And Arsenic Sampling Results

4800 Block of Glenbrook Rd

MW-24 and MW-25

American University



Perchlorate And Arsenic Sampling Results

American University

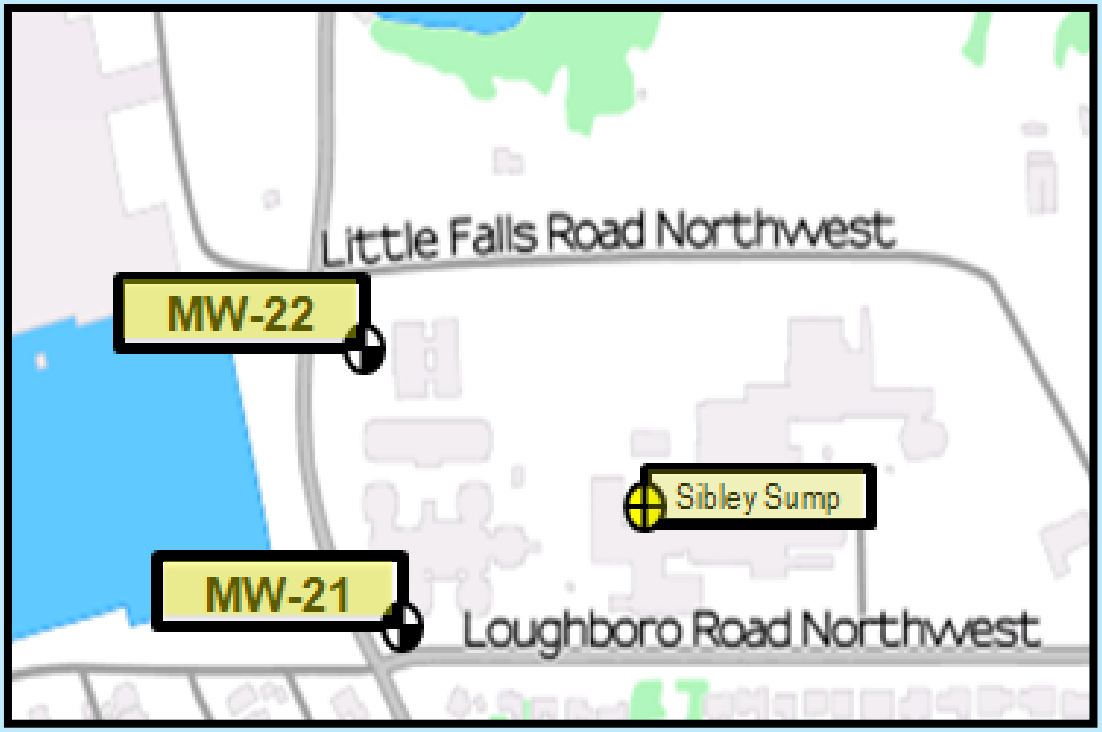
MW-45S Depth: 119-124 ft		
Date	Arsenic	Perchlorate
05/03/13	0.53 J	31.1
05/03/13 FD	0.32 J	30.9
09/06/12	ND	6

MW-45D Depth: 147-152 ft		
Date	Arsenic	Perchlorate
05/03/13	ND	54.3
05/03/13 FD	0.16 J	52.9
09/06/12	ND	3.6

PZ-4S Depth: 27-47 ft		
Date	Arsenic	Perchlorate
07/24/13	1.4	ND
07/24/13 FD	1.5	ND
05/03/13	0.22 J	5.57
02/08/12	2.4 J	28
11/09/11	ND	25
08/04/11	ND	19
07/28/11	NT	18
05/16/11	2.6 J	30
11/10/09	NT	50
06/13/07	ND	146
07/07/06	ND	71.8

MW-44 Depth: 80-95 ft		
Date	Arsenic	Perchlorate
04/29/13	0.15 J	40.5
09/06/12	ND	35
9/6/12 FD	ND	36
03/29/12	ND	34
03/29/12 FD	ND	33

Sibley Hospital



Perchlorate And Arsenic Sampling Results

Sibley Hospital

MW-21		
Date	Arsenic	Perchlorate
05/01/13	ND	4.53
02/07/12	ND	5.2
11/08/11	ND	4.7
09/01/11	ND	12
05/13/11	ND	8.3
11/11/09	NT	19
06/14/07	ND	43.8
07/10/06	ND	34.8
07/10/06 FD	NT	38.2
12/20/05	NT	48

SIBLEY SUMP		
Date	Arsenic	Perchlorate
07/24/13	3.8	14.5
04/30/13	0.73 J	18.5
02/08/12	5	24
11/09/11	ND	21
08/03/11	ND	16
05/13/11	ND	16
10/30/09	NT	15
06/06/07	ND	25.2
07/12/06	ND	18.5
08/09/05	NT	24

MW-22		
Date	Arsenic	Perchlorate
05/01/13	0.078 J	16.4
02/07/12	ND	13
11/08/11	ND	12
08/01/11	ND	13
05/11/11	ND	10
10/29/09	NT	13
06/11/07	ND	7.65
07/10/06	ND	5.48
08/10/05	ND	8.92

Glover-Archbold Park

Possible SW-24 Storm Drain		
Date	Arsenic	Perchlorate
08/03/11	No access to property	
05/13/11	No access to property	

SW-24		
Date	Arsenic	Perchlorate
08/03/11	No access to property	
05/13/11	No access to property	
11/10/09	NT	20
06/19/07	ND	3.66
01/26/07	ND	15.7

SW-25		
Date	Arsenic	Perchlorate
05/02/13	0.35 J	33.8
02/06/12	ND	11
11/07/11	ND	15
08/03/11	1 J	7
08/03/11 FD	1.3 J	6.9
05/13/11	ND	9.8

Perchlorate And Arsenic Sampling Results

Glover – Archbold Park

Groundwater

Fiscal Year 2014 Groundwater Study

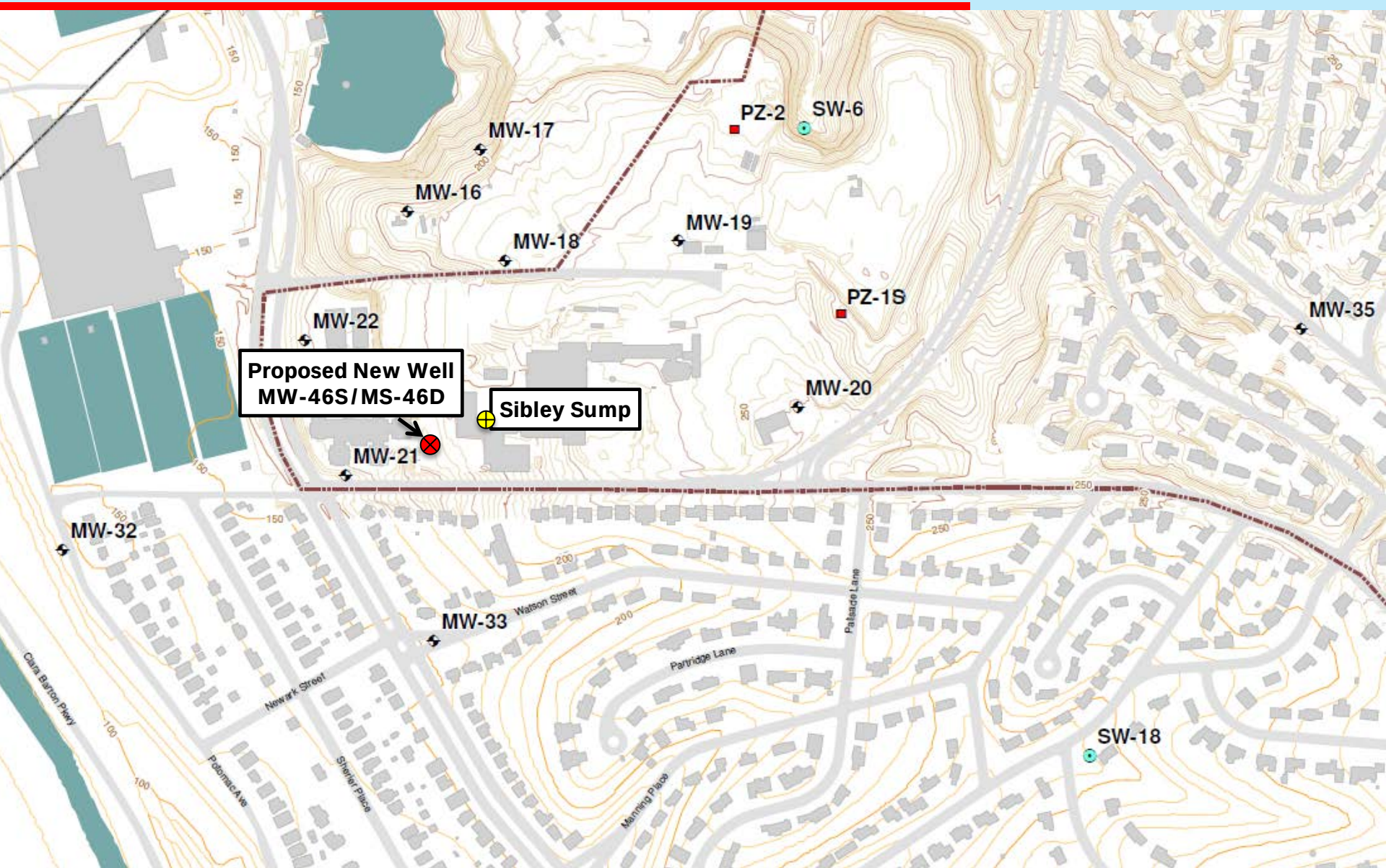
- **Continue monitoring of existing groundwater wells and surface water locations**
  - **Semi–annual sampling of 20 wells and 10 surface water locations in December 2013 and June 2014**
  - **Quarterly sampling at select wells in front of Kreeger Hall and Sibley Sump**

- **Install two new deep wells to further evaluate deeper groundwater chemistry and flow characteristics**
  - **MP-5 located in between two other deep wells**
  - **MW-46 S&D at Sibley Hospital near Sibley Sump**

- **Draft Remedial Investigation Report**

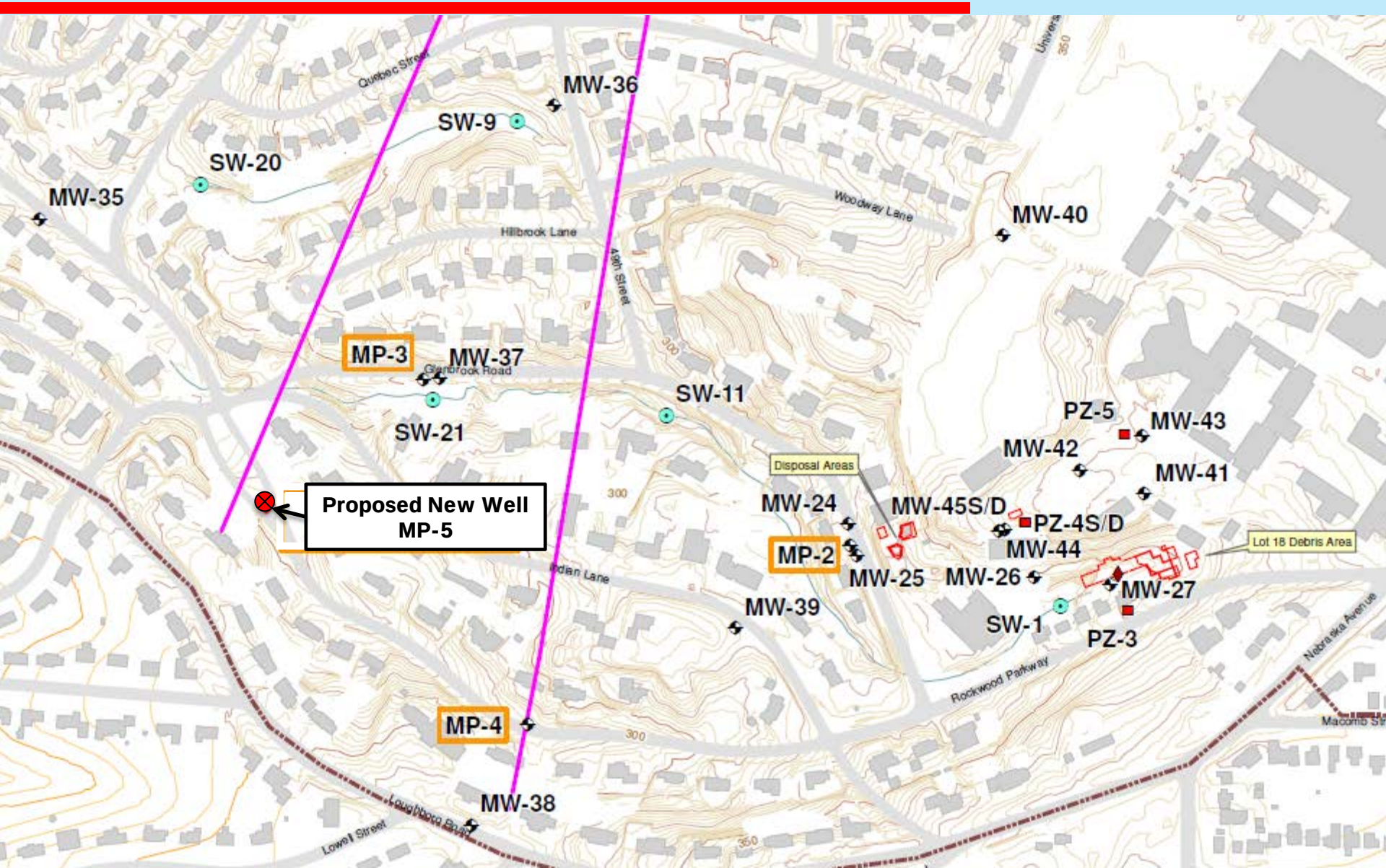
Groundwater

Planned New Well MW-46S&D (Sibley Hospital Area)



Groundwater

Planned New Well MP-5



Spring Valley FUDS
Restoration Advisory Board

Community Items:

JHU Follow-On Health Study and Survey

by Mary Fox, PhD

JOHNS HOPKINS
UNIVERSITY

JOHNS HOPKINS
BLOOMBERG
SCHOOL of PUBLIC HEALTH

Follow-up on Spring Valley Health Study

Briefing for RAB
November 12, 2013

Protecting Health, Saving Lives—*Millions at a Time*

Outline

- 2013 Follow-up Study Objectives
- Main Findings
  - Community Health Assessment
  - Community Survey
  - Environment Assessment
- Recommendations

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2013 Study Challenges and Strengths

- Challenges
  - Time lag approaching 100 years since AUES activity
  - Data limitations (health, exposure, environment)
  - Disease latency
  - High mobility of population particularly in 20016
- Strengths
  - Integrated assessment considering
    - Community input via survey
    - Health data
    - Environment data
  - Builds on health and environment findings from 2007 Scoping Study

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2013 Follow-up Study Components and Objectives

- Community Health Assessment
  - Update community mortality and selected cancer statistics
- Community Survey
  - Gather community input and concerns
- Environment Assessment
  - Develop community environmental portraits
  - Extend 2007 scoping study with assessment of site-related water sampling plans and data

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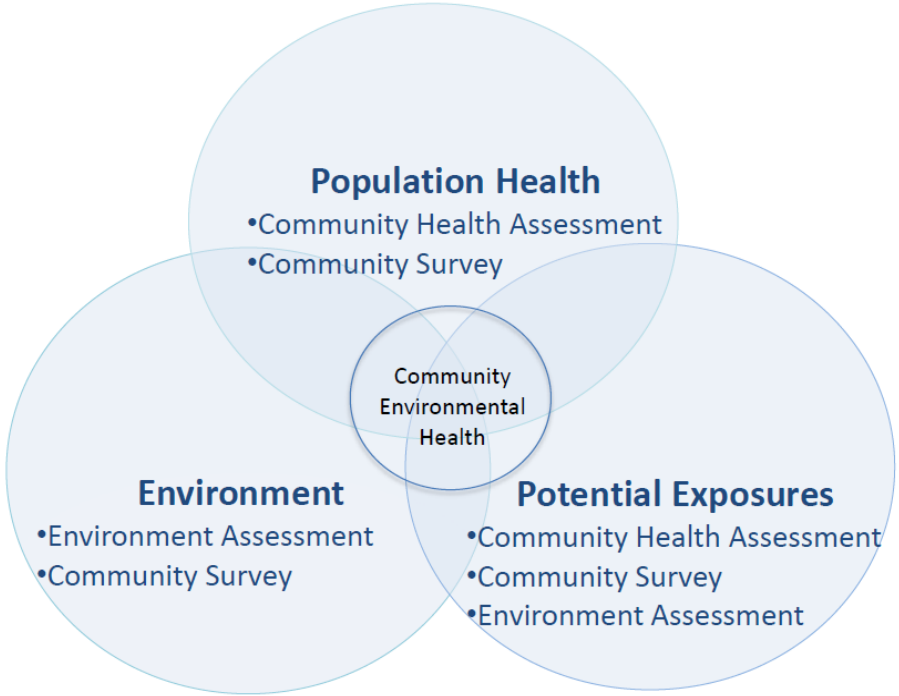
Approach and Framework

- Compare rates, trends and survey responses across geographic areas: Spring Valley Chevy Chase, DC, US
- Consider findings from community health, environment and survey components
- Offer public health recommendations, as indicated by findings



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Community Health Assessment Data and Results

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Community Health Assessment Components

- Population demographics, 2006-2010
  - US Census and American Community Survey
- Age-adjusted rates for Top 15 causes of mortality, 2004-2010
  - Data from DC Department of Health (DCDOH), Division of Vital Records
- Age-adjusted rates for selected cancer incidence and mortality, 2005-2009
  - Bladder, kidney & renal pelvis, liver & bile duct, lung & bronchus, leukemias, lymphomas, melanoma
  - Data from DCDOH, Vital Records and Cancer Control Registry

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Demographic comparisons, 2006-2010

Population Characteristics	Spring Valley	Chevy Chase	D.C.	U.S.
Total Population	24,762	16,766	617,996	311,591,917
% White	84.3	81.8	38.5	63.7
% Black	4.4	8.7	50.7	12.6
% Hispanic	7.4	6.5	9.1	16.3
% Other	4.0	3.1	1.7	7.4
Median Household Income	$139,724	$132,773	$ 58,526	$ 51,914
% College Degree	82	82	49	28

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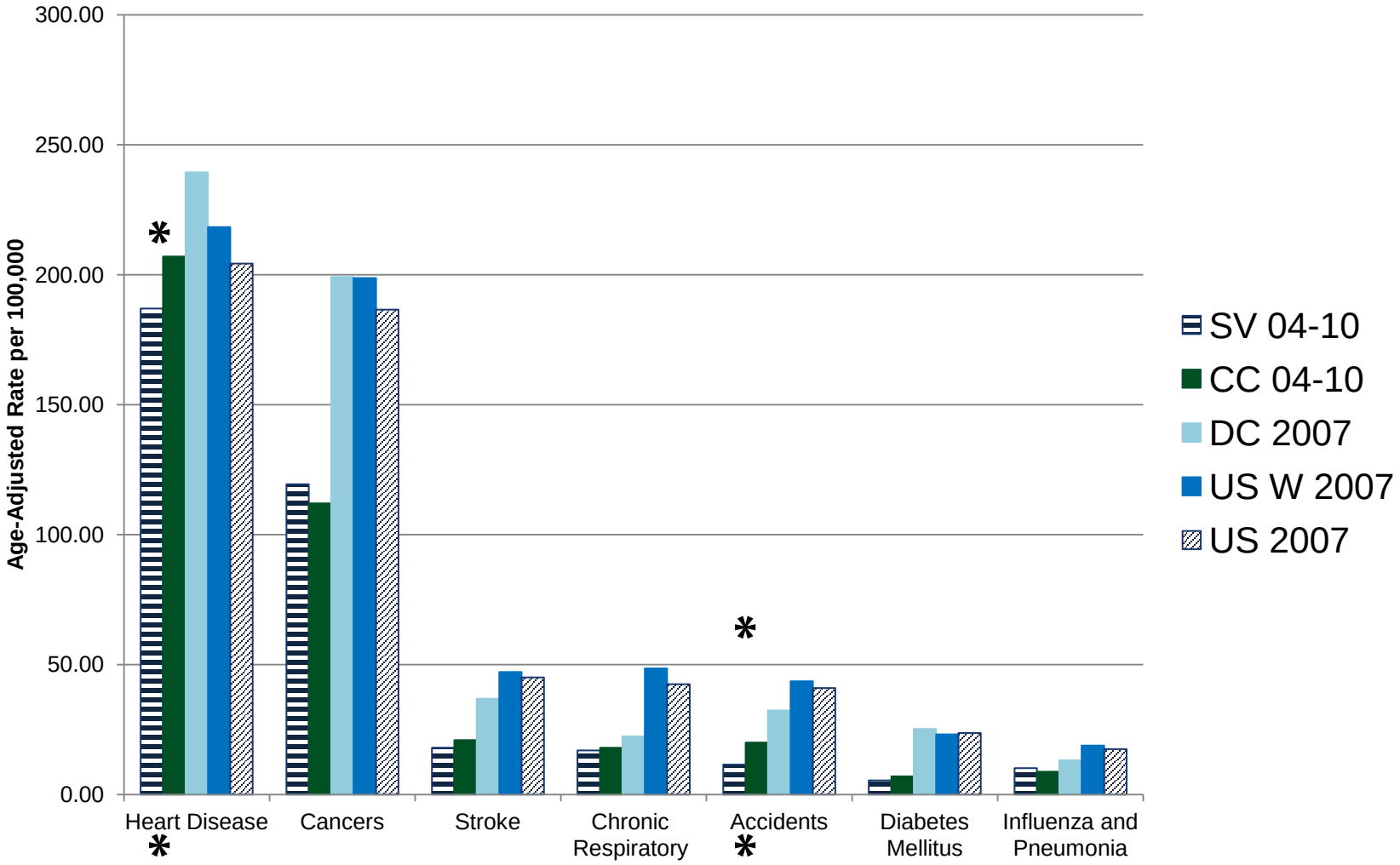
Top Causes of Death - #1 to 7, 2004-2010



*Statistical differences between Spring Valley and Chevy Chase areas

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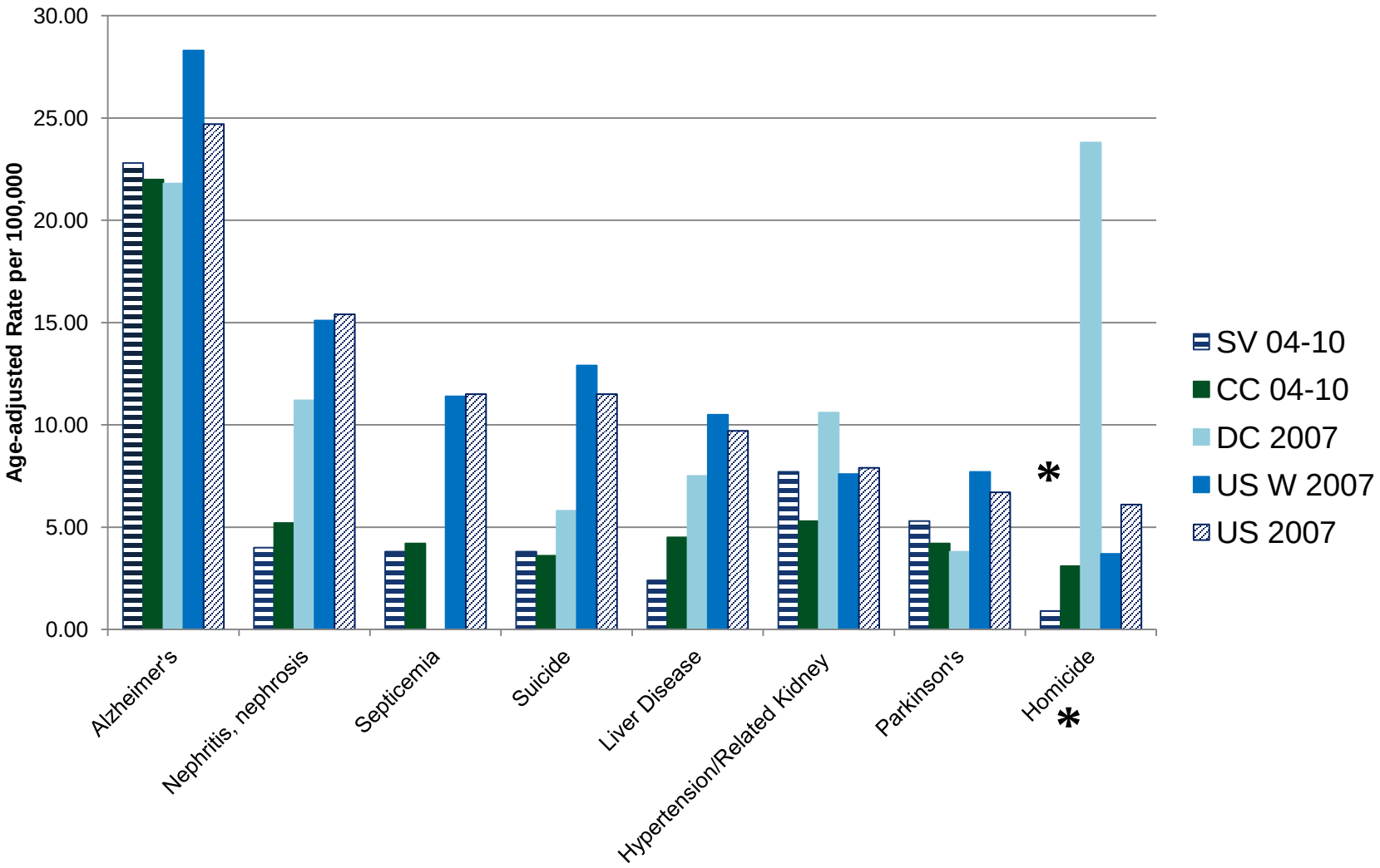
Top Causes of Death - #8 to 15, 2004-2010



*Statistical difference between Spring Valley and Chevy Chase areas

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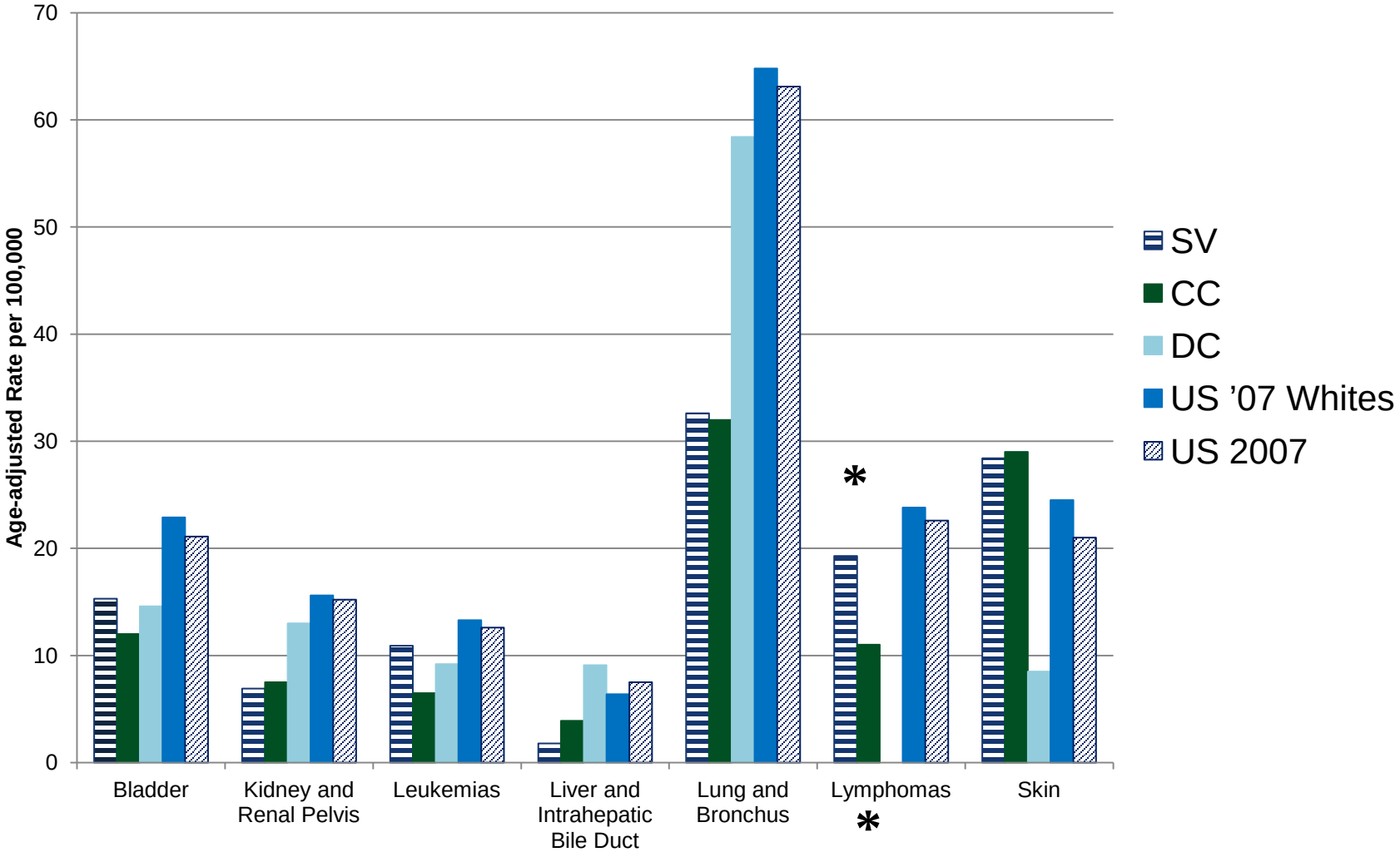
Selected cancers – Incidence, 2005-09



*Statistical difference between Spring Valley and Chevy Chase areas

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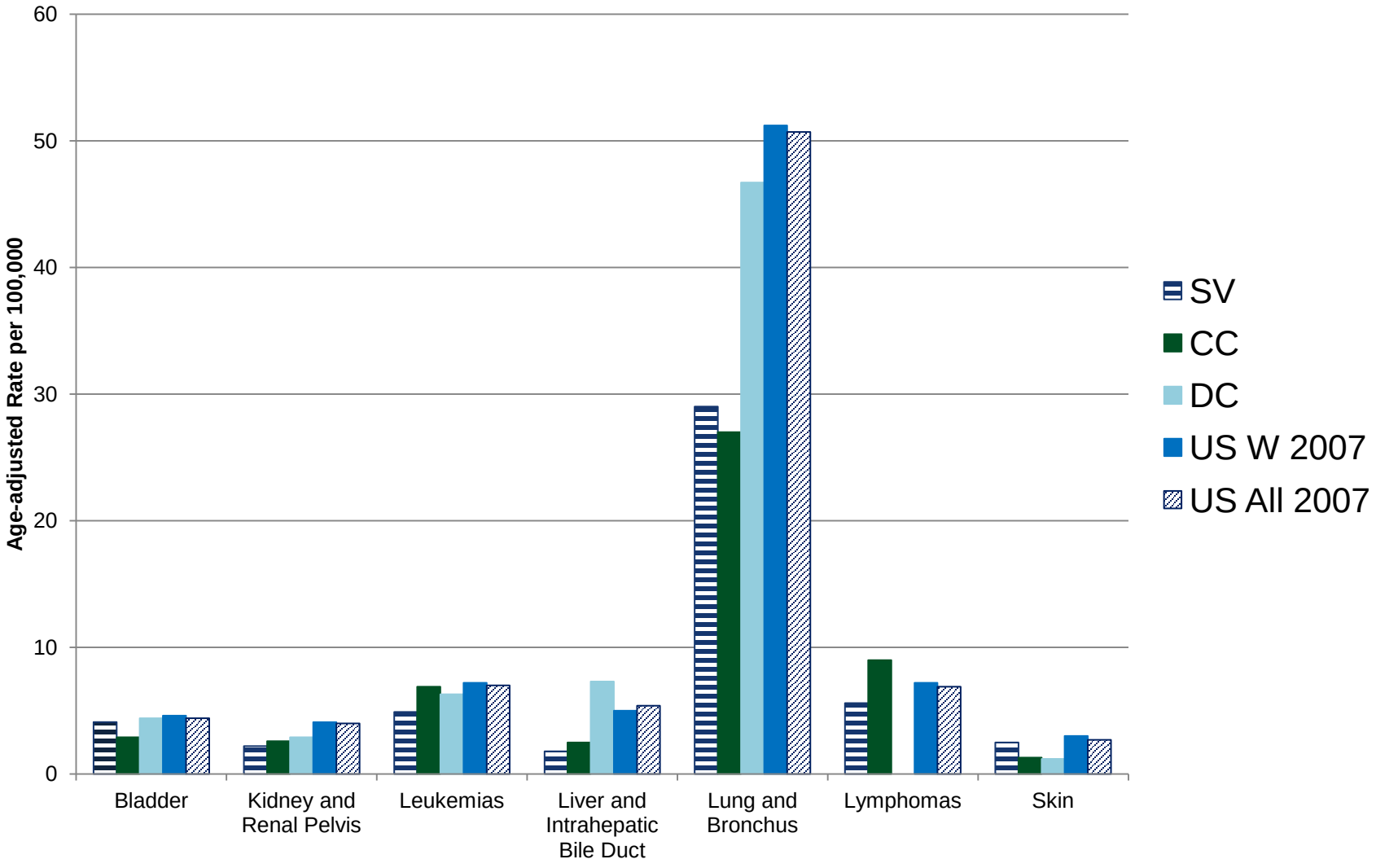
Selected cancers – Mortality, 2005-09



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Cancer trends, 1994 – 2009

- Annual trends were examined for cancers where differences compared to US trends were observed and where “numbers” were adequate (≥1 case/year)
- Findings:
  - Year by year rates are highly variable
  - Spring Valley annual trends:
    - » Small increasing trends found for bladder and lung and bronchus incidence, and lymphoma mortality;
    - » Moderate, statistically significant increasing trend found for lung and bronchus mortality
  - Chevy Chase annual trends:
    - » Small increasing trends found for lung and bronchus and lymphoma mortality

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Community Survey Data and Results

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Survey Objectives

- Characterize residential, work & study history in 3 geographic areas and time-in-residence
  - Areas: 20015 / 20016 Inside FUDS / 20016 Outside FUDS
  - Time in residence: 0 - 5 yrs / 6 – 17 yrs / 18 or more yrs
- Describe overall health status
- Report specific health conditions
- Identify public health and community concerns

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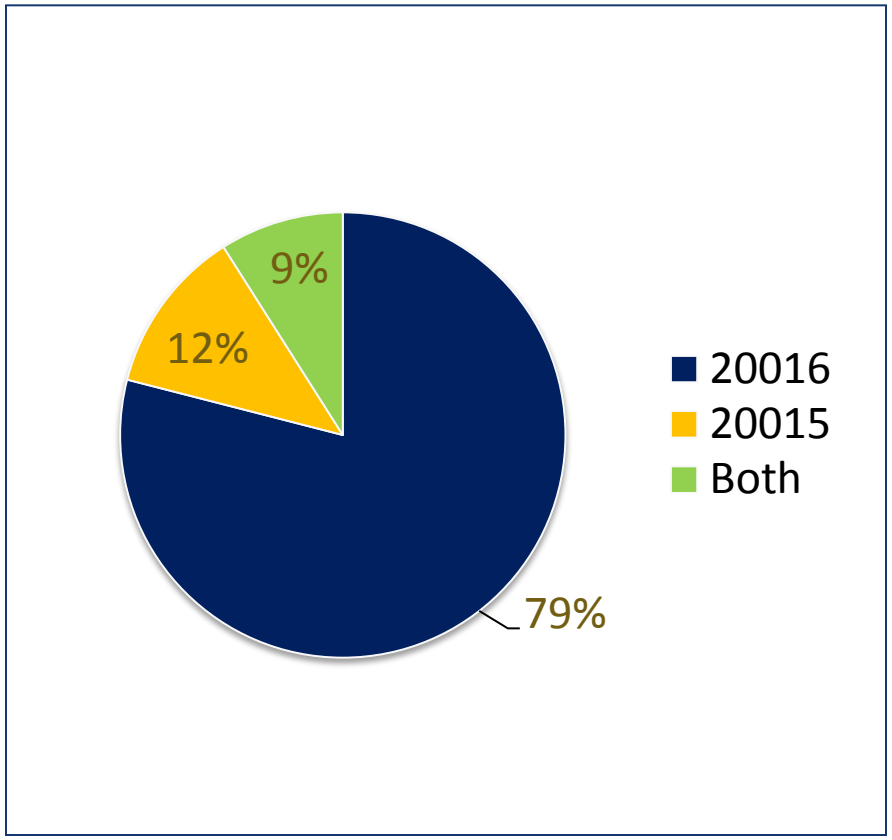
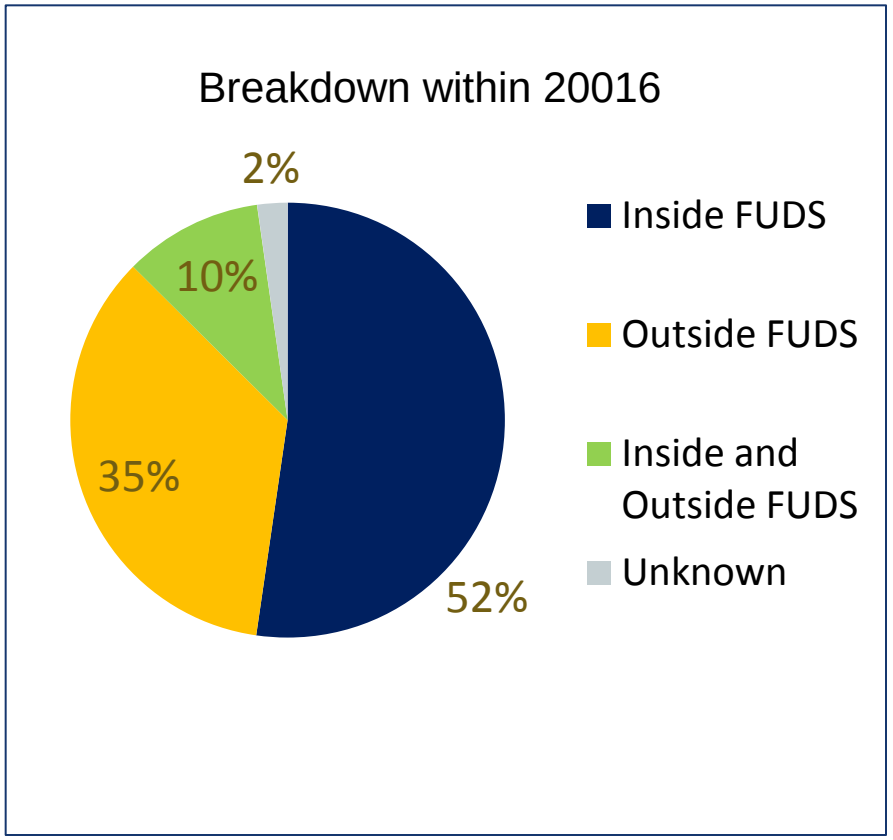
Community Survey Response

865 total respondents



757 respondents from 20016



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Self-Reported Personal Health Status

- Survey respondents in all 3 geographic areas reported equal or better overall health status than the general U.S. population

- Only in the case of residents living in 20016 inside the FUDS for 18 or more years was the proportion of those reporting fair/poor health slightly higher (17%) than the national average (13%)

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Self-Reported Health Conditions

- List provided in survey:
  - Cancer
  - Hypertension
  - Skin Disease
  - Respiratory Disease
  - Thyroid Disease
  - Heart Disease
  - Learning Disability
  - Mental Illness
  - Peripheral Neuropathy
  - Diabetes
  - Kidney Disease
  - Other (please specify)

- Most conditions were reported at percentages below US national averages

- Conditions reported at greater frequency than US statistics:
  - 20016 Inside FUDS: Learning Disability, Thyroid Disease
  - 20016 Outside FUDS: Learning Disability, Peripheral Neuropathy, Thyroid Disease
  - 20015: Hypertension, Learning Disability, Heart Disease, Peripheral Neuropathy, Respiratory Disease, Thyroid Disease

Top 5 Reported Health Concerns

Inside FUDS			Outside FUDS			20015		
n=403 mean age = 44.3	#	%	n=259 mean age = 39.4	#	%	n=126 mean age = 36.7	#	%
1. Cancer	62	15%	1. Cancer	36	14%	1. Hypertension	20	16%
2. Hypertension	53	13%	2. Skin Dis.	35	14%	2. Skin Dis.	18	14%
3. Skin Dis.	44	11%	3. Hypertension	28	11%	3. Cancer	17	13%
4. Thyroid Dis.	29	7%	4. Thyroid Dis.	20	8%	4. Resp. Dis.	17	13%
5. Resp. Dis.	27	7%	5. Resp. Dis.	19	7%	5. Thyroid Dis.	11	9%

Public Health and Community Concerns

Concerns	20016 Inside FUDS	20016 Outside FUDS	20015
Drinking Water Quality	√	√	√
Chronic Conditions	√	√	√
Nutrition/Obesity	√	√	√
Outdoor Air Quality	√	√	√
Site-related chemical contamination	√		
Causes of cancer	√		

Environment Assessment Data and Results

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Environment Assessment Components

- Community environmental health portraits, 2005-2012
  - Data from DDOE, EPA, Washington Aqueduct
- Exposure pathway evaluation, Spring Valley FUDS
  - Data from EPA and Army Corps of Engineers reports
- Water monitoring plans and data evaluation, Spring Valley FUDS
  - Includes available data from Army Corps of Engineers and URS, 2005 – May 2012

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Environmental Portrait

Industrial Facilities and Air and Water Quality

- 20016 ZIP Code has a greater density of facilities that report to EPA than 20015

- Air quality in the D.C. area has improved over the past 10 years
  - Ozone is the only criteria air pollutant found above national standards in the Washington, D.C. area

- Exposures and risks from air toxics in the study areas and DC overall are typical of US urban areas (higher than US average)
  - Potential for adverse respiratory outcomes due to air toxics

- Both the 20016 and 20015 ZIP Codes are served by the public water system
  - Water supply meets existing standards for arsenic and perchlorate

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Exposure Analysis and Water Study Review

Assessment of Site- Specific Exposure Pathways

- Completed exposure pathways identified by JHSPH and USACE were similar, with two exceptions:
  - JHSPH evaluated particulate inhalation for a landscaper worker
  - JHSPH evaluated particulate inhalation for residents
  - Included in 2007 Scoping Study

- No increased risks were indicated from incidental and recreational exposure to surface water evaluated for all contaminants detected in sampling

Evaluation of Army Corps water study plans

- The types of data and general approaches developed for the water study are adequate to address the stated objectives
  - Gaps identified: rationale for well location, role of biogeochemical processes, potential for groundwater seepage to surfaces

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Summary and Recommendations

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Summary of Main Findings

- Community health in the Spring Valley and Chevy Chase study areas continues to be very good.
  - Mortality rates for the major causes of mortality are lower or similar to US rates
  - Incidence and mortality rates for selected cancers are mostly lower than US rates
  - Some cancer rate time trends were found to be increasing in the study areas
- Survey respondents reported better health overall than the national average
  - Respondents across the study areas reported a common set of concerns about chronic health conditions, air and water quality, nutrition/obesity
  - Respondents residing inside the FUDS area continue to be concerned about site-related exposures
- Environment: overall air and water quality are good
  - Air quality concerns are common to US cities
  - No increased risk was estimated from contact with surface water on the site
  - Although the methods and approaches being used in the site-related water study are appropriate, some aspects could be strengthened

Community Health/Outreach Recommendations

- Develop a complete profile of cancer incidence and mortality including rates and time trends for all major cancers, as well as cancers selected for site-related or other community concerns.

- Monitor health conditions that were reported more frequently than national average in the study areas:
  - Heart Disease, Hypertension, Learning Disability, Peripheral Neuropathy, Respiratory Disease, Thyroid Disease

- Engage with the communities to identify opportunities for communication, education and evaluation of reported topics of concern (drinking water quality, chronic conditions, outdoor air quality and nutrition/obesity).

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Water Study Recommendations

- US ACE water study methods and approaches were found to be adequate to achieve stated objectives

- Recommend further documentation and evaluation on:
  - Strategy for well location
  - Role of biogeochemical processes on contaminant fate and transport
  - Potential for groundwater seepage onto surfaces

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2013 Study Challenges and Strengths

- Challenges
  - Time lag approaching 100 years since AUES activity
  - Data limitations (health, exposure, environment)
  - Disease latency
  - High mobility of population particularly in 20016
- Strengths
  - Integrated assessment considering all components
    - Community input via survey
    - Health data
    - Environment data
  - Consistency of health findings across 2007 and 2013 studies
  - Strong agreement between community survey reporting and health data analysis findings

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Thank you!

Find further information in study reports online:

http://www.jhsph.edu/springvalley

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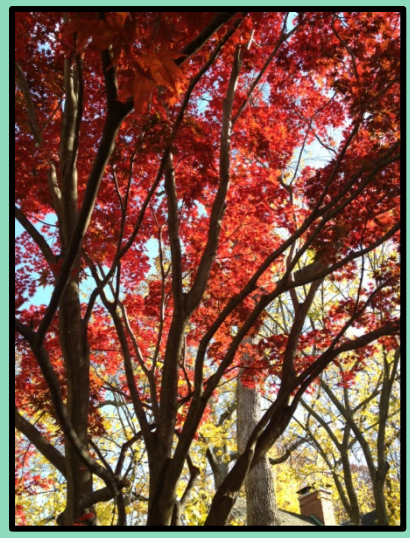
Spring Valley FUDS
Restoration Advisory Board



REMINDER: The next RAB meeting is on **January 14**.

Upcoming Agenda Items

- Suggestions?

- Report of Pre-2005 Risk Assessment Review (ERT) - TBD
- Community Relations Plan Update – TBD
- 4825 Glenbrook Road Health Consultation Update (ATSDR) – draft available for public review in 2014 (tentative).

Spring Valley FUDS
Restoration Advisory Board

- Public Comments

- Wrap-Up

U.S. Army Corps of Engineers
Spring Valley Joint Restoration Advisory Board Meeting
St. David's Episcopal Church
Minutes of the November 12, 2013 RAB Meeting

RESTORATION ADVISORY BOARD MEMBERS PRESENT AT THIS MEETING	
Dan Noble	Military Co-Chair/USACE, Spring Valley MMRP Manager
Greg Beumel	Community Co-Chair
Ralph Cantral	Community Member
Kathleen Connell	Community Member
Mary Douglas	Community Member
William Krebs	Community Member
Lawrence Miller	Community Member
Lee Monsein	Community Member
Malcolm Pritzker	Community Member
George Vassiliou	Community Member
Dr. Peter deFur	Environmental Stewardship Concepts/RAB TAPP Consultant
Steve Hirsh	Agency Representative – US Environmental Protection Agency Region III
James Sweeney	Agency Representative – District Department of the Environment
RESTORATION ADVISORY BOARD MEMBERS NOT PRESENT AT THIS MEETING	
Mary Bresnahan	Community Member
Paul Dueffert	Community Member
Tom Smith	Community Member
John Wheeler	Community Member
Linda Argo	At Large Representative – American University
Alma Gates	At Large Representative – Horace Mann Elementary School
ATTENDING PROJECT PERSONNEL	
Brenda Barber	USACE, Spring Valley Project Manager
Todd Beckwith	USACE, Spring Valley Project Manager
Andrea Takash	USACE, Public Affairs
Rebecca Yahiel	Spring Valley Community Outreach Program

Jessica Bruland	ERT

HANDOUTS FROM THE MEETING
I. Final Agenda for the November 12, 2013 RAB Meeting II. Army Corps of Engineers Presentation

AGENDA

Starting Time: The November 12, 2013 RAB meeting began at 7:02 PM.

I. Administrative Items

A. Co-Chair Updates

Greg Beumel, Community Co-Chair, opened the meeting. He turned the meeting over to Dan Noble.

Dan Noble, Spring Valley Project Manager and Military Co-Chair, welcomed the group. He reviewed the evening's agenda. He mentioned that this is the final RAB meeting of 2013, with the next meeting scheduled for the New Year in January 2014.

B. Introduce Guests

No guest introductions were made.

C. General Announcements

D. Noble announced that recent website updates include the August 2013 Partnering minutes, the September 2013 RAB minutes, and the most recent (October 2013) version of the Site-Wide Groundwater Monitoring Map (reviewed later during the meeting). Additionally, recent website updates include the monthly site-wide project update, along with the weekly remediation progress updates for the 4825 Glenbrook Road site, and associated photographs as appropriate.

D. Noble mentioned that the September 2013 Corps'pondent was a special electronic edition focused on the 4825 Glenbrook Road site. This website issue was posted on the Spring Valley project website on the start date for high-probability excavation.

D. Noble announced that several documents were recently added to the Information Repository at the Tenley-Friendship Branch Library. These documents include the Final Pre-2005 Human Health Risk Assessment (HHRA) Review; the Final Remedial Investigation (RI) Report for 4835 Glenbrook Road; the Final Risk Assessment (RA) for the Public Safety Building at American University (AU); and the Site Specific Investigation Report for the American University Public Safety Building (Phase 1 and Phase 2 Investigations). Updates also included a binder containing project newsletters, with issues of the Corps'pondent from 1998 through the present (the most recent newsletter).

D. Noble added that these documents are also available on the separate external SharePoint site. He reminded the group that, as described at previous RAB meetings, the main Spring Valley project website was recently streamlined to include current project news, recent project documents (approximately one year old or newer), and a limited selection of popularly viewed older project documents. All other historical project documents are archived in a wider electronic database on the SharePoint site. Interested

community members are welcome to access these electronic archives, and should send an email to Andrea Takash, of the USACE Baltimore District Public Affairs Office (PAO), who will supply them with an individual permanent username and password. Due to strict federal government security protocols, individual passwords must be changed every 60 days in order to maintain an active account.

D. Noble announced that the SharePoint site will be transferring to a new platform within the next month, and the new link will be emailed to everyone once it is established. USACE is exploring options for transferring the SharePoint document archive to a website format that does not require login credentials for easier public accessibility. The current SharePoint site will remain active in the interim. An update will be provided to the RAB as early as January 2014.

D. Noble emphasized that site-wide document preparation is in progress, and the documents recently added to the Information Repository serve as fairly important sources of information for the Site-Wide Remedial Investigation (RI) report and Feasibility Study (FS). In preparation for reading the completed site-wide documents, it may be helpful for the RAB and the wider Spring Valley community to read and familiarize themselves with the general contents and the overall conclusions. This is not necessary, however, and some individuals may choose to wait for the completed RI report, which summarizes all of the information contained in the separate source documents.

Officer McElwee of the District of Columbia Metropolitan Police Department (MPD) 2nd District briefly attended the meeting. He introduced himself and his colleague Officer McCray, and mentioned their involvement with the Shelter-in-Place (SIP) program in the event of an incident during high-probability activities at 4825 Glenbrook Road. The site has been very quiet, and MPD 2nd District officers were briefed on SIP response instructions by Brenda Barber, Spring Valley Project Manager. MPDC Special Operations Division (SOD) personnel are stationed on site, and questions associated with SOD responsibilities must be passed along to the appropriate MPDC personnel. No additional questions were asked regarding the 2nd District's role in current Spring Valley operations. [As noted during the September 2013 RAB meeting, USACE will continue to stay in contact and coordinate closely with MPDC during the high-probability excavation time frame.]

Question from George Vassiliou, RAB Member – Someone recently mentioned that you would share information with the RAB regarding the outcome of a trespassing incident at 4825 Glenbrook Road.

Officer McElwee explained that this incident occurred several months ago and was defined as a trespassing incident without any threat to the site itself. A gentleman walked onto the site, past the gate area, into the backyard behind the house. The guard stationed on site immediately contacted MPDC. Officer McElwee responded to the call and took an official report.

Officer McElwee added that members of the public are entitled to a copy of the report, free of charge. It can be obtained in person at the MPDC 2nd District's station on Idaho Avenue. [Office McElwee provided the report number (13137401) for ease of requesting a copy.]

Officer McElwee emphasized that no threat was associated with this incident.

Question from Allen Hengst, Community Member – Is the official report only available on site at MPDC?

Officer McElwee confirmed this. He added that any citizen could come to the MPDC Idaho Avenue station and request a copy of the official report.

Question from Audience Member – I run past the 4825 Glenbrook Road site twice daily, and I have not seen a guard stationed there.

Officer McElwee clarified that he cannot speak to this observation. [As stated previously, MPDC Special Operations Division (SOD) personnel are stationed on site, which is separate from the 2nd District personnel associated with SIP response in the event of a site incident.]

B. Barber explained that security coverage at the site is provided 24 hours per day, 7 days per week. During work hours, site personnel and MPDC SOD personnel are responsible for site security. During non-work hours, an armed guard is stationed at the site at all times, with a total of two shifts. The first shift's night guard arrives an hour before the work day concludes, and receives a daily safety briefing and official orders from site personnel and MPDC SOD personnel prior to departure. Turnover from the first shift to the second shift occurs in the early morning.

B. Barber noted that the armed guards conduct roving patrols with variable schedules so that no one becomes familiar with the routine, and quality control checks are conducted every night. Witnessing an armed guard on site during non-work hours depends on the passerby's route and timing.

An audience member commented that he noticed a guard stationed at the site in Spring 2013.

Question from Allen Hengst, Community Member – Is there a date on the official incident report?

Officer McElwee replied that the incident occurred on September 25, 2013.

A. Hengst thanked Office McElwee for the information.

Officer McElwee wished everyone a safe holiday season and reminded everyone to retrieve packages from their porches as soon as possible to deter theft. He added that he would see the RAB and audience members at the January 2014 RAB meeting.

The RAB thanked Officer McElwee and Officer McCray for briefly attending the meeting.

D. Task Group Updates

Spring Valley Project Funding Update

D. Noble presented a brief update on the Spring Valley project schedule, including the recently concluded fiscal year (FY) 2013 project schedule and allocated funding. (FY2013 officially began on October 1, 2012.) He also briefly reviewed the current project schedule and allocated funding for FY 2014.

As described at the January/May 2013 RAB meetings, project funding updates are typically presented to the RAB toward the end of each calendar year.

FY2013 Summary: Approximately $9.21 million were spent on Military Munitions Response Program (MMRP) and Hazardous and Toxic Waste (HTW) project activities during FY2013. (This total budget includes the baseline funding and the plus-up funding.) These activities included further preparations for completing the munitions components of the Site-Wide RI/FS report, which will resemble the documents produced for the 4825 Glenbrook Road site but will address the entire Spring Valley FUDS. Under the MMRP program, 4825 Glenbrook Road house demolition and the remedial design were completed. Additional MMRP activities at the 4825 Glenbrook Road site included completion of portions of the remedial action at 4825 Glenbrook Road site (a major milestone for the Spring Valley project), and stakeholder outreach and site security activities continued. Under the HTW program, which focuses on environmental concerns, completed activities include arsenic sampling (1 remaining residential property funded in FY2012, and situated within an Area of Interest (AOI)). Additional HTW activities included further preparations (related to HTW concerns) for completing the Site-Wide RI/FS report, the groundwater investigation, and landscape reimbursement. Under the Potentially Responsible Party (PRP) effort, progress was made toward conducting the PRP investigation.

D. Noble emphasized that most of the FY2013 funding was allocated to the MMRP project activities, particularly the active field effort at 4825 Glenbrook Road, the scope of which is large and expensive to conduct. Site security is characterized as an MMRP activity due to the history of recovering munitions at the site.

FY2014 Summary: The baseline awarded budget for FY2014 project activities is $3.97 million. Preparation of the Site-Wide RI/FS and Proposed Plan will continue. Under the MMRP program, the last planned residential anomaly investigation (Fordham Road property) will tentatively be completed, along with landscape reimbursement. Additional MMRP activities at the 4825 Glenbrook Road site will include completion of remedial actions at 4825 Glenbrook Road site (a major milestone for the Spring Valley project). Completion of the remedial action closeout report for the 4825 Glenbrook Road site will be another major project milestone, and stakeholder outreach and site security activities will continue. Under the HTW program, activities will include the groundwater investigation, the last planned arsenic soil removal (1 residential property: Fordham Road), and landscape reimbursement. Under the Potentially Responsible Party (PRP) effort, the PRP investigation will be completed.

This total does not include plus-up funding, which may be awarded to the project by USACE Headquarters later during FY2014, as needed. (There is a good likelihood of receiving plus-up funding if applied for, based on the significant portion of FY2013 budget that was awarded as plus-up funding.)

D. Noble noted that the projected expenses for FY2014 are significantly lower than in previous years due to the relatively small proportion of active field efforts compared with the much higher proportion consisting of site-wide document preparation.

[As described at the January 2013 RAB meeting, beyond FY2014, an annual 'cost to complete' will estimate the amount of funding required to complete planned efforts during upcoming fiscal years. These funding estimates can be adjusted based on the status of project activities. Future annual budgets beyond the next fiscal year (FY2015) are speculative based on currently planned project activities. Active investigations are ongoing and the projected budgets may change.]

Anticipated Major Reporting Milestones: [Planned time frames for these planned milestones were described at the May 2013 RAB meeting. These milestones include finalization of each site-wide document (similar to the site-specific documents for the 4825 Glenbrook Road site), including the **Site-Wide Remedial Investigation (RI) report** in October 2014, the **Site-Wide Feasibility Study (FS)** in December 2014, the **Site-Wide Proposed Plan (PP)** (which will describe the recommended remedial actions, if any, for completing the Spring Valley project cleanup goals) in June 2015, and the **Site-Wide Decision Document (DD)** in November 2015.]

The determinations made in the Site-Wide DD will significantly impact future actions taken and future FY budgets, depending on whether additional site-wide remedial activities are required or whether the site cleanup is officially closed and completed. If additional actions are required, they would be funded and implemented immediately following final approval and signature of the DD. At this time, the FY2014 projected summary and the major reporting milestones provide the best look-ahead for the overall site-wide project completion time frame, but these are subject to change pending decisions made in the site-wide DD.

Comment from William Krebs, RAB Member – My recollection is that a portion of the FY 2013 budget was used to pre-fund the 4825 Glenbrook Road site remedial action.

D. Noble confirmed that large portions of the FY 2012 and FY 2013 budgets (including most of the plus-up funding awarded in FY 2013) were allocated to the 4825 Glenbrook Road site to fund the current remedial action activities.

No other task group updates were presented.

II. USACE Updates

B. Barber, Spring Valley Project Manager, provided a brief status update on the current high-probability schedule and progress to date for 4825 Glenbrook Road.

T. Beckwith, Spring Valley Project Manager, provided a status update on the groundwater investigation, focused on recent sampling results.

A. Military Munitions Response Program

4825 Glenbrook Road

Background Summary

[This section is a summary of completed schedule components provided for Readers of this meeting summary. This information was not presented at this meeting.]

Completed Documents: Finalized 4825 Glenbrook Road CERCLA-related documents are posted on the Spring Valley project website and are also available at the Information Repository at the Tenley-Friendship Branch Library. These documents include the Decision Document, which formally selects Alternative 5 (removal of the house and cleanup to residential standards providing for unrestricted future use of the property) as the cleanup alternative for the 4825 Glenbrook Road site. These documents also include the Demolition and Disposal Plan, which describes the removal and disposal of the 4825 Glenbrook Road house and associated debris.

Finalized documents also include the 4825 Glenbrook Road Remedial Design and Remedial Action Work Plan (which includes the Public Protection Plan), which describes the intrusive activities designed to achieve remedial objectives, including details of high-probability excavation engineering controls and safety procedures. (Details of this plan were shared with the RAB and the community at the October 2012 Joint RAB/Community meeting, with updates provided at the January and February 2013 RAB meetings.)

Demolition Phase: House demolition was completed in late November 2012, after the Thanksgiving holiday. Remaining house structural components are limited to the basement foundation walls and floor. The site is currently secured with fencing, and a fall protection system was installed to minimize worker safety risks at the site. (Details of this effort were shared with the RAB and the community at the January 2013 RAB meeting.)

Site Preparations for Low Probability Work: USACE completed site preparations for low probability investigative and remedial action work in January 2013. (Details of this effort were shared with the RAB and the community at the January and February 2013 RAB meetings.)

Low Probability Soil Removal Completed To Date: The first phase of the low probability effort began on January 28, 2013 and was completed in February 2013. This effort consisted of excavating a small portion of the front sidewalk, followed by confirmation sampling and restoration. (Details of this effort were shared with the RAB and the community at the February 2013 RAB meeting.)

The second low probability effort began on February 19, 2013 and was completed in early March 2013. This effort consisted of excavating all remaining backyard test pits to competent saprolite. No evidence of AUES-related debris, visible soil staining, or air monitoring detections of chemicals of potential concern were observed during this effort. (Details of this effort were shared with the RAB and the community at the March 2013 RAB meeting.)

The last initial low probability soil removal effort began on March 25, 2013 and was completed in mid-April 2013. This effort consisted of relocating a sewer utility and a water utility that could interfere with implementation of remedial activities at the site. The water utility was situated above ground along the adjacent Koreans' property, and the sewer line was situated below grade. No evidence of AUES-related debris, visible soil staining, or air monitoring detections of chemicals of potential concern were observed during this effort. This effort was completed concurrently with the initial high-probability site preparations described below. (Details of this effort were shared with the RAB and the community at the April 2013 RAB meeting.)

(Remaining low probability efforts (second phase) include a small portion of the driveway and a small portion of the backyard behind the retaining wall, and are scheduled following completion of high-probability efforts.)

Findings to Date: To date, a total of 3 items were recovered along with small pieces of laboratory glassware and ceramic fragments. All items were situated directly behind the backyard retaining wall and were recovered under low-probability excavation protocols. Items included an empty 75 mm munitions debris (MD) item, which was described in detail at the May 2013 RAB meeting, followed by a heat-sealed pipette (test tube) and an empty closed-cavity item (pipe), which were described in detail at the July 2013 RAB meeting.

The protective steps that were taken to ensure the safety of the workers and the community were described in detail at the May 2013 and July 2013 RAB meetings. All protocols worked as intended, and at no time were the workers or the community at risk. No air monitoring detections of chemicals of potential concern were observed throughout these incidents. In summary, all items (including glassware and ceramic fragments) were cleared for headspace and tested negative for chemical agent contamination. These items will be disposed of as waste or scrap, as appropriate.

As noted at the July 2013 RAB meeting, due to the potential for encountering additional debris items along the retaining wall, the remainder of Area A will be addressed along with the remaining low-probability excavation areas following completion of high-probability excavations.

Completed Site Preparations for High-Probability Work: As described at the March through July 2013 RAB meetings, site preparations for high-probability work began in March 2013, concurrently with completion of the initial low probability effort. Completed preparations include construction of temporary fences, water and sewer utility relocation efforts, installation of soldier piles to support soil embankments, removal of the backyard retaining wall, and installation of engineering controls support equipment.

As described at the September 2013 RAB meeting, the remaining completed site preparations for high-probability work include construction of the Engineering Control Structure (ECS), also referred to as the protective tent. Installations also included air filtration ductwork (connecting the ECS to the CAFS), sound suppression equipment, the MiniCAMS vestibule (providing near-real-time air monitoring), and the re-dress tent for site personnel. Final preparations included equipment testing, safety briefings, tabletop exercises, on-site training exercises, and two pre-operational surveys (which are designed to ensure that the remedial effort contractor (Parsons) is fully prepared to conduct high-probability excavations).

The RAB attended a tour of the 4825 Glenbrook Road site, which focused on the site conditions prior to the start of high-probability excavation, at a time when all engineering controls are in place and fully functional. A similar virtual site tour was prepared for the benefit of RAB members who were unable to attend, and for interested audience members. (The contents of this video were shared during the September 2013 meeting.)

Shelter-in-Place (SIP): As described at the September 2013 RAB meeting, completed SIP preparations include installation of SIP alert systems (one at the 4825 Glenbrook Road site and one at AU's campus, designated specifically for the campus community in Watkins Hall and the nearby athletic field). Monthly siren tests are scheduled for the first Wednesday of each month at 4:05 P.M., to ensure the alarm system is functioning properly, until the high-probability excavation is completed. USACE successfully performed the first monthly test on September 4, 2013 after notifying the alarm company that a test was scheduled, followed by the monthly tests on October 2, 2013 and November 6, 2013.

Public Communication During High Probability Excavation and Finds: As described at the September 2013 RAB meeting, the ongoing public communication process includes weekly updates focused on site progress (via e-mail and posting on the Spring Valley project website), along with special e-mail and website notifications as needed.

Presentation Summary

[This section is a summary of schedule components completed since the September 2013 RAB meeting.]

High-Probability Work Progress: High-probability excavation began on Monday, September 23, 2013, starting in the current tent location (front yard). Full access to the front yard excavation area was achieved following removal of the retaining wall, including cinderblock materials and old utility pipes, adjacent to the driveway. A substantial construction entrance was built in the driveway area to provide a staging location for roll-off containers, for the purpose of loading excavated soil into the roll-offs. To date, a total of 26 roll-offs have been filled; of these, 20 contain soil and 6 contain hardscape rubble materials.

High-probability excavation is underway in the front yard, during which all soil will be removed and competent saprolite (bedrock) will be exposed. To date, half of the front foundation wall has been removed using a jackhammer, and all generated construction rubble was loaded into a roll-off. The excavation equipment continues to progress further across the front yard. At this time, the excavation extent is approaching the front porch area, where a glassware item containing arsenic trichloride was previously recovered (in 2010). Necessary safety precautions have been taken to ensure site personnel are fully prepared in the event that additional glassware and/or chemical agent is encountered.

Site personnel are outfitted in Level B personal protective equipment (PPE) while actively performing intrusive activities underneath the tent. During daily site preparations, including necessary equipment testing, site personnel are outfitted in modified Level D PPE.

Findings to Date: To date, a total of 7 pounds of glassware have been removed. All glassware tested negative for chemical agent. No air monitoring detections of chemicals were recorded during high-probability excavation to date.

Updated AEGL Values for Establishing Safety Distances: It was recently brought to USACE's attention that the Acute Exposure Guideline Level (AEGL) for Lewisite was updated to reflect a less conservative value than previously used. The remedial action contractor verified that the revised value does not change the extent of the current SIP evacuation zone surrounding the 4825 Glenbrook Road site, which is currently based on an even more conservative value for arsenic trichloride. As a result, maximum protectiveness for the surrounding community remains in place, and high-probability excavation is moving forward as planned.

Upcoming Holidays and Events: Intrusive activities at 4825 Glenbrook Road will not be conducted on several weekdays between late November 2013 and early January 2014, in accordance with federal holidays and to accommodate upcoming AU campus athletic events. Security personnel will remain stationed on-site during non-work hours. Site personnel will conduct limited site maintenance and spot-checks during restricted work dates associated with AU campus athletic events.

- Three dates (November 12, 13, and 27) were identified as half-days, where limited site activities will be performed from the beginning of the work day through 12 noon, during AU campus athletic events.
- A modified work week schedule of four 10-hour days per week (Monday through Thursday) will be implemented on November 18, and will continue until the winter holidays begin. All site activities will be paused for the Thanksgiving break (November 28 and 29) and the winter holiday season (December 20, 2013, through January 7, 2014).

Tentative Schedule (Next Steps)

All remedial action dates from this point forward are tentative and will be determined pending resolution of any remaining issues.

Site Cleanup: The tentative remedial action schedule was recently updated to reflect the revised cleanup time frame and currently extends from late November 2012 (the completed demolition phase) through

December 2014. This schedule is subject to change pending resolution of any remaining issues and any findings of concern at the site.

- **Major Milestone:** The second pre-operational survey began on September 9, 2013 and was completed on September 13, 2013 by the Department of the Army (DA).
- **Major Milestone:** High-probability excavation began on Monday, September 23, 2013 as planned. The tentative high-probability completion schedule is subject to change pending any findings of concern at the site.

- High-probability excavation is currently scheduled to continue through late Summer 2014. The protective tent will be moved twice, for a total of three tent locations, to provide full coverage of the entire high-probability excavation area. Each tent move will tentatively require four months to complete, with a total high-probability duration of one year. The current tent location (front yard) will be completed first, then the back yard, and finally the center yard (including the house foundation). The completion date for high-probability excavation depends on many factors including the rate at which each tent move can be completed. Upon completion of the current tent location (front yard), the tentative schedule will be updated to reflect the actual progress rate.
- Remaining low probability removal actions in Areas A and B (including the driveway and a small portion of the backyard) are scheduled for Fall 2014 following completion of the high probability excavations.
- Site restoration is tentatively scheduled for December 2014. The project team anticipates turning the remediated and restored property over to the property owner (AU) in December 2014.

Potentially Responsible Party (PRP) Investigation Update

USACE and their contractor Watermark, Inc. continue to pursue information regarding the development of three properties (4825 Glenbrook Road, 4835 Glenbrook Road, and the Public Safety Building on AU's campus at 4400 Massachusetts Avenue). Details of this investigation and contact information were provided at recent RAB meetings.

Question from A. Hengst, Audience Member – Do you know whether any high-probability investigations have been temporarily stopped during an AU campus athletic event in the past?

B. Barber and D. Noble confirmed that at least one previous high-probability investigation at 4825 Glenbrook Road was temporarily suspended during athletic events held at the neighboring AU campus.

Question from Dr. Peter deFur, RAB TAPP Consultant – Do I recall correctly that the high-probability excavation production rate is progressing as scheduled?

B. Barber confirmed this. Approximately 10 to 15 cubic yards of soil are excavated daily and placed in a roll-off, with a total of one or two roll-offs filled per day. The exact soil production rate depends on the amount of rubble in the excavation, which takes longer to process compared with soil. The production rate will certainly be lower if AUES-related items or debris are encountered.

Question from Kathleen Connell, RAB Member – Regarding the PRP investigation, what is the next step for the Army Corps after you identify the person who is responsible?

B. Barber explained that USACE will prepare and present a report to the USACE Baltimore District Commander. Upon obtaining concurrence, the report will be passed along to the Department of Justice (DOJ), who will determine whether the case should or should not be pursued. If the DOJ chooses to pursue litigation against the PRP, and if their case is successful, then the associated information would return to the USACE district level for further action.

Question from K. Connell, RAB Member – Has this scenario occurred at USACE during recent history?

B. Barber replied that this has certainly occurred at other project sites with which she is familiar.

B. Barber and D. Noble clarified that they do not know offhand the history and the success rate of these types of litigation cases with respect to the USACE Baltimore District. Specific information on this topic would be best requested from USACE legal counsel (Jon Owens).

K. Connell commented that the responsible party would receive significant public exposure associated with such a case.

B. Groundwater Investigation

[Previous groundwater study efforts were described at the November 2010 RAB meeting as well as various earlier RAB meetings. Additional planned groundwater study efforts were described at the May 2011 RAB meeting as well as various subsequent RAB meetings. Recently completed and upcoming groundwater study efforts were summarized at the January 2012 through September 2013 RAB meetings.]

Completed Semi-annual Sampling: As described at the March through July 2013 RAB meetings, selected existing groundwater monitoring wells and surface water monitoring locations will be sampled twice annually for the next few years. These locations include a total of 20 shallow and deep wells and a total of 10 surface water locations. During these sampling events, USACE field sampling crews are present in the neighborhood along with Community Outreach.

The first semi-annual sampling event began in April 2013 and was completed in mid-May 2013, as part of the extended 2013 groundwater monitoring program. (Details were provided at the May 2013 RAB meeting.)

An additional sampling event to collect additional groundwater data from PZ-4S/D at AU's campus and the Sibley Hospital Sump was completed in mid-July 2013. (Details are provided below.)

The designations for sampling locations were briefly reviewed: MW (monitoring well), PZ (piezometer, similar to a monitoring well), SW (surface water location), and MP (multi-port monitoring well).

Summary of Recent Semi-Annual Sampling Results by Contaminant: In general, the sampling results obtained in April/May and June 2013 were mostly consistent with previous sampling results. Although Spring Valley groundwater is not used for drinking water purposes, the associated perchlorate and arsenic standards are used for comparison purposes when evaluating groundwater study results.

- Perchlorate concentrations slightly exceeded the drinking water advisory level of 15 parts per billion (ppb) at seven locations: MP-2, MW-44, MW-45D, MW-45S, MW-2, SW-25, and the Sibley Sump.
- Arsenic concentrations slightly exceeded the drinking water standard of 10 ppb at two locations: MP-2 and MW-24. Both of these wells are situated directly across Glenbrook Road from the 4825 Glenbrook Road property.
- Notable results were limited to the five monitoring wells near Kreeger Hall at AU's campus, where higher perchlorate concentrations were detected in the deeper well intervals compared to the shallow well intervals. (This is notable because in the past, the highest perchlorate concentrations in this area were detected in shallow groundwater.) All five monitoring wells (PZ-4S, PZ-4D, MW-44, MW-45S, and MW-45D) are situated within about 20 feet of each other and represent different sampling depths ranging from 27 feet bgs to 152 feet bgs (below ground surface).

Summary of Recent Semi-Annual Sampling Results by Location: The recent sampling results specific to each semi-annual sampling location were also reviewed in comparison to prior concentrations (during the previous sampling event in July 2012). Concentrations exceeding the relevant drinking water

standards were highlighted in yellow. Small variations (within a few ppb) in perchlorate and arsenic concentrations are fairly normal and commonly observed between consecutive sampling events.

- **MP-2 (4800 Block of Glenbrook Road)** – This well is situated in a vicinity with historical perchlorate and arsenic detections in groundwater. Sampling depths range from 35 feet to 160 feet across eight ports. Between July 2012 and April/May 2013, within each sampling port, perchlorate concentrations decreased a little or significantly and arsenic concentrations decreased by a few ppb. Although perchlorate and arsenic concentrations appear to be consistent or decreasing over time, it is too early to reach conclusions. Further monitoring at MP-2 is necessary to determine whether this downward trend will continue.
- **MW-24 (4800 Block of Glenbrook Road)** – This well is situated to one side of MP-2 (described above). Between July 2012 and April/May 2013, perchlorate decreased from trace to non-detect (ND) and arsenic increased by several ppb to exceed the arsenic drinking water standard. Arsenic at this location did not exceed the drinking water standard since the 2005-2006 time frame, until now. Continued monitoring will evaluate whether this is an anomaly.
- **MW-25 (4800 Block of Glenbrook Road)** – This well is situated to the other side of MP-2 (described above). Between July 2012 and April/May 2013, perchlorate increased slightly from non-detect (ND) to around 3 ppb and arsenic increased very slightly from 2.2 ppb to 4.5 ppb. These concentrations, although slightly increased, are still within the same low consistent range recorded during recent sampling events.
- **PZ-4S (AU Campus in front of Kreeger Hall)** – This well is the location at which the historically highest perchlorate detection of 146 ppb was detected in 2007. This concentration has generally decreased or remained consistent over time. Between July 2012 and April/May 2013, perchlorate decreased significantly from 28 ppb to 6 ppb (below the drinking water advisory level). In April/May 2013, perchlorate was non-detect (ND) in both the field sample and the field duplicate. Arsenic concentrations have remained extremely low to non-detect with very slight fluctuations over time.
- **MW-44 (AU Campus in front of Kreeger Hall)** – This well was installed in early 2012 with a sampling depth of 80 to 95 feet bgs. Perchlorate concentrations have consistently increased very slightly over time across five sampling events, from 33 ppb in March 2012 to 40.5 ppb in April 2013. Arsenic concentrations were non-detect until a trace detection of 0.15 ppb in April 2013.
- **MW-45S and MW-45D (AU Campus in front of Kreeger Hall)** – This well was installed with two deep intervals (119 to 124 feet bgs, and 147 to 152 feet bgs) and has been sampled twice to date. Between September 2012 and May 2013, perchlorate concentrations increased from very low (6 ppb and 3.6 ppb, respectively) to significantly elevated levels (31.1 ppb and 54.3 ppb. Arsenic concentrations were initially non-detect and more recently ranged from trace levels to non-detect. Conclusions cannot be made based on two sampling events to date, but it is possible that the initial perchlorate levels could have been influenced and biased by well drilling activities.
- **Sibley Sump (Elevator Shaft of Sibley Hospital) –** Groundwater infiltrating into the sump has consistently shown perchlorate concentrations ranging from 15 ppb to 25.2 ppb (slightly above the drinking water advisory level of 15 ppb). Between April 2013 and July 2013, perchlorate decreased from 18.5 ppb to 14.5 ppb, slightly below the drinking water advisory level. Arsenic concentrations remained non-detect until the most recent detections of 5 ppb (February 2012), 0.73 ppb (April 2013), and 3.8 ppb (July 2013).
- **MW-21 (Near Dalecarlia Reservoir; West of Sibley Sump)** – Between 2005 and 2009, perchlorate concentrations were consistently elevated, and decreased to concentrations consistently below the drinking water advisory level in 2011 and 2012. Recent perchlorate

concentrations slightly decreased from 5.2 ppb (February 2012) to 4.53 ppb (May 2013). Arsenic concentrations remained non-detect.

- **MW-22 (Near Dalecarlia Reservoir; West of Sibley Sump)** – Since 2005, perchlorate concentrations have remained consistent or slightly increased to just below the drinking water advisory level. The most recent concentration of 16.4 ppb slightly exceeds the advisory level, and arsenic concentrations ranged from trace levels to non-detect. Possible explanations for the increase in perchlorate include significant construction activities in the vicinity of Sibley Hospital, which could have influenced groundwater flow patterns and chemistry. Further trends will be monitored.
- **SW-25 (Cathedral Avenue at DC Property and Glover Archbold Park)** – This surface water sampling location consists of a stream where perchlorate concentrations have fluctuated above and below the drinking water advisory level. Since 2007, SW-25 has been sampled six times, with a significant increase to 33.8 ppb perchlorate during the May 2013 sampling event. Arsenic concentrations have fluctuated between trace levels and non-detect. (SW-24 remains inaccessible within Glover Archbold Park due to property right of entry issues, and SW-25 is situated approximately a few hundred feet downstream at an accessible location). This location will continue to be sampled due to detections exceeding the drinking water advisory level, even though SW-25 is situated southeast of the historical AUES activities and the perchlorate contamination is probably unrelated. Potential sources include anthropogenic materials such as road flares.

Upcoming Semi-annual Sampling: The second semi-annual sampling event is scheduled for December 2013 and will generally consist of the same set of selected existing groundwater monitoring wells and surface water monitoring locations described above. The third semi-annual sampling event is tentatively scheduled for June 2014.

Upcoming Quarterly Sampling: Selected wells will continue to be monitored quarterly. Sampling will be conducted during upcoming semi-annual sampling efforts (discussed above) and during upcoming intervals (tentatively scheduled for March 2014 and September 2014).

Upcoming Deep Well Installations: Two additional deep monitoring wells (MP-5 and MW-46S/46D) are planned for installation in two locations, followed by sampling. The contract for conducting this work was recently finalized. The goals include obtaining further data on deep groundwater chemistry.

- MP-5 will be installed between MP-3 and MP-4 (both of which have been sampled multiple times, with no significant detections of perchlorate or arsenic) to evaluate whether groundwater is flowing between these two locations. This multi-port well will be drilled to an anticipated depth of 200 feet bgs.
- MW-46S/46D will be installed adjacent to Sibley Hospital, near the Sibley Sump, to evaluate the vertical distribution of groundwater contamination in this area. This well will be drilled to an anticipated depth of 120 feet bgs, with two well screens (around 60 feet bgs and around 100 feet bgs).

Current and Upcoming Efforts: The groundwater investigation will be a major topic of interest at upcoming RAB meetings. Preparation of the draft RI report will begin soon, pending Partner discussion and concurrence that sufficient data are available to describe and define the nature and extent of groundwater contamination in Spring Valley.

Question from Audience Member – Were you able to solve the recent issue where multi-port well sampling was limited to some intervals? I believe this occurred during the spring semi-annual sampling.

T. Beckwith confirmed that this issue was resolved, followed by sampling of groundwater from these ports using a different technique. (Details of this issue were provided at the May and July 2013 RAB meetings.)

Question from K. Connell, RAB Member – To refresh my memory, what is the significance of the red symbol representing PZ-4S/4D on the groundwater sampling results map? Does this indicate information about the perchlorate and/or arsenic levels in groundwater?

T. Beckwith clarified that this map symbol simply indicates that PZ-4S/4D was constructed as a 1-inch diameter well, unlike many other groundwater monitoring program wells. This symbol is unrelated to groundwater chemistry results.

Question from G. Vassiliou, RAB Member – Can you provide an explanation for the significant decline in perchlorate concentrations at PZ-4S? Have you discussed why the original elevated concentration has diminished?

T. Beckwith replied that, generally, these data indicate the perchlorate contamination source is flushing out and diminishing over time. Further discussion of these recent sampling results with the Partners is warranted. Implications of the observed decline in perchlorate at PZ-4S, along with recent and upcoming groundwater sampling results, will be discussed with the Regulatory Partners (EPA and DDOE) during an upcoming Partners meeting focused on groundwater. (This meeting has not been scheduled yet.)

Question from A. Hengst, Audience Member – Can you describe the exact locations of MW-44 and MW-45 on AU's campus? Are these situated behind Kreeger Hall?

T. Beckwith replied that these two wells are located close to PZ-4S/4D, which is adjacent to the walkway between Kreeger Hall and the Kreeger Music Roadway. Relative to PZ-4S/4D, MW-44 is situated about 10 feet away in the grass toward the athletic fields, and MW-45 is situated about 10 feet further away on the same grassy embankment.

Question from Nan Wells, ANC3D Commissioner – Will you provide a written analysis of the recent groundwater sampling results?

T. Beckwith explained that all groundwater sampling results, including the recent data and future semi-annual sampling data, will be summarized and detailed within the Site-Wide Groundwater RI report.

Question from N. Wells, ANC3D Commissioner – When do you expect the RI report will be available to the RAB and the community?

T. Beckwith noted that this timeline would be presented briefly later during the meeting.

N. Wells thanked D. Noble for the response.

Question from Audience Member – Can you describe the direction in which groundwater is flowing? Would groundwater contamination be flushed in the direction of the Dalecarlia Reservoir?

T. Beckwith explained that Spring Valley groundwater generally flows toward the Potomac River. The potential issue of contaminated groundwater flowing toward the drinking water reservoir was identified early during the groundwater study project. Several shallow monitoring wells were installed around the reservoir to address this concern, and no significant perchlorate or arsenic detections were ever recorded in those wells.

Question from W. Krebs, RAB Member – Have you examined whether precipitation patterns may have caused any variation in perchlorate and arsenic concentrations during these sampling events?

T. Beckwith replied that rainfall occurred during the Spring 2013 semi-annual sampling event. In response to recent Partner comments regarding wet weather in spring 2013, an examination of the precipitation data revealed that the number of inches of rainfall during April and May 2013 was normal compared with rainfall amounts during the same time frame in previous years.

Question from K. Connell, RAB Member – At that groundwater depth of 124 feet, would rainfall have any effect? It seems that the ground would have to be fairly saturated in order for this to occur.

T. Beckwith explained that the effect of rainfall on groundwater chemistry depends on the groundwater flow characteristics. Rainfall can infiltrate into fracture zones and recharge areas.

Question from K. Connell, RAB Member – Are there horizontal fissures in the Spring Valley landscape where erosion effects could be caused by surrounding hillsides?

Steve Hirsh, U.S. Environmental Protection Agency Region III, clarified that there are cracks in the bedrock through which groundwater can flow.

Dr. P. deFur, RAB TAPP Consultant, added that fractures are naturally occurring bedrock features, but the vertical and horizontal groundwater flow rates in Spring Valley bedrock fractures are not well known.

T. Beckwith added that groundwater flow rates depend on the specific fracture size and depth.

Question from A. Hengst, Audience Member – How long does a typical sampling event last until completion? Are you collecting groundwater throughout the day or within a few hours?

T. Beckwith explained that some sampling locations take longer than others, depending on the groundwater production rate within the well. When a specific well is purged prior to sampling, the groundwater may flow slowly (in which case sampling could take hours) or flow very quickly (in which case sampling may take as little as a half-hour).

Comment from A. Hengst, Audience Member – Regarding the fluctuations in perchlorate levels at SW-25, there is a synagogue located within the stream watershed and situated upstream of the surface water sampling location. Religious holidays and other events are held along Massachusetts Avenue and include the use of road flares.

T. Beckwith acknowledged that this anthropogenic source of perchlorate may explain the fluctuating concentrations at SW-25. He reiterated that this location will continue to be sampled due to detections exceeding the drinking water advisory level, even though the perchlorate contamination is probably unrelated to historical AUES activities.

Question from A. Hengst, Audience Member – Do the selected wells for future quarterly sampling in front of Kreeger Hall include MW-44 and MW-45?

T. Beckwith replied that these two wells were not sampled in July 2013 along with the selected quarterly locations (PZ-4S/D at AU's campus and the Sibley Hospital Sump). Based on elevated perchlorate concentrations in April/May 2013, these two locations (MW-44 and MW-45) will be included in future quarterly sampling events.

Question from Mary Douglas, RAB Member – Has the small creek between Fordham Road and 49th Street ever been tested for surface water contamination?

T. Beckwith and D. Noble confirmed that SW-20 is situated within this creek.

Question from Mary Douglas, RAB Member – None of the sampling results for SW-20 are highlighted on the overall groundwater map. Does that indicate that the surface water quality in the stream is fine?

T. Beckwith confirmed that no significant detections of concern were observed at SW-20.

Question from K. Connell, RAB Member – Regarding the next scheduled RAB meeting in January 2014, can we assume that you will meet with the Spring Valley Partners to discuss the groundwater sampling results prior to the RAB meeting, and then return with updated information on how to interpret these data? Will you have a summary prepared by the January 2014 RAB meeting?

T. Beckwith replied that interpretations of these data will likely be shared with the RAB as early as March 2014. The Partners and groundwater experts will tentatively meet next in January 2014 to discuss the new

deep well drilling effort, but the results of this meeting may not be available as early as the January 2014 RAB meeting.

III. Community Items

Dr. Mary Fox of Johns Hopkins University (JHU) Bloomberg School of Public Health presented the findings of the follow-on Spring Valley public health study and community survey. Team members included Beth Resnick, Associate Scientist at JHU. (The overall purpose, structure, and contents of this document were described at previous RAB meetings.)

M. Fox thanked the RAB for the opportunity to briefly review the follow-on health study findings. She emphasized that this presentation is equivalent to the Cliffs Notes Study Guide version of the full report and the public presentation given during Summer 2013. Links for the full final follow-on health study report and associated documents were provided following the presentation components.

Challenges and Strengths: The follow-on health study results, conclusions, and recommendations were influenced by several challenges and several strengths that provided advantages for addressing each challenge.

Challenges included the **time lag** duration that has passed since AUES activities ended (approaching 100 years), **disease latency** (between exposure and illness), **data limitations** (including health, exposure, and environmental factors), and the **high mobility** of residential populations (particularly within the 20016 zip code, where a large proportion of residents are relatively new to the area, and where approximately 44 percent of the community has only resided in Spring Valley since 2005).

Strengths included the **integrated assessment comprised of multiple aspects of community health** (including heath data sources, environmental data sources, and community input via survey responses) and the **ability to build on the original 2007 health scoping study findings** (which provided several health outcomes and recommendations for further evaluation).

2013 Follow-Up Health Study Objectives: Specific follow-on health study objectives were identified for each of three study components, as follows:

- **Community Health Assessment** – The objective was to update statistics on community mortality and on selected cancer types.
- **Community Survey** – The objectives were to characterize residential, work, and study history (including time in residence) in three geographic areas; describe overall health status and specific health conditions; and gather community input on public health and community concerns.
- **Environmental Assessment** – The objectives were to develop general community environmental 'portraits' and to extend the original 2007 health scoping study by preparing a follow-on assessment of site-related water sampling plans and associated sampling data. (The 2007 study examined soil data, and the follow-on study serves as an extension of this effort).

Approach and Framework: The framework for evaluating overall community health is comprised of findings from the three study components described above. The overall approach is to compare rates, trends, and survey responses across four geographic areas: Spring Valley, DC; Chevy Chase, MD; the entire District of Columbia (DC); and the U.S. nationwide. This approach is consistent with the approach used during the original 2007 scoping study, and the ultimate goal is to offer public health recommendations, as indicated by the follow-on health study findings.

Main Findings of the Three Study Components:

- **Community Health Assessment Data and Results:** Data included population demographics from 2006 through 2010 (obtained from the U.S. Census and the American Community Survey),

age-adjusted rates for the top 15 causes of mortality from 2004 through 2010 (obtained from the DC Department of Health (DCDOH) Division of Vital Records), and age-adjusted rates for selected cancer incidence and mortality from 2005 through 2009 (obtained from the DCDOH Vital Records and Cancer Control Registry). Selected cancers included leukemias, lymphomas, melanomas, and those affecting the bladder, kidney and renal pelvis, liver and bile duct, and the lung and bronchus.

- Demographic comparisons showed very good correspondence between racial composition, income, and education among the primary study areas (Spring Valley, Chevy Chase, and DC overall). These demographic similarities are important for providing good statistical data comparisons.
- With respect to the top 15 causes of death, both Spring Valley and Chevy Chase have **lower rates compared with the national population**, and in some cases lower rates when compared with DC overall (e.g., selected cancers). Statistical differences were observed between Spring Valley and Chevy Chase, with **lower rates of heart disease, accidents, and homicide in Spring Valley**.
- With respect to incidence of selected cancers, both Spring Valley and Chevy Chase have **lower cancer incidence compared with the national population**, and in some cases lower rates when compared with DC overall (e.g., lung and bronchus cancers). Statistical differences were observed between Spring Valley and Chevy Chase, with **higher incidence of lymphomas in Spring Valley** during this seven-year time period.
- With respect to mortality from selected cancers, the **same overall pattern** was observed as for the incidence of these cancers. No significant differences were observed between Spring Valley and Chevy Chase.
- Although annual cancer incidence and mortality rates are highly variable, several annual cancer trends were observed (for the 1994 through 2009 time period). **For these specific cancers, small increases were observed for the study areas compared to small decreases nationwide.** In Spring Valley, small increasing trends were found for bladder and lung and bronchus incidence and for lymphoma mortality. A moderate, statistically significant increasing trend was found for lung and bronchus mortality. In Chevy Chase, small increasing trends were found for lung and bronchus mortality and for lymphoma mortality.

- **Community Survey Data and Results:** Details of the community survey contents are available in the full follow-on health study report. A total of 865 respondents participated in the community survey. Of these respondents, 79 percent reside in the 20016 zip code (primarily comprising the Spring Valley FUDS), 12 percent reside in the 20015 zip code (Chevy Chase), and 9 percent reported having lived in both areas.
  - Within the 20016 zip code (total of 757 respondents), 52 percent are inside the FUDS boundary, 35 percent are outside the FUDS boundary, a small portion (10 percent) have spent time in both portions of the zip code 20016, and the remaining small number (2 percent) are unknown.
  - In all three geographic areas of the 20016 zip code, **survey respondents reported equal or better overall health status than the general nationwide population**. One exception to this status was noted: **among long-term respondents living inside the FUDS for 18 or more years, a slightly higher proportion (17 percent) reported fair or poor health when compared to the national average (13 percent)**.

- **Most self-reported health conditions were reported at percentages below the national average.** Examples include cancer, skin disease, and diabetes. **Several conditions (e.g., learning disabilities and thyroid disease within the Spring Valley FUDS) were reported at a higher frequency than the corresponding national averages.**
    - Learning disabilities and peripheral neuropathy were reported at higher frequencies by respondents in the 20016 zip code (both inside and outside the FUDS) and in the 20015 zip code.
    - Thyroid disease was reported at higher frequencies by respondents in the 20016 zip code (outside the FUDS) and in the 20015 zip code.
    - Hypertension, heart disease, and respiratory disease were reported at higher frequencies by respondents in the 20015 zip code (Chevy Chase).
- **The top five reported health concerns were strongly consistent among study areas**, with minor shifts in rankings; these included cancer, hypertension, skin disease, thyroid disease, and respiratory disease. **Strong agreement on public health and community concerns was also reported among study areas**; these included drinking water quality, chronic conditions, nutrition and obesity, and outdoor air quality. **Two concerns were only mentioned by respondents inside the Spring Valley FUDS: causes of cancer, and site-related chemical contamination.**

- **Environment Assessment Data and Results:** Data included community environmental health portraits from 2005 through 2012 (obtained from the DDOE, EPA, and Washington Aqueduct), an exposure pathway evaluation for the Spring Valley FUDS (using data obtained from the EPA and USACE reports), and water monitoring plans (not the ongoing groundwater study implementation) and data evaluation for the Spring Valley FUDS (which includes available data from USACE and their contractor URS).
    - Overall, with respect to the environmental portrait addressing industrial facilities and air and water quality, the 20016 zip code contains a greater density of facilities that report to the EPA compared with the 20015 zip code. However, this does not relate directly to any particular exposure.
    - Air quality is considered to be a regional phenomenon. During the past 10 years, **air quality has improved in the DC area**, where ozone is now the only air pollutant found above national standards. **Exposures and risks from airborne toxins are higher than the national average but are typical of other urban areas in the U.S.**, and there is potential for adverse respiratory outcomes due to airborne toxins.
    - Both zip codes (20016 and 20015) are served by the public water system. **These water supplies meet existing drinking water standards for arsenic and perchlorate.**
    - With respect to site-specific exposure pathways, the **two completed conceptual site models (CSMs) were very similar and were developed independently** by JHU (during the original 2007 health scoping study) and USACE (as part of the ongoing site-wide project). Minor differences were limited to JHU's additional evaluation of particulate inhalation for residents and landscape workers. **No increased health risks were indicated based on incidental and recreational exposure to surface water**, which was evaluated for all contaminants that were detected during sampling.
    - With respect to evaluation of USACE site-specific water study plans, **the types of data and the general approaches developed for the water study are adequate to address the stated objectives (e.g., to characterize site-wide groundwater issues)**. Several data

gaps were identified in the initial plans, including the rationale for monitoring well locations, the role of biogeochemical processes in transforming contaminants, and the potential for groundwater seepage to the ground surface (but these data gaps may have been or will be addressed by USACE as part of the groundwater monitoring program).

Summary of Main Findings:

- **Community health continues to be very good in the Spring Valley and Chevy Chase study areas.** Mortality rates for the major causes of mortality are lower or similar to national rates, while incidence and mortality rates for selected cancers are mostly lower than national rates. Some cancer rate time trends were found to be increasing in the study areas.
- **Survey respondents reported better health overall than the national average.** Respondents across the study areas reported a common set of concerns about chronic health conditions, air and water quality, and nutrition/obesity. Respondents residing within the Spring Valley FUDS continue to be concerned about site-related exposures.
- **Environmental data show that overall air and water quality are good.** Air quality concerns are common across many cities nationwide. No increased risks were estimated from contact with surface water on the site. Although the methods and approaches used in the site-related water study are appropriate for the study goals, some aspects could be strengthened.

Recommendations for Community Health and Outreach:

- Development of a complete profile of cancer incidence and mortality including rates and time trends for all major cancers, as well as cancers selected for site-related or other community concerns, is recommended. The purpose of this recommendation is to fully understand the overall community portrait of observed cancer trends for common types (e.g., arsenic-related cancers, which comprise approximately 45 percent of all reported types) and to evaluate other top cancer types.
- Continued monitoring is recommended for six health conditions that were reported more frequently in the study areas (based on community survey results) compared with the national average. These include heart disease, hypertension, learning disability, peripheral neuropathy, respiratory disease, and thyroid disease.
- Continued engagement with study area communities is recommended to identify opportunities for communication, education and evaluation of general concerns reported during the community survey (including drinking water quality, chronic medical conditions, outdoor air quality, and nutrition/obesity).

Recommendations for Further Groundwater and Surface Water Study:

- The groundwater and surface water study methods and approaches employed by USACE were found to be adequate to achieve the stated objectives.
- Further documentation and evaluation is recommended with respect to the USACE strategies for determining monitoring well locations, the role of biogeochemical processes on contaminant fate and transport, and the potential for groundwater seepage onto surfaces. These three site-wide water study aspects are anticipated to be further addressed in the Site-Wide Groundwater RI report for Spring Valley.

2013 Follow-on Health Study Strengths: As noted earlier in the presentation, one of this study's strengths is that it was built upon the original 2007 health scoping study findings. In conclusion, the follow-on study showed very strong agreement and continuity with the original study, thus the follow-on study findings affirm the original scoping study findings. Additionally, findings from the community health survey and findings from the objective health data statistics were also in strong agreement.

Further Information: The full follow-on health study report and associated documents are available on JHU's website at the following link: **http://www.jhsph.edu/springvalley.** These documents are also accessible via DDOE's website and USACE's Spring Valley project website.

Question from A. Hengst, Audience Member – You mentioned the role of biogeochemical processes on contaminant fate and transport in groundwater. What specifically do you mean by this?

M. Fox explained that this topic addresses the possible presence of bacteria that are capable of reducing or modifying the chemical constituents of groundwater, which could change the groundwater concentrations measured over time.

Question from A. Hengst, Audience Member – Are you referring specifically to arsenic and perchlorate when discussing contaminant fate and transport?

M. Fox confirmed this.

S. Hirsh, U.S. Environmental Protection Agency Region III, clarified that arsenic does not break down in groundwater over time, so this follow-on health study component really only addresses biogeochemical reduction of perchlorate.

M. Fox acknowledged this and noted that her explanation reflects general contaminant fate and transport based on previous groundwater plans.

Question from Kent Miller, Audience Member – Regarding the presentation slide on cancer mortality, are these seven selected types of cancer due to arsenic?

M. Fox clarified that four of these cancer types (bladder, kidney, liver, and lung) are considered to be arsenic-related, based on research showing an association between arsenic exposure and cancer development. The other three cancers (leukemia, lymphoma, and skin) are not linked to arsenic exposure.

Question from K. Miller Audience Member – My understanding is that four of these cancers can also be caused by smoking. Have you adjusted the cancer mortality rates to reflect the differences in prevalence of smoking across different study populations?

M. Fox acknowledged that smoking is one cause of these four cancers, but the rates of smoking within the study populations were beyond the scope of the follow-on health study.

Comment from K. Miller Audience Member – I calculated an estimate based on American Lung Association information. The nationwide prevalence of smoking is around 20 percent, compared to percentages of around 8 percent for the Metropolitan Statistical Area (MSA) of Bethesda-Gaithersburg-Fredrick which has a demographic and education attainment similar to Spring Valley. In this calculation, when cancer rates are adjusted for the difference in smoking prevalence (i.e., lowering the national lung cancer rate by 80 percent and lowering that of Spring Valley rate by a smaller percentage), when one looks at what is left after subtracting the mortality due to smoking, it appears that Spring Valley is not healthier than the nation.

M. Fox replied that there are many causes of cancer. Roughly 90 percent of lung cancers are attributable to smoking, which is consistent with the information stated by the audience member, but not accounting for smoking prevalence is certainly a data limitation. Lung cancer mortality rates do appear to be increasing within the Spring Valley and Chevy Chase neighborhoods, which is a statistic of concern.

Question from K. Miller, Audience Member – Some community members would like to address the issue of whether there are consequences of exposure to chemical warfare materiel (CWM) and whether these consequences can be interpreted using available data. For example, is it possible to control for smoking rates within the residential populations to see whether living in a neighborhood with CWM significantly contributes to the increasing cancer rates? Based on his calculation, it appears that the Spring Valley community is not healthier than the overall nation when the calculation has been adjusted to account for smoking prevalence.

M. Fox reiterated that this analysis is beyond the scope of the follow-on health study, but this point is well taken.

Comment from K. Miller Audience Member – The skin cancer data are not described as arsenic-related. However, arsenic is one cause of squamous cell carcinoma. I wondered why you excluded squamous cell carcinoma from the follow-on health study.

M. Fox clarified that these data specifically refer to melanoma, not other forms of skin cancer. Squamous cell carcinoma was excluded due to the difficulty in obtaining relevant data from the cancer registry. In contrast, data focused on melanoma were easily obtained.

L. Monsein added that there probably is not a mortality rate associated with squamous cell carcinoma, while mortality rates are likely available for melanoma.

M. Fox agreed that this is an issue of data availability.

Question from Lee Monsein, RAB Member – Regarding the health concerns reported by survey respondents, can you confirm the percentage of residents who reported some type of cancer?

M. Fox confirmed that 14 percent of the survey respondents reported experiencing a form of cancer.

Question from L. Monsein, RAB Member – How does that compare with the objective data obtained from the cancer registry? If these data also indicated around 15 percent cancer incidence, then this would represent a huge number of Spring Valley residents.

M. Fox clarified that it is difficult to compare these two datasets. During the community health survey, only 62 respondents within the FUDS

As a result, the cancer incidence reported in the community survey is under-reported compared to the cancer incidence data available from the registry.

Question from L. Monsein, RAB Member – It sounds like cancer was reported as a health concern by a much higher percentage of survey respondents compared to a lower percentage of residents documented in the cancer registry.

M. Fox acknowledged that cancer incidence and cancer mortality were treated as a general category and broken down into specific cancer types for statistical purposes. There are certainly more than 62 cases of cancer recorded in the registry data that we received.

L. Monsein thanked M. Fox for the clarification.

Question from William Krebs, RAB Member – What was the specific question about cancer in the community survey?

M. Fox replied that the survey included a question that asked participants whether they have ever been personally diagnosed with cancer. As appropriate, survey participants who are the head of their household were permitted to respond on behalf of their family members.

Question from W. Krebs, RAB Member – Could the higher incidence of reported conditions, such as learning disabilities, reflect greater access to medical care and psychologists instead of an actual difference in community health?

M. Fox agreed that this is a plausible explanation.

Question from Malcolm Pritzker, RAB Member – You mentioned that only a few dozen survey participants responded to the question about cancer diagnoses?

L. Monsein noted that a total of 62 Spring Valley FUDS residents responded to this question.

Question from M. Pritzker, RAB Member – How many people participated in the survey?

M. Fox replied that a total of 865 community survey responses were received.

K. Connell noted that this number includes all respondents, including those outside of the Spring Valley FUDS.

L. Miller added that around 400 of these respondents reside within the Spring Valley FUDS.

M. Fox confirmed that the reported percentages are based on the number of responses obtained for each category.

Question from M. Pritzker, RAB Member – There are close to 25,000 people residing in Spring Valley. How many responses did you receive indicating that the respondent had been diagnosed with cancer?

M. Fox replied that within the Spring Valley FUDS study population, 62 respondents reported having been diagnosed with cancer, out of a total of 403 respondents.

Comment from K. Connell, RAB Member – This discussion reflects the challenge when performing a broad-based community survey. The results depend on the portion of the community who choose to respond. It is possible to obtain a generalized sample, but it is also possible that respondents with specific health concerns are most likely to respond, thus creating a biased sample. It is not feasible for JHU to read further into the data based on a small sample of responses from a very large community of over 25,000 individuals. Personally and academically, I respect the conclusions of the follow-on health study, as the results are solid from a statistical perspective, and the reported percentages are valid within the total number of surveys received from the community.

K. Connell noted that the primary question is whether a valid sample was obtained from the community of over 25,000 individuals. Given the failure of the rest of the community to respond to the survey, this question cannot be answered. However, within the survey responses themselves, sufficient data was submitted by each of the sampled groups (within zip codes 20016, 20015, and both) to assess cancer mortality and other health rates. We just don't know whether the study populations were over-represented or under-represented based on the demographics of our survey respondents.

B. Resnick, Associate Scientist at JHU, emphasized that the community survey was never intended to be a standalone document containing validated evidence of community health, and the summarized results should not be over-interpreted. Instead, the survey is a small portion of the follow-on health study that simply provides supporting information for other study findings, conclusions, and recommendations, and the survey results must be interpreted in conjunction with all other data sources. The follow-on health study team never intended to survey every single resident within the study areas.

Question from G. Vassiliou, RAB Member – Can you provide an indication of how many years these respondents lived within the area? What did this distribution of residency look like?

M. Fox and B. Resnick replied that all community survey participants were organized into a list based on their length of residence, and then this list was divided into three groups: short (up to 5 years), medium (5 to 17 years), and long (18 or more years). The resulting information was presented as percentages in the final report.

B. Resnick added that 24 percent of Spring Valley FUDS survey respondents have resided in Spring Valley for five or fewer years, while 35 percent have resided in Spring Valley for 6 to 17 years. The remaining 41 percent have resided in Spring Valley for 18 years or longer.

Question from N. Wells, ANC3D Commissioner – During recent years, the incidence of smoking has decreased significantly, but the numbers of reported cancers have increased in the Spring Valley area, correct?

M. Fox explained that the team was unable to characterize smoking rates, thus she cannot adequately answer this question. She would expect the incidence of smoking to be relatively low within the study

areas. Within the follow-on health study, increasing trends for lung (and bronchus) cancers were observed for the Spring Valley neighborhood.

Question from N. Wells, ANC3D Commissioner – Do these increasing trends also apply to the Chevy Chase, Maryland neighborhood?

M. Fox confirmed that these increasing trends for lung (and bronchus) cancers were also observed for the Chevy Chase neighborhood in the context of cancer mortality rates.

Question from K. Miller Audience Member – Did the community survey include any questions about the participants' overall lifestyle?

M. Fox clarified that these types of questions were not included in the survey. Lifestyle questions were limited to their affiliated study area (within or outside of the Spring Valley FUDS) and the length of time residing within the study area.

Comment from K. Miller Audience Member – Lifestyle choices can cause diseases that are otherwise preventable.

M. Fox acknowledged this. The community survey was not intended to be an analytical assessment of health, but rather it serves as a descriptive reporting mechanism that accompanies the overall follow-on health study results and conclusions.

Question from M. Douglas, RAB Member – Do you consider the increased incidence of certain cancer types in Spring Valley to be biased, based on the limited self-selected reporting of cancers by residents? Would this limited follow-on health study justify a broader health study?

M. Fox noted that the reported cancer incidence within the community survey results is regarded as under-reporting, based on the more comprehensive and informative cancer incidence and mortality statistics obtained from the Department of Health.

Comment from M. Douglas, RAB Member – My question refers to increased cancer incidence and mortality rates as indicated by the cancer registry data. It seems that these increasing cancer trends would justify conducting a broader study of all 25,000 Spring Valley residents.

M. Fox explained that the full report includes more information on other factors that may have contributed to the increasing lung and bronchus cancer mortality trends in the Spring Valley and Chevy Chase study areas. For example, nationally lung cancer mortality rates have decreased among males but increased among females. Also, US mortality rates are higher for older patients. Looking at the registry data from the study areas there are more females than males and patients from the study areas are older. So these community demographic factors also contribute to the overall increasing lung cancer mortality trends.

M. Fox noted that as a public health professional, she would be curious to learn more about cancer statistics within the study areas (Spring Valley and Chevy Chase). This is the source of JHU's recommendation to conduct a full cancer profile.

Question from M. Douglas, RAB Member – When you use the phrase 'complete cancer profile,' does this include data from all 25,000 residents within the study area?

M. Fox explained that the complete cancer profile includes all reported cancer types and statistics obtained from the cancer registry, for the entire neighborhood

B. Resnick added that the complete cancer profile is described in the follow-on health study final report but is not part of the descriptive community health assessment portion.

Comment from K. Miller Audience Member – Regarding specific spoken vocabulary used during this presentation, it sounds like some references to 'causes of cancer' are referring to 'cancer sites' instead. For example, lung cancer would be the cancer site, while smoking would be the cancer cause.

M. Fox confirmed this and apologized for any confusion this may have caused.

Question from K. Connell, RAB Member – If your recommendations include a suggestion for conducting a broader study focused on cancer incidence and mortality, how would you obtain a much larger (and thus better) response from the entire community (over 25,000 people) compared with the small response you received did first time?

M. Fox replied that a comprehensive cancer profile could be prepared using the cancer registry, which includes the pertinent information from the entire community.

Question from K. Connell, RAB Member – Do you know if this type of profile can be cross-correlated with the length of time each individual lived within the Spring Valley FUDS?

M. Fox responded that this data would not be available via the cancer registry.

Comment from K. Connell, RAB Member – That would be my concern when preparing a comprehensive cancer profile. The available data would perhaps be misinterpreted if the relationship between length of residency and the incidence of cancer cannot be determined.

M. Fox acknowledged this and noted that K. Connell's description reflects a research study rather than the overall profile recommended by JHU. Specifically, the team recommended performing another type of evaluation, which would serve as another piece of the community health assessment.

Comment from K. Connell, RAB Member – Within the Spring Valley community, there are obviously concerns and anxieties about the potential impact of chemicals on human health and the incidence of particular cancer types. If an additional health study is conducted, the JHU team must clearly describe what types of explanations and conclusions can or cannot be made based on huge data gaps and data availability limitations. The community would not want another study to result in a database that doesn't answer the question of interest.

M. Fox acknowledged that this is a fair point.

Comment from W. Krebs, RAB Member – L. Monsein left the meeting early, but if he were here, he would say this type of site-specific health study cannot be conducted regardless of the available funding amount. The Spring Valley residential population is too transient and the community response level provides too small of a sample.

M. Fox responded that the overall community health picture with respect to cancer incidence and mortality rates (which was part of the follow-on health study) is certainly a different question than assessing site-related exposures and cancer risk (for which an answer cannot be obtained due to the limitations mentioned above).

Question from G. Vassiliou, RAB Member – Given the follow-on health study results, and reflecting my views as an observer, do you conclude that the Spring Valley neighborhood exhibits average mortality and cancer rates that are lower than the national average?

B. Resnick confirmed this with respect to the mortality causes and cancer types that were examined statistically in the follow-on health study report.

G. Vassiliou added that this conclusion is strikingly obvious from his viewpoint, and thanked B. Resnick for the information.

IV. Open Discussion and Agenda Development

A. Next Meeting: Tuesday, January 14, 2013

Tonight's meeting is the last RAB meeting scheduled in calendar year 2013.

Upcoming meetings will be held in January 2014 and March 2014.

RAB meetings are not held in even numbered months.

B. Future Agenda Topics

- Report by ERT on Site-Wide RI Report Human Health Risk Assessment (TBD)
- Update on the Community Relations Plan for the Spring Valley FUDS (TBD)
- Update on the ATSDR Health Consultation for 4825 Glenbrook Road (TBD)

D. Noble mentioned that the Draft ATSDR Health Consultation for 4825 Glenbrook Road will be available for public review tentatively as early as 2014. [This document was described and discussed at the September 2013 and previous RAB meetings, and is being prepared by the ATSDR, not by USACE.]

C. Open Discussion

G. Beumel asked if there were any additional agenda topics the RAB wishes to discuss.

No additional agenda topics were shared.

V. Public Comments

G. Beumel asked if there were any topics the audience wishes to further discuss.

No additional public comments or questions were shared.

G. Beumel thanked everyone for attending.

VI. Adjourn

The meeting was adjourned at 8:42 PM.