
Final

Phase I Remedial Investigation for CS-C503

PERFORMANCE-BASED RESTORATION JOINT BASE ANDREWS NAVAL AIR FACILITY WASHINGTON CAMP SPRINGS, MARYLAND

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**Phase I Remedial Investigation at CS-C503
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Joint Base Andrews Naval Air Facility Washington
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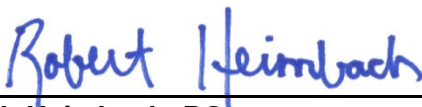
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The information contained in this report is true and correct to the best of my knowledge.



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12/27/2013

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Acronyms and Abbreviations

µg/kg	micrograms per kilogram	NCP	National Oil and Hazardous Substances Contingency Plan
°F	degrees Fahrenheit	NCDC	National Climatic Data Center
AFB	Air Force Base	NPDES	National Pollutant Discharge Elimination System
amsl	above mean sea level	NPL.....	National Priorities List
Bay West.....	Bay West, Inc.	PA.....	preliminary assessment
BERA	Basewide Ecological Risk Assessment	PBR	performance-based restoration
bgs	below ground surface	PCB	polychlorinated biphenyl
BTAG	Biological Technical Assistance Group	ppb.....	parts per billion
BX	Base Exchange	ppm.....	parts per million
CEC	chemical exceeding criteria	QC	quality control
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	QSM	Quality Systems Manual
COMAR.....	Code of Maryland Regulations	RCRA	Resource Conservation and Recovery Act
CSM	conceptual site model	RI	remedial investigation
DERA	Defense Environmental Restoration Account	RSL.....	regional screening level
DO.....	delivery order	SI	site inspection
DoD.....	Department of Defense	SOO.....	statement of objectives
DRO	diesel range organics	SquiRT.....	Screening Quick Reference Tables
ERP.....	Environmental Restoration Program	SVOC	semi-volatile organic compound
ESCC	ecological screening criteria comparison	TCL.....	target compound list
FFA	Federal Facilities Agreement	TestAmerica. .	TestAmerica Laboratories, Inc.
GRO.....	gasoline range organics	TOC	total organic carbon
HHSCC	human health screening criteria comparison	TPH	total petroleum hydrocarbons
IDW	investigation derived waste	UCL	upper confidence limit
JBA	Joint Base Andrews Naval Air Facility Washington	UFP-QAPP	Uniform Federal Policy for Quality Assurance Project Plan
LCS	laboratory control sample	URS	URS Corp.
LCSD	laboratory control sample duplicate	USACE	United States Army Corps of Engineers
LOD.....	limit of detection	USAF	United States Air Force
MCL	maximum contaminant level	USEPA	United States Environmental Protection Agency
MDE	Maryland Department of the Environment	UU/UE	unlimited use/unrestricted exposure
MS/MSD.....	matrix spike/matrix spike duplicate	VOC.....	volatile organic compound
NOAA.....	National Oceanic and Atmospheric Administration	WSSC.....	Washington Suburban Sanitary Commission

EXECUTIVE SUMMARY

A Phase I Remedial Investigation (RI) was conducted at CS-C503 at Joint Base Andrews Naval Air Facility Washington (JBA), located near the community of Camp Springs, Maryland. The Phase I RI objective is to determine whether hazardous substances were released to the environment and/or whether hazardous substances have impacted the environment exceeding human health or environmental exposure criteria in accordance with the CS-C503 Uniform Federal Policy for Quality Assurance Project Plan (UFP-QAPP) (Bay West, 2012). This Phase I RI Report presents the field investigation results, human health and ecological screening criteria, chemicals exceeding criteria (CECs), a site-specific conceptual site model (CSM), conclusions, and recommendations.

CS-C503, as designated in the Environmental Restoration Program (ERP) at JBA, is a 50-foot by 500-foot retention pond located near the intersection of Arnold Avenue and North Perimeter Road and directly north of Building 1889. The retention pond drainage area originates in the vicinity of the Base Exchange (BX), Building 1811. Runoff from the building, asphalt loading area, and adjacent asphalt parking lot is conveyed via the storm sewer from the BX building to an outlet at the south end of the retention pond. Prior to this Phase I RI, a stormwater maintenance project was completed at the retention pond in which both polychlorinated biphenyls (PCBs) and total petroleum hydrocarbons (TPH) were detected in the pond sediment during material disposal sampling. No additional analyses were conducted with regards to the source or extent of PCB contamination, if any.

The work conducted under this Phase I RI includes the evaluation of the presence or absence of PCBs within the existing retention pond and the associated drainage area by analyzing for the target compound list (TCL) PCBs in soil, sediment, and surface water. The samples were also analyzed for diesel range organics (DRO), gasoline range organics (GRO), and total organic carbon (TOC) as these parameters can be correlated to PCB detections, if any.

Eleven soil samples, eight sediment samples, and three surface water samples were collected from 22 locations throughout the retention pond area and retention pond drainage area. DRO was detected in sediment and surface water samples at concentrations that exceed Maryland Department of the Environment (MDE) Interim Final Cleanup Standards (MDE, 2008); however, detections of DRO are anticipated in storm sewer networks and stormwater retention ponds by design and are managed under the United States Environmental Protection Agency (USEPA) National Pollutant Discharge Elimination System (NPDES). PCBs were detected in four surface soil samples on the side slopes of the pond; however, no PCB detections exceeded the human or ecological screening criteria used during the development of this report.

During the review of this Phase I RI report, the Biological Technical Assistance Group (BTAG) identified a mammalian soil screening criteria for exposure to PCBs published by the National Oceanic and Atmospheric Administration (NOAA) in the Screening Quick Reference Tables (SQuiRT). The BTAG comments and responses to their comments are included in **Appendix E** of this report for reference. The NOAA SQuiRT mammalian soil screening criteria was developed by the USEPA Region 5 for the shrew or vole and is two orders of magnitude lower (0.332 µg/kg) than the laboratory detection limit (11 µg/kg) and four order of magnitude lower than the typical cleanup criteria established by the USEPA (1,000 µg/kg). Even though there were detections of PCBs above the USEPA Region 5 mammalian criteria for PCB exposure in soil, no further investigation at CS-C503 is warranted due to the following:

- Habitat potential within the Henson Creek drainage area (where CS-C503 is located) is very limited, as reported in the Basewide Ecological Risk Assessment (BERA);

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Performance-Based Restoration**

Joint Base Andrews Naval Air Facility Washington, Maryland

- PCBs were only detected in four soil samples at estimated concentrations within a localized area on the banks of the pond;
- PCBs were not detected at concentrations greater than the laboratory limit of detection (LOD) in any of the other soil, sediment, or surface water samples within the retention pond or in the retention pond drainage area during the Phase I RI field work; therefore, no residual source of PCBs is present at CS-C503;
- PCBs were not detected at concentrations exceeding the USEPA residential regional screening levels (RSLs) or the BTAG ecological freshwater sediment values; and
- PCBs were not detected above a likely PCB site remediation goal under a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) removal action.

1.0 INTRODUCTION

1.1 Project Authorization

This Phase I Remedial Investigation (RI) Report has been prepared for CS-C503 at Joint Base Andrews Naval Air Facility Washington (JBA), located near the community of Camp Springs, Maryland (**Figure 1-1**). The United States Army Corps of Engineers (USACE) - Omaha District has contracted Bay West, Inc. (Bay West) to perform the performance-based restoration (PBR) at multiple sites at JBA under Contract Number W9128F-10-D-0025, Delivery Order (DO) No. 0002.

In May 1999, JBA was added to the National Priorities List (NPL). The National Superfund electronic database identification number for the base is MD0570024000. CS-C503 was identified in Section 6.7.2.12 of the Federal Facilities Agreement (FFA) between the United States Environmental Protection Agency (USEPA) and United States Air Force (USAF) (USEPA/USAF, 2011). A Phase I RI, as defined in the PBR Statement of Objectives (SOO), consists of a sampling and reporting effort equivalent to Preliminary Assessment and Site Inspection (PA/SI), as defined in the National Oil and Hazardous Substances Contingency Plan (NCP) requirements, without the Hazard Rating Score (USAF, 2011).

CS-C503 has previously been referred to in other historical reports as the Polychlorinated Biphenyl (PCB)-Contaminated Sediment in the Retention Pond.

1.2 Objective and Scope

The objective of this Phase I RI was to determine whether hazardous substances were released to the environment and/or whether hazardous substances have impacted the environment exceeding human health or environmental exposure criteria.

The work conducted under this Phase I RI includes the evaluation of whether chemicals exceeding criteria (CECs) are present or absent within CS-C503 and the associated retention pond drainage area. Prior to this Phase I RI, a stormwater maintenance project was completed at the retention pond in which both PCBs and total petroleum hydrocarbons (TPH) were detected in the sediment at the CS-C503 retention pond during material disposal sampling. No additional analyses were conducted with regards to the source or extent of PCB contamination, if any.

Based on previous sampling results during the retention pond maintenance project, the following analyses were completed in soil, sediment, and surface water:

- Gasoline range organics (GRO)/diesel range organics (DRO);
- Target compound list (TCL) PCBs; and
- Total organic carbon (TOC).

GRO and DRO were also analyzed for during the Phase I RI field work as an indicator of possible oil-related PCBs if PCBs were detected at concentrations exceeding applicable screening criteria. The retention pond surface water and sediments (with regards to the GRO and DRO detections in the sediment and surface water) are regulated and treated under the USEPA NPDES regulations. In addition, if PCBs were detected at concentrations that exceeded the screening criteria in the soil/sediment samples collected, one sample with the greatest concentration of PCBs was to be analyzed for dioxins/furans.

The sections of this Phase I RI are organized as follows:

Section 1.0 – Introduction: This section provides the introduction, Phase I RI purpose and objective, and site history.

Section 2.0 – Physical Characteristics: This section provides the Basewide and site-specific geology, hydrogeology, surface water hydrology, land use, and habitat descriptions.

Section 3.0 – Phase I Remedial Investigation Procedures: This section describes the procedures used during this Phase I RI.

Section 4.0 – Phase I Remedial Investigation Results: This section describes the results of the Phase I RI and the screening criteria exceedances.

Section 5.0 – Fate and Transport: This section describes the fate and transport for the contaminated media, if any.

Section 6.0 – Human Health Screening Criteria Comparison: This section provides the comparison of detected concentrations against human health screening criteria.

Section 7.0 – Ecological Screening Criteria Comparison: This section provides the comparison of detected concentrations against ecological screening criteria.

Section 8.0 – Conceptual Site Model and Conclusions: This section provides the conclusions and conceptual site model (CSM).

Section 9.0 – Recommendations: This section provides the recommendations for this site.

Section 10.0 – References: This section provides the references cited in the Phase I RI.

Appendix A – Historical Aerial Images: This appendix includes the historical aerial images used during the Phase I RI data review.

Appendix B – Field Documentation: This appendix includes the field documentation from the field work stage of the Phase I RI.

Appendix C – Data Validation Report: This appendix includes the data validation report from the data collected during the Phase I RI.

Appendix D – Laboratory Analytical Packages: This appendix includes the laboratory analytical packages from the data collected during the Phase I RI.

Appendix E – Regulatory Comment Worksheet: This appendix includes the comment worksheet in Microsoft Word format.

1.3 Site Location and Description

JBA is located in Prince George's County, near the community of Camp Springs, Maryland. Washington, D.C. is located approximately five miles northwest of the base. The base occupies approximately 4,300 acres and consists of runways, airfield operations, an industrial area, housing, and recreational facilities (**Figure 1-1**).

JBA was originally established as the Camp Springs Army Air Field on August 25, 1942. The name was changed to Andrews Air Force Base (AFB) in 1947, when the USAF was established as a separate military service. The base has served as headquarters at various times for the Continental Air Command, the Strategic Air Command, the Military Air Transport Service, and the Air Force Systems Command. The current major tenant command is the Andrews Naval Air Facility. The missions of the Andrews Naval Air Facility are flight operations and photographic reconnaissance. In 1992, Andrews AFB became an Air Mobility Command Base. In 2009, the name of the base was officially changed to Joint Base Andrews Naval Air Facility Washington to more accurately reflect the joint nature of the missions and operations at the base.

CS-C503, as designated in the Environmental Restoration Program (ERP) at JBA, is a 50-foot by 500-foot retention pond located near the intersection of Arnold Avenue and North Perimeter Road and directly north of Building 1889. The elevations of the bottom and top of the retention

pond are approximately 250 feet and 257 feet above mean sea level (amsl), respectively. In addition, the normal water level elevation is approximately 253 feet amsl, resulting in a normal depth of water of 3 feet. **Figure 1-1** shows the location of CS-C503 within JBA. **Figure 1-2** presents the existing site features and recent aerial imagery.

1.4 Site History

Based on the historical aerial imagery review, discussed in **Section 4.1**, the retention pond was constructed between 1993 and 1998. Both the pipe inlet and overflow structure appear to have been constructed during this time. The retention pond was re-constructed in 2007 with the objective of removing excess sediment, trees, and vegetation, and returning the site to a dry-bottom pond according to the Project Summary Report and associated construction as-builts (ToITest, Inc., 2008). The scope of work included excavating approximately 870 tons of sediment over a 220-foot by 35-foot area. Prior to excavation, two composite samples were collected from the sediment in the retention pond for waste characterization and analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), PCBs, pesticides, herbicides, metals, mercury, TPH, cyanide, sulfides, pH, and ignitability. The samples were collected from the influent and effluent areas of the pond. Results of the analysis indicated that PCB-contaminated sediment was present at concentrations of 190 parts per billion (ppb) and 300 ppb. In addition, DRO was detected at concentrations of 120 parts per million (ppm) and 640 ppm. The waste profile was approved by Maryland Department of the Environment (MDE) as non-hazardous. A total quantity of 870 tons of soil/sediment was excavated, temporarily staged along the east bank of the pond, and transported to the Brown Station Road Landfill in Prince George's County for use as daily cover material. Due to groundwater seeps encountered during excavation and following acceptance from the USAF and MDE, the site was restored to a wet-bottom pond (ToITest, Inc., 2008).

1.5 Previous Investigations

Prior to this Phase I RI, no removal actions or RIs have been completed at CS-C503. In 2009, URS Corp. (URS) completed a Final Evaluation Report, Air Force Compliance Clean-Up Sites, Identification and Evaluation of Defense Environmental Restoration Account (DERA) Eligibility for Multiple Locations at JBA. The report concluded that there was a release of PCBs at the site based on the 2007 waste characterization sampling and it was determined to be DERA eligible. The JBA April 2011 Tier I Meeting Minutes (Tier I Meeting April 2011) reported that PCB Aroclor 1254 and TPH were detected within the pond soil/sediment at concentrations of 300 ppb and 640 ppb, respectively.

2.0 PHYSICAL CHARACTERISTICS

2.1 Geology

2.1.1 Regional Geology

JBA is located within the Atlantic coastal plain physiographic province, 12 miles east of the Atlantic coastal plain and Appalachian piedmont fall line. The coastal plain is characterized by an eastward thickening wedge of unconsolidated sediments, which overlap the rocks of the eastern piedmont. These unconsolidated sediments consist of gravel, sand, silt, and clay, which were derived from erosion of the piedmont and mountains to the west. The Coastal Plain deposits range in age from Cretaceous to Recent and are approximately 1,600 feet thick in the JBA area. The upper 300 feet consists of, from stratigraphically highest to lowest (i.e., from youngest to oldest): the Upland (Pliocene) Deposits (approximately 3 to 55 feet thick); the Calvert Formation (70 to 100 feet thick); the Nanjemoy Formation (70 to 125 feet thick); the Marlboro Clay (0 to 20 feet thick); and the Aquia Formation (100 to 140 feet thick). The Coastal Plain sediments overlie Pre-Cambrian-age metamorphic crystalline basement rocks (Earth Tech, 2001).

Except for the Upland deposits, the Coastal Plain formations strike northeast and dip gently to the southeast. The Upland Deposits consist of interbedded brown to gray silt and clay, sand and gravel. The Calvert Formation is part of the Chesapeake Group in Maryland, which also includes the Choptank and St. Mary's formations. The Calvert Formation on the western shore is subdivided into the basal Fairhaven Member and the overlying Plum Point Marl Member. The Fairhaven Member ranges in color from brown to white and consists mostly of diatoms in a very fine quartz matrix. Some calcareous material may be present at base of member. The Plum Point Member is described as a series of bluish green to grayish brown and buff sandy clay and marls, containing organic remains, including diatoms (CH2M Hill, 2004).

2.1.2 Site Geology

The land surface surrounding the CS-C503 stormwater retention pond, like most of JBA, is generally flat. Soils have not been specifically logged at CS-C503 in previous investigations; however, soils at nearby SS-21 located 250 feet to the southeast, consist of partially saturated Quaternary Upland Deposits comprising three stratigraphic lithologies including: silt-clay; intermediate sand and gravel stratum; and underlying silty fine sand. The Calvert Formation was encountered at 18 to 22 feet below ground surface (bgs) at SS-21 (IT, 1996). The Miocene-age Calvert Formation consists of a thick stratigraphic sequence of lower permeability interbedded greenish-gray silt, clay, and fine sand.

2.2 Hydrogeology

2.2.1 Regional Hydrogeology

Both unconfined and confined aquifers are present in Prince George's County and specifically JBA. Unconfined groundwater units consist of sediments that are in direct contact with atmospheric pressure, whereas confined aquifers are overlain by an impervious or semi-impervious layer of geologic material. Confined aquifers are, therefore, under increased hydrostatic pressure. Precipitation evaporates, infiltrates, or runs off after contact with the ground. A percentage of water from precipitation recharges the hydrostratigraphic units. Hydrostratigraphic units consist of gravel, sand, silt, and clay, or combinations thereof, which behave in a similar and synergistic way to either transmit or retard the movement of groundwater both vertically and horizontally. Groundwater moves through the pore spaces of these hydrostratigraphic units until removal through springs and seeps (next to surface water bodies) or by wells or plant roots (Earth Tech, 2001).

An unconfined groundwater table is present within the Upland Deposits that is derived primarily from precipitation recharge in the vicinity of JBA. The movement of the unconfined groundwater tends to be towards local surface waters. Below this water table are the Calvert, Nanjemoy, and Marlboro formations, which separate the shallow groundwater aquifer from the deeper Aquia formation.

JBA and most of Prince George's County obtains its potable water supplies from the Washington Suburban Sanitary Commission (WSSC) water utility. The source of the potable water supply is surface water from the Potomac and Patuxent Rivers.

2.2.2 Site Hydrogeology

Hydrogeology has not been specifically investigated in the vicinity of CS-C503. Shallow groundwater observed at nearby SS-21, located 250 feet to the southeast, was approximately 8 feet bgs. The downward migration of shallow groundwater is limited by the Calvert Formation at a depth of approximately 18 to 22 feet bgs (IT, 1996).

Based on Basewide groundwater monitoring, groundwater is flowing to the northeast toward Henson Creek. Hydraulic conductivity has been estimated at SS-21 to range between 0.011 and 8.8 feet per day averaging approximately 2.2 feet per day (URS, 2006).

2.3 Surface Water Hydrology

2.3.1 Regional Surface Water Hydrology

JBA is situated on a drainage divide between the Potomac River Basin to the west and the Patuxent River Basin to the east. Surface water originating in the north, west, and south portions of the Base is discharged to the Potomac River via Henson Creek, the Meetinghouse and Paynes Branches of Tinker Creek, and Piscataway Creek. Surface water originating in the eastern portion of the Base flows to the Patuxent River via Cabin Branch and Charles Branch of Western Branch (CH2M Hill, 2005).

The Potomac River and its tributaries identified above are listed in the Code of Maryland Regulations (COMAR) Stream Use Classification Index as Use-IP (Water Contact Recreation and Protection of Aquatic Life). The Patuxent River and its tributaries are also listed in the COMAR Stream Use Classification Index as Use-IP (EA, 2012).

2.3.2 Site Surface Water Hydrology

CS-C503 lies on the northern side of a surface water drainage divide. Based on the site topography and the existing stormwater drainage system, the overflow stormwater from the CS-C503 retention pond drains northeast to the Henson via a stormwater culvert and ultimately the Potomac River.

The elevations of the bottom and top of the retention pond are approximately 250 feet and 257 feet amsl, respectively. In addition, the normal water level elevation is approximately 253 feet amsl resulting in a normal depth of water of 3 feet.

During the development of the Uniform Federal Policy for Quality Assurance Project Plan (UFP-QAPP), the drainage area to the CS-C503 retention pond was mapped by a utility-locating subcontractor on 6 June 2012 to define the drainage area. The retention pond drainage area originates from the Base Exchange (BX), Building 1811 parking lot and surrounding grass areas. Runoff from the roof drains, asphalt loading area, adjacent asphalt parking lot, and grass areas surrounding the BX is conveyed east and north via the storm sewer within the west boulevard of Arnold Avenue. The storm sewer eventually outlets at the south end of the CS-C503 retention pond (**Figure 1-2**). The 6 June 2012 survey confirmed that no other areas drain into the CS-C503 Retention Pond other than overland drainage in the near vicinity of the pond.

The following areas do not contribute stormwater to the CS-C503 retention pond:

- The Club at Andrews (Building 1889);
- The Club at Andrews Parking Lot;
- The electrical substation (Building 1870);
- The detention pond south of The Club at Andrews;
- The Arnold Avenue roadway and boulevard drainage; and
- The North Perimeter Road roadway and ditches.

2.4 Demography and Land Use

2.4.1 Basewide Demography and Land Use

Residential housing, consisting of occupied and unoccupied housing, is the second largest land use area on Base. More than 8,000 full-time military personnel are stationed at JBA, which also employs more than 2,000 civilians. On-Base housing consists of single-family, duplex-type developments, and high-density apartments. The majority of housing is located on the west side of the Base. One residential area is located east of the airfield. Outdoor recreation land use includes golf courses, ball fields, a tennis court, a running track, and picnic areas and the majority are located on the west side of the Base.

Land use adjacent to JBA includes light industrial, commercial, residential, and undeveloped land. On the north side of the Base, there is a business park and light industrial area. Most of the area northeast of the Base is currently undeveloped. The area just south of the Base is primarily residential and undeveloped land. Some of the land south of the residential area is used for commercial purposes. Land use on the west side of the base consists of residential, commercial (shopping centers and office), light industrial, and few areas of undeveloped land. On the east side of the Base, land use includes light industrial/business park and residential.

2.4.2 Site Demography and Land Use

CS-C503 is currently zoned as open space. The future land uses for the site is two land uses: community, and aircraft operations and maintenance.

2.5 Habitats and Biology

In 2005, a Basewide Ecological Risk Assessment (BERA) was completed to provide a basic conceptual model for the evaluation of potential ecological risks on JBA (CH2M Hill, 2005). The following Basewide and Site-Specific Habitat and Biology are summarized from the BERA.

2.5.1 Basewide Habitats and Biology

2.5.1.1 Wetland and Aquatic Habitats

Wetland and aquatic habitats occur infrequently on JBA. Wetlands, which comprise only about two percent of the JBA land area, are mainly associated with the borders of stream channels. The headwaters of five streams are located on-Base, including Piscataway Creek, Henson Creek, Tinkers Creek (Paynes and Meetinghouse Branches), Cabin Branch (North and South Branches), and Charles Branch. There are five small ponds and one larger surface water body (Base Lake) that encompass a total area of approximately 20 acres (CH2M Hill, 2005).

2.5.1.2 Terrestrial Habitats

JBA is located in the Oak-Pine Forest Region, originally characterized by oaks and hickories, with pines prevalent on sites with poorer soils. Vegetative communities at JBA currently consist of extensively managed areas and unmanaged patches of natural plant communities. Approximately 85 percent of JBA is either developed (e.g., housing, buildings, roads, and runways) or intensely managed. The intensely managed areas include lawns, golf course fairways and greens, and recreational fields, as well as the runway borders, the infield, and

approach clear zones. Unimproved areas contain ecological communities such as mixed hardwood forests, mixed hardwood/pine forests, oak forests, oak/hickory forests, oak/pine forests, pine forests, red maple swamp, and shallow emergent marsh.

2.5.1.3 Biota

Various species of birds, mammals, reptiles, amphibians, and aquatic organisms have been observed at JBA and reported in historical documents. The following summarizes the number of species that have been identified in each category:

<u>Species Category</u>	<u>No. of Species on-Base</u>
Birds	68
Mammals	11
Reptiles	1
Amphibians	3
Fish:	
- Base Lake and Golf Course Ponds	13
- Berry Pond	1
- Piscataway Creek	27
- Paynes Branch	8
- Meetinghouse Branch	7
- Cabin Branch	0
- Henson Creek	Habitat Limited, Not Surveyed
- Charles Branch	Habitat Limited, Not Surveyed

There is one Federally-listed endangered plant, the sandplain gerardia (*Agalinis acuta*), on JBA, according to a 1997 Basewide survey. In addition, there is one Federally-listed threatened species, the bald eagle (*Haliaeetus leucocephalus*), that has been observed at Base Lake during winter bird surveys. No bald eagle nests have been found on JBA to date, and it has been reported the eagles were likely transients from Chesapeake Bay. No additional state or federally listed threatened or endangered species have been identified on JBA (Geo-Marine, 2001).

2.5.2 Site Habitat and Biology

2.5.2.1 Wetland and Aquatic Habitats

The CS-C503 retention pond's primary purpose is to treat stormwater and surface water that runs off from the BX parking lot drainage area. There are no wetland or aquatic habitats in the vicinity of the CS-C503 site; however, as stated in **Section 2.2.2**, CS-C503 contributes both groundwater and surface water to Henson Creek. As stated in the BERA, the habitat potential is very limited in this stream reach, especially for fish, and exposures are likely to be very low.

2.5.2.2 Terrestrial Habitats

The area surrounding the CS-C503 retention pond is relatively flat in topography. The site is located within a mowed grass ecological community bordered by a hardwood forest ecological community.

2.5.2.3 *Biota*

Biota has not been specifically investigated at CS-C503; however, CS-C503 was included in the Henson Creek Drainage Area in the BERA. The aquatic and terrestrial receptor species identified in the 2005 BERA are identified below:

- Belted kingfisher (*Ceryle alcyon*) - semi-aquatic avian invertivore/piscivore;
- Great blue heron (*Ardea herodias*) - semi-aquatic avian piscivore;
- Mallard (*Anas platyrhynchos*) - semi-aquatic avian omnivore;
- Muskrat (*Ondatra zibethicus*) - semi-aquatic mammalian herbivore; and
- Raccoon (*Procyon lotor*) - semi-aquatic mammalian omnivore.

2.6 Meteorology and Climate

JBA has a continental type of climate with well-defined seasons in a transition zone between a humid continental climate zone to the north and west and a humid subtropical climate zone to the south. Both of these zones, in addition to the nearby water bodies, influence the local climate at JBA. JBA is on the upper end of a peninsula formed by the Potomac River on the west and south and the Chesapeake Bay on the east. Further to the east, across the Delmarva Peninsula, is the Atlantic Ocean.

Based on data collected at the Upper Marlboro National Climatic Data Center Station located approximately 5 miles to the northeast of the Base, the mean annual temperature for JBA is 54 degrees Fahrenheit (°F), with the warmest month being July (monthly average temperature of 76°F) and the coldest month being January (monthly average temperature of 32°F). The annual precipitation at JBA averages about 42 inches of rain, and the monthly distribution of precipitation is fairly uniform during the year (NCDC, 2013).

3.0 PHASE I REMEDIAL INVESTIGATION TASKS

3.1 Image Review

Prior to the initiation of field activities at CS-C503, a review of aerial imagery from 1964 to 2007 was conducted to identify modifications to the landscape and structures at the Site and to identify contributing sources of potential contamination to the retention pond. Information obtained during the imagery review was used to select sample locations. The aerial images reviewed during this Phase I RI are included in **Appendix A**. The results of the aerial imagery review are presented in **Section 4.1**.

3.2 Site Permits and Utility Locate

Prior to conducting the field investigation, subsurface utilities were located at each soil sampling location around the retention pond. On-site utility clearances were obtained by completing Air Force Form 103 – Work Clearance Request and by submitting a Maryland 811 Miss Utility locate request. All sample locations were cleared by Air Force personnel and a private utility locator. No sample locations were moved based on locations of subsurface utilities. Final sampling locations are shown on **Figure 3-1**.

3.3 Environmental Sampling

On 8 December 2012, environmental sampling at CS-C503 was conducted in accordance with the UFP-QAPP for the Phase I RI at CS-C503 developed by Bay West (Bay West, 2012) and approved by the project stakeholders. Environmental sample collection consisted of soil, sediment, and surface water at the Site. Note that the UFP-QAPP planned for stormwater runoff sample collection from the BX Building 1811 parking lot, however; stormwater was not available for sample collection at the time of the field investigation; therefore, stormwater samples were not collected. The following sections describe the procedures used to collect environmental samples.

3.3.1 Soil sampling

Soil samples were collected from the uppermost 6 inches of surface soil using disposable scoops at each soil sample location. A total of 11 soil samples and two field duplicates were collected, labeled, sealed under chain-of-custody, and shipped to TestAmerica Laboratories, Inc., in Denver, Colorado (TestAmerica) for analysis, with the exception of TOC analysis, which was performed by TestAmerica Laboratories, Inc., in Burlington, Vermont (TestAmerica Burlington). Soil samples were analyzed using the laboratory methods described in **Section 3.4**. The CS-C503 soil analytical results are presented in **Section 4.2.1**.

3.3.2 Sediment Sampling

Sediment samples were collected with an Ekman Bottom Sampler. Prior to and following sample collection, the Ekman Bottom Sampler was decontaminated using procedures outlined in the UFP-QAPP. Sediment samples from retention pond catch basins were collected with disposable containers. If a sufficient volume of sediment was not available in the catch basin at the time of sampling, a soil sample was collected adjacent to and up gradient of the catch basin using the procedures discussed in **Section 3.3.1**. **Figure 3-1** shows the soil and sediment sampling locations. A total of eight sediment samples and one field duplicate were collected, labeled, sealed under chain-of-custody, and shipped to TestAmerica for analysis, with the exception of TOC analysis, which was performed by TestAmerica Burlington. Sediment samples were analyzed using the laboratory methods described in **Section 3.4**. The CS-C503 sediment analytical results are presented in **Section 4.2.2**.

3.3.3 Surface Water Sampling

Surface water samples were collected from the CS-C503 retention pond using disposable Teflon containers. The samples were collected from the most downstream location first, working in an upstream direction. The sample locations are shown on **Figure 3-1**.

Surface water sample collection forms are included in **Appendix B**. A total of three surface water samples and one field duplicate were collected, labeled, sealed under chain-of-custody, and shipped to TestAmerica and analyzed using the methods described in **Section 3.4**. The CS-C503 surface water analytical results are presented in **Section 4.2.3**.

3.4 Sample Analytical Methods

Soil, sediment, and surface water samples were analyzed by TestAmerica and analyzed for:

- DRO/GRO by SW-846 Method 8015C;
- PCBs by SW-846 Method 8082A; and
- TOC by the Lloyd Kahn Method (analyzed by TestAmerica Burlington).

TOC was analyzed for the purposes of relating PCB concentrations, if any, to the TOC of the soil, sediment, and surface water. Quality control (QC) samples were also analyzed for the same parameters and are discussed in **Section 3.5**.

3.5 Sample Quality Assurance/Quality Control Measures

QC samples were collected as part of the soil, sediment, and surface water investigation, including matrix spike/matrix spike duplicates (MS/MSDs) field duplicates, equipment rinsate blanks, temperature blanks, and field blanks.

3.5.1 Field Quality Assurance/Quality Control

Field QC samples include field duplicates, MS/MSDs, equipment rinsate blanks, temperature blanks, and field blanks. Field duplicates were collected at the required frequency of 10 percent per method and matrix. Equipment rinsate blanks were collected at the required frequency of 5 percent per method and matrix only when non-disposable sampling equipment was used. Field blanks were collected at the required frequency of one per source of water (e.g. decontamination rinse water).

QC procedures for pH, specific conductance, temperature, and turbidity measurements collected during surface water included calibrating the instruments as specified in the UFP-QAPP and checking the reproducibility of the measurements by taking multiple readings on a single sample or reference standard.

3.5.2 Laboratory Quality Assurance/Quality Control

MS/MSDs were analyzed at a frequency of 5 percent per method and matrix. A triple volume of sample matrix was collected to ensure an adequate sample for MS/MSD analysis. In addition, the laboratory analyzed method blanks and laboratory control samples (LCSs) at a frequency of 5 percent per method and matrix. If a MS/MSD was not included in an analytical batch, a laboratory control sample duplicate (LCSD) was analyzed in order to measure precision. Surrogates were also spiked into all organic field and QC samples.

3.5.3 Data Validation

Bay West used Laboratory Data Consultants, Inc. Automated Data Review software to perform an automated data review equivalent to a USEPA Tier II evaluation and to provide preliminary discrete data qualification. During the full data validation, data were evaluated for precision, accuracy, representativeness, completeness, comparability, and sensitivity. Data qualifiers were appended to each result, as necessary, in the electronic data deliverables with validation criteria

set at 100 percent of USEPA Tier III validation in accordance with the Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, v4.2 (DoD, 2010), the USEPA's National Functional Guidelines for Superfund Organic Methods Data Review (USEPA, 2008) and the USEPA's National Functional Guidelines for Inorganic Superfund Data Review (USEPA, 2010). Data validation reports and laboratory analytical packages are included in **Appendix C** and **Appendix D**, respectively.

3.5.4 Decontamination Procedures

Single use disposable sampling equipment was primarily used for sample collection with the exception of the sediment samples collected with the Ekman Bottom Sampler for the environmental sampling at CS-C503 Phase I RI field investigation. The Ekman Bottom Sampler was decontaminated with an equipment rinse with non-phosphate detergent followed with a second rinse with deionized water.

3.6 Investigation Derived Waste

Investigation derived waste (IDW) was not generated during soil, sediment, or surface water sampling. Single use disposable sampling equipment items were disposed as solid waste for landfill disposal. The minimal rinse water generated from the Ekman Bottom Sampler decontamination procedures were consolidated with the disposable solid waste items.

4.0 PHASE I REMEDIAL INVESTIGATION RESULTS

4.1 Aerial Image Review

As discussed in **Section 3.1**, Bay West conducted a thorough review during the preparation of the UFP-QAPP of available historical aerial imagery to identify modifications to landscape and structures at the CS-C503 site. The aerial images used in the UFP-QAPP are included in **Appendix A**. Available images predating 1964 are not included because they did not present any significant changes to the site during that timeframe. The following items were noted during the review:

- **1964** – Building 1889, The Club at Andrews, was constructed with an adjacent parking lot to the South. North Perimeter Road, Arnold Avenue and Westover Drive, which surround Building 1889, were constructed.
- **1971** – Building 1889 was expanded to the north.
- **1974** – Building 1870, an electrical substation southwest of Building 1889, was constructed. There is a disturbed area south of Westover Drive and west of Arnold Avenue near the present day BX. The area is clear of trees and contains unidentified objects.
- **1982** – Previously mentioned disturbed area is clear of objects.
- **1993** – The north side of Building 1889, the Club at Andrews, was expanded.
- **1998** – Building 1811, the BX, was constructed with an adjacent asphalt parking lot to the southwest. Retention pond northeast of Building 1889 was constructed
- **2000** – No changes to the landscape in the vicinity of the CS-C503 site since the 1998 aerial image.
- **2007** – Historical image for the site that pre-dates the CS-C503 pond reconstruction project.

Based on the historical aerial image review, the retention pond was constructed between 1993 and 1998. Both the pipe inlet and overflow structure appear to have been constructed during this timeframe. The construction of Building 1870, the electrical substation, was noted because transformers have historically contained PCBs and could be identified as a potential contaminant source; however, Building 1889, situated between the electrical substation and PCB-contaminated retention pond, would intercept potentially contaminated sediment/stormwater from the transformer site and the stormwater from the transformer site is directed to a separate storm sewer system. In addition, the aerial imagery review confirmed that Building 1889 pre-dates Building 1870; therefore, at no point was there a direct transport pathway between Building 1870 and the retention pond (CS-C503).

4.2 Environmental Sampling

Environmental sampling was conducted in accordance with the UFP-QAPP as described in **Section 3.3**. The following sections present the results of soil, sediment, and surface water, as well as a comparison of the analytical results to the USEPA Residential Regional Screening Levels (RSLs) (USEPA, 2012), USEPA maximum contaminant levels (MCLs; USEPA, 2012), or MDE interim final cleanup standards (MDE, 2008), as appropriate.

4.2.1 Soil Sampling

Soil samples were collected in the vicinity of the CS-C503 retention pond and adjacent to catch basins when a sufficient amount of sediment was not present within catch basin for sampling. Sediment sampling is discussed in **Section 4.2.2**. Eleven soil samples and two field duplicates were collected from the uppermost 6 inches of surface soil at the locations shown on **Figure 3-1**

using the methods described in **Section 3.3.1**. Soil collected for sampling generally consisted of brown silt and fine-grained sand with varying amounts of gravel and organics. No indications of contamination were observed in any of the soil samples during sample collection. Laboratory analytical detections in soil samples are presented in **Table 4-1**. The following sections provide a summary of the soil sampling analytical results.

4.2.1.1 DRO/GRO

DRO was detected in all 11 soil samples and the field duplicate at concentrations ranging from 3,400 micrograms per kilogram ($\mu\text{g}/\text{kg}$) to 29,000 $\mu\text{g}/\text{kg}$; however, none of the DRO concentrations exceeded the MDE interim final cleanup standard of 230,000 $\mu\text{g}/\text{kg}$ (MDE, 2008). GRO was detected in three of the soil samples at concentrations ranging from 450 $\mu\text{g}/\text{kg}$ to 2,300 $\mu\text{g}/\text{kg}$; however, none of the GRO concentrations exceeded the MDE interim final cleanup standard of 230,000 $\mu\text{g}/\text{kg}$ (MDE, 2008).

4.2.1.2 PCBs

The only PCB compound detected at concentrations greater than the laboratory limit of detection (LOD) in soil samples was PCB-1260, which was detected in four soil samples at concentrations ranging from 11 $\mu\text{g}/\text{kg}$ to 53 $\mu\text{g}/\text{kg}$; however, none of the PCB-1260 concentrations exceeded the USEPA residential regional screening level (RSL) of 220 $\mu\text{g}/\text{kg}$ (USEPA, 2012).

4.2.1.3 TOC

TOC was detected in all of the soil samples and the field duplicate at concentrations ranging from 5,600,000 $\mu\text{g}/\text{kg}$ to 29,000,000 $\mu\text{g}/\text{kg}$. There is not a RSL or MDE interim standard for TOC.

4.2.2 Sediment Sampling

Sediment samples were collected in the CS-C503 retention pond and from catch basins which contained a sufficient volume of sediment available to sample. As discussed in **Section 4.2.1**, if sufficient sediment was not available for sampling in a catch basin location, soil samples were collected directly adjacent to and upgradient of the catch basin location. Eight sediment samples and the field duplicate were collected from the uppermost 6 inches of sediment at the locations shown on **Figure 3-1** using the methods described in **Section 3.3.2**. Sediment collected for sampling generally consisted of brown silt and fine-grained sand with organics. No indications of contamination were observed in any of the sediment samples during sample collection. Laboratory analytical detections in sediment samples are presented in **Table 4-2**. The following sections provide a summary of the sediment sampling analytical results.

4.2.2.1 DRO/GRO

DRO was detected in all eight sediment samples and the field duplicate at concentrations ranging from 10,000 $\mu\text{g}/\text{kg}$ to 600,000 $\mu\text{g}/\text{kg}$; however, none of the DRO concentrations exceeded the MDE interim final cleanup standards (230,000 $\mu\text{g}/\text{kg}$) with the exception of sample CSC503-20-SD-002 (600,000 $\mu\text{g}/\text{kg}$). GRO was detected in four of the sediment samples at concentrations greater than the laboratory LOD, ranging from 320 $\mu\text{g}/\text{kg}$ to 2,300 $\mu\text{g}/\text{kg}$; however, none of the GRO concentrations exceeded the MDE interim final cleanup standards (230,000 $\mu\text{g}/\text{kg}$).

4.2.2.2 PCBs

No PCB compounds were detected at concentrations greater than the laboratory LOD in any of the sediment samples.

4.2.2.3 TOC

TOC was detected in all eight of the sediment samples and the field duplicate at concentrations ranging from 5,600,000 µg/kg to 29,000,000 µg/kg.

4.2.3 Surface Water Sampling

Three surface water samples and the field duplicate were collected from the CS-C503 retention pond at the locations shown on **Figure 3-1** using the methods described in **Section 3.3.3**. Laboratory analytical detections in surface water samples are presented in **Table 4-3**. The following sections provide a summary of the surface water sampling analytical results.

4.2.3.1.1 DRO/GRO

DRO was detected in all three surface water samples and the field duplicate at concentrations ranging from 140 µg/L to 540 µg/L. All of the DRO concentrations detected in surface water samples exceeded the MDE interim final cleanup standard of 47 µg/L. GRO was not detected at concentrations greater than the laboratory LOD in any of the surface water samples.

4.2.3.1.2 PCBs

No PCB compounds were detected at concentrations greater than the laboratory LOD in any of the surface water samples.

4.2.3.1.3 TOC

TOC was detected in all three of the surface water samples and the field duplicate sample at concentrations ranging from 3,400 µg/L to 4,600 µg/L.

4.3 **Sample Quality Assurance/Quality Control Measures**

All laboratory analytical data were validated by Bay West. Data validation results are discussed in the Data Validation Report included in **Appendix C**. All data were determined to be usable or usable as qualified.

It should be noted that **Tables 4-1** through **4-3** include the detections in the field duplicate samples.

5.0 FATE AND TRANSPORT

The fate and transport of chemicals are dependent on a wide variety of factors. Fate refers to the expected final state that an element, compound, or group of compounds will achieve following release to the environment. Transport refers to the mechanisms and rates of migration of chemicals away from the source area in which human or ecological receptors can then be exposed.

5.1 Fate of Chemicals Exceeding Criteria

Organic compounds can be degraded to different states depending on the redox conditions present in the soil and groundwater. Organic compounds can be chemically or biologically degraded. Biological degradation can occur by native microbial populations or by microbial populations introduced into the aquifer.

5.2 Potential Transport and Exposure Pathways

The following sections present potential chemical transport and exposure pathways along with general descriptions of each. Site-specific transport and exposure pathways are discussed in **Sections 6.0** and **7.0**. It should be noted that groundwater and air transport and exposure pathways, although defined below, were evaluated and found to not be present at CS-C503; therefore, those pathways are not discussed in **Sections 6.0** or **7.0**.

5.2.1 Soil

Transport Pathways – Soil transport pathways include: fugitive dust from surface soil; transport of surface soil via precipitation and runoff; uptake or ingestion of surface soil by biota; and leaching and infiltration of water from the surface through the soil column to shallow groundwater.

Exposure Pathways – Soil exposure pathways include: dust inhalation of airborne soil particles from fugitive dust and intrusive activities in surface and subsurface soils; incidental ingestion of and dermal contact with inland surface water and sediments from precipitation and runoff; incidental ingestion and dermal contact with surface and subsurface soil; incidental ingestion of biota; and dermal contact, drinking water ingestion, and incidental ingestion of shallow groundwater.

5.2.2 Surface Water and Sediment

Transport Pathways – Surface water and sediment transport pathways include the transport of impacted soil via surface water runoff.

Exposure Pathways – Surface water and sediment exposure pathways include the incidental ingestion of and dermal contact with chemicals sorbed to sediments being transported with the surface water or stormwater.

5.2.3 Groundwater

Transport Pathways – Groundwater transport pathways include the migration of groundwater to surface water seepages.

Exposure Pathways – Groundwater exposure pathways include: incidental ingestion of and dermal contact with inland surface water; incidental ingestion of biota; ingestion of shallow groundwater as drinking water; and incidental ingestion of and dermal contact with shallow groundwater. It should be noted that drinking water wells are not permitted within JBA.

5.2.4 Air

Transport Pathways – Air transport pathways include the volatilization of chemicals into the air.

Exposure Pathways – Air exposure pathways include inhalation if volatiles are present in the surface soils.

6.0 HUMAN HEALTH SCREENING CRITERIA COMPARISON

6.1 Screening Approach and Decision Logic

As part of the Phase I RI, a human health screening criteria comparison (HHSCC) was performed for CS-C503. The primary objective of the HHSCC is to assess potential health impacts to humans under current conditions relative to current and future uses at the site resulting from site chemicals. CS-C503 is currently zoned as open space and used as a retention pond. Future land use consists of both community, and aircraft operations and maintenance. Based on these uses, potential human receptor groups include military personnel and construction workers. It should be noted, however, that the USAF desires to obtain unlimited use/unrestricted exposure (UU/UE) at its contaminated sites; therefore, future residential human receptors are evaluated with this HHSCC as well. To that end, the USEPA residential RSLs and MCLs are used as the human health screening criteria.

6.2 Human Health Criteria Comparison Evaluation

6.2.1 Soil

Eleven soil samples and two field duplicates were collected from the CS-C503 site. Samples were analyzed using methods discussed in **Section 3.4** and soil sample results are presented on **Table 4-1**. As discussed in **Section 4.2.1.2**, the only PCB compound detected in soil samples was PCB-1260, which was detected in four samples at concentrations greater than the laboratory LOD; however, none of the concentrations exceeded the USEPA residential RSL. GRO was detected in three soil samples at concentrations greater than the laboratory LOD; however, none of the concentrations exceed the MDE interim final cleanup standard. DRO was detected in all of the soil samples and the field duplicate sample at concentrations greater than the laboratory LOD; however, none of the concentrations exceed the MDE interim final cleanup standard. For this reason, none of the compounds detected in soil were evaluated further in the HHSCC.

6.2.2 Sediment

Eight sediment samples and one field duplicate sample were collected from the CS-C503 site. Samples were analyzed using the methods discussed in **Section 3.4** and sediment sample results are presented on **Table 4-2**. As discussed in **Section 4.2.2.2**, PCBs were not detected at concentrations greater than laboratory LODs in any of the samples. GRO was detected in four sediment samples at concentrations greater than the laboratory LOD; however, none of the concentrations exceeded the MDE interim final cleanup standard. DRO was detected in all of the sediment samples and the field duplicate sample at concentrations greater than the laboratory LOD; however, only sediment sample CSC503-20-SD-002 (600,000 µg/kg) had a DRO concentration that exceeded the MDE interim final cleanup standard of 230,000 µg/kg. Sediment sample CSC503-20-SD-002 was collected from the catch basin located on the south side of Building 1811 (BX Building), as shown on **Figure 3-1**.

It should be noted that catch basins, storm sewers, and stormwater ponds are designed to capture, convey, and treat stormwater from the surrounding drainage area in accordance with USEPA National Pollutant Discharge Elimination System (NPDES) regulations. The CS-C503 catch basin and stormwater retention pond and associated storm sewer network is designed to capture stormwater from the Building 1811 site, driveways, and parking areas. The stormwater is then conveyed and retained in the CS-C503 stormwater retention pond for treatment and eventual controlled discharge. Detections of DRO, GRO, and compounds associated with parking areas are expected in storm sewer networks and stormwater retentions ponds. These detections are regulated under the USEPA NPDES regulations. Additionally, a retention pond treatment mechanism includes the settling of possibly contaminated suspended solids to

sediments. Under general maintenance of retention ponds, these sediments are excavated and disposed of under Resource Conservation and Recovery Act (RCRA) regulations. Because this Phase I RI is investigating possible contamination under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulations, DRO in sediment will not be further evaluated in this HHSCC.

6.2.3 Surface Water

Three surface water samples and one field duplicate were collected from the CS-C503 site. Samples were analyzed using methods discussed in **Section 3.4** and surface water sample results are presented on **Table 4-3**. As discussed in **Sections 4.2.3.1.1** and **4.2.3.1.2**, PCBs and GRO were not detected at concentrations greater than laboratory LODs in any of the samples. DRO was detected in all of the surface water samples and the field duplicate sample at concentrations that exceeded the MDE interim final cleanup standard of 47 µg/L. As discussed in **Section 6.2.2**, detections of DRO are anticipated in the storm sewer networks and stormwater retention ponds, which are regulated under USEPA NPDES and RCRA regulations. Because this Phase I RI is investigating possible contamination under CERCLA regulations, DRO in surface water will not be further evaluated in this HHSCC.

6.3 Transport and Exposure Pathways

As discussed in **Section 6.1**, the objective of this HHSCC is to assess potential health impacts to humans under current conditions relative to current and future uses at the site resulting from site chemicals. In order to assess potential health impacts to humans, transport and exposure pathways would typically be evaluated for the site; however, because no chemicals were detected at concentrations that exceed applicable screening levels, (with the exception of DRO, which will not be further evaluated in this HHSCC for reasons discussed in **Sections 6.2.2** and **6.2.3**), evaluation of transport and exposure pathways is not necessary.

6.4 Human Health Screening Criteria Comparison Summary

Analytical results of soil, sediment, and surface water samples collected from CS-C503 were evaluated in the HHSCC to identify potential health impacts to current and future human receptors under current conditions.

The only detection at concentrations that exceeded screening levels during the Phase I RI was DRO in one sediment sample and all of the surface water samples. As discussed in **Sections 6.2.2** and **6.2.3**, detections of DRO are anticipated in the storm sewer networks and stormwater retention ponds, which are regulated under USEPA NPDES and RCRA regulations, not CERCLA regulations; therefore, DRO will not be further evaluated in this HHSCC. Additionally, PCBs were not detected in any of the samples at concentrations greater than the laboratory LOD; with the exception of PCB-1260, which was detected in four soil samples at concentrations less than USEPA residential RSLs.

7.0 ECOLOGICAL SCREENING CRITERIA COMPARISON

7.1 General Approach

As part of the Phase I RI, an ecological screening criteria comparison (ESCC) was performed for the CS-C503 site. The primary objective of the ESCC is to assess potential ecological impacts under current conditions resulting from site-related chemicals. The ESCC evaluates if any of the following three conditions exist:

1. The site contains chemicals exceeding ecological screening benchmarks;
2. Ecological habitat is present on, adjacent to, or potentially impacted by the site; and
3. There are possible chemical transport pathways from the site to ecological receptors.

If **all three** of these conditions are met for a site, a potential risk to the environment is present and additional ecological evaluation may be appropriate. If one or more of the three conditions are not met, there is no risk to ecological receptor species and no further ecological evaluation is warranted. Even with a source of chemicals, without ecological receptors or a pathway for exposure of the receptors, there is no ecological risk.

In order to identify chemicals that exceed criteria, this ESCC compares the Phase I RI CS-C503 laboratory analytical data against the USEPA Region 3 Biological Technical Assistance Group (BTAG) freshwater sediment and freshwater screening criteria.

The BERA (CH2M Hill, 2004) was used to assess site habitats and to determine potential ecological receptors based on the overall drainage area in which CS-C503 is located (**Section 2.5**). The combination of site habitats and potential ecological receptors were then used to determine the potential for complete transport and exposure pathways.

7.2 Ecological Screening Criteria Comparison Evaluation

7.2.1 Soil

Eleven soil samples and two field duplicates were collected from the CS-C503 site and were analyzed using the methods discussed in **Section 3.4**. As discussed in **Section 4.2.1.2**, the only PCB compound detected in soil samples was PCB-1260, which was detected in four samples at concentrations greater than the laboratory LOD; however, none of the concentrations exceeded the USEPA Region 3 BTAG freshwater sediment and freshwater screening criteria. GRO was detected in three soil samples and DRO was detected in all of the soil samples at concentrations greater than the laboratory LOD. Ecological screening criteria for GRO and DRO have not been established. Therefore, none of the compounds detected in soil samples were evaluated further in the ESCC. Soil sample ecological screening results are presented on **Table 7-1**.

7.2.2 Sediment

Eight sediment samples and one duplicate sample were collected from the CS-C503 site and analyzed using the methods discussed in **Section 3.4**. As discussed in **Section 4.2.2.2**, PCBs were not detected at concentrations greater than laboratory LODs in any of the samples. GRO was detected in four sediment samples and DRO was detected in all of the samples and the field duplicate at concentrations greater than the laboratory LOD. Ecological screening criteria for GRO and DRO have not been established. Therefore, none of the compounds detected in sediment samples were evaluated further in the ESCC. Sediment sample ecological screening results are presented on **Table 7-2**.

7.2.3 Surface Water

Three surface water samples and one duplicate were collected from the CS-C503 site and analyzed using the methods in **Section 3.4**. As discussed in **Sections 4.2.3.1.1** and **4.2.3.1.2**, PCBs and GRO were not detected at concentrations greater than laboratory LODs in any of the samples. DRO was detected in all of the surface water samples and the duplicate samples. Ecological screening criteria for DRO have not been established. Therefore, none of the compounds detected in surface water samples were evaluated further in the ESCC. Surface water sample ecological screening results are presented on **Table 7-3**.

7.3 Transport and Exposure Pathways

The primary objective of the ESCC is to assess potential ecological impacts under current conditions resulting from site-related chemicals. In order to assess potential impacts to ecological receptors, transport and exposure pathways would typically be evaluated for the site; however, the site does not contain chemicals exceeding ecological screening benchmarks. Therefore, Condition 1, as described in **Section 7.1**, was not met and no transport and exposure pathways are complete.

7.4 Ecological Screening Criteria Comparison Summary

Analytical results of soil, sediment, and surface water samples collected from CS-C503 were evaluated in the ESCC to identify chemicals that may pose a potential risk to ecological receptors under current conditions.

PCB-1260 was the only constituent detected at concentrations exceeding the laboratory LODs. PCB-1260 was detected in four soil samples; however, none of the detected PCB concentrations exceeded USEPA Region 3 BTAG freshwater sediment and freshwater screening criteria. DRO, which was detected in all of the soil, sediment, and surface water samples; and GRO, which was detected in three soil samples and four sediment samples; however, GRO and DRO in stormwater ponds are regulated under USEPA NPDES and not CERCLA, and therefore are not evaluated further in this report. Because no CERCLA-regulated chemicals were detected at concentrations exceeding ecological screening criteria used in this Phase I RI, transport and exposure pathways were not evaluated.

During the review of this Phase I RI report, the BTAG identified a mammalian soil screening criteria for exposure to PCBs published by the National Oceanic and Atmospheric Administration (NOAA) in the Screening Quick Reference Tables (SQuiRT). The mammalian soil screening criteria was developed by the USEPA Region 5 for the shrew or vole and is two orders of magnitude lower (0.332 µg/kg) than the laboratory detection limit (11 µg/kg) and four order of magnitude lower than the typical cleanup criteria established by the USEPA (1,000 µg/kg). The Phase I RI did not include a site-specific habitat assessment and was only to include a presence or absence analysis in accordance with the UFP-QAPP; however, habitat potential within the Henson Creek drainage area (where CS-C503 is located) is very limited as reported in the BERA (Section 2.5.2). The BTAG comments and responses to their comments are included in the Appendix E of this report for reference.

8.0 CONCEPTUAL SITE MODEL AND CONCLUSIONS

The objective of this Phase I RI is to determine whether hazardous substances were released to the environment and whether hazardous substances have impacted the environment exceeding human health or environmental exposure criteria, resulting in a determination of CECs for the site. Soil, sediment, and surface water analytical data were evaluated by performing a HHSCC and ESCC to assess if hazardous substances detected in soil, sediment, and surface water exceed human health or environmental screening criteria. The following sections present the conclusions of this Phase I RI consisting of a CSM and identifying data gaps.

8.1 Conceptual Site Model

CS-C503 is listed in the Federal Facility Agreement between the USAF and USEPA as a removal action site. The retention pond at CS-C503 is maintained by the JBA Stormwater Management and is regulated under the JBA General National Pollution Discharge Elimination System (NPDES) Permit. The NPDES General Permit for JBA includes analysis of outfall samples for the following parameters:

- VOCs by Method 624;
- SVOCs by Method 625;
- Cyanide by Method 335.4;
- Pesticide/PCB by Method 608;
- Total Metals by Method 200.7;
- Total Nitrate/Nitrite by Method 353.2;
- Nitrogen, Kjeldahl by Method 351.2;
- Ammonia by Method 350.1;
- Phosphorus by Method 365.1;
- Chemical Oxygen Demand (COD) by Method 410.4;
- Oil/Grease by Method 1664A;
- Propylene Glycol by Method SW 8015C;
- Total Dissolved Solids (TDS) by Method SM 2540C;
- Total Suspended Solids by Method SM 2540D; and
- pH.

Based on the historical aerial imagery review, the CS-C503 retention pond was originally constructed between 1993 and 1998 for the purposes of stormwater retention for the BX Building. The retention pond was reconstructed in 2007, at which time waste characterization sample analysis indicated the presence of PCB Aroclor 1254 in sediment excavated from the retention pond. The PCB-containing sediment was staged on the perimeter of the retention pond prior to off-site disposal during the 2007 reconstruction.

PCB Aroclor 1260 was detected in soil samples during the Phase I RI field work in four locations around the perimeter of the retention pond, ranging in estimated concentrations from 11 to 53 ppb and was likely the result of residual contamination from sediment staged during the 2007 retention pond reconstruction. The detections were on the north, east, and west sides of the pond. PCB Aroclors are multi-component mixtures. When samples contain more than one Aroclor, a higher level of analyst expertise is required to attain acceptable levels of qualitative and quantitative analysis and even then the qualitative analysis is somewhat subjective. The same is true of Aroclors that have been subjected to environmental degradation (weathering). Such weathered multi-component mixtures may have significant differences in peak patterns

compared to those of Aroclor standards. Weathering and analyst subjectivity may account for detections of Aroclor 1254 in the 2007 waste characterization sampling and Aroclor 1260 in the Phase I RI sampling.

PCBs were only detected in 4 of the 11 Phase I RI soil samples at concentrations greater than the laboratory LOD; however, none of the PCB concentrations exceeded the USEPA RSL or the BTAG ecological freshwater sediment values. With regards to the EcoSSL screening criteria, PCBs were excluded by the EcoSSL workgroup, as it became apparent early in the process of EcoSSL development that a screening value would not be appropriate. Because of the known persistence and toxicity of PCBs, and the conservative nature of the Eco-SSLs, it was determined by the workgroup that any soil screening level derived for PCBs would typically be lower than the analytical detection limits used in a screen. Therefore, the USEPA recommended that if PCBs are detected in soil above background levels, then they should be considered site-related, and therefore should be included as a COPC in an Ecological Risk Assessment (USEPA BTAG, 2005). Background soil, surface water, and sediment samples were included in the Basewide Background Study completed in 2005. An Upper Confidence Limit (UCL) was not calculated for PCBs; however, there was one soil detection (49 J ppb) and one sediment detection (53 J ppb). There were no PCBs detected in the surface water.

If a CERCLA removal action is determined to be warranted at the pond, the likely PCB cleanup goal would be 1 mg/kg. Documented in a 2013 Action Memorandum at the JBA Former DRMO Area, BLNA, and Piscataway Creek site, a cleanup criterion of 1,000 µg/kg was approved by the USEPA. There were no PCB detections at CS-C503 above the cleanup criteria.

As the pond is maintained by JBA Stormwater Management, the soil around the perimeter of the retention pond containing low-level concentrations of PCBs will likely be removed as part of scheduled retention pond maintenance activities.

PCBs were not detected at concentrations greater than the laboratory LOD in any of the other soil, sediment, or surface water samples within the retention pond or in the retention pond drainage area during the Phase I RI field work; therefore, no residual source of PCBs is present at CS-C503.

DRO and GRO were also analyzed for during the Phase I RI field work as an indicator of possible oil-related PCBs if PCBs were detected at concentrations exceeding applicable screening criteria. GRO was not detected above the MDE screening criteria, and DRO was not detected above the MDE screening criteria in the soil samples co-located with the low-level detections of PCBs. DRO was detected above the MDE screening criteria in both the sediment and surface water, which is to be expected given the drainage area of the pond is the BX parking lot. The retention pond surface water and sediments (with regards to the DRO detections in the sediment and surface water) are regulated and treated under the USEPA NPDES.

Therefore, while four soil samples had PCB detections, all results were below USEPA RSL or the BTAG ecological freshwater sediment screening criteria. The pond is maintained by JBA Stormwater Management, and sampling is conducted at the outfall in accordance with USEPA NPDES. No source of PCBs was identified and residual PCBs will be addressed during routine pond maintenance. No additional CERCLA actions are warranted. This evaluation process is presented graphically with a CSM for soil, sediment, and surface water on **Figure 8-1**.

8.2 Data Gaps

As discussed in **Section 8.1**, there are no CECs identified for CS-C503 based on the screening criteria used in this Phase I RI. However, as identified in **Section 7.4**, during the review of this Phase I RI report, the BTAG identified a mammalian soil screening criteria for exposure to PCBs

**Phase I Remedial Investigation at CS-C503
Performance-Based Restoration**

Joint Base Andrews Naval Air Facility Washington, Maryland

published by the NOAA in the SQuiRTs. The mammalian soil screening criteria was developed by the USEPA Region 5 for the shrew or vole; however, the scope of this Phase I RI did not include a site-specific habitat assessment and was only to include presence or absence analysis in accordance with the UFP-QAPP.

9.0 RECOMMENDATIONS

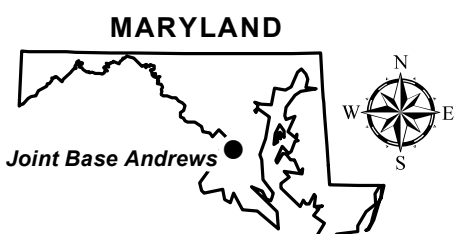
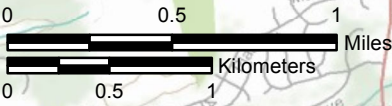
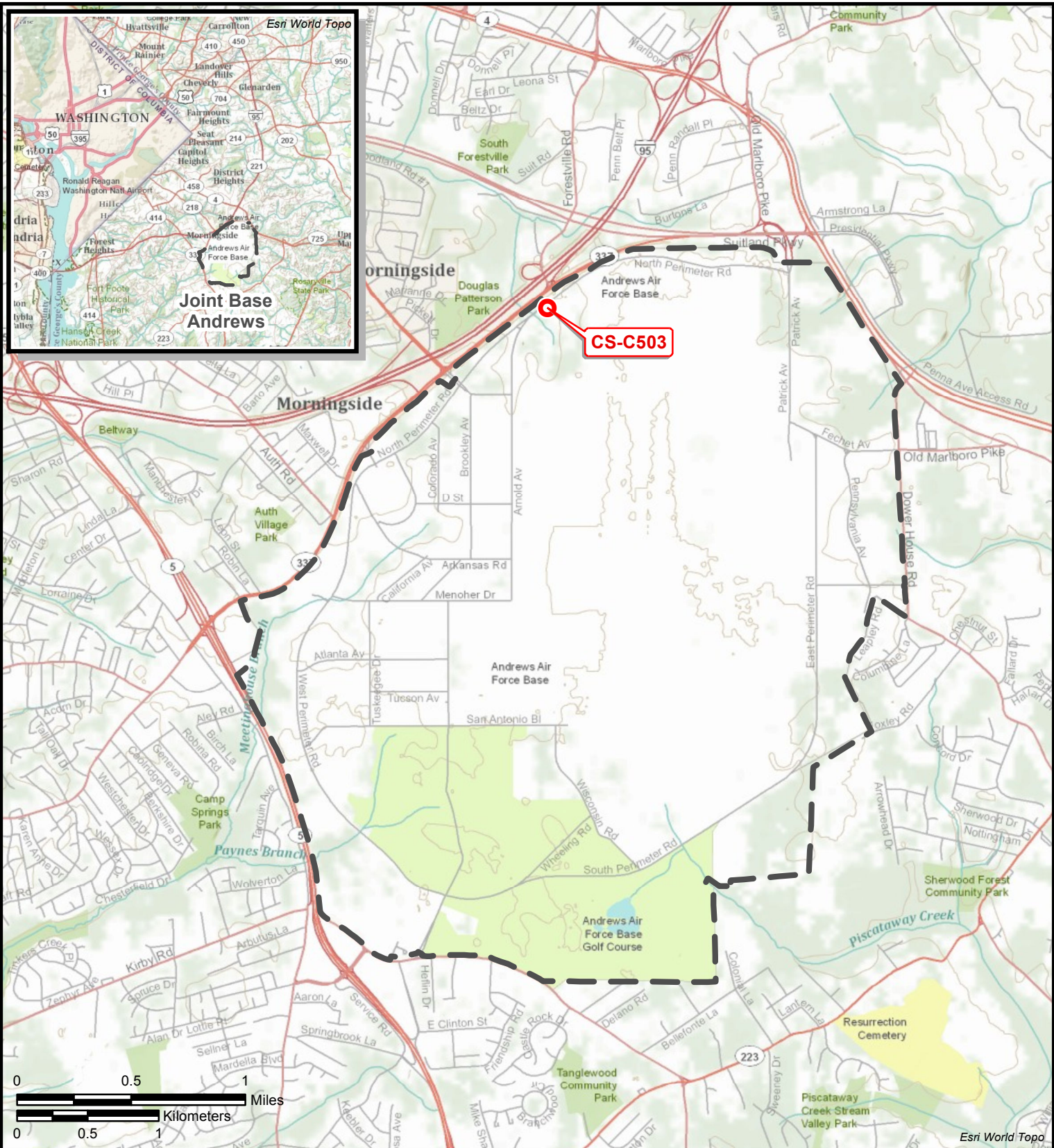
The objective of this Phase I RI is to determine whether hazardous substances were released to the environment and/or whether hazardous substances have impacted the environment exceeding human health or environmental exposure criteria. This Phase I RI did not identify any CECs for the site; however, as summarized in Section 8.0, the BTAG identified a mammalian soil screening criteria for PCB exposure published by USEPA Region 5. The BTAG comments and responses to their comments provided on this Phase I RI are included in the Appendix E for reference. Even though there were detections of PCBs above the USEPA Region 5 mammalian criteria for PCB exposure in soil, no further investigation at CS-C503 is warranted due to the following:

- Habitat potential within the Henson Creek drainage area (where CS-C503 is located) is very limited as reported in the BERA;
- PCBs were only detected in four soil samples at estimated concentrations within a localized area on the banks of the pond;
- PCBs were not detected at concentrations greater than the laboratory LOD in any of the other soil, sediment, or surface water samples within the retention pond or in the retention pond drainage area during the Phase I RI field work; therefore, no residual source of PCBs is present at CS-C503;
- PCBs were not detected at concentrations exceeding the USEPA residential RSLs or the BTAG ecological freshwater sediment values; and
- PCBs were not detected above a likely PCB site remediation goal under a CERCLA removal action.

10.0 REFERENCES

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Figures



- Site of Interest
- Installation Boundary

Figure 1-1
Site Location Map
CS-C503 Phase I RI
 Joint Base Andrews
 Camp Springs, Maryland



Map Projection: NAD 1983 StatePlane Maryland FIPS 1900 Feet

Drawn By: G.S. Date Drawn/Revised: 1/23/2013 Project No. J110202

Y:\Clients\US_ARMY_CORP_OF_ENGINEERS_OMAHA\Andrews_AFB\CS-C503\MapDocs\U110202 FIG 1-1 RI CS-C503 Site Location Map.mxd

Y:\Clients\US_ARMY_CORP_OF_ENGINEERS_OMAHA\Andrews_AFB\CS-C503\MapDocs\J110202\FIG 1-2 RI CS-C503 Existing Features and Hist Investigations.mxd

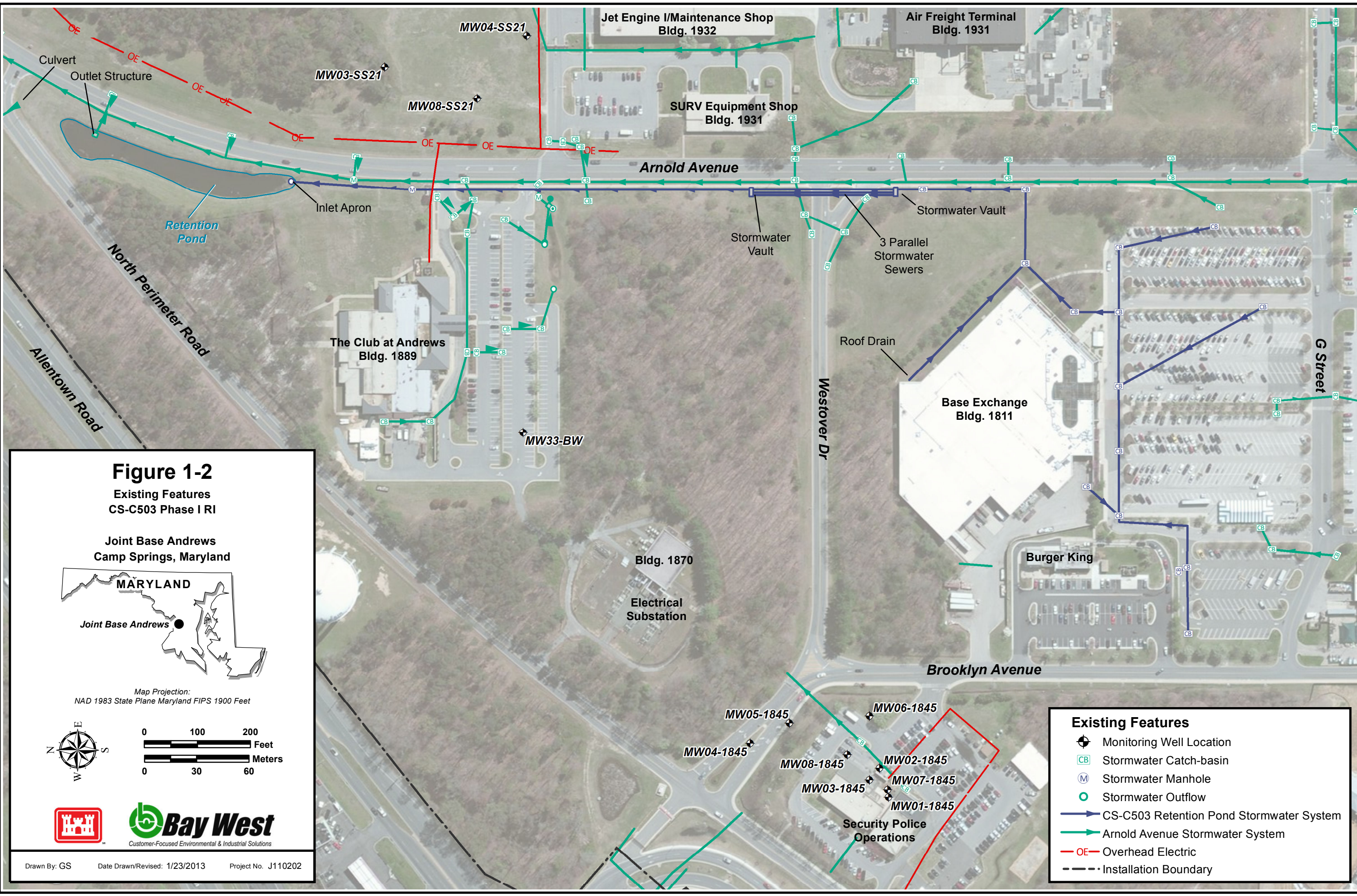


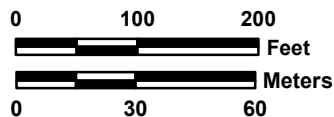
Figure 1-2

Existing Features
CS-C503 Phase I RI

Joint Base Andrews
Camp Springs, Maryland



Map Projection:
NAD 1983 State Plane Maryland FIPS 1900 Feet



Drawn By: GS Date Drawn/Revised: 1/23/2013 Project No. J110202

Existing Features

- Monitoring Well Location
- Stormwater Catch-basin
- Stormwater Manhole
- Stormwater Outflow
- CS-C503 Retention Pond Stormwater System
- Arnold Avenue Stormwater System
- Overhead Electric
- Installation Boundary

Y:\Clients\US_ARMY_CORP_OF_ENGINEERS_OMAHA\Andrews_AFB\CS-C503\MapDocs\J110202\FIG 3-1 RI CS-C503 Site Map.mxd

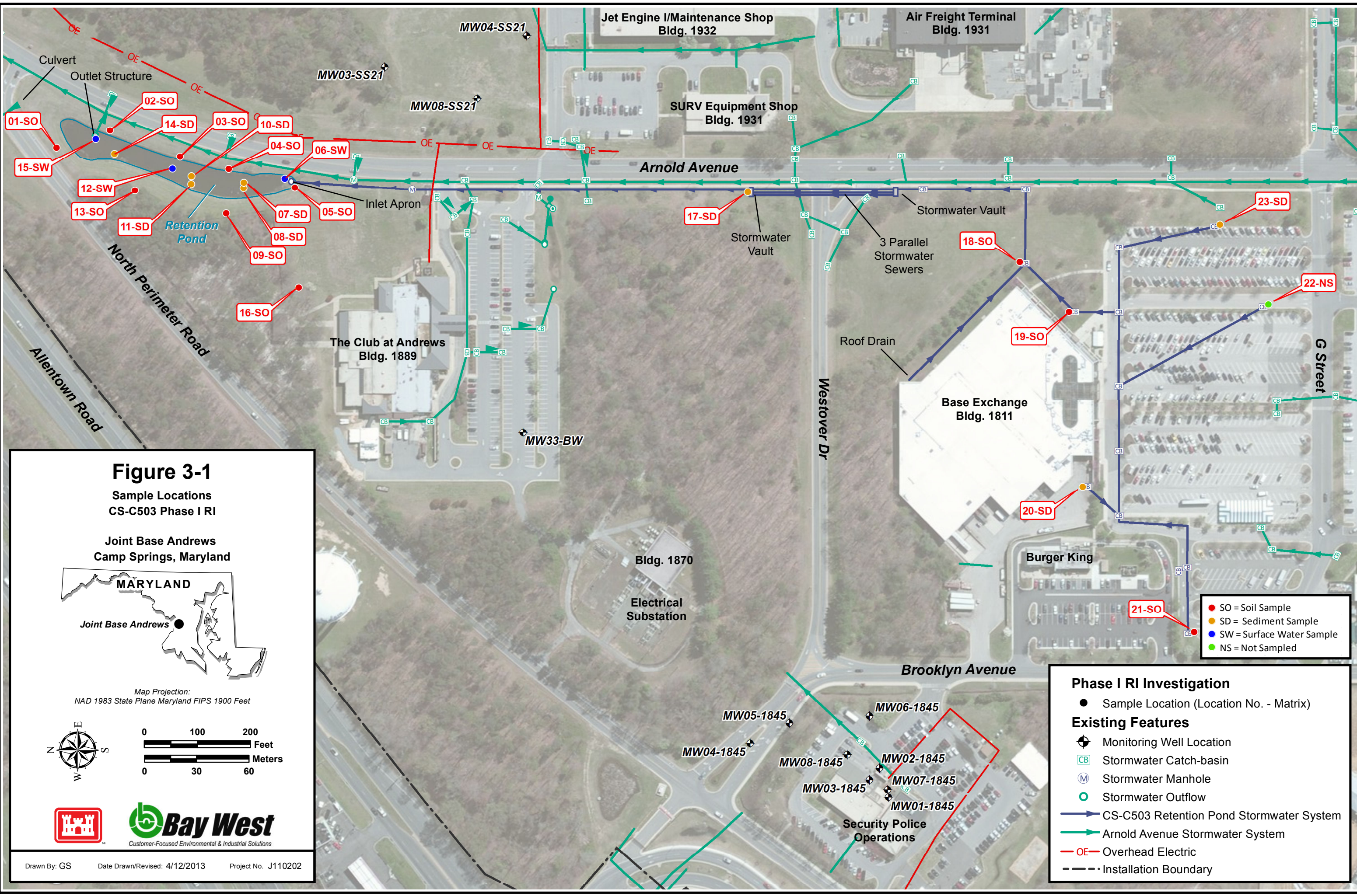


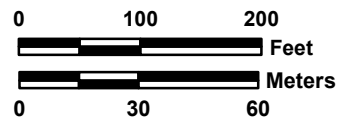
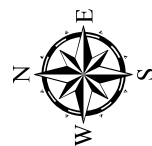
Figure 3-1

Sample Locations
CS-C503 Phase I RI

Joint Base Andrews
Camp Springs, Maryland



Map Projection:
NAD 1983 State Plane Maryland FIPS 1900 Feet



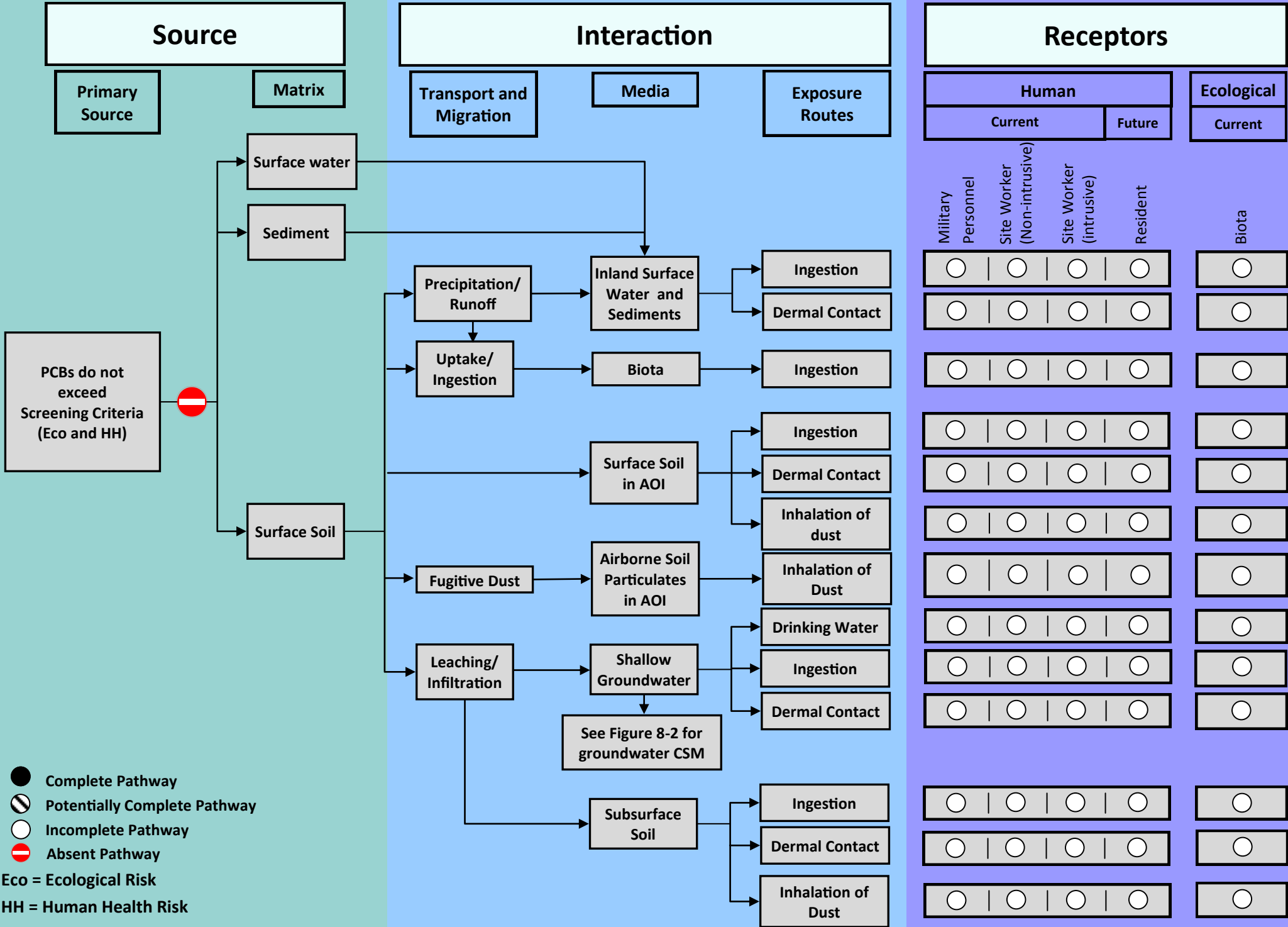
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Drawn By: GS Date Drawn/Revised: 4/12/2013 Project No. J110202

- SO = Soil Sample
- SD = Sediment Sample
- SW = Surface Water Sample
- NS = Not Sampled

- Phase I RI Investigation**
- Sample Location (Location No. - Matrix)
- Existing Features**
- ⊕ Monitoring Well Location
 - CB Stormwater Catch-basin
 - M Stormwater Manhole
 - Stormwater Outflow
 - CS-C503 Retention Pond Stormwater System
 - Arnold Avenue Stormwater System
 - OE — Overhead Electric
 - - - Installation Boundary

Figure 8-1 CS-C503 Conceptual Site Model



Tables

Table 4-1 Soil Detections
Phase I RI for CS-C503
Performance-Based Restoration
Joint Base Andrews Naval Air Facility Washington
Camp Springs, Maryland

Analyte ¹	USEPA Residential RSL ² (µg/kg)	MDE Interim Residential Cleanup Standards ³ (µg/kg)	CSC503-01-SB-001	CSC503-02-SB-002	CSC503-03-SB-003	CSC503-04-SB-004	CSC503-05-SB-005	CSC503-05-SB-006 (DUP)	CSC503-09-SB-007	CSC503-13-SB-008	CSC503-16-SB-009	CSC503-18-SB-010	CSC503-19-SB-011	CSC503-19-SB-012 (DUP)	CSC503-21-SB-013
DRO and GRO by SW-846 8015C															
DRO	NE	230,000	20,000	14,000	3400 J	4,800	4,300 J	8,500 J	22,000	16,000	26,000	13,000	17,000	15,000	29,000
GRO	NE	230,000	570 U	650 U	640 U	570 U	590 U	720 U	2,300	550 U	580 U	450 J	590 U	770 J	560 U
PCBs by SW-846 8082A															
PCB – 1260	220	NE	29 J	53 J	11 J	11 U	11 U	11 U	36 J	11 U	11 U	12 U	12 U	12 UJ	12 U
TOC by 9060A															
TOC	NE	NE	13,000,000	14,000,000	14,000,000	5,600,000	7,500,000 J	13,000,000 J	18,000,000	13,000,000 J	21,000,000	22,000,000 J	25,000,000	29,000,000	13,000,000 J

Notes:

¹ All analyte concentrations are reported in µg/kg.

² The Screening Criteria is the USEPA RSL Summary Table updated November 2012 (USEPA 2012).

³ The Screening Criteria is the MDE Interim Final Cleanup Standards (MDE 2008). The MDE Interim Final Cleanup Standards are to be considered only and not intended to be primary cleanup criteria at CERCLA sites.

Qualifiers:

Bold values indicate values that were detected

J = The reported positive result is considered estimated because the result is less than the LOQ or because certain quality control criteria were not met.

U = The analyte was not detected and is reported as less than the LOD or as defined by the client.

UJ = The analyte was not detected in the sample. The LOD (or LOQ) should be considered estimated and may be inaccurate or imprecise.

Acronyms:

µg/kg = microgram per kilogram

DRO = diesel range organics

GRO = gasoline range organics

LOQ = limit of quantitation

LOD = limit of detection

NE = none established

PCB = polychlorinated biphenyl

SB = soil

TOC = total organic content

Table 4-2 Sediment Detections
Phase I RI for CS-C503
Performance-Based Restoration
Joint Base Andrews Naval Air Facility Washington
Camp Springs, Maryland

Analyte ¹	USEPA Residential RSL ² (µg/kg)	MDE Interim Residential Cleanup Standards ³ (µg/kg)	CSC503-07-SD-008	CSC503-07-SD-009 (DUP)	CSC503-08-SD-007	CSC503-10-SD-006	CSC503-11-SD-005	CSC503-14-SD-004	CSC503-17-SD-001	CSC503-20-SD-002	CSC503-23-SD-003
DRO and GRO by SW-846 8015C											
DRO	NE	230000	58,000 J	140,000 J	130,000	37,000	10,000	150,000	170,000	600,000	30,000
GRO	NE	230000	320 J	530 U	890 UJ	1,000 UJ	560 U	2,000 UJ	880 J	2,300	580 J
PCBs by SW-846 8082A											
No PCB detections above the LOD.											
TOC by 9060A											
TOC	NE	NE	86,000,000 J	14,000,000 J	42,000,000	21,000,000	27,000,000	61,000,000 J	14,000,000 J	35,000,000	12,000,000 J

Result exceeds established screening criteria.

Notes:

¹ All analyte concentrations are reported in µg/kg.

² The Screening Criteria is the USEPA RSL Summary Table updated November 2012 (USEPA 2012).

³ The Screening Criteria is the MDE Interim Final Cleanup Standards (MDE 2008). The MDE Interim Final Cleanup Standards are to be considered only and not intended to be primary cleanup criteria at CERCLA sites.

Qualifiers:

Bold values indicate values that were detected

J = The reported positive result is considered estimated because the result is less than the LOQ or because certain quality control criteria were not met.

U = The analyte was not detected and is reported as less than the LOD or as defined by the client.

UJ = The analyte was not detected in the sample. The LOD (or LOQ) should be considered estimated and may be inaccurate or imprecise.

Acronyms:

µg/kg = microgram per kilogram

DRO = diesel range organics

GRO = gasoline range organics

LOQ = limit of quantitation

LOD = limit of detection

NE = none established

PCB = polychlorinated biphenyl

SD = sediment

TOC = total organic content

Table 4-3 Surface Water Detections
Phase I RI for CS-C503
Performance-Based Restoration
Joint Base Andrews Naval Air Facility Washington
Camp Springs, Maryland

Analyte ¹	USEPA Residential RSL ² (µg/L)	MDE Interim Residential Cleanup Standards ³ (µg/L)	CSC503-06-SW-003	CSC503-06-SW-004 (DUP)	CSC503-12-SW-002	CSC503-15-SW-001
DRO and GRO by SW-846 8015C						
DRO	NE	47	380 J	540 J	140 J	210 J
GRO not detected above the LOD.						
PCBs by SW-846 8082A						
PCB – 1221	0.004	NE	0.34 U	0.31 U	0.30 U	0.31 U
PCB – 1232	0.004	NE	0.45 U	0.42 U	0.40 U	0.42 U
PCB – 1242	0.034	NE	0.34 U	0.31 U	0.30 U	0.31 U
PCB – 1248	0.034	NE	0.22 U	0.21 U	0.20 U	0.21 U
PCB – 1254	0.034	NE	0.34 U	0.31 U	0.30 U	0.31 U
PCB – 1260	0.034	NE	0.34 U	0.31 U	0.30 U	0.31 U
TOC by 9060A						
TOC	NE	NE	3,500 J	4,600 J	3,400	3,400

Result exceeds established screening criteria.

Screening criteria is lower than the LOD.

Notes:

¹ All analyte concentrations are reported in µg/L.

² The Screening Criteria is the USEPA RSL Summary Table updated November 2012 (USEPA 2012).

³ The Screening Criteria is the MDE Interim Final Cleanup Standards (MDE 2008). The MDE Interim Final Cleanup Standards are to be considered only and not intended to be primary cleanup criteria at CERCLA sites.

Qualifiers:

Bold values indicate values that were detected

J = The reported positive result is considered estimated because the result is less than the LOQ or because certain quality control criteria were not met.

U = The analyte was not detected and is reported as less than the LOD or as defined by the client.

UJ = The analyte was not detected in the sample. The LOD (or LOQ) should be considered estimated and may be inaccurate or imprecise.

Acronyms:

µg/L = microgram per liter

DRO = diesel range organics

GRO = gasoline range organics

LOQ = limit of quantitation

LOD = limit of detection

NE = none established

PCB = polychlorinated biphenyl

SW = surface water

TOC = total organic content

Table 7-1 Ecological Screening for Soil
Phase I RI for CS-C503
Performance-Based Restoration
Joint Base Andrews Naval Air Facility Washington
Camp Springs, Maryland

Analyte ¹	USEPA Region 3 BTAG Freshwater Sediment ² (µg/kg)	CSC503- 01-SB-001	CSC503- 02-SB-002	CSC503- 03-SB-003	CSC503- 04-SB-004	CSC503- 05-SB-005	CSC503- 05-SB-006 (DUP)	CSC503- 09-SB-007	CSC503- 13-SB-008	CSC503- 16-SB-009	CSC503- 18-SB-010	CSC503- 19-SB-011	CSC503- 19-SB-012 (DUP)	CSC503- 21-SB-013
DRO and GRO by SW-846 8015C														
Diesel Range Organics	NE	20,000	14,000	3,400 J	4,800	4,300 J	8,500 J	22,000	16,000	26,000	13,000	17,000	15,000	29,000
Gasoline Range Organics	NE	570 U	650 U	640 U	570 U	590 U	720 U	2,300	550 U	580 U	450 J	590 U	770 J	560 U
PCBs by SW-846 8082A														
PCB – 1260	59.8 ^a	29 J	53 J	11 J	11 U	11 U	11 U	36 J	11 U	11 U	12 U	12 U	12 UJ	12 U
TOC by 9060A														
TOC	NE	13,000,000	14,000,000	14,000,000	5,600,000	7,500,000 J	13,000,000 J	18,000,000	13,000,000 J	21,000,000	22,000,000 J	25,000,000	29,000,000	13,000,000 J

Notes:

¹ All analyte concentrations are reported in µg/kg.

² The Screening Criteria Reference is taken from the US EPA Region 3 Freshwater Sediment Screening Benchmarks Table dated August 2006.

^a The Screening Benchmark for total PCBs.

Qualifiers:

Bold values indicate values that were detected

Acronyms:

µg/kg = microgram per kilogram

DRO = diesel range organics

GRO = gasoline range organics

NE = none established

PCB = polychlorinated biphenyl

SB = soil

TOC = total organic content

Table 7-2 Ecological Screening for Sediment
Phase I RI for CS-C503
Performance-Based Restoration
Joint Base Andrews Naval Air Facility Washington
Camp Springs, Maryland

Analyte ¹	USEPA Region 3 BTAG Freshwater Sediment ² (µg/kg)	CSC503- 07-SD-008	CSC503- 07-SD-009 (DUP)	CSC503- 08-SD-007	CSC503- 10-SD-006	CSC503- 11-SD-005	CSC503- 14-SD-004	CSC503- 17-SD-001	CSC503- 20-SD-002	CSC503- 23-SD-003
DRO and GRO by SW-846 8015C										
Diesel Range Organics	NE	58,000 J	140,000 J	130,000	37,000	10,000	150,000	170,000	600,000	30,000
Gasoline Range Organics	NE	320 J	530 U	890 UJ	1,000 UJ	560 U	2,000 UJ	880 J	2,300	580 J
PCBs by SW-846 8082A										
No PCB detections above the LOD.										
TOC by 9060A										
TOC	NE	86,000,000 J	14,000,000 J	42,000,000	21,000,000	27,000,000	61,000,000 J	14,000,000 J	35,000,000	12,000,000 J

Notes:

¹ All analyte concentrations are reported in µg/kg.

² The Screening Criteria Reference is taken from the US EPA Region 3 Freshwater Sediment Screening Benchmarks Table dated August 2006.

Qualifiers:

Bold values indicate values that were detected

Acronyms:

µg/kg = microgram per kilogram

DRO = diesel range organics

GRO = gasoline range organics

NE = none established

PCB = polychlorinated biphenyl

SD = Sediment

TOC = total organic content

LOD = limit of detection

Table 7-3 Ecological Screening for Water
Phase I RI for CS-C503
Performance-Based Restoration
Joint Base Andrews Naval Air Facility Washington
Camp Springs, Maryland

Analyte ¹	USEPA Region 3 BTAG Freshwater ² (µg/L)	CSC503-15-SW 001	CSC503-12-SW 002	CSC503-06-SW 003	CSC503-06-SW 004 (DUP)
DRO and GRO by SW-846 8015C					
Diesel Range Organics	NE	210 J	140 J	380 J	540 J
Gasoline Range Organics	NE	20 U	20 U	20 U	20 U
PCBs by SW-846 8082A					
PCB – 1016	0.000074 ^a	0.31 U	0.30 U	0.34 U	0.31 U
PCB – 1221	0.000074 ^a	0.31 U	0.30 U	0.34 U	0.31 U
PCB – 1232	0.000074 ^a	0.42 U	0.40 U	0.45 U	0.42 U
PCB – 1242	0.000074 ^a	0.31 U	0.30 U	0.34 U	0.31 U
PCB – 1248	0.000074 ^a	0.21 U	0.20 U	0.22 U	0.21 U
PCB – 1254	0.000074 ^a	0.31 U	0.30 U	0.34 U	0.31 U
PCB – 1260	0.000074 ^a	0.31 U	0.30 U	0.34 U	0.31 U
TOC by 9060A					
TOC	NE	3,400	3,400	3,500 J	4,600 J

Screening criteria is lower than the LOD.

Notes:

¹ All analyte concentrations are reported in µg/L.

² The Screening Criteria Reference is taken from the US EPA Region 3 Freshwater Screening Benchmarks Table dated August 2006.

^a The Screening Benchmark for total PCBs.

Qualifiers:

Bold values indicate values that were detected

Acronyms:

µg/L = microgram per liter

DRO = diesel range organics

GRO = gasoline range organics

NE = none established

PCB = polychlorinated biphenyl

SB = soil

TOC = total organic content

Appendix A

Historical Aerial Images

Y:\Clients\US_ARMY_CORP_OF_ENGINEERS_OMAHA\Andrews_AFB\BICS-C503\MapDocs\J110202 FIG 3A CS-C503 UFP-QAPP 1964 Aerial Map.mxd

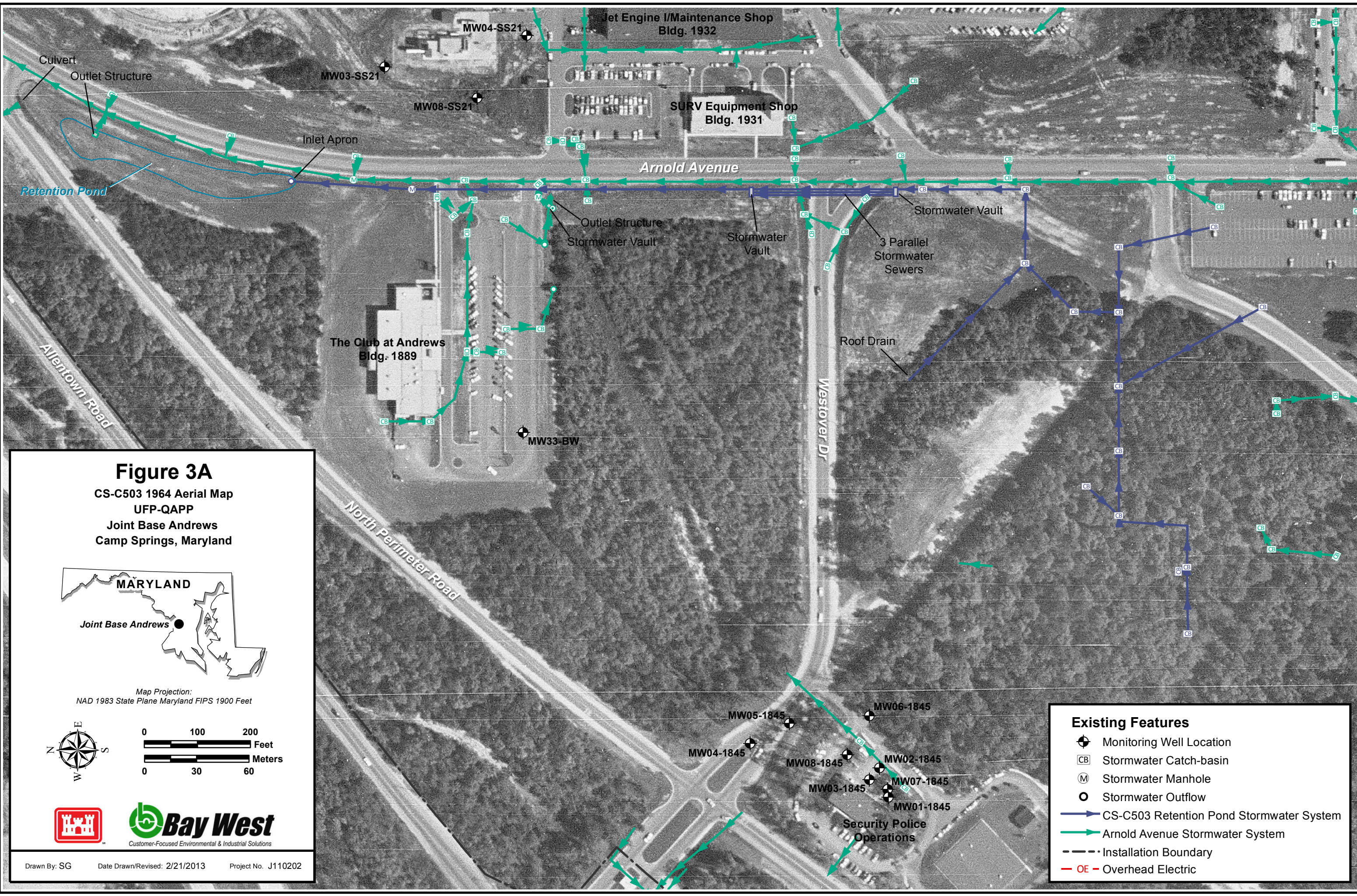
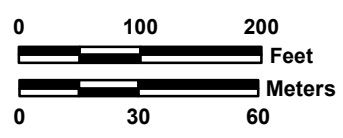
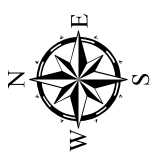


Figure 3A

CS-C503 1964 Aerial Map
UFP-QAPP
Joint Base Andrews
Camp Springs, Maryland



Map Projection:
NAD 1983 State Plane Maryland FIPS 1900 Feet



Drawn By: SG Date Drawn/Revised: 2/21/2013 Project No. J110202

Existing Features

- Monitoring Well Location
- Stormwater Catch-basin
- Stormwater Manhole
- Stormwater Outflow
- CS-C503 Retention Pond Stormwater System
- Arnold Avenue Stormwater System
- Installation Boundary
- Overhead Electric

Y:\Clients\US_ARMY_CORP_OF_ENGINEERS_OMAHA\Andrews_AFB\CS-C503\MapDocs\J110202 FIG 3B CS-C503 UFP-QAPP 1974 Aerial Map.mxd

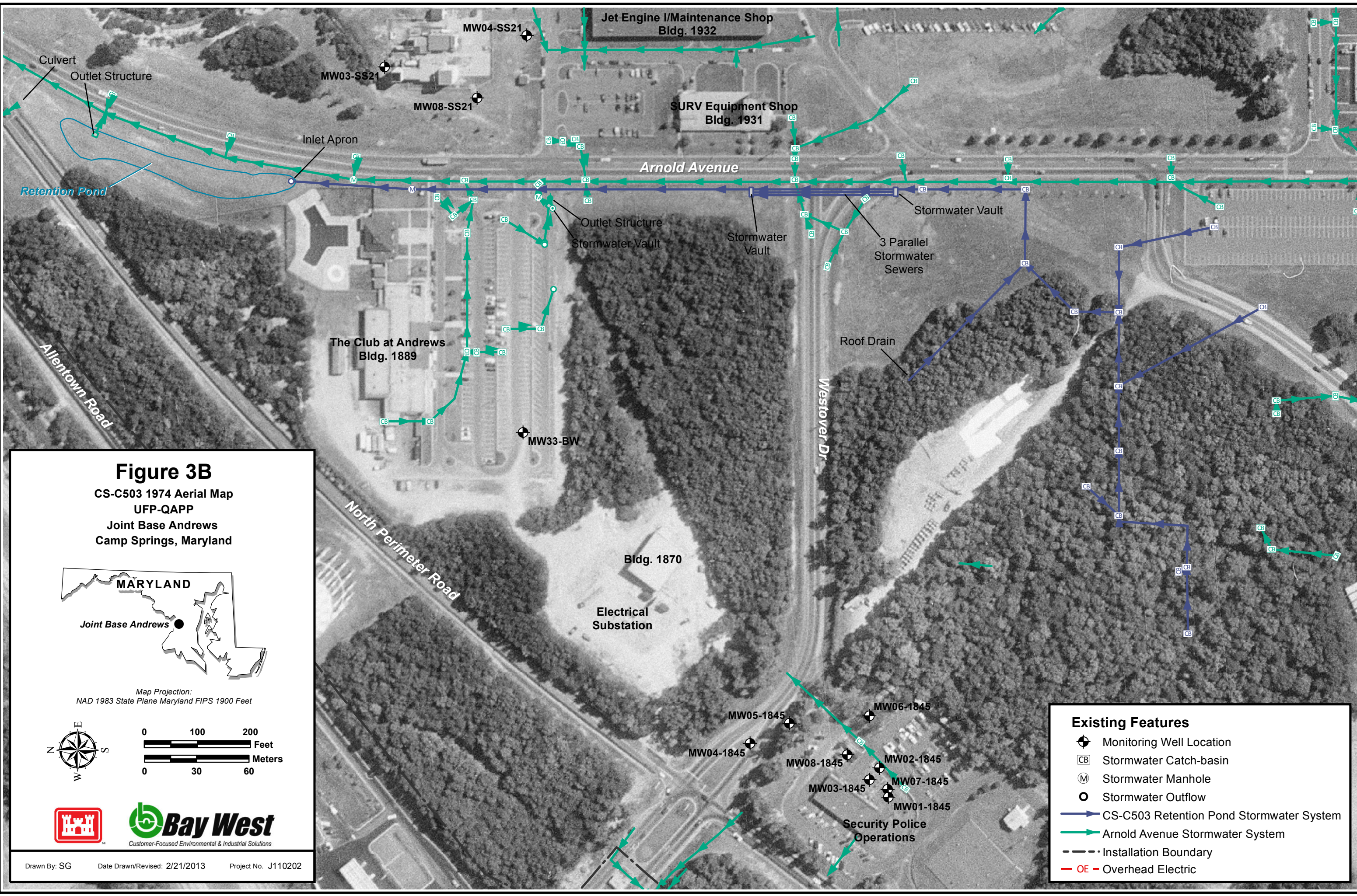
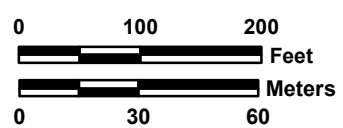
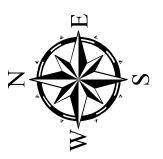


Figure 3B

CS-C503 1974 Aerial Map
UFP-QAPP
Joint Base Andrews
Camp Springs, Maryland



Map Projection:
NAD 1983 State Plane Maryland FIPS 1900 Feet



Drawn By: SG Date Drawn/Revised: 2/21/2013 Project No. J110202

Existing Features

- Monitoring Well Location
- Stormwater Catch-basin
- Stormwater Manhole
- Stormwater Outflow
- CS-C503 Retention Pond Stormwater System
- Arnold Avenue Stormwater System
- Installation Boundary
- Overhead Electric

Y:\Clients\US_ARMY_CORP_OF_ENGINEERS_OMAHA\Andrews_AFB\BICS-C503\MapDocs\J110202 FIG 3C CS-C503 UFP-QAPP 1982 Aerial Map.mxd

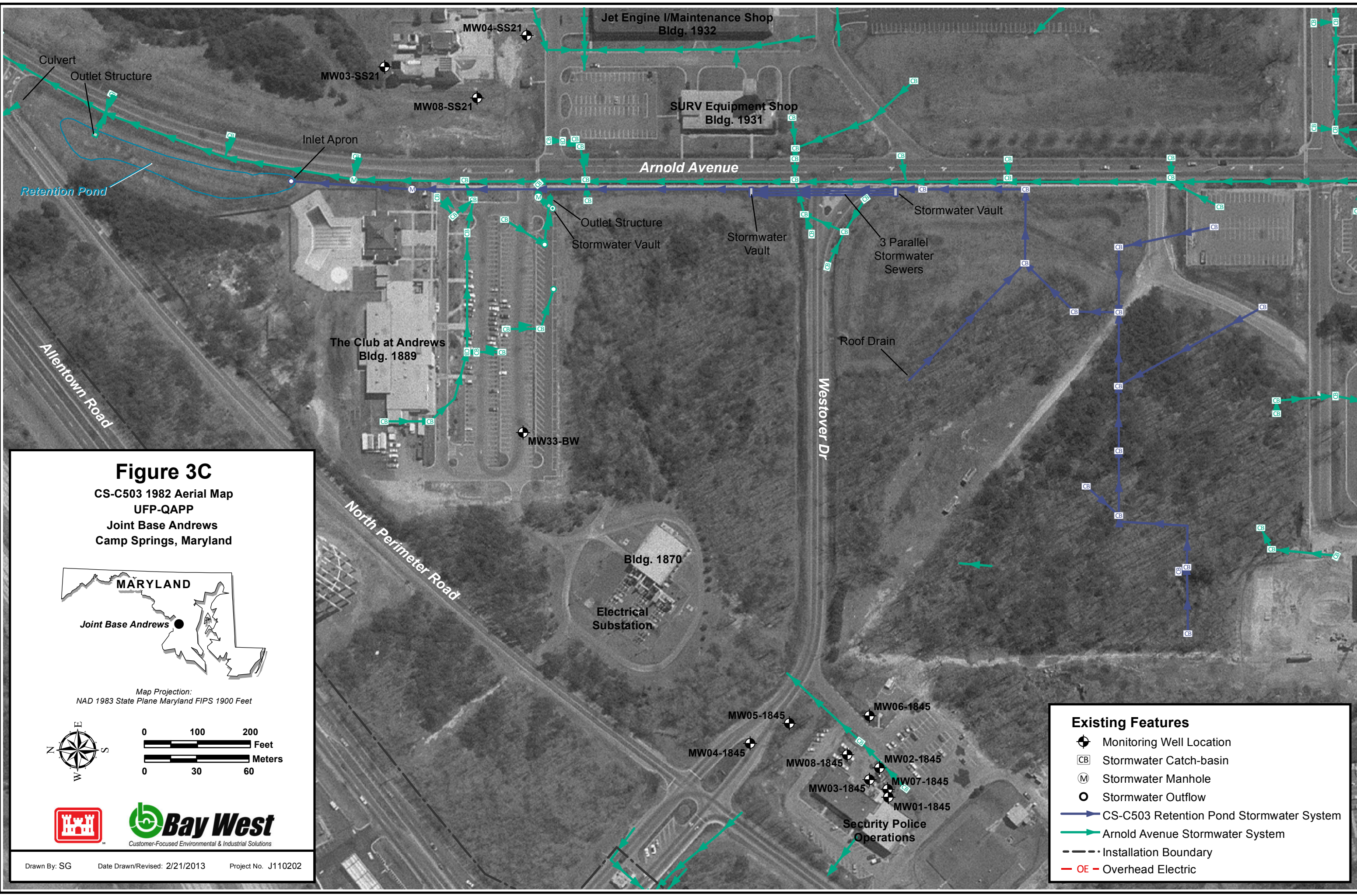
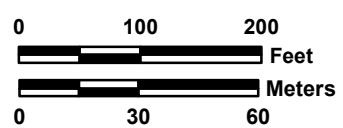
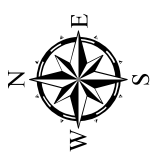


Figure 3C

CS-C503 1982 Aerial Map
UFP-QAPP
Joint Base Andrews
Camp Springs, Maryland



Map Projection:
NAD 1983 State Plane Maryland FIPS 1900 Feet



Drawn By: SG Date Drawn/Revised: 2/21/2013 Project No. J110202

Existing Features

- Monitoring Well Location
- Stormwater Catch-basin
- Stormwater Manhole
- Stormwater Outflow
- CS-C503 Retention Pond Stormwater System
- Arnold Avenue Stormwater System
- Installation Boundary
- Overhead Electric

Y:\Clients\US_ARMY_CORP_OF_ENGINEERS_OMAHA\Andrews_AFB\CS-C503\MapDocs\J110202 FIG 3D CS-C503 UFP-QAPP 1993 Aerial Map.mxd

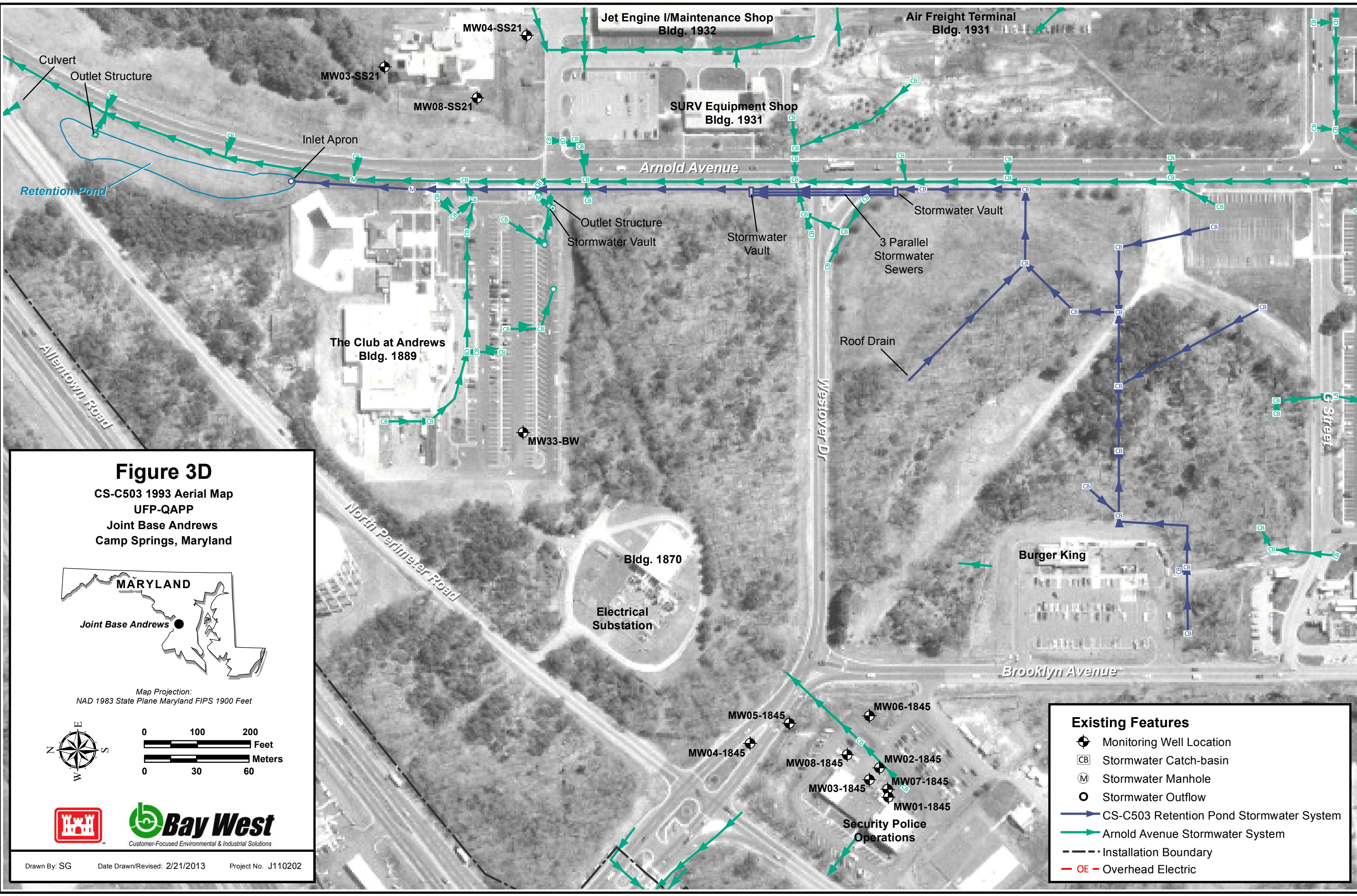
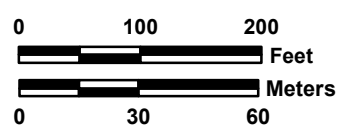
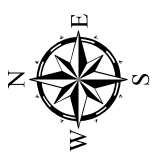


Figure 3D

CS-C503 1993 Aerial Map
UFP-QAPP
Joint Base Andrews
Camp Springs, Maryland



Map Projection:
NAD 1983 State Plane Maryland FIPS 1900 Feet



Drawn By: SG Date Drawn/Revised: 2/21/2013 Project No. J110202

Existing Features

- Monitoring Well Location
- Stormwater Catch-basin
- Stormwater Manhole
- Stormwater Outflow
- CS-C503 Retention Pond Stormwater System
- Arnold Avenue Stormwater System
- Installation Boundary
- Overhead Electric

Y:\Clients\US_ARMY_CORP_OF_ENGINEERS_OMAHA\Andrews_AFB\CS-C503\MapDocs\J110202 FIG 3E CS-C503 UFP-QAPP 1998 Aerial Map.mxd

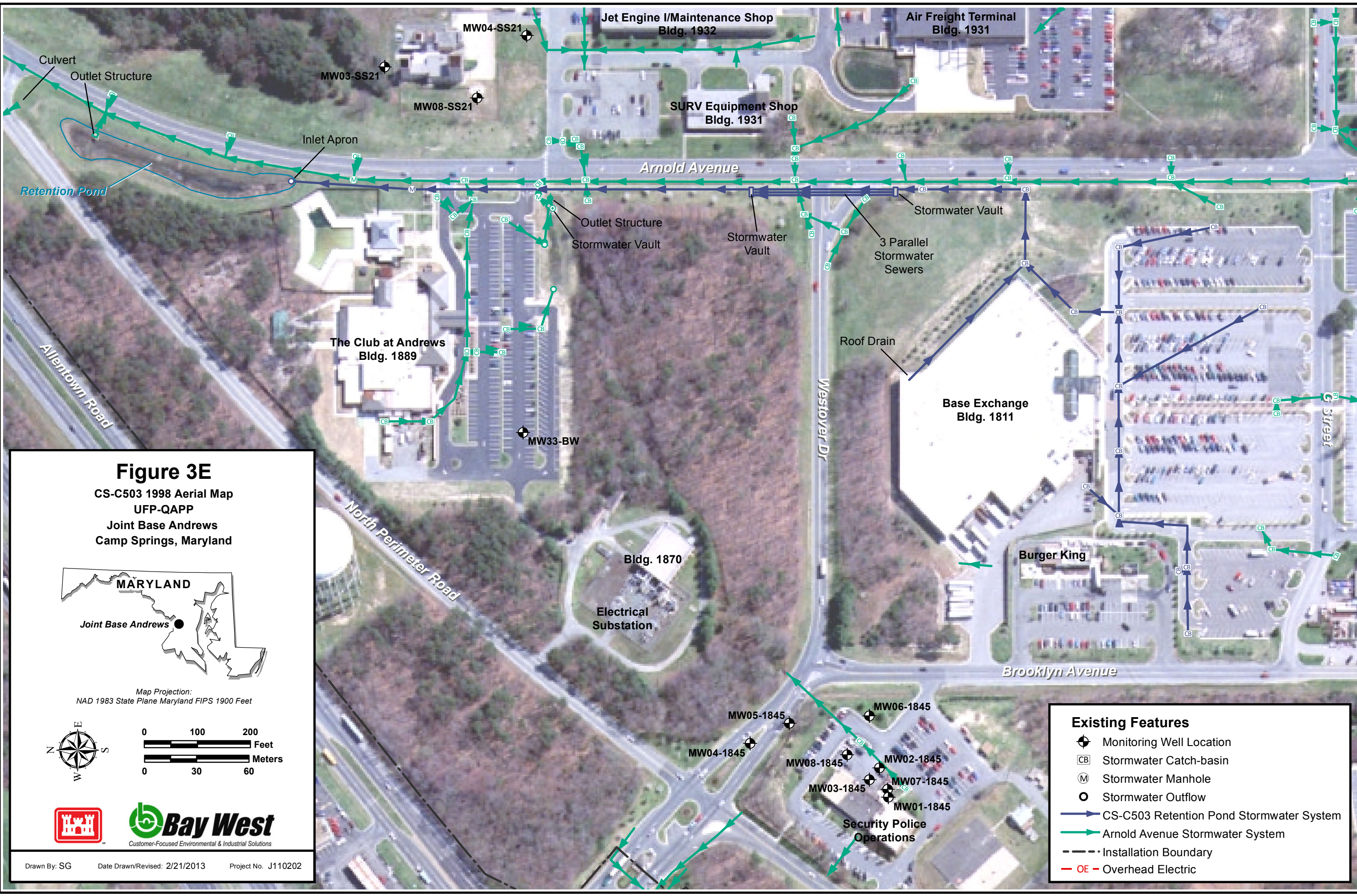
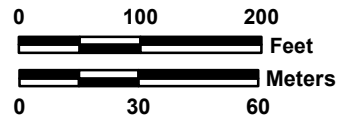


Figure 3E

CS-C503 1998 Aerial Map
UFP-QAPP
Joint Base Andrews
Camp Springs, Maryland



Map Projection:
NAD 1983 State Plane Maryland FIPS 1900 Feet



Drawn By: SG Date Drawn/Revised: 2/21/2013 Project No. J110202

Existing Features

- Monitoring Well Location
- Stormwater Catch-basin
- Stormwater Manhole
- Stormwater Outflow
- CS-C503 Retention Pond Stormwater System
- Arnold Avenue Stormwater System
- Installation Boundary
- Overhead Electric

Y:\Clients\US_ARMY_CORP_OF_ENGINEERS_OMAHA\Andrews_AFB\CS-C503\MapDocs\J110202 FIG 3F CS-C503 UFP-QAPP 2000 Aerial Map.mxd

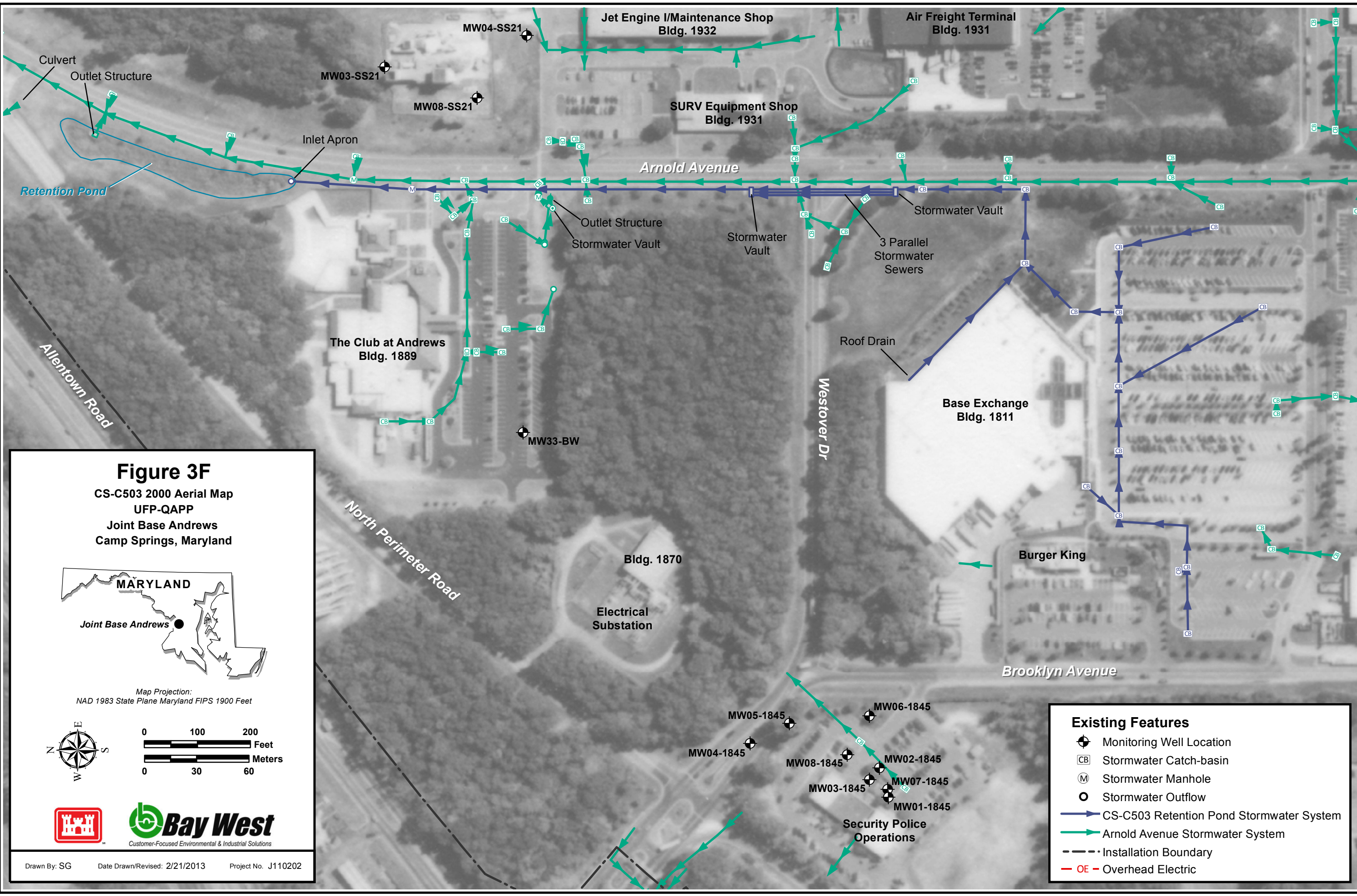
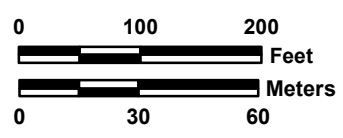
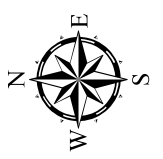


Figure 3F

CS-C503 2000 Aerial Map
UFP-QAPP
Joint Base Andrews
Camp Springs, Maryland



Map Projection:
NAD 1983 State Plane Maryland FIPS 1900 Feet



Drawn By: SG Date Drawn/Revised: 2/21/2013 Project No. J110202

Existing Features

- Monitoring Well Location
- Stormwater Catch-basin
- Stormwater Manhole
- Stormwater Outflow
- CS-C503 Retention Pond Stormwater System
- Arnold Avenue Stormwater System
- Installation Boundary
- Overhead Electric

Y:\Clients\US_ARMY_CORP_OF_ENGINEERS_OMAHA\Andrews_AFB\CS-C503\MapDocs\J110202 FIG 3G CS-C503 UFP-QAPP 2007 Aerial Map.mxd

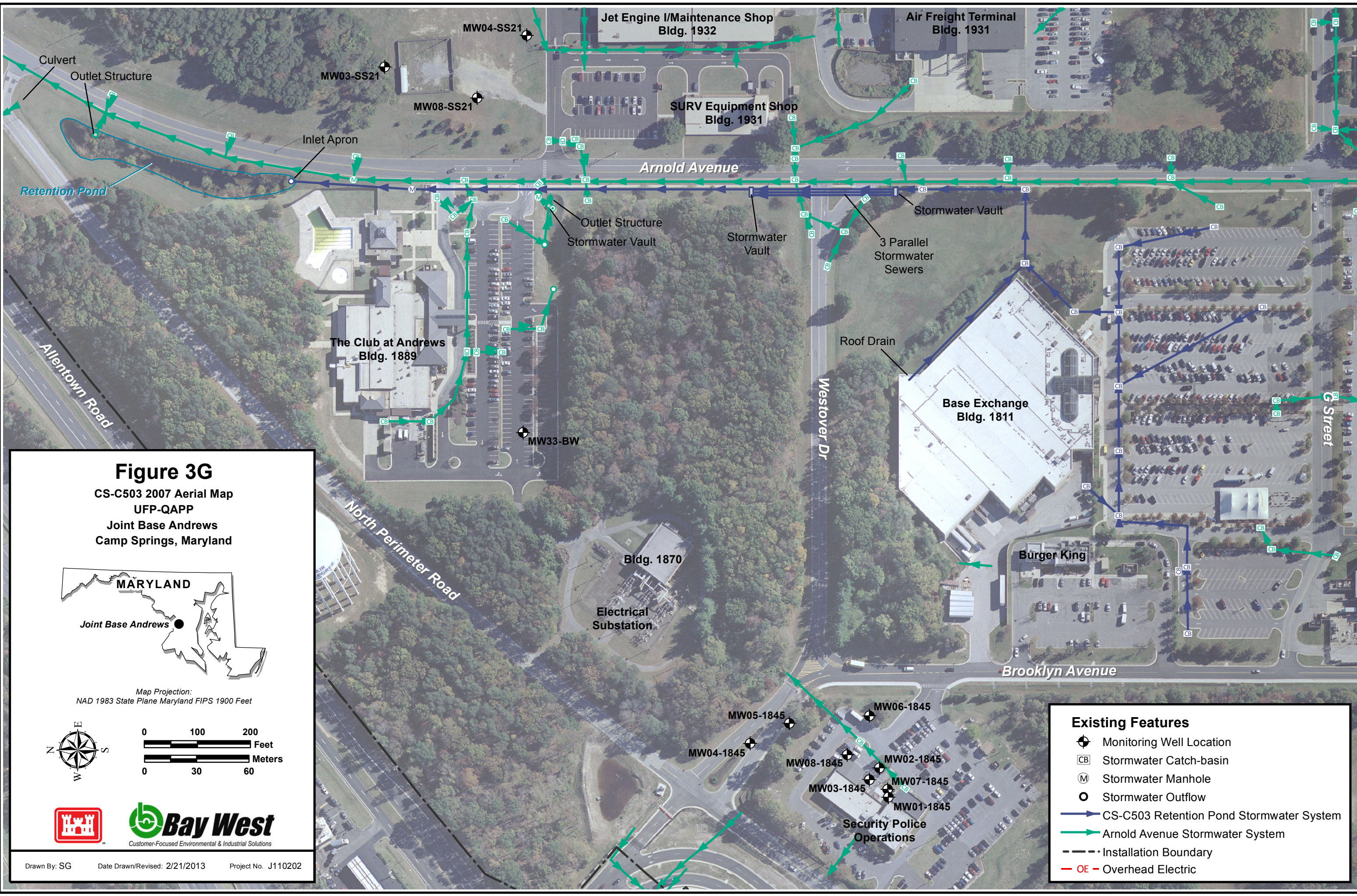
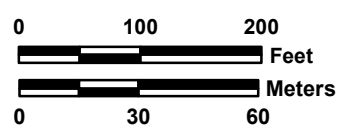
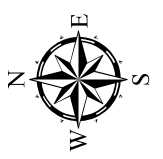


Figure 3G

CS-C503 2007 Aerial Map
UFP-QAPP
Joint Base Andrews
Camp Springs, Maryland



Map Projection:
NAD 1983 State Plane Maryland FIPS 1900 Feet



Drawn By: SG Date Drawn/Revised: 2/21/2013 Project No. J110202

Existing Features

- Monitoring Well Location
- Stormwater Catch-basin
- Stormwater Manhole
- Stormwater Outflow
- CS-C503 Retention Pond Stormwater System
- Arnold Avenue Stormwater System
- Installation Boundary
- Overhead Electric

Appendix B

Field Documentation

- B-1 Soil and Sediment Sample Collection Forms
- B-2 Surface Water Sample Collection Forms
- B-3 Investigation-Derived Waste Disposal Documentation
- B-4 Photo Log

Appendix B-1
Soil and Sediment Sample Collection Forms

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: CSC503-01-S0-001 PROJECT NO. J110202, PA.0
 SAMPLE NO. CSC503 ↓ BORING NO. 01
 DATE/TIME COLLECTED: 12/08/12 1084Z PERSONNEL: Amanda Maloney
 SAMPLE METHOD / DEPTH: grate / 0-6" Paul Paymaker
 SAMPLE MEDIA: SOIL / SEDIMENT / SLUDGE Jim Hubbell
 SAMPLE QA SPLIT: YES NO (NO) SPLIT SAMPLE NO. NA
 SAMPLE QC DUPLICATE: YES NO (NO) DUPLICATE SAMPLE NO. ↓
 MS/MSD REQUESTED: YES NO (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>2- 40ml vials</u>	<u>mcoH</u>	<u>GRO</u>
<u>3- 4oz. jars</u>	<u>none</u>	<u>DEO, PCB, TDW</u>

OVA MEASUREMENTS

Background NA
 Breathing zone _____
 Boring _____
 Headspace _____

SAMPLE DESCRIPTION

DEPTH: 0-6" DESCRIPTION: topsoil (silt, br3, dry)

GENERAL COMMENTS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME:	<u>CSC503</u>	PROJECT NO.:	<u>J110202.PA.0</u>
SAMPLE NO.:	<u>CSC503-02-50-002</u>	BORING NO.:	<u>02</u>
DATE/TIME COLLECTED:	<u>12/08/12 / 0852</u>	PERSONNEL:	<u>Amanda Maloney</u> <u>Paul Kaymaker</u> <u>Jim Hubbell</u>
SAMPLE METHOD / DEPTH:	<u>grab / 0-6"</u>	SPLIT SAMPLE NO.:	<u>NA</u>
SAMPLE MEDIA:	<u>(SOIL)</u> SEDIMENT SLUDGE	DUPLICATE SAMPLE NO.:	<u>↓</u>
SAMPLE QA SPLIT:	YES NO <input checked="" type="radio"/>		
SAMPLE QC DUPLICATE:	YES NO <input checked="" type="radio"/>		
MS/MSD REQUESTED:	YES NO <input checked="" type="radio"/>		

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>32-40ml vials</u>	<u>meth</u>	<u>GR0</u>
<u>3-4oz. amber</u>	<u>none</u>	<u>DR0, PCB, TOC</u>

OVA MEASUREMENTS

Background	<u>NA</u>
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH:	<u>0-6"</u>	DESCRIPTION:	<u>topsoil (silt, br, dry)</u>

GENERAL COMMENTS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: CSC503 PROJECT NO. J110202.PA.0
SAMPLE NO. CSC503-03-S0-003 BORING NO. 03
DATE/TIME COLLECTED: 12/08/12 PERSONNEL: Amanda Malaney
SAMPLE METHOD / DEPTH: grab 10-6" Paul Kaymaker
SAMPLE MEDIA: SOIL SEDIMENT SLUDGE Jim Hubbert
SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO. NA
SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO. ↓
MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>2-40 mL vials</u>	<u>meolt</u>	<u>ERO</u>
<u>3-102 amber</u>	<u>none</u>	<u>DRO, PCB, TDC</u>

OVA MEASUREMENTS

Background NA
Breathing zone ↓
Boring ↓
Headspace ↓

SAMPLE DESCRIPTION

DEPTH: 0-6" DESCRIPTION: topsoil, moist, br clayey silt

GENERAL COMMENTS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: CSC503 PROJECT NO. J110202.PA.0
SAMPLE NO. CSC503 - 04-SO-004 BORING NO. 04
DATE/TIME COLLECTED: 12/08/12 / 0922 PERSONNEL: A. Maloney
SAMPLE METHOD / DEPTH: grab 0-6" NO NO NO P. Raymaker
SAMPLE MEDIA: SOIL SEDIMENT SLUDGE J. Hubbell
SAMPLE QA SPLIT: YES NO SPLIT SAMPLE NO. NA
SAMPLE QC DUPLICATE: YES NO DUPLICATE SAMPLE NO. ↓
MS/MSD REQUESTED: YES NO

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>2 - 40 mL vials</u>	<u>meolt</u>	<u>GRO</u>
<u>3 - 4oz. amber</u>	<u>none</u>	<u>DRU, PUB, TOC</u>

OVA MEASUREMENTS

Background NA
Breathing zone ↓
Boring ↓
Headspace ↓

SAMPLE DESCRIPTION

DEPTH: 0-6" DESCRIPTION: brown sand w/ gravel, moist

GENERAL COMMENTS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: CSC503 PROJECT NO. J110202.PA.0
 SAMPLE NO. CSC503-SO 05-SO-005 BORING NO. 05
 DATE/TIME COLLECTED: 12/08/12 / 0933 PERSONNEL: A. Malaney
 SAMPLE METHOD / DEPTH: grab / 0-6" P. Raymaker
 SAMPLE MEDIA: SOIL SEDIMENT SLUDGE J. Hubbell
 SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO. NA
 SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO. CSC503-05-SO-005
 MS/MSD REQUESTED: YES (NO) @ 0940

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>2- 40 mL vials</u>	<u>mcot</u>	<u>GR0</u>
<u>6- 4oz. amber</u>	<u>none</u>	<u>DR0, PCB, TOG</u>

OVA MEASUREMENTS

Background NA
 Breathing zone ↓
 Boring ↓
 Headspace ↓

SAMPLE DESCRIPTION

DEPTH: 0-6" DESCRIPTION: br sand w/gravel, moist

GENERAL COMMENTS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: CSC503 PROJECT NO. J110202.PA.0
 SAMPLE NO. CSC503-07-SD-008 BORING NO. 07
 DATE/TIME COLLECTED: 12/09/12 / 1200 PERSONNEL: A. Malaney
 SAMPLE METHOD / DEPTH: grab / 4.5' below water surface P. Raymaker
 SAMPLE MEDIA: SOIL SEDIMENT SLUDGE J. Hubbell
 SAMPLE QA SPLIT: YES NO SPLIT SAMPLE NO. NA
 SAMPLE QC DUPLICATE: YES NO DUPLICATE SAMPLE NO. CSC503-07-SD-009 @ 1215
 MS/MSD REQUESTED: YES NO

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>4 - 20 ml vials</u>	<u>MeOH</u>	<u>GRD</u>
<u>6 - 402. amber</u>	<u>none</u>	<u>DRO, PCB, TDC</u>

OVA MEASUREMENTS

Background NA
 Breathing zone ↓
 Boring ↓
 Headspace ↓

SAMPLE DESCRIPTION

DEPTH: 4.5' below water surface DESCRIPTION: gray fine-grained sand w/ gravel,

GENERAL COMMENTS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: <u>CSC503</u>	PROJECT NO. <u>J110202.PA.0</u>
SAMPLE NO. <u>CSC503-08-SD-007</u>	BORING NO. <u>08</u>
DATE/TIME COLLECTED: <u>12/09/12/1130</u>	PERSONNEL: <u>A. Malaney</u>
SAMPLE METHOD / DEPTH: <u>grab / 4' below water surface</u>	<u>P. Raymaker</u>
SAMPLE MEDIA: <u>SOIL</u> / <u>SEDIMENT</u> / <u>SLUDGE</u>	<u>J. Hubbell</u>
SAMPLE QA SPLIT: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	SPLIT SAMPLE NO. <u>NA</u>
SAMPLE QC DUPLICATE: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	DUPLICATE SAMPLE NO. <u>NA</u>
MS/MSD REQUESTED: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>2-40 ml vials</u>	<u>metH</u>	<u>GR2</u>
<u>3-4 oz. Amber</u>	<u>none</u>	<u>DR2, PCB, TOC</u>

OVA MEASUREMENTS

Background	<u>NA</u>
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 4' below water surface DESCRIPTION: gr fine-grained sand w/ gravel, few organics

GENERAL COMMENTS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: <u>CSC503</u>	PROJECT NO. <u>J110202.PA.0</u>
SAMPLE NO. <u>CSC503-09-S0-007</u>	BORING NO. <u>09</u>
DATE/TIME COLLECTED: <u>12/08/12 / 0950</u>	PERSONNEL: <u>A. Malaney</u>
SAMPLE METHOD / DEPTH: <u>grab / 0-6"</u>	<u>P. Raymaker</u>
SAMPLE MEDIA: <u>SOIL</u> <input checked="" type="checkbox"/> <u>SEDIMENT</u> <input type="checkbox"/> <u>SLUDGE</u> <input type="checkbox"/>	<u>J. Hubbell</u>
SAMPLE QA SPLIT: <u>YES</u>	SPLIT SAMPLE NO. <u>NA</u>
SAMPLE QC DUPLICATE: <u>YES</u>	DUPLICATE SAMPLE NO. <u>↓</u>
MS/MSD REQUESTED: <u>YES</u>	

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>2- 40 mL vials</u>	<u>meat</u>	<u>GRD</u>
<u>3- 4 oz, amber</u>	<u>none</u>	<u>DRD, PCB, TOC</u>

OVA MEASUREMENTS

Background	<u>NA</u>
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: <u>0-6"</u>	DESCRIPTION: <u>br silt, dry</u>

GENERAL COMMENTS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: CSC503 PROJECT NO. J110202.PA.6
 SAMPLE NO. CSC503-16-SD-006 BORING NO. 10
 DATE/TIME COLLECTED: 12/09/12 1115 PERSONNEL: A. Malaney
 SAMPLE METHOD / DEPTH: grab / 4.5' below water surface P. Raymaker
 SAMPLE MEDIA: SOIL SEDIMENT SLUDGE J. Hubbell
 SAMPLE QA SPLIT: YES NO SPLIT SAMPLE NO. NA
 SAMPLE QC DUPLICATE: YES NO DUPLICATE SAMPLE NO. ↓
 MS/MSD REQUESTED: YES NO

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>2-40ml vials</u>	<u>meqbt</u>	<u>GRE</u>
<u>3-4oz. amber</u>	<u>none</u>	<u>DEB, PCB, TOL</u>

OVA MEASUREMENTS

Background NA
 Breathing zone ↓
 Boring ↓
 Headspace ↓

SAMPLE DESCRIPTION

DEPTH: 4.5' DESCRIPTION: gray fine-grained sand w/ gravel
below
water surface

GENERAL COMMENTS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: CSC503 PROJECT NO. J110202.PA.0
 SAMPLE NO. CSC503-11-SD-005 BORING NO. 11
 DATE/TIME COLLECTED: 12/09/12 / 1100 PERSONNEL: A. Malaney
 SAMPLE METHOD / DEPTH: Grdb / 4' below water surface P. Raymaker
 SAMPLE MEDIA: SOIL SEDIMENT SLUDGE
 SAMPLE QA SPLIT: YES NO SPLIT SAMPLE NO. NA
 SAMPLE QC DUPLICATE: YES NO DUPLICATE SAMPLE NO. ↓
 MS/MSD REQUESTED: YES NO

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>2-40 mL vials</u>	<u>met</u>	<u>GR0</u>
<u>3-40 oz. amber</u>	<u>none</u>	<u>DR0, PCB, TCL</u>

OVA MEASUREMENTS

Background	<u>NA</u>
Breathing zone	
Boring	
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 4' below water surface DESCRIPTION: gray sand; gravel, few organics

GENERAL COMMENTS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: CSC503 PROJECT NO. J110202.PA.0
 SAMPLE NO. CSC503-^{AD}13-SO-008 BORING NO. 13
 DATE/TIME COLLECTED: 12/08/12 11010 PERSONNEL: A. Malaney
 SAMPLE METHOD / DEPTH: grab 0-6" P. Raymaker
 SAMPLE MEDIA: SOIL SEDIMENT SLUDGE J. Hubbell
 SAMPLE QA SPLIT: YES NO NO SPLIT SAMPLE NO. NA
 SAMPLE QC DUPLICATE: YES NO NO DPLICATE SAMPLE NO. U
 MS/MSD REQUESTED: YES NO NO

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>6 - 40 mL vials</u>	<u>meth</u>	<u>GRD</u>
<u>9 - 4 oz. Amber</u>	<u>none</u>	<u>DRD, PCB, TOL</u>

OVA MEASUREMENTS

Background NA
 Breathing zone ↓
 Boring ↓
 Headspace ↓

SAMPLE DESCRIPTION

DEPTH: 0-6" DESCRIPTION: fine-grained br. sand w/ gravel, moist

GENERAL COMMENTS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: CSC503 PROJECT NO. J110202.PA.0
 SAMPLE NO. CSC503-14-SD-004 BORING NO. 14
 DATE/TIME COLLECTED: 12/08/12 / 1550 PERSONNEL: A. Malancy
 SAMPLE METHOD / DEPTH: grab / 4' P. Raymaker
 SAMPLE MEDIA: SOIL SEDIMENT SLUDGE J. Hubbard
 SAMPLE QA SPLIT: YES NO SPLIT SAMPLE NO. NA
 SAMPLE QC DUPLICATE: YES NO DUPLICATE SAMPLE NO. ↓
 MS/MSD REQUESTED: YES NO

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>6-40 ml vials</u>	<u>NO</u> <u>het meth</u>	<u>GR0</u>
<u>9-4oz, amber</u>	<u>none</u>	<u>DR0, PUB, TOL</u>

OVA MEASUREMENTS

Background NA
 Breathing zone ↓
 Boring ↓
 Headspace ↓

SAMPLE DESCRIPTION

DEPTH: 4' DESCRIPTION: black organic silt w/ organic matter

GENERAL COMMENTS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: CSC503 PROJECT NO. J110202.PA.0
SAMPLE NO. CSC503-16-SO-009 BORING NO. 16
DATE/TIME COLLECTED: 12/08/12 / 1025 PERSONNEL: A. Malaney
SAMPLE METHOD / DEPTH: grab / 0-6" P. Raymaker
SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE J. Hubbard II
SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO. NA
SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO. ↓
MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>2-40 mL vials</u>	<u>meott</u>	<u>GR0</u>
<u>3-4oz. amber</u>	<u>none</u>	<u>DR0, PCB, TOC</u>

OVA MEASUREMENTS

Background NA
Breathing zone ↓
Boring ↓
Headspace ↓

SAMPLE DESCRIPTION

DEPTH: 0-6" DESCRIPTION: br. fine-grained sand, moist

GENERAL COMMENTS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: CSC503 PROJECT NO. 110202-PA-D
 SAMPLE NO. CSC503-17-SD-001 BORING NO. 17
 DATE/TIME COLLECTED: 12/08/12 / 1330 PERSONNEL: A. Malaney
 SAMPLE METHOD / DEPTH: grab / bottom of CB P. Raymaker.
 SAMPLE MEDIA: SOIL SEDIMENT SLUDGE J. Hubbell
 SAMPLE QA SPLIT: YES NO SPLIT SAMPLE NO. NA
 SAMPLE QC DUPLICATE: YES NO DUPLICATE SAMPLE NO. ↓
 MS/MSD REQUESTED: YES NO

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>2-40 ml vials</u>	<u>meth</u>	<u>GRO</u>
<u>3-4 oz. amber</u>	<u>none</u>	<u>DRO, PCB, TOC</u>

OVA MEASUREMENTS

Background NA
 Breathing zone ↓
 Boring ↓
 Headspace ↓

SAMPLE DESCRIPTION

DEPTH: bottom of CB DESCRIPTION: gray fine-medium grained sand, wet
(4.5' bgs)

GENERAL COMMENTS

no water in CB for stormwater sample

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: CS1503 PROJECT NO. J10202.PA.0
 SAMPLE NO. CS1503-18-S0-010 BORING NO. 18
 DATE/TIME COLLECTED: 12/08/12 / 1350 PERSONNEL: A. Malaney
 SAMPLE METHOD / DEPTH: grab / 0-6" P. Raymaker
 SAMPLE MEDIA: SOIL / SEDIMENT / SLUDGE J. Hubbard
 SAMPLE QA SPLIT: YES / NO / NO SPLIT SAMPLE NO. NA
 SAMPLE QC DUPLICATE: YES / NO / NO DPLICATE SAMPLE NO. ↓
 MS/MSD REQUESTED: YES / NO / NO

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>2 - 40 mL vials</u>	<u>meth</u>	<u>GRD</u>
<u>3 - 4 oz. Amber</u>	<u>none</u>	<u>DRD, PCB, TOL</u>

OVA MEASUREMENTS

Background NA
 Breathing zone ↓
 Boring ↓
 Headspace ↓

SAMPLE DESCRIPTION

DEPTH: 0-6" DESCRIPTION: br. clayey silt, moist
soil sample collected upgradient at SW corner of CB concrete pad

GENERAL COMMENTS

CB bottom 4.3' below grade
insufficient sediment in CB
no water in CB for stormwater sample

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: CSC503 PROJECT NO. J110202.PA.0
 SAMPLE NO. CSC503-19-SO-011 BORING NO. 19
 DATE/TIME COLLECTED: 12/08/12 / 1400 PERSONNEL: A. Malaney
 SAMPLE METHOD / DEPTH: grab / 0-6" P. Raymaker
 SAMPLE MEDIA: SOIL SEDIMENT SLUDGE J. Hubbell
 SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO. NA
 SAMPLE QC DUPLICATE: (YES) DUCPLICATE SAMPLE NO. CSC503-19-SO-012
 MS/MSD REQUESTED: YES (NO) 01410

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>47 - 40 ml vials</u>	<u>meth</u>	<u>GRD</u>
<u>6 - 4 oz. amber</u>	<u>none</u>	<u>DRD, PCB, TOC</u>

OVA MEASUREMENTS

Background NA
 Breathing zone ↓
 Boring ↓
 Headspace ↓

SAMPLE DESCRIPTION

DEPTH: 0-6" DESCRIPTION: br. clayey silt, moist
collected soil upgradient of CB
at NW corner of CB concrete pad

GENERAL COMMENTS

CB 7.42 below ground surface (bottom)
insufficient sediment in CB
no water in CB for stormwater sample.

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: CSC503 PROJECT NO. J10202.PA.0
 SAMPLE NO. CSC503-20-SP-002 BORING NO. 20
 DATE/TIME COLLECTED: 12/08/12 / 1425 PERSONNEL: A. Malaney
 SAMPLE METHOD / DEPTH: grab P. Raymaker
 SAMPLE MEDIA: SOIL SEDIMENT SLUDGE J. Hubbell
 SAMPLE QA SPLIT: YES NO SPLIT SAMPLE NO. NA
 SAMPLE QC DUPLICATE: YES NO DUPLICATE SAMPLE NO. ↓
 MS/MSD REQUESTED: YES NO

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>2-40 mL vials</u>	<u>meoff</u>	<u>GRO</u>
<u>3-4 oz. amber</u>	<u>none</u>	<u>DRO, PCB, TOC</u>

OVA MEASUREMENTS

Background NA
 Breathing zone _____
 Boring _____
 Headspace _____

SAMPLE DESCRIPTION

DEPTH: ground surface DESCRIPTION: sand, gr, wet

collected sediment immediately adjacent to CB grate on south side, sediment located in depression in asphalt

GENERAL COMMENTS

CB 3.40' bgs
no @ insufficient water in CB for stormwater sample.
insufficient sediment in bottom of CB for sample
CB surrounded by asphalt

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: CSC503 PROJECT NO. J110202.PA.0
 SAMPLE NO. CSC503-21-SO-5/13 BORING NO. 21
 DATE/TIME COLLECTED: 12/08/12 11450 PERSONNEL: A. Malaney
 SAMPLE METHOD / DEPTH: grab 10-6" P. Raymaker
 SAMPLE MEDIA: SOIL SEDIMENT SLUDGE J. Hubbell
 SAMPLE QA SPLIT: YES YES SPLIT SAMPLE NO. NA
 SAMPLE QC DUPLICATE: YES NO DPLICATE SAMPLE NO. J
 MS/MSD REQUESTED: YES NO

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>2- 40 mL vials</u>	<u>meat</u>	<u>GRO</u>
<u>3- 4oz. amber</u>	<u>none</u>	<u>DRO, PCB, TDC</u>

OVA MEASUREMENTS

Background NA
 Breathing zone ↓
 Boring ↓
 Headspace ↓

SAMPLE DESCRIPTION

DEPTH: 0-6" DESCRIPTION: br. clayey silt, moist soil
collected sediment immediately adjacent
upgradient at SW corner of CB concrete
pad

GENERAL COMMENTS

CB - 2.94' bgs (bottom)
no water in CB for stormwater sample
insufficient sediment in CB for sediment sample

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: CSC503 PROJECT NO. J110202.PA.O
 SAMPLE NO. NA BORING NO. 22
 DATE/TIME COLLECTED: NA PERSONNEL: A. Malaney
 SAMPLE METHOD / DEPTH: NA P. Raymond
 SAMPLE MEDIA: SOIL SEDIMENT SLUDGE J. Hubbell
 SAMPLE QA SPLIT: YES NO SPLIT SAMPLE NO. NA
 SAMPLE QC DUPLICATE: YES NO DUPLICATE SAMPLE NO. ↓
 MS/MSD REQUESTED: YES NO

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>NA</u>		

OVA MEASUREMENTS

Background NA
 Breathing zone ↓
 Boring ↓
 Headspace ↓

SAMPLE DESCRIPTION

DEPTH: NA DESCRIPTION: NA

GENERAL COMMENTS

CB bottom 2.93' bgs
no water in CB for groundwater sample
insufficient sediment in CB for sample
no soil sample collected per QAPP

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: CSC503 PROJECT NO. J110202.PA.0
 SAMPLE NO. CSC503-23-5D-003 BORING NO. 23
 DATE/TIME COLLECTED: 12/08/12 11525 PERSONNEL: A. Malaney
 SAMPLE METHOD / DEPTH: grab / at bottom of CB P. Raymaker
 SAMPLE MEDIA: SOIL SEDIMENT SLUDGE J. Hubbell
 SAMPLE QA SPLIT: YES SPLIT SAMPLE NO. NA
 SAMPLE QC DUPLICATE: YES DUCPLICATE SAMPLE NO. ↓
 MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>2-40 mL vials</u>	<u>Meth</u>	<u>GRO</u>
<u>3-4oz. amber</u>	<u>none</u>	<u>PRO, PLB, TOC</u>

OVA MEASUREMENTS

Background NA
 Breathing zone ↓
 Boring ↓
 Headspace ↓

SAMPLE DESCRIPTION

DEPTH: bottom of CB DESCRIPTION: gray sand, wet
(3.3' bgs)

GENERAL COMMENTS

CB bottom 3.30' bgs
no water in CB for stormwater sample

Appendix B-2
Surface Water Sample Collection Forms

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME JBA - CSC503 PROJECT NO. J110202.PA.2
 SAMPLE NO. CSC503-15-SW-001 WELL NO. 15-SW
 DATE/TIME COLLECTED 12/8/12 @ 1045 PERSONNEL Paul Ruyter
 SAMPLE METHOD grab Tom Kistner
 SAMPLE MEDIA: Groundwater Surface Water
 SAMPLE QA SPLIT: YES NO SPLIT SAMPLE NO. NA
 SAMPLE QC DUPLICATE: YES NO DUPLICATE SAMPLE NO. ↓
 MS/MSD REQUESTED YES NO

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>12x 1L Amber</u>	<u>NA</u>	<u>DRO PCBs</u>
<u>9x 40ml VOA</u>	<u>HCl</u>	<u>ORO</u>
<u>6x 250ml Poly Amber</u>	<u>H₂SO₄</u>	<u>TOC</u>

WELL PURGING DATA

Date	_____	Well Depth (ft. BTOC)	_____
Time Started	_____	Depth to Water (ft BTOC)	_____
Time Completed	_____	Water Column Length	_____
<u>Inu Measurements</u>	_____	Volume of Water in Well (gal)	_____
Background	_____	Casing Volumes to Purge	_____
Breathing Zone	_____	Minimum to Purge (gal)	_____
Well Head	_____	Actual Purge (gal)	_____

FIELD MEASUREMENTS

Time	Amount Purged (gal)	pH	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU's)
<u>1115</u>	<u>NA</u>	<u>7.90</u>	<u>4.99</u>	<u>212.5</u>	<u>10.43</u>	<u>235.4</u>	<u>4.4</u>

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	_____	_____
Water Quality Meter	<u>NA YSI 6820 v2</u>	<u>12/8/12</u>

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME CSC503 - JBA PROJECT NO. J/10202.PH.0
 SAMPLE NO. CSC503-12-SW-002 WELL NO. 12-SW
 DATE/TIME COLLECTED 12/8/12 @ 1130 PERSONNEL Paul Raymaker
 SAMPLE METHOD grab Jim Hubbell
 SAMPLE MEDIA: ~~Groundwater~~ Surface Water
 SAMPLE QA SPLIT: YES NO SPLIT SAMPLE NO. NA
 SAMPLE QC DUPLICATE: YES NO DUPLICATE SAMPLE NO. NA
 MS/MSD REQUESTED YES NO

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

<u>Sample Container</u>	<u>Preservative</u>	<u>Analysis Requested</u>
<u>4x 1L Amber</u>	<u>None</u>	<u>DRO, PCBs</u>
<u>3x 40ml VOA</u>	<u>HCl</u>	<u>GRO</u>
<u>2x 250ml Amber</u>	<u>H₂SO₄</u>	<u>TOC</u>

WELL PURGING DATA

Date	Well Depth (ft. BTOC)
Time Started	Depth to Water (ft BTOC)
Time Completed	Water Column Length
<u>None Measurements</u>	Volume of Water in Well (gal)
Background	Casing Volumes to Purge
Breathing Zone	Minimum to Purge (gal)
Well Head	Actual Purge (gal)

FIELD MEASUREMENTS

Time	Amount Purged (gal)	pH	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU's)
<u>1135</u>	<u>NA</u>	<u>7.13</u>	<u>9.38</u>	<u>0.132</u>	<u>10.62</u>	<u>214.0</u>	<u>2.7</u>

FIELD EQUIPMENT AND CALIBRATION

Water Level Probe	<u>Model</u>	<u>Calibration</u>
Water Quality Meter	<u>NA</u>	<u>12/8/12</u>
	<u>YSI 680 V2</u>	

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME CSC503-JBA PROJECT NO. J1/0202.PA.0
 SAMPLE NO. CSC503-06-SW-003 WELL NO. 06-SW
 DATE/TIME COLLECTED 12/8/12 @ 1150 PERSONNEL Paul Rappley
 SAMPLE METHOD grab JIM Habbell
 SAMPLE MEDIA: Groundwater Surface Water
 SAMPLE QA SPLIT: YES NO SPLIT SAMPLE NO. _____
 SAMPLE QC DUPLICATE: YES NO DUPLICATE SAMPLE NO. CSC503-06-SW-004 @ 1200
 MS/MSD REQUESTED YES NO

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>8x 1L Amber</u>	<u>None</u>	<u>DRO PUS</u>
<u>6x 40ml VOA</u>	<u>HCl</u>	<u>GRO</u>
<u>2x 150ml Amber</u>	<u>H2SO4</u>	<u>TOC</u>

WELL PURGING DATA

Date	_____	Well Depth (ft. BTOC)	_____
Time Started	_____	Depth to Water (ft BTOC)	_____
Time Completed	_____	Water Column Length	_____
<u>Flow Measurements</u>	_____	Volume of Water in Well (gal)	_____
Background	_____	Casing Volumes to Purge	_____
Breathing Zone	_____	Minimum to Purge (gal)	_____
Well Head	_____	Actual Purge (gal)	_____

FIELD MEASUREMENTS

Time	Amount Purged (gal)	pH	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU's)
<u>1210</u>	<u>NA</u>	<u>7.22</u>	<u>11.17</u>	<u>0.053</u>	<u>9.52</u>	<u>183</u>	<u>2.7</u>

FIELD EQUIPMENT AND CALIBRATION

Water Level Probe NA Model _____ Calibration _____
 Water Quality Meter XSE 0820 V2 _____ 12/8/12

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME CSC503-JBA PROJECT NO. J1/0202.PA.0
 SAMPLE NO. CSC503-SBFB01 WELL NO. NA
 DATE/TIME COLLECTED 12/9/12 @ 1310 PERSONNEL Paul Reynolds
 SAMPLE METHOD grab
 SAMPLE MEDIA: Groundwater Surface Water
 SAMPLE QA SPLIT: YES NO SPLIT SAMPLE NO. NA
 SAMPLE QC DUPLICATE: YES NO DUPLICATE SAMPLE NO. NA
 MS/MSD REQUESTED YES NO

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>4x 1L Amber</u>	<u>None</u>	<u>DRP PCBs</u>
<u>3x 10ml VOA</u>	<u>HCl</u>	<u>GRO</u>
<u>2x 250 ml Amber</u>	<u>H₂SO₄</u>	<u>TOC</u>

WELL PURGING DATA

Date	_____	Well Depth (ft. BTOC)	_____
Time Started	_____	Depth to Water (ft BTOC)	_____
Time Completed	_____	Water Column Length	_____
<u>Inu Measurements</u>	_____	Volume of Water in Well (gal)	_____
Background	_____	Casing Volumes to Purge	_____
Breathing Zone	_____	Minimum to Purge (gal)	_____
Well Head	_____	Actual Purge (gal)	_____

FIELD MEASUREMENTS

Time	Amount Purged (gal)	pH	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU's)

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	_____	_____
Water Quality Meter	_____	_____

GENERAL COMMENTS

Field Blank (source water)

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME CSC503 - JBA PROJECT NO. J110202.PA.0
 SAMPLE NO. CSC503-5BEB01 WELL NO. NA
 DATE/TIME COLLECTED 12/9/12 @ 1300 PERSONNEL Paul Raymcke
 SAMPLE METHOD Grab
 SAMPLE MEDIA: Groundwater Surface Water
 SAMPLE QA SPLIT: YES NO SPLIT SAMPLE NO. NA
 SAMPLE QC DUPLICATE: YES NO DUPLICATE SAMPLE NO. _____
 MS/MSD REQUESTED YES NO

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
<u>4x 1L Amber</u>	<u>None</u>	<u>DRO PCB</u>
<u>3x 40ml VOA</u>	<u>HCl</u>	<u>GRO</u>
<u>2x 250ml Amber</u>	<u>H2SO4</u>	<u>TOC</u>

WELL PURGING DATA

Date	Well Depth (ft. BTOC)
Time Started	Depth to Water (ft. BTOC)
Time Completed	Water Column Length
<u>Flow</u> Measurements	Volume of Water in Well (gal)
Background	Casing Volumes to Purge
Breathing Zone	Minimum to Purge (gal)
Well Head	Actual Purge (gal)

FIELD MEASUREMENTS

Time	Amount Purged (gal)	pH	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU's)

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	_____	_____
Water Quality Meter	_____	_____


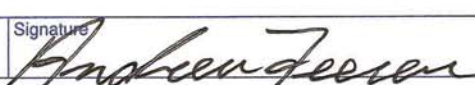
GENERAL COMMENTS

Equipment Blank for soil borings

Appendix B-3
Investigation-Derived Waste Disposal Documentation

NON-HAZARDOUS SOLID WASTE The Environmental Services Source

BILL OF LADING

Generator's Name and Mailing Address JOINT BASE ANDREWS ADD: KEITH FREITHOFFER 3466 NORTH CAROLINA AVE Generator's Phone 301 858 3470 ANDREWS AFB, MD 20762		BOL				
Transporter 1 Company Name Clean Venture, Inc.		STATE TRANS. ID-NJDEPE Decal No.- Transporter's Phone (410) 368-9170				
Designated Facility Name and Site Address Cycle Chem, Inc. 550 Industrial Drive Lewisberry, PA 17339		US EPA ID Number 10. P A D 0 6 7 0 9 8 8 2 2				
US DOT Description (Including Proper Shipping Name, Hazard Class or Division, ID Number and Packing Group)		Containers No.	Type	Total Quantity	Unit Wt/Vol	Waste No.
a. Non DOT/EPA Regulated Material (PURGE WATER)		X15	DM	X5100	P	None
b. NON DOT/EPA REGULATED MATERIAL (SOIL CUTTINGS)		X5	DM	X2000	P	NONE
c. NON DOT/EPA REGULATED MATERIAL (SLUDGE)		X11	DM	X2100	P	NONE
J. Additional Descriptions for Materials Listed Above a. LF-05-5, DW-03-640-3, SS-27-1, SWM-50-2, SWM-60-1 B/B/WIDE CSM-3 b. B/B/WIDE CSM-5 C. B/B/WIDE CSM-11						
CCI Generator # and Product Codes: 24 hour Emergency Response Phone # (410) 368-9170		Job# 46057-04-09 CVB-NEW				
GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and are non-hazardous by USEPA & applicable state regulations.						
Printed/Typed Name 		Signature NO		PLACARDS SUPPLIED <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO- FURNISHED BY CARRIER		
Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name ANDREW FEESER		Signature 		Month Day Year 19-26-13		
Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name		Signature		Month Day Year		
FACILITY Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest.						
Printed/Typed Name		Signature		Month Day Year		



Cycle Chem, Inc.
 217 South 1st St. Elizabeth, NJ 07206
 Phone: (908) 355-5800 Fax: (908) 355-0562
 550 Industrial Dr. Lewisberry, PA 17339
 Phone: (717) 938-4700 Fax: (717) 938-3301

General Chemical Corporation
 183-138 Leland St., Framingham, MA 01701
 Phone: (508) 872-5000 Fax: (508) 875-5271

Material Profile Sheet
 Gencode - Stream:
 Process Code:

A. GENERATOR INFORMATION
 EPA ID # M00 570 024 000
 GENERATOR NAME ANDREWS AIR FORCE BASE
 MAILING ADDRESS 3466 NORTH CAROLINA AVE
ANDREWS AFB MD 20762
 GENERATOR CONTACT PATRICIA GRAY
 GENERATOR PHONE # 301 858 3472
 SITE ADDRESS SAME
 PICKUP COUNTY

BILLING COMPANY CVI-04
 BILLING ADDRESS
 BILLING CONTACT CITUCK PAGANO
 BILLING PHONE # _____ FAX _____
 PROCESS GENERATING WASTE:
WELL DRILLING
 NAME OF WASTE: WATER

B. PHYSICAL CHARACTERISTICS OF WASTE (AT 70o F)
 Color/Physical Description: VARIES
 Strong Incidental Odor Present? Yes No
 Wastewater: Wastewater Non-wastewater
 Specific Gravity:
 Physical State: Single Phase SpM Gas/Aerosol
 Bi-Layered Liquid Lab Pack
 Multi-Layered Semi-Solid
 Powder Sludge
 Flash Point: Flash Point <74 F Flash Point 101-140 F Flash Point >200 F Exact Flash Point:
 Flash Point 74-100 F Flash Point 141-200 F No Flash Point
 Open cup Closed cup
 Ignitable Solid? Yes No
 pH: <2.0 2.01-5.0 5.01-9.0 9.01-12.49 >12.5 Exact pH

Liquid/Solid/Sludge
 % Liquid 100
 % Suspended Solids
 % Sludge
 % Solid
 Dumpable? Yes No
 Pumpable? Yes No
 Pourable? Yes No

D. REGULATORY INFORMATION
 Is it USEPA haz waste? Yes No
 USEPA Haz Codes:
 EPA Sub Categories:
 Is it STATE waste? Yes No
 STATE Haz Codes:
 DOT Hazardous Material? Yes No
 Proper Shipping Name: NON DOT/EPA
REGULATED MATERIAL
 Hazard Class: _____ UN/NA #: _____ P. G.: _____
 RQ: _____ ERG#:

C. CHEMICAL COMPOSITION

ATTACHMENTS: MSDS attached Supplemental Analysis Additional Information LDR Attachment

Chemical Composition	Percent	Minimum	Maximum
<u>WATER FROM</u>			
<u>WELL DRILLING</u>			

E. SHIPPING INFORMATION
 Shipment Method:
 Bulk Liquid - Tanker Pallet(s) Drum(s): 376
 Bulk Solid - Bmp Tr Tote(s)
 Bulk Solid - Roll Off Cubic Yard Box(s) Other(Size):
 Anticipated Volume: 10 Per TR
 Quantity: _____ Price: _____ / Unit:

F. SPECIAL HANDLING CONSIDERATIONS

Radioactive PA RW SQG No Land Filling
 Etiologic/Medical Waste DRMS/DRMO Waste Incinerate Only
 Fuming CERCLA Waste Recycle Only
 Phenolics Asbestos Other:

G. TRANSPORTER ARRANGEMENTS

CCI/GCC Provides Transportation
 Customer Delivers to CCI/GCC
 Customer Delivers to End Facility via CCI/GCC Other: CCB

Indicate if waste contains any of the following:

	Non-Reg.	or Less Than	or Actual
PCBs	<input checked="" type="checkbox"/>	<input type="checkbox"/> 50 PPM	
Cyanides	<input checked="" type="checkbox"/>	<input type="checkbox"/> 250 PPM	
Phenolics	<input checked="" type="checkbox"/>	<input type="checkbox"/> 50 PPM	
Sulfides	<input checked="" type="checkbox"/>	<input type="checkbox"/> 500 PPM	
VOCs	<input checked="" type="checkbox"/>	<input type="checkbox"/> 500 PPM	
Chlorides	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1000 PPM	

H. OTHER HAZARDOUS CHARACTERISTICS

RCRA REACTIVE ETIOLOGICAL EXPLOSIVE/SHOCK SENSITIVE
 WATER REACTIVE TSCA REG NONE OF THE ABOVE
 RADIOACTIVE OXIDIZING MATL
 SUBJECT TO SUBPART FF BENZENE REG PYROPHORIC

1. Is this waste characteristically hazardous for metals or organics (EPA Waste Codes D004 through D043)? Yes No
 IF YES, please list the constituents and concentrations in section C.
 2. Does this waste contain underlying hazardous constituents as defined in 40 CFR 268 Part 2, Section I at concentrations exceeding the UTS treatment standards? Yes No
 IF YES, please list the constituents and concentrations in section C.

GENERATOR CERTIFICATION: I hereby certify that all information submitted in this and all other attached documents is complete, contains true and accurate descriptions and is representative of the waste material, and that all relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. If CCI/GCC discovers, after having taken the delivery of the waste, that any waste does not conform to the identification or descriptions contained in this MFS then CCI/GCC shall provide notice to Generator and coordinate the return of the non conforming waste to the point of origin as set forth in the manifest or to such other locations designated in writing by the Generator. Generator agrees to reimburse CCI/GCC for all handling, packaging, cleanup and transportation costs or charges, damage to equipment and costs associated with lost time incurred by CCI/GCC during the receipt, handling, temporary storage and return of such non conforming waste to its point of origin or to such other location designated by the Generator. I hereby authorize CCI/GCC to amend and/or correct any information on the MFS with the full understanding that if any amendment or correction is performed, I will be contacted as such to issue any approval.

Authorized Signature: [Signature] Title: HCES/CEIER Date: 9/26/13

CCI/GCC APPROVAL: Sales Code _____ Tech Initials _____ Date _____ Management Initials _____ Date _____ Residual Waste Form Code: _____



Cycle Chem, Inc.
 217 South 1st St. Elizabeth, NJ 07206
 Phone: (908) 355-5800 Fax: (908) 355-0562
 550 Industrial Dr. Lewisberry, PA 17339
 Phone: (717) 938-4700 Fax: (717) 938-3301

General Chemical Corporation
 133-138 Leland St., Framingham, MA, 01701
 Phone: (508) 872-5000 Fax: (508) 875-5271

Material Profile Sheet
 Gencode - Stream: _____
 Process Code: _____

A. GENERATOR INFORMATION
 EPA ID # M00 570 024 000
 GENERATOR NAME ANDREWS AIR FORCE BASE
 MAILING ADDRESS 3466 NORTH CAROLINA AVE
ANDREWS AFB MD 20762
 GENERATOR CONTACT PATRICIA GRAY
 GENERATOR PHONE # 301 858 3472
 SITE ADDRESS _____
 PICKUP COUNTY JAMF

BILLING COMPANY CVI-04
BILLING ADDRESS _____
BILLING CONTACT CITUCK PAGANO
BILLING PHONE # _____ **FAX** _____
PROCESS GENERATING WASTE:
WELL DRILLING
NAME OF WASTE: SLUDGE

B. PHYSICAL CHARACTERISTICS OF WASTE (AT 70o F)
 Color/Physical Description: VARIOUS
 Strong Incidental Odor Present? Yes No
 Wastewater: Wastewater Non-wastewater
 Specific Gravity: _____
 Physical State: Single Phase Solid Gas/Aerosol
 Bi-Layered Liquid Lab Pack
 Multi-Layered Semi-Solid Powder Sludge
 Flash Point: Flash Point <74 F Flash Point 101-140 F Flash Point >200 F Exact Flash Point:
 Flash Point 74-100 F Flash Point 141-200 F No Flash Point
 Open cup Closed cup
 Ignitable Solid? Yes No
 pH: <2.0 2.01-5.0 5.01-9.0 9.01-12.49 >12.5 Exact pH _____

Liquid/Solid/Sludge
 % Liquid _____
 % Suspended Solids _____
 % Sludge 100
 % Solid 100
 Dumpable? Yes No
 Pumpable? Yes No
 Pourable? Yes No

D. REGULATORY INFORMATION
 Is it USEPA haz waste? Yes No
 USEPA Haz Codes: _____
 EPA Sub Categories: _____
 Is it STATE waste? Yes No
 STATE Haz Codes: _____
 DOT Hazardous Material? Yes No
 Proper Shipping Name: CONDON/EPA
PERMITS AND UNDERPIN
 Hazard Class: _____ UN/NA #: NA P.G.: _____
 RQ: _____ ERG#: _____

C. CHEMICAL COMPOSITION

ATTACHMENTS: MSDS attached Supplemental Analysis Additional Information LDR Attachment

Chemical Composition	Percent	Minimum	Maximum
<u>SOIL</u>	<u>50</u>	<u>0</u>	<u>70</u>
<u>SLUDGE</u>	<u>50</u>	<u>0</u>	<u>70</u>
<u>WATER</u>	<u>100</u>		

E. SHIPPING INFORMATION
 Shipment Method: Bulk Liquid - Tanker Pallet(s) Drum (Size): 316
 Bulk Solid - Dump Tilt Tote(s)
 Bulk Solid - Roll Off Cubic Yard Box(es) Other (Size): YR
 Anticipated Volume: 10 Per YR
 Quantity: _____ Price: _____ / Unit: _____

F. SPECIAL HANDLING CONSIDERATIONS

Radioactive PA RW SQG No Land Filling
 Etiological/Medical Waste DRMS/DRMO Waste Incinerate Only
 Fuming CERCLA Waste Recycle Only
 Phenolics Asbestos Other: _____

G. TRANSPORTER ARRANGEMENTS

CCI/GCC Provides Transportation Other:
 Customer Delivers to CCI/GCC
 Customer Delivers to End Facility via CCI/GCC

Indicate if waste contains any of the following:

	Non-Reg.	or Less Than	or Actual
PCBs	<input checked="" type="checkbox"/>	<input type="checkbox"/> 50 PPM	_____
Cyanides	<input checked="" type="checkbox"/>	<input type="checkbox"/> 250 PPM	_____
Phenolics	<input checked="" type="checkbox"/>	<input type="checkbox"/> 50 PPM	_____
Sulfides	<input checked="" type="checkbox"/>	<input type="checkbox"/> 500 PPM	_____
VOCs	<input checked="" type="checkbox"/>	<input type="checkbox"/> 500 PPM	_____
Chlorides	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1000 PPM	_____

H. OTHER HAZARDOUS CHARACTERISTICS

RCRA REACTIVE ETIOLOGICAL EXPLOSIVE/SHOCK SENSITIVE
 WATER REACTIVE TSCA REG NONE OF THE ABOVE
 RADIOACTIVE OXIDIZING MATL
 SUBJECT TO SUBPART FF BENZENE REG PYROPHORIC

1. Is this waste characteristically hazardous for metals or organics (EPA Waste Codes D004 through D043)? Yes No
 If YES, please list the constituents and concentrations in section C.
 2. Does this waste contain underlying hazardous constituents as defined in 40 CFR 268 Part 2, Section I at concentrations exceeding the UTS treatment standards? Yes No
 If YES, please list the constituents and concentrations in section C.

GENERATOR CERTIFICATION: I hereby certify that all information submitted in this and all other attached documents is complete, contains true and accurate descriptions and is representative of the waste material, and that all relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. If CCI/GCC discovers, after having taken the delivery of the waste, that any waste does not conform to the identification or descriptions contained in this NPS then CCI/GCC shall provide notice to Generator and coordinate the return of the non conforming waste to the point of origin as set forth in the manifest or to such other locations designated in writing by the Generator. Generator agrees to reimburse CCI/GCC for all handling, packaging, cleanup and transportation costs or charges, damage to equipment and costs associated with lost time incurred by CCI/GCC during the receipt, handling, temporary storage and return of such non conforming waste to its point of origin or to such other location designated by the Generator. I hereby authorize CCI/GCC to amend and/or contact any information on the NPS with the full understanding that if any amendment or correction is performed, it will be contacted as such to issue any approval.

Authorized Signature: _____ Title: ICES/LETTER Date: 9/26/13

CCI/GCC APPROVAL: _____ Sales Code: _____ Tech Initials: _____ Date: _____ Management Initials: _____ Date: _____ Residual Waste / Form Codes: _____



Cycle Chem, Inc.
 217 South 1st St. Elizabeth, NJ 07206
 Phone: (908) 355-5800 Fax: (908) 355-0562
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General Chemical Corporation
 133-138 Leland St., Framingham, MA 01701
 Phone: (508) 872-5000 Fax: (508) 875-5271

Material Profile Sheet
 Gencode - Stream: _____
 Process Code: _____

A. GENERATOR INFORMATION
 EPA ID # MO0570024000
 GENERATOR NAME ANDREWS AIR FORCE BASE
 MAILING ADDRESS 3466 NORTH CAROLINA AVE
ANDREWS AFB MO 20762
 GENERATOR CONTACT PATRICIA GRAY
 GENERATOR PHONE # 301 858 3472
 SITE ADDRESS _____
 PICKUP COUNTY SAME

BILLING COMPANY CVI-04
BILLING ADDRESS _____
BILLING CONTACT CITUCK PAGANO
BILLING PHONE # _____ **FAX** _____
PROCESS GENERATING WASTE:
WELL DRILLING
NAME OF WASTE: SOIL CUTTINGS

B. PHYSICAL CHARACTERISTICS OF WASTE (AT 70o F)
 Color/Physical Description: WHITE
 Strong Incidental Odor Present? Yes No
 Wastewater: Wastewater Non-wastewater
 Specific Gravity: _____
 Physical State: Single Phase Solid Gas/Aerosol
 Bi-Layered Liquid Lab Pack
 Multi-Layered Semi-Solid Powder Sludge
 Flash Point: Flash Point <74 F Flash Point 101-140 F Flash Point >200 F Exact Flash Point:
 Flash Point 74-100 F Flash Point 141-200 F No Flash Point
 Open cup Closed cup
 Ignitable Solid? Yes No
 pH: <2.0 2.01-5.0 5.01-9.0 9.01-12.9 >12.5 Exact pH _____

Liquid/Solid/Sludge
 Liquid
 % Suspended Solids _____
 % Sludge _____
 Solid
 Dumpable? Yes No
 Pumpable? Yes No
 Pourable? Yes No

D. REGULATORY INFORMATION
 Is it USEPA haz waste? Yes No
 USEPA Haz Codes: _____
 EPA Sub Categories: _____
 Is it STATE waste? Yes No
 STATE Haz Codes: _____
 DOT Hazardous Material? Yes No
 Proper Shipping Name: NON DOT EPA
REGULATED MATERIAL
 Hazard Class: _____ UN/NA #: AH P.G.: _____
 RQ: _____ ERG#:

C. CHEMICAL COMPOSITION

ATTACHMENTS: MSDS attached Supplemental Analysis Additional Information LDR Attachment

Chemical Composition	Percent	Minimum	Maximum
<u>SOIL CUTTINGS</u>	<u>100</u>		

E. SHIPPING INFORMATION
 Shipment Method: Bulk Liquid - Tanker Pallet(s) Drum (Size): 55G
 Bulk Solid - Dump Tr. Tote(s)
 Bulk Solid - Roll Off Cubic Yard Box(es) Other (Size): _____
 Anticipated Volume: 17 Per YR
 Quantity: _____ Price: _____ / Unit:

F. SPECIAL HANDLING CONSIDERATIONS

Radioactive PA RW SQG No Lead Filling
 Etiologic/Medical Waste DRMS/DRMO Waste Incinerate Only
 Fuming CERCLA Waste Recycle Only
 Phenolics Asbestos Other:

G. TRANSPORTER ARRANGEMENTS

CCI/GCC Provides Transportation Other: CVI
 Customer Delivers to CCI/GCC
 Customer Delivers to End Facility via CCI/GCC

Indicate if waste contains any of the following:

	Non-Reg.	or Less Than	or Actual
PCEs	<input checked="" type="checkbox"/>	<input type="checkbox"/> 50 PPM	_____
Cyanides	<input checked="" type="checkbox"/>	<input type="checkbox"/> 250 PPM	_____
Phenolics	<input checked="" type="checkbox"/>	<input type="checkbox"/> 50 PPM	_____
Sulfides	<input checked="" type="checkbox"/>	<input type="checkbox"/> 500 PPM	_____
VOCs	<input checked="" type="checkbox"/>	<input type="checkbox"/> 500 PPM	_____
Chlorides	<input checked="" type="checkbox"/>	<input type="checkbox"/> 1000 PPM	_____

H. OTHER HAZARDOUS CHARACTERISTICS

RCRA REACTIVE ETIOLOGICAL EXPLOSIVE/SHOCK SENSITIVE
 WATER REACTIVE TSCA REG NONE OF THE ABOVE
 RADIOACTIVE OXIDIZING MATL
 SUBJECT TO SUBPART FF BENZENE REG PYROPHORIC

1. Is this waste characteristically hazardous for metals or organics (EPA Waste Codes D004 through D043)? Yes No
 If YES, please list the constituents and concentrations in section C.
 2. Does this waste contain underlying hazardous constituents as defined in 40 CFR 268 Part 2, Section 1 at concentrations exceeding the UTS treatment standards? Yes No
 If YES, please list the constituents and concentrations in section C.

GENERATOR CERTIFICATION: I hereby certify that all information submitted in this and all other attached documents is complete, contains true and accurate descriptions and is representative of the waste material, and that all relevant information regarding known or suspected hazards in the possession of the generator has been disclosed. If CCI/GCC discovers, after having taken the delivery of the waste, that any waste does not conform to the identification or descriptions contained in this MPS then CCI/GCC shall provide notice to Generator and coordinate the return of the non conforming waste to the point of origin as set forth in the manifest or to such other locations designated in writing by the Generator. Generator agrees to reimburse CCI/GCC for all handling, packaging, cleanup and transportation costs or charges, damage to equipment and costs associated with lost time incurred by CCI/GCC during the receipt, handling, temporary storage and return of such non conforming waste to its point of origin or to such other location designated by the Generator. I hereby authorize CCI/GCC to amend and/or correct any information on the MPS with the full understanding that if any amendment or correction is performed, I will be contacted as such to issue any approval.

Authorized Signature: _____ Title: VICE PRESIDENT Date: 9/26/17

CCI/GCC APPROVAL: Sales Cor: _____ Tech Initials: _____ Date: _____ Management Initials: _____ Date: _____
 Recycled Waste / Form Code: _____

Appendix B-4

Photo Log



View of: CSC503-17



View of: CSC503-17



View of: CSC503-18



View of: CSC503-18



View of: CSC503-19



View of: CSC503-19



View of: CSC503-20



View of: CSC503-20



View of: CSC503-21

View of: CSC503-21



View of: CSC503-22

View of: CSC503-22



View of: CSC503-23



View of: CSC503-23



View of: CSC503-07



View of: CSC503-08



View of: CSC503-10



View of: CSC503-11



View of: Retention Pond
Facing East



View of: Outlet Structure
Facing North

Appendix C
Data Validation Report

Laboratory Analytical Data Validation

Site: JBA CS-C503
Date Completed: 01-15-2013
Submitted by: Nancy McDonald
Sample Collection Date(s): 12-08-2012 and 12-09-2012
TestAmerica Project Number(s) (LPN): 280-36874-1 and 280-36927-1
Bay West DMS #: 1605718

This data validation memo describes the validation of 6 aqueous samples, 13 soil samples, 9 sediment samples, one Field Blank, and one Equipment Blank collected on December 8 and 9, 2012 and analyzed for PCBs (8082A), GRO (8015C), and TOC (9060A) at TestAmerica Laboratory in Denver, Colorado as sample delivery group (SDG) 280-36669-1. The soil and sediment samples were also analyzed for TOC (Lloyd Kahn Method) at TestAmerica Laboratory in South Burlington, Vermont as SDG 36927. Samples included as part of this validation are listed below:

Sample ID	Date Sampled	TestAmerica, Denver and South Burlington				
		Lab ID	PCBs	GRO	DRO	TOC
CSC503-15-SW-001	12/08/2012	36874-1	X*	X*	X*	X*
CSC503-12-SW-002	12/08/2012	36874-2	X	X	X	X
CSC503-06-SW-003	12/08/2012	36874-3	X	X	X	X
CSC503-06-SW-004	12/08/2012	36874-4	X [†]	X [†]	X [†]	X [†]
SWMU56-SBFB01	12/08/2012	36874-5	X	X	X	X
SWMU56-SBEB01	12/09/2012	36874-6	X	X	X	X
CSC503-01-SB-001	12/09/2012	36874-7	X	X	X	
CSC503-02-SB-002	12/08/2012	36874-8	X	X	X	
CSC503-03-SB-003	12/08/2012	36874-9	X	X	X	
CSC503-04-SB-004	12/08/2012	36874-10	X	X	X	
CSC503-05-SB-005	12/08/2012	36874-11	X	X	X	
CSC503-05-SB-006	12/08/2012	36874-12	X ^α	X ^α	X ^α	
CSC503-09-SB-007	12/08/2012	36874-13	X	X	X	
CSC503-13-SB-008	12/08/2012	36874-14	X*	X*	X*	
CSC503-16-SB-009	12/08/2012	36874-15	X	X	X	
CSC503-17-SD-001	12/08/2012	36874-16	X	X	X	
CSC503-18-SB-010	12/08/2012	36874-17	X	X	X	
CSC503-19-SB-011	12/08/2012	36874-18	X	X	X	
CSC503-19-SB-012	12/08/2012	36874-19	X ^β	X ^β	X ^β	
CSC503-20-SD-002	12/08/2012	36874-20	X	X	X	
CSC503-21-SB-013	12/08/2012	36874-21	X	X	X	
CSC503-23-SD-003	12/08/2012	36874-22	X	X	X	
CSC503-14-SD-004	12/08/2012	36874-23	X*	X*	X*	
CSC503-11-SD-005	12/09/2012	36874-24	X	X	X	
CSC503-10-SD-006	12/09/2012	36874-25	X	X	X	

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Sample ID	Date Sampled	TestAmerica, Denver and South Burlington				
CSC503-08-SD-007	12/09/2012	36874-26	X	X	X	
CSC503-07-SD-008	12/09/2012	36874-27	X	X	X	
CSC503-07-SD-009	12/09/2012	36874-28	X ^δ	X ^δ	X ^δ	
CSC503-01-SB-001	12/09/2012	36927-1				X
CSC503-02-SB-002	12/08/2012	36927-2				X
CSC503-03-SB-003	12/08/2012	36927-3				X
CSC503-04-SB-004	12/08/2012	36927-4				X
CSC503-05-SB-005	12/08/2012	36927-5				X
CSC503-05-SB-006	12/08/2012	36927-6				X ^α
CSC503-09-SB-007	12/08/2012	36927-7				X
CSC503-13-SB-008	12/08/2012	36927-8				X*
CSC503-16-SB-009	12/08/2012	36927-9				X
CSC503-17-SD-001	12/08/2012	36927-10				X
CSC503-18-SB-010	12/08/2012	36927-11				X
CSC503-19-SB-011	12/08/2012	36927-12				X
CSC503-19-SB-012	12/08/2012	36927-13				X ^β
CSC503-20-SD-002	12/08/2012	36927-14				X
CSC503-21-SB-013	12/08/2012	36927-15				X
CSC503-23-SD-003	12/08/2012	36927-16				X
CSC503-14-SD-004	12/08/2012	36927-17				X*
CSC503-11-SD-005	12/09/2012	36927-18				X
CSC503-10-SD-006	12/09/2012	36927-19				X
CSC503-08-SD-007	12/09/2012	36927-20				X
CSC503-07-SD-008	12/09/2012	36927-21				X
CSC503-07-SD-009	12/09/2012	36927-22				X ^δ

- ‡ - Field duplicate sample of CSC503-06-SW-003
- ^α - Field duplicate sample of CSC503-05-SB-005
- ^β - Field duplicate sample of CSC503-19-SB-011
- ^δ - Field duplicate sample of CSC503-07-SD-008
- * - Sample selected for MS/MSD analysis.

The Data Qualification Summary Table below summarizes the qualifications that were applied during validation:

Sample ID	Date Sampled	TestAmerica, Denver and South Burlington				
		Lab ID	PCBs	GRO	DRO	TOC
CSC503-15-SW-001	12/08/2012	36874-1				
CSC503-12-SW-002	12/08/2012	36874-2				
CSC503-06-SW-003	12/08/2012	36874-3			J: DRO	J: TOC
CSC503-06-SW-004	12/08/2012	36874-4			J: DRO	J: TOC
CSC503-SBFB01	12/09/2012	36874-5				U: TOC
CSC503-SBEB01	12/09/2012	36874-6				U: TOC
CSC503-01-SB-001	12/08/2012	36874-7	J: Aroclor 1260			NA
CSC503-02-SB-002	12/08/2012	36874-8	J: Aroclor 1260			NA
CSC503-03-SB-003	12/08/2012	36874-9	UJ: Aroclor 1016 UJ: Aroclor 1221 UJ: Aroclor 1232 UJ: Aroclor 1242 UJ: Aroclor 1248 UJ: Aroclor 1254 J: Aroclor 1260			NA
CSC503-04-SB-004	12/08/2012	36874-10				NA
CSC503-05-SB-005	12/08/2012	36874-11			J: DRO	NA
CSC503-05-SB-006	12/08/2012	36874-12			J: DRO	NA
CSC503-09-SB-007	12/08/2012	36874-13	J: Aroclor 1260			NA
CSC503-13-SB-008	12/08/2012	36874-14				NA
CSC503-16-SB-009	12/08/2012	36874-15	UJ: Aroclor 1016 UJ: Aroclor 1221 UJ: Aroclor 1232 UJ: Aroclor 1242 UJ: Aroclor 1248 UJ: Aroclor 1254 UJ: Aroclor 1260			NA
CSC503-17-SD-001	12/08/2012	36874-16				NA
CSC503-18-SB-010	12/08/2012	36874-17				NA
CSC503-19-SB-011	12/08/2012	36874-18				NA
CSC503-19-SB-012	12/08/2012	36874-19	UJ: Aroclor 1016 UJ: Aroclor 1221 UJ: Aroclor 1232 UJ: Aroclor 1242 UJ: Aroclor 1248 UJ: Aroclor 1254 UJ: Aroclor 1260			NA
CSC503-20-SD-002	12/08/2012	36874-20	UJ: Aroclor 1016 UJ: Aroclor 1221 UJ: Aroclor 1232 UJ: Aroclor 1242 UJ: Aroclor 1248 UJ: Aroclor 1254 UJ: Aroclor 1260			NA

Joint Base Andrews
CS-C503 Data Validation
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Sample ID	Date Sampled	TestAmerica, Denver and South Burlington				
CSC503-21-SB-013	12/08/2012	36874-21				NA
CSC503-23-SD-003	12/08/2012	36874-22	UJ: Aroclor 1016 UJ: Aroclor 1221 UJ: Aroclor 1232 UJ: Aroclor 1242 UJ: Aroclor 1248 UJ: Aroclor 1254 UJ: Aroclor 1260			NA
CSC503-14-SD-004	12/08/2012	36874-23	UJ: Aroclor 1016 UJ: Aroclor 1221 UJ: Aroclor 1232 UJ: Aroclor 1242 UJ: Aroclor 1248 UJ: Aroclor 1254 UJ: Aroclor 1260	UJ: GRO		NA
CSC503-11-SD-005	12/09/2012	36874-24				NA
CSC503-10-SD-006	12/09/2012	36874-25	UJ: Aroclor 1016 UJ: Aroclor 1221 UJ: Aroclor 1232 UJ: Aroclor 1242 UJ: Aroclor 1248 UJ: Aroclor 1254 UJ: Aroclor 1260	UJ: GRO		NA
CSC503-08-SD-007	12/09/2012	36874-26	UJ: Aroclor 1016 UJ: Aroclor 1221 UJ: Aroclor 1232 UJ: Aroclor 1242 UJ: Aroclor 1248 UJ: Aroclor 1254 UJ: Aroclor 1260	UJ: GRO		NA
CSC503-07-SD-008	12/09/2012	36874-27			J: DRO	NA
CSC503-07-SD-009	12/09/2012	36874-28	UJ: Aroclor 1016 UJ: Aroclor 1221 UJ: Aroclor 1232 UJ: Aroclor 1242 UJ: Aroclor 1248 UJ: Aroclor 1254 UJ: Aroclor 1260		J: DRO	NA
CSC503-01-SB-001	12/09/2012	36927-1	NA	NA	NA	
CSC503-02-SB-002	12/08/2012	36927-2	NA	NA	NA	
CSC503-03-SB-003	12/08/2012	36927-3	NA	NA	NA	
CSC503-04-SB-004	12/08/2012	36927-4	NA	NA	NA	
CSC503-05-SB-005	12/08/2012	36927-5	NA	NA	NA	J: TOC
CSC503-05-SB-006	12/08/2012	36927-6	NA	NA	NA	J: TOC
CSC503-09-SB-007	12/08/2012	36927-7	NA	NA	NA	
CSC503-13-SB-008	12/08/2012	36927-8	NA	NA	NA	J: TOC
CSC503-16-SB-009	12/08/2012	36927-9	NA	NA	NA	
CSC503-17-SD-001	12/08/2012	36927-10	NA	NA	NA	J:TOC
CSC503-18-SB-010	12/08/2012	36927-11	NA	NA	NA	J: TOC
CSC503-19-SB-011	12/08/2012	36927-12	NA	NA	NA	
CSC503-19-SB-012	12/08/2012	36927-13	NA	NA	NA	
CSC503-20-SD-002	12/08/2012	36927-14	NA	NA	NA	
CSC503-21-SB-013	12/08/2012	36927-15	NA	NA	NA	J: TOC
CSC503-23-SD-003	12/08/2012	36927-16	NA	NA	NA	J: TOC

Sample ID	Date Sampled	TestAmerica, Denver and South Burlington				
CSC503-14-SD-004	12/08/2012	36927-17	NA	NA	NA	J: TOC
CSC503-11-SD-005	12/09/2012	36927-18	NA	NA	NA	
CSC503-10-SD-006	12/09/2012	36927-19	NA	NA	NA	
CSC503-08-SD-007	12/09/2012	36927-20	NA	NA	NA	
CSC503-07-SD-008	12/09/2012	36927-21	NA	NA	NA	J: TOC
CSC503-07-SD-009	12/09/2012	36927-22	NA	NA	NA	J: TOC

Validation was conducted according to this hierarchy of validation guidance: USACE EM200-1-10 Guidance for Evaluating Performance-Based Chemical Data June 2005 (USACE, 2005), DoD Quality Systems Manual for Environmental Laboratories, v 4.2, October 2010 (DoD, 2010), USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (USEPA, 2008), USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review (USEPA, 2010). The QAPP and analytical methods were consulted during the data validation.

A Level II ADR was also performed on this data and the qualifier summary report is included in Attachment 1. Target analytes present between the LOQ and MDL were flagged “J” as estimated. In addition, GRO results were qualified “UJ” as estimated in the aqueous samples, because of a high RPD in the LCS/LCSD. The validator removed these qualifications in the final results tables, because the RPD was incorrectly reported as 200% instead of the correct RPD of 6.6%.

Data Validation Detail:

- **Data Package Completeness**

The Level IV data packages were reviewed to make certain that it contained the data contractually required in the deliverable. This included checking the data package for the results of each analyte requested for each field sample submitted in the analytical batch, along with requested QC documentation for the method. The data package is complete.

- **Laboratory Case Narrative/Cooler Receipt Form**

No anomalies were noted on the chain-of-custodies or cooler receipt forms that affected data quality. The laboratory case narrative was accurate and complete and documented the following:

(1) Discrepancies were noted between the time of sample collection listed on the CoCs and the sample container labels for samples CSC503-06-SW-003, CSC503-16-SB-009, CSC503-21-SB-013, and CSC503-07-SD-008. Bay West was notified and confirmed that times listed on the sample container labels were accurate. (2) Sample collection times for selected samples were logged per the revised CoC.

(3) The case narrative documented that the laboratory did not receive a 250 mL sulfuric acid preserved amber bottle for sample CSC503-06-SW-004. The laboratory split and preserved sample volume from one of the unpreserved 1 liter amber bottles for analysis.

(4) TOC samples in batch 49853 were analyzed in duplicate and results of the two indeterminations were averaged and reported as the final TOC result for each sample. In samples CSC503-05-SB-006, CSC503-17-SD-001, CSC503-18-SB-010, CSC503-21-SB-013, and CSC503-23-SD-003, the percent difference between the two values was >

40%, so the laboratory provided additional determinations and applied the “Dixon” outlier test to the total population of determinations.

- **Holding Times, Storage, and Preservation**

Review of the sample collection and analysis dates involved comparing the CoCs, the summary forms, and the data report for holding time compliance.

All samples were received correctly, intact and properly preserved. All samples were prepared and analyzed within the turnaround time required by the project.

- **Instrument Performance Check**

The instruments met all applicable performance check requirements.

- **Initial Calibration (ICAL) / Initial Calibration Verification (ICV)**

ICAL and ICV acceptance criteria were met for all parameters except for the following.

PCBs: In the ICV (12/19/2012 02:40), the % difference for Aroclor 1260 (peak 4) exceeded the criterion of 15% on column CLP1 with high bias. No action was required, because Aroclor 1260 met criteria on column CLP2. In the ICV (12/19/2012 06:14), the % difference for Aroclor 1242 (peak 4) exceeded the criterion of 15% on column CLP2 with high bias. No action was required, because Aroclors 1254 and 1260 met criteria on column CLP1.

- **Continuing Calibration Verification (CCV)**

CCV acceptance criteria were met for all parameters with the following exception:

PCBs: In the CCVRT (12/21/2012 15:38), the % difference for Aroclor 1260 (peak 4) exceeded the criterion of 15% on column CLP1 with low bias. In addition, the % difference for Decachlorobiphenyl (DCB) exceeded criterion on both columns with low bias. No action was required, because Aroclor 1260 met criteria on column CLP2 and the bracketing CCV met criteria. In the CCVRT (12/19/2012 02:40), the % difference for Aroclor 1260 (peak 4) exceeded the criterion of 15% on column CLP1 with high bias. No action was required, because Aroclor 1260 met criteria on column CLP2.

- **Method Blank**

Target analytes were not detected above ½ the Limit of Quantitation (LOQ) in the Method Blanks. However, the following anomalies were noted:

TOC: Low-level concentrations of TOC, < ½ the LOQs, were detected in Method Blank (0.271 mg/L) and continuing calibration blanks (0.228 and 0.283 mg/L). The TOC results in samples CSC503-SBFB01 and CSC503-EBFB01 was qualified “U” and raised to the LOQ, because the results was < five times the blank concentrations.

- **Field and Equipment Blanks:** Equipment blank sample CSC503-SBEB01 and Field Blank sample CSC503-SBFB01 were non-detect with the exception of TOC. The TOC results were qualified because of method blank contamination, so no further action was required.

- **Surrogate Spikes**

Surrogates were added to all samples and QC samples as required by the analytical method. All surrogate recoveries met the required QC criteria except for the following.

PCBs: The following DCB recoveries were biased high and outside acceptance criteria on one or both columns.

Sample	Surrogate	Column 1 (%R)	Column 2 (%R)	Criteria
CSC503-03-SB-003	DCB	57	58	60-125
CSC503-09-SB-007	DCB	140	139	60-125
CSC503-17-SD-001	DCB	42	--	60-125
CSC503-19-SB-012	DCB	58	--	60-125
CSC503-20-SD-002	DCB	56	--	60-125
CSC503-23-SD-003	DCB	53	--	60-125
CSC503-14-SD-004	DCB	47	--	60-125
CSC503-10-SD-006	DCB	48	--	60-125
CSC503-08-SD-007	DCB	58	--	60-125
CSC503-07-SD-009	DCB	59	--	60-125

All PCB results were qualified "J" or "UJ" and may be biased low in samples CSC503-03-SB-003, CSC503-17-SD-001, CSC503-19-SB-012, CSC503-20-SD-002, CSC503-23-SD-003, CSC503-14-SD-004, CSC503-10-SD-006, CSC503-08-SD-007, and CSC503-07-SD-009. The detected Aroclor 1260 result was qualified "J" and may be biased high in sample CSC503-09-SB-007.

GRO: Recoveries for surrogate a,a,a-Trifluorotoluene in samples CSC503-14-SD-004 (59%), CSC503-10-SD-006 (65%), CSC503-08-SD-007 (59%), and CSC503-14-SD-004 MS/MSD (34% and 50%) were biased low and outside criteria of 77-123%. GRO results in samples CSC503-14-SD-004, CSC503-10-SD-006, and CSC503-08-SD-007 were qualified "UJ" as estimated and may be biased low. An overall qualifier of "UJ" was applied, because these results were previously qualified due to equipment blank contamination.

- **Matrix Spike/Matrix Spike Duplicates (MS/MSD) and Laboratory Duplicates**

MS/MSD analyses were performed on samples CSC503-15-SW-001, CSC503-13-SB-008, and CSC503-14-SD-004. All recoveries and RPDs were within acceptance criteria except for the following.

GRO: GRO recoveries of 29% and 40% were biased low and outside QC limits of 85-153% in sample CSC503-14-SD-004. In addition, the RPD of 70% exceeded the QC limit of 30%. The sample size submitted for the MS/MSD exceeded 10 % difference and the RPD is calculated based on MS/MSD concentrations not recoveries which may account for a high RPD. The GRO result was qualified "UJ" as estimated and may be biased low in parent sample CSC503-14-SD-004.

TOC: Laboratory duplicates were analyzed on samples CSC503-13-SB-008 and CSC503-14-SD-004. RPDs for TOC in samples CSC503-13-SB-008 (31%) and CSC503-14-SD-004 (26%) were high and exceeded the acceptance criteria of ≤ 20%. TOC results were qualified "J" as estimated in parent samples CSC503-13-SB-008 and CSC503-14-SD-004.

- **Laboratory Control Sample (LCS)**

All LCS recoveries were within the QAPP and the DoD QSM 4.2 acceptance criteria.

- **Blind Field Duplicates**

The following samples were collected as blind field duplicates: (1) CSC503-06-SW-003 and CSC503-06-SW-004, (2) CSC503-07-SD-008 and CSC503-07-SD-009, and (3) CSC503-05-SB-005 and CSC503-05-SB-006, (4) CSC503-19-SB-011 and CSC503-19-SB-012 were analyzed for PCBs, GRO, DRO, and TOC. All RPDs were within acceptance criteria of $\leq 20\%$ for TOC and $\leq 30\%$ for all other parameters except for the following. The RPDs for DRO of 34.8%, 82.8%, and 65.6% in field duplicates CSC503-06-SW-003 and CSC503-06-SW-004, CSC503-07-SD-008 and CSC503-07-SD-009, CSC503-05-SB-005 and CSC503-05-SB-006, respectively, exceeded criteria of $\leq 30\%$. The RPDs for TOC of 27.2%, 144%, and 53.7% in field duplicates CSC503-06-SW-003 and CSC503-06-SW-004, CSC503-07-SD-008 and CSC503-07-SD-009 and CSC503-05-SB-005 and CSC503-05-SB-006, respectively, also exceeded criteria of $\leq 20\%$. DRO and TOC results in samples CSC503-06-SW-003, CSC503-06-SW-004, CSC503-07-SD-008, CSC503-07-SD-009, CSC503-05-SB-005, and CSC503-05-SB-006 were qualified "J" as estimated. RPDs are not calculated unless both the parent and duplicate results are \geq the LOQ.

- **Target Analyte Identification and Quantitation**

Target analyte identification followed the specific analytical Method. Retention times and Mass Spectra were consistent with the analytical standards.

Samples CSC501-01-SB-001, CSC501-02-SB-002, CSC501-03-SB-003, and CSC501-03-SB-007 appear to contain PCBs, but due to weathering or other environmental processes, the PCB patterns do not match the Aroclors used for calibration. The PCBs were quantified and reported as Aroclor 1260. Therefore, Aroclor 1260 results were qualified "J" as estimated in these samples.

All PCB samples required sulfuric acid cleanup due to matrix interferences. In addition, CSC503-12-SW-002 formed emulsions during extractions which were broken up by pour backs.

TOC samples in batch 49853 were analyzed in duplicate and results of the two indeterminations were averaged and reported as the final TOC result for each sample. In samples CSC503-05-SB-006, CSC503-17-SD-001, CSC503-18-SB-010, CSC503-21-SB-013, and CSC503-23-SD-003, the percent difference between the two values was $> 40\%$. The TOC results in these samples were qualified "J" as estimated.

Non-detected results were reported to the Limit of Detection (LOD) in accordance with DoD QSM 4.2. The laboratory also reported the LOQ for each analyte on the sample result sheet (Form 1). The laboratory reported target analytes, which were qualitatively identified at concentrations below the LOQs, with a "J" qualifier to indicate that the result is estimated as required by DoD QSM 4.2. The "J" qualifier was retained by the validator. In general, the LOQs reported are consistent with the LOQs listed in the QAPP and sample dilutions were not required.

Overall Evaluation

A number of results were qualified as estimated as a result of surrogate performance, blank contamination, high RPDs in the field duplicate pairs. Detected Aroclor 1260 results were qualified as estimated, because the PCB patterns did not match the Aroclors used for calibration. In addition, some TOC results were qualified as estimated, because the percent difference for the two results was > 40%. All other validation elements were acceptable and the data, as qualified, is acceptable for its intended use.

Based on the criteria presented above, it is recommended that the results reported for these analyses be accepted as qualified. MS/MSD and LCS/LCSD and surrogate recoveries demonstrated that acceptable levels of accuracy and precision were achieved. In addition, completeness, defined to be the percentage of analytical results to be valid, including estimated values was 100% for this Sample Delivery Group.

Data Validation Qualifiers

Validation Qualifier	Definition
J	The reported positive result is considered estimated, because the result is less than the LOQ or because certain quality control criteria were not met.
U	The analyte was not detected and is reported as less than the LOD or as defined by the client.
UJ	The analyte was not detected in the sample. The LOD (or LOQ) should be considered estimated and may be inaccurate or imprecise.
R	The result for this analyte is unusable. The analyte may or may not be present.

References

USACE EM200-1-10 Guidance for Evaluating Performance-Based Chemical Data, June 2005. (USACE, 2005).

U.S. Department of Defense (DoD). DoD Quality Systems Manual for Environmental Laboratories, Version 4.2, October, 2010. (DoD, 2010).

U.S. Environmental Protection Agency (USEPA). USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June, 2008. (USEPA, 2008).

USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review (USEPA, 2010).

Data Qualifier Summary

Lab Reporting Batch ID: 280-36874-1

Laboratory: TAL DEN

EDD Filename: 280-36874-1_BayWest

eQAPP Name: Bay West-Joint Base Andrews_20130129

Method Category: GENCHEM

<i>Sample ID:</i> CSC503-06-SW-003		<i>Collected:</i> 12/8/2012 11:50:00		<i>Analysis Type:</i> Initial/TOT				<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
TOTAL ORGANIC CARBON (TOC)	3500		400	LOD	1000	LOQ	ug/L	J	Fd
TOTAL ORGANIC CARBON 1 (TOC)	3500		400	LOD	1000	LOQ	ug/L	J	Fd
TOTAL ORGANIC CARBON 2 (TOC)	3600		400	LOD	1000	LOQ	ug/L	J	Fd
TOTAL ORGANIC CARBON 3 (TOC)	3500		400	LOD	1000	LOQ	ug/L	J	Fd
TOTAL ORGANIC CARBON 4 (TOC)	3400		400	LOD	1000	LOQ	ug/L	J	Ms, Fd

<i>Sample ID:</i> CSC503-06-SW-004		<i>Collected:</i> 12/8/2012 12:00:00		<i>Analysis Type:</i> Initial/TOT				<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
TOTAL ORGANIC CARBON (TOC)	4600		400	LOD	1000	LOQ	ug/L	J	Fd
TOTAL ORGANIC CARBON 1 (TOC)	4500		400	LOD	1000	LOQ	ug/L	J	Fd
TOTAL ORGANIC CARBON 2 (TOC)	4600		400	LOD	1000	LOQ	ug/L	J	Fd
TOTAL ORGANIC CARBON 3 (TOC)	4600		400	LOD	1000	LOQ	ug/L	J	Fd
TOTAL ORGANIC CARBON 4 (TOC)	4700		400	LOD	1000	LOQ	ug/L	J	Ms, Fd

<i>Sample ID:</i> CSC503-12-SW-002		<i>Collected:</i> 12/8/2012 11:30:00		<i>Analysis Type:</i> Initial/TOT				<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
TOTAL ORGANIC CARBON 4 (TOC)	3500		400	LOD	1000	LOQ	ug/L	J	Ms

<i>Sample ID:</i> CSC503-15-SW-001		<i>Collected:</i> 12/8/2012 10:45:00		<i>Analysis Type:</i> Initial/TOT				<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
TOTAL ORGANIC CARBON 4 (TOC)	3300	J	400	LOD	1000	LOQ	ug/L	J	Ms

<i>Sample ID:</i> CSC503-SBEB01		<i>Collected:</i> 12/9/2012 1:00:00		<i>Analysis Type:</i> Initial/TOT				<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
TOTAL ORGANIC CARBON (TOC)	580	J	400	LOD	1000	LOQ	ug/L	U	Mb
TOTAL ORGANIC CARBON 1 (TOC)	510	J	400	LOD	1000	LOQ	ug/L	U	Mb
TOTAL ORGANIC CARBON 2 (TOC)	590	J	400	LOD	1000	LOQ	ug/L	U	Mb
TOTAL ORGANIC CARBON 3 (TOC)	620	J	400	LOD	1000	LOQ	ug/L	U	Mb
TOTAL ORGANIC CARBON 4 (TOC)	610	J	400	LOD	1000	LOQ	ug/L	UJ	Ms, Mb

* denotes a non-reportable result

Project Name and Number: Joint Andrews AFB - Joint Andrews AFB

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Data Qualifier Summary

Lab Reporting Batch ID: 280-36874-1

Laboratory: TAL DEN

EDD Filename: 280-36874-1_BayWest

eQAPP Name: Bay West-Joint Base Andrews_20130129

Method Category: GENCHEM

Sample ID: CSC503-SBFB01 **Collected:** 12/9/2012 1:10:00 **Analysis Type:** Initial/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
TOTAL ORGANIC CARBON (TOC)	590	J	400	LOD	1000	LOQ	ug/L	U	Mb
TOTAL ORGANIC CARBON 1 (TOC)	540	J	400	LOD	1000	LOQ	ug/L	U	Mb
TOTAL ORGANIC CARBON 2 (TOC)	550	J	400	LOD	1000	LOQ	ug/L	U	Mb
TOTAL ORGANIC CARBON 3 (TOC)	680	J	400	LOD	1000	LOQ	ug/L	U	Mb
TOTAL ORGANIC CARBON 4 (TOC)	590	J	400	LOD	1000	LOQ	ug/L	UJ	Ms, Mb

Method Category: SVOA

Sample ID: CSC503-03-SB-003 **Collected:** 12/8/2012 9:07:00 **Analysis Type:** Initial/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DIESEL RANGE ORGANICS	3400	J M	2400	LOD	4900	LOQ	ug/Kg	J	RI

Sample ID: CSC503-05-SB-005 **Collected:** 12/8/2012 9:33:00 **Analysis Type:** Initial/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DIESEL RANGE ORGANICS	4300	M	2100	LOD	4300	LOQ	ug/Kg	J	Fd

Sample ID: CSC503-05-SB-006 **Collected:** 12/8/2012 9:40:00 **Analysis Type:** Initial/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DIESEL RANGE ORGANICS	8500	M	2100	LOD	4300	LOQ	ug/Kg	J	Fd

Sample ID: CSC503-07-SD-008 **Collected:** 12/9/2012 12:00:00 **Analysis Type:** Initial/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DIESEL RANGE ORGANICS	58000	M	2800	LOD	5600	LOQ	ug/Kg	J	Fd

Sample ID: CSC503-07-SD-009 **Collected:** 12/9/2012 12:15:00 **Analysis Type:** Initial/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DIESEL RANGE ORGANICS	140000	M	3100	LOD	6200	LOQ	ug/Kg	J	Fd

* denotes a non-reportable result

Project Name and Number: Joint Andrews AFB - Joint Andrews AFB

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Data Qualifier Summary

Lab Reporting Batch ID: 280-36874-1

Laboratory: TAL DEN

EDD Filename: 280-36874-1_BayWest

eQAPP Name: Bay West-Joint Base Andrews_20130129

Method Category: SVOA

Sample ID: CSC503-14-SD-004 **Collected:** 12/8/2012 3:50:00 **Analysis Type:** Initial/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DIESEL RANGE ORGANICS	150000	M J	6300	LOD	13000	LOQ	ug/Kg	J	Ms, Ms

Method Category: SVOA

Sample ID: CSC503-06-SW-003 **Collected:** 12/8/2012 11:50:00 **Analysis Type:** Initial/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DIESEL RANGE ORGANICS	380	M	97	LOD	240	LOQ	ug/L	J	Fd

Sample ID: CSC503-06-SW-004 **Collected:** 12/8/2012 12:00:00 **Analysis Type:** Initial/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DIESEL RANGE ORGANICS	540	M	110	LOD	280	LOQ	ug/L	J	Fd

Sample ID: CSC503-12-SW-002 **Collected:** 12/8/2012 11:30:00 **Analysis Type:** Initial/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DIESEL RANGE ORGANICS	140	J M	110	LOD	280	LOQ	ug/L	J	RI

Sample ID: CSC503-15-SW-001 **Collected:** 12/8/2012 10:45:00 **Analysis Type:** Initial/TOT **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
DIESEL RANGE ORGANICS	210	M J	100	LOD	260	LOQ	ug/L	J	RI, Ms

Method Category: SVOA

Sample ID: CSC503-01-SB-001 **Collected:** 12/8/2012 8:42:00 **Analysis Type:** Initial/TOT- **Dilution:** 1

Analyte	Lab Result	Lab Qual	DL	DL Type	RL	RL Type	Units	Data Review Qual	Reason Code
AROCOR 1260	29	J	10	LOD	33	LOQ	ug/Kg	J	RI

* denotes a non-reportable result

Project Name and Number: Joint Andrews AFB - Joint Andrews AFB

Data Qualifier Summary

Lab Reporting Batch ID: 280-36874-1

Laboratory: TAL DEN

EDD Filename: 280-36874-1_BayWest

eQAPP Name: Bay West-Joint Base Andrews_20130129

Method Category: SVOA

<i>Sample ID: CSC503-03-SB-003</i>		<i>Collected: 12/8/2012 9:07:00</i>		<i>Analysis Type: Initial/TOT-</i>				<i>Dilution: 1</i>	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
AROCLOR 1260	11	J Q	12	LOD	38	LOQ	ug/Kg	J	RI

<i>Sample ID: CSC503-09-SB-007</i>		<i>Collected: 12/8/2012 9:50:00</i>		<i>Analysis Type: Initial/TOT-</i>				<i>Dilution: 1</i>	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
AROCLOR 1260	36	Q	11	LOD	36	LOQ	ug/Kg	J	Surr

Method Category: VOA

<i>Sample ID: CSC503-07-SD-008</i>		<i>Collected: 12/9/2012 12:00:00</i>		<i>Analysis Type: Initial/TOT</i>				<i>Dilution: 1</i>	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
GASOLINE RANGE ORGANICS	320	J	510	LOD	1100	LOQ	ug/Kg	J	RI, Ms, Ms, Fd

<i>Sample ID: CSC503-07-SD-009</i>		<i>Collected: 12/9/2012 12:15:00</i>		<i>Analysis Type: Initial/TOT</i>				<i>Dilution: 1</i>	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
GASOLINE RANGE ORGANICS	530	U	530	LOD	1200	LOQ	ug/Kg	UJ	Ms, Fd

<i>Sample ID: CSC503-08-SD-007</i>		<i>Collected: 12/9/2012 11:30:00</i>		<i>Analysis Type: Initial/TOT</i>				<i>Dilution: 1</i>	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
GASOLINE RANGE ORGANICS	890	U Q	890	LOD	2000	LOQ	ug/Kg	UJ	Ms, Surr

<i>Sample ID: CSC503-10-SD-006</i>		<i>Collected: 12/9/2012 11:15:00</i>		<i>Analysis Type: Initial/TOT</i>				<i>Dilution: 1</i>	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
GASOLINE RANGE ORGANICS	1000	U Q	1000	LOD	2300	LOQ	ug/Kg	UJ	Ms, Surr

<i>Sample ID: CSC503-11-SD-005</i>		<i>Collected: 12/9/2012 11:00:00</i>		<i>Analysis Type: Initial/TOT</i>				<i>Dilution: 1</i>	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
GASOLINE RANGE ORGANICS	560	U	560	LOD	1300	LOQ	ug/Kg	UJ	Ms

* denotes a non-reportable result

Project Name and Number: Joint Andrews AFB - Joint Andrews AFB

2/15/2013 11:10:31 AM

ADR version 1.7.0.207

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Data Qualifier Summary

Lab Reporting Batch ID: 280-36874-1

Laboratory: TAL DEN

EDD Filename: 280-36874-1_BayWest

eQAPP Name: Bay West-Joint Base Andrews_20130129

Method Category: VOA

<i>Sample ID:</i> CSC503-14-SD-004			<i>Collected:</i> 12/8/2012 3:50:00			<i>Analysis Type:</i> Initial/TOT			<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>	
GASOLINE RANGE ORGANICS	2000	U Q J	2000	LOD	4500	LOQ	ug/Kg	UJ	Ms, Surr	

<i>Sample ID:</i> CSC503-17-SD-001			<i>Collected:</i> 12/8/2012 1:30:00			<i>Analysis Type:</i> Initial/TOT			<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>	
GASOLINE RANGE ORGANICS	880	J M	620	LOD	1400	LOQ	ug/Kg	J	RI	

<i>Sample ID:</i> CSC503-18-SB-010			<i>Collected:</i> 12/8/2012 1:50:00			<i>Analysis Type:</i> Initial/TOT			<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>	
GASOLINE RANGE ORGANICS	450	J	570	LOD	1300	LOQ	ug/Kg	J	RI	

<i>Sample ID:</i> CSC503-19-SB-011			<i>Collected:</i> 12/8/2012 2:00:00			<i>Analysis Type:</i> Initial/TOT			<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>	
GASOLINE RANGE ORGANICS	590	U	590	LOD	1300	LOQ	ug/Kg	UJ	Fd	

<i>Sample ID:</i> CSC503-19-SB-012			<i>Collected:</i> 12/8/2012 2:10:00			<i>Analysis Type:</i> Initial/TOT			<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>	
GASOLINE RANGE ORGANICS	770	J	710	LOD	1600	LOQ	ug/Kg	J	RI, Fd	

<i>Sample ID:</i> CSC503-21-SB-013			<i>Collected:</i> 12/8/2012 2:50:00			<i>Analysis Type:</i> Initial/TOT			<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>	
GASOLINE RANGE ORGANICS	560	U	560	LOD	1300	LOQ	ug/Kg	UJ	Ms	

<i>Sample ID:</i> CSC503-23-SD-003			<i>Collected:</i> 12/8/2012 3:25:00			<i>Analysis Type:</i> Initial/TOT			<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>	
GASOLINE RANGE ORGANICS	580	J	620	LOD	1400	LOQ	ug/Kg	J	RI, Ms, Ms	

* denotes a non-reportable result

Project Name and Number: Joint Andrews AFB - Joint Andrews AFB

2/15/2013 11:10:31 AM

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Data Qualifier Summary

Lab Reporting Batch ID: 280-36874-1

Laboratory: TAL DEN

EDD Filename: 280-36874-1_BayWest

eQAPP Name: Bay West-Joint Base Andrews_20130129

Method Category: VOA

<i>Sample ID:</i> CSC503-06-SW-003		<i>Collected:</i> 12/8/2012 11:50:00		<i>Analysis Type:</i> Initial/TOT				<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
GASOLINE RANGE ORGANICS	20	U Q	20	LOD	25	LOQ	ug/L	UJ	Lcs

<i>Sample ID:</i> CSC503-06-SW-004		<i>Collected:</i> 12/8/2012 12:00:00		<i>Analysis Type:</i> Initial/TOT				<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
GASOLINE RANGE ORGANICS	20	U Q	20	LOD	25	LOQ	ug/L	UJ	Lcs

<i>Sample ID:</i> CSC503-12-SW-002		<i>Collected:</i> 12/8/2012 11:30:00		<i>Analysis Type:</i> Initial/TOT				<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
GASOLINE RANGE ORGANICS	20	U Q	20	LOD	25	LOQ	ug/L	UJ	Lcs

<i>Sample ID:</i> CSC503-15-SW-001		<i>Collected:</i> 12/8/2012 10:45:00		<i>Analysis Type:</i> Initial/TOT				<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
GASOLINE RANGE ORGANICS	20	U Q J	20	LOD	25	LOQ	ug/L	UJ	Lcs

<i>Sample ID:</i> CSC503-SBEB01		<i>Collected:</i> 12/9/2012 1:00:00		<i>Analysis Type:</i> Initial/TOT				<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
GASOLINE RANGE ORGANICS	20	U Q	20	LOD	25	LOQ	ug/L	UJ	Lcs

<i>Sample ID:</i> CSC503-SBFB01		<i>Collected:</i> 12/9/2012 1:10:00		<i>Analysis Type:</i> Initial/TOT				<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
GASOLINE RANGE ORGANICS	20	U Q	20	LOD	25	LOQ	ug/L	UJ	Lcs

* denotes a non-reportable result

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Data Qualifier Summary

Lab Reporting Batch ID: 280-36874-1

Laboratory: TAL DEN

EDD Filename: 280-36874-1_BayWest

eQAPP Name: Bay West-Joint Base Andrews_20130129

Reason Code Legend

<i>Reason Code</i>	<i>Description</i>
Fd	Field Duplicate Precision
Lcs	Laboratory Control Precision
Mb	Method Blank Contamination
Ms	Matrix Spike Lower Estimation
Ms	Matrix Spike Precision
Ms	Matrix Spike Upper Estimation
RI	Reporting Limit Trace Value
Surr	Surrogate/Tracer Recovery Lower Estimation
Surr	Surrogate/Tracer Recovery Upper Estimation

* denotes a non-reportable result

Project Name and Number: Joint Andrews AFB - Joint Andrews AFB

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Data Qualifier Summary

Lab Reporting Batch ID: 280-36927-1

Laboratory: TAL BUR

EDD Filename: 280-36927-1_BayWest

eQAPP Name: Bay West-Joint Base Andrews_20130129

Method Category: GENCHEM

<i>Sample ID:</i> CSC503-05-SB-005		<i>Collected:</i> 12/8/2012 9:33:00			<i>Analysis Type:</i> Initial/TOT			<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
TOTAL ORGANIC CARBON (TOC)	7500000		440000	LOD	1100000	LOQ	ug/Kg	J	Fd

<i>Sample ID:</i> CSC503-05-SB-006		<i>Collected:</i> 12/8/2012 9:40:00			<i>Analysis Type:</i> Initial/TOT			<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
TOTAL ORGANIC CARBON (TOC)	13000000		460000	LOD	1100000	LOQ	ug/Kg	J	Fd

<i>Sample ID:</i> CSC503-07-SD-008		<i>Collected:</i> 12/9/2012 12:00:00			<i>Analysis Type:</i> Initial/TOT			<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
TOTAL ORGANIC CARBON (TOC)	86000000		1100000	LOD	2800000	LOQ	ug/Kg	J	Fd

<i>Sample ID:</i> CSC503-07-SD-009		<i>Collected:</i> 12/9/2012 12:15:00			<i>Analysis Type:</i> Initial/TOT			<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
TOTAL ORGANIC CARBON (TOC)	14000000		580000	LOD	1400000	LOQ	ug/Kg	J	Fd

<i>Sample ID:</i> CSC503-13-SB-008		<i>Collected:</i> 12/8/2012 10:10:00			<i>Analysis Type:</i> Initial/TOT			<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
TOTAL ORGANIC CARBON (TOC)	13000000		430000	LOD	1100000	LOQ	ug/Kg	J	Ld

<i>Sample ID:</i> CSC503-14-SD-004		<i>Collected:</i> 12/8/2012 3:50:00			<i>Analysis Type:</i> Initial/TOT			<i>Dilution:</i> 1	
<i>Analyte</i>	<i>Lab Result</i>	<i>Lab Qual</i>	<i>DL</i>	<i>DL Type</i>	<i>RL</i>	<i>RL Type</i>	<i>Units</i>	<i>Data Review Qual</i>	<i>Reason Code</i>
TOTAL ORGANIC CARBON (TOC)	61000000		1300000	LOD	3300000	LOQ	ug/Kg	J	Ld

* denotes a non-reportable result

Project Name and Number: Joint Andrews AFB - Joint Andrews AFB

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Data Qualifier Summary

Lab Reporting Batch ID: 280-36927-1

Laboratory: TAL BUR

EDD Filename: 280-36927-1_BayWest

eQAPP Name: Bay West-Joint Base Andrews_20130129

Reason Code Legend

<i>Reason Code</i>	<i>Description</i>
Fd	Field Duplicate Precision
Ld	Laboratory Duplicate Precision

* denotes a non-reportable result

Project Name and Number: Joint Andrews AFB - Joint Andrews AFB

2/15/2013 11:44:44 AM

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Appendix D
Laboratory Analytical Packages (on attached DVD)

Appendix E
Regulatory Comments

Response to Comments for the
 CS-C503 Draft RTCs and Draft Final Phase I Remedial Investigation Report
 Performance-Based Restoration
 Joint Base Andrews Naval Air Facility Washington, Camp Springs, Maryland
 July 2013

Comment #	Page	Section/ Paragraph/ Line No.	Comment	A, D, E, FD or X ¹	Response	A or D ²
<p>General Note: The following changes were made to the CS-C503 Phase I RI report to address USEPA comments on the Joint Base Andrews Phase I RIs (i.e. SWMU 56, SWMU 66, CS-C503, and OW-C3640). The changes were proposed and accepted by the USEPA via an email dated 20 August 2013. The SWMU 56, SWMU 66, and OC-C3640 Phase I RIs were all finalized in October 2013.</p> <p>1) The 95% UCL discussions and screening was eliminated; 2) The comparison to background concentrations (as specified in the UFP-QAPP) remains; however, no chemicals were screened away based on background concentrations. 3) The comparison to the RSLs is the primary comparison. 4) The term COPCs was no longer used; exceedances were referred to as chemicals exceeding criteria, including MCLs. 5) The titles 'Screening Level Human Health Risk Assessment' and 'Screening Level Ecological Risk Assessment' were revised to 'Human Health Screening Criteria Comparison' and 'Ecological Screening Criteria Comparison', respectively.</p>						
<p>USEPA BTAG – Comments Received: 24 October 2013 (Comments compiled by Andy Sochanski, USEPA Remedial Project Manager)</p>						
1			<p>The response to Comment 5 refers to the Response to Comment 8. CS-C503 was a removal action and PCBs were found in the excavated sediment and removed and disposed. The scope of this investigation was to determine whether there was residual PCB contamination in and around the storm water pond. PCBs were detected in the soils. It is not appropriate to just compare the concentration levels to sediment screening values because even if these concentrations are simply PCBs left behind when sediments were piled on the soil during the removal, terrestrial, not aquatic organisms would be exposed. Since there is no Region 3 soil screening value for PCBs the procedure is to use additional resources such as the NOAA SQuiRT values. The concentrations in soil exceed these values. In addition, a food chain analysis, evaluating potential bioaccumulation based pathways, should be performed for PCBs. Food chain models used in previous screening level assessments at Andrews can be utilized</p>	E	<p>The screening criteria in the Phase I RI are consistent with the SWMU 56, SWMU 66, and OW-C3640 Phase I RIs. In addition, the screening criteria used was outlined and approved in the CS-C503 Final UFP-QAPP approved prior to the field work.</p> <p>To clarify and acknowledge the additional BTAG comments that were deemed to be out of the Phase I RI document scope as defined by the Statement of Objectives, the following changes were made to the Phase I RI.</p> <p>Page ES-1 and Page 7-2, the following paragraph was added:</p> <p>During the review of this Phase I RI report, the Biological Technical Assistance Group (BTAG) identified a mammalian soil screening criteria for exposure to PCBs published by the National Oceanic and Atmospheric Administration (NOAA) in</p>	

¹A = agree D = disagree E = explanation FD = needs further discussion X = take exception to

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Comment #	Page	Section/ Paragraph/ Line No.	Comment	A, D, E, FD or X ¹	Response	A or D ²
			<p>using the site specific PCB data from this investigation. The text should include a discussion of the spatial extent of the PCBs in soil, the total organic carbon, bioavailability and habitat and possible ecological receptors. This information can then be used to make a risk management decision to support a decision whether or not a Phase II investigation is necessary.</p>		<p>the Screening Quick Reference Tables (SQiRT). The mammalian soil screening criteria was developed by the USEPA Region 5 for the shrew or vole and is two orders of magnitude lower (0.332 µg/kg) than the laboratory detection limit (11 µg/kg) and four order of magnitude lower than the typical clean criteria established by the USEPA (1,000 µg/kg). However, as the scope of this Phase I RI did not include a site-specific habitat assessment and was to include presence or absence analysis in accordance with the UFP-QAPP, additional evaluation is recommended to satisfy the BTAG comments included in Appendix E of this report.</p> <p>Page 8-2, the following paragraph was added:</p> <p>As discussed in Section 8.1, there are no CECs identified for CS-C503 based on the screening criteria used in this Phase I RI. However, as identified in Section 7.4, during the review of this Phase I RI report, the BTAG identified a mammalian soil screening criteria for exposure to PCBs published by the NOAA in the SQiRTs. The mammalian soil screening criteria was developed by the USEPA Region 5 for the shrew or vole; however, the scope of this Phase I RI did not include a site-specific habitat assessment and was only to include presence or absence analysis in accordance with the UFP-QAPP.</p> <p>Page 9-1, the following sentences were added:</p> <p>This Phase I RI did not identify any CECs for the site; however, as identified in Section 8.0, the BTAG identified a mammalian soil screening criteria for</p>	

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Response to Comments for the
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Comment #	Page	Section/ Paragraph/ Line No.	Comment	A, D, E, FD or X ¹	Response	A or D ²
					PCB exposure published by USEPA Region 5. If the identified screening criteria is used for comparison, additional assessment may be warranted prior to a recommendation of no further action. The BTAG comments provided on this Phase I RI are included in Appendix E for reference.	
2			<p>The response to Comment 6 is insufficient. The comment is asking for ecotoxicological information on GRO and DRO and also suggests the alternative of analyzing and evaluating individual contaminants in these classes. The information provided below in an email from Project Manager Shirley McMaster on August 22, 2013 should be incorporated into the document if it hasn't been already.</p> <p>DRO and GRO were also analyzed for during the Phase I RI field work as an indicator of possible oil-related PCBs if PCBs were detected at concentrations exceeding applicable screening criteria. GRO was not detected above the MDE screening criteria; DRO was not detected above the MDE screening criteria in the soil samples co-located with the low-level detections of PCBs. DRO was detected above the MDE screening criteria in both the sediment and surface water which is to be expected given the drainage area of the pond is the BX parking lot. The retention pond surface water and sediments (with regards to the DRO detections in the sediment and surface water) are regulated/treated under the USEPA NPDES.</p>	E	<p>Page 8-1 – 8-3, the CSM was revised according to the email sent by Shirley McMaster on August 22, 2013. Specifically, the following paragraph was added on Page 8-2:</p> <p>DRO and GRO were also analyzed for during the Phase I RI field work as an indicator of possible oil-related PCBs if PCBs were detected at concentrations exceeding applicable screening criteria. GRO was not detected above the MDE screening criteria, and DRO was not detected above the MDE screening criteria in the soil samples co-located with the low-level detections of PCBs. DRO was detected above the MDE screening criteria in both the sediment and surface water, which is to be expected given the drainage area of the pond is the BX parking lot. The retention pond surface water and sediments (with regards to the DRO detections in the sediment and surface water) are regulated and treated under the USEPA NPDES.</p>	
End of comments						

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 Draft CS-C503 Draft RI Phase 1 Report
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 July 2013

Comment #	Page	Section/ Paragraph/ Line No.	Comment	A, D, E, FD or X ¹	Response	A or D ²
USEPA Toxicologist (Dawn Ioven) – 1 July 2013 (Comments compiled by Andy Sochanski, USEPA Remedial Project Manager)						
1.			In terms of PCBs, from a human health perspective, nothing of significance was detected.		Comment noted.	
2.			Additionally, with one exception, no diesel-range organics (DRO) or gasoline-range organics (GRO) were observed in excess of MDE standards. However, a human health risk assessment could not be performed for DRO or GRO, since toxicity criteria are not available for these broad classes of compounds. Generally, for risk assessment purposes, the <i>individual</i> constituents of DRO and GRO (such as benzene and toluene) are of more interest. This said, I doubt that the individual constituents would pose an unacceptable risk at this site, for a few reasons: 1) the most toxic of the potential constituents (benzene) would likely vaporize at ambient temperatures, quickly diluting in ambient air and 2) viable exposure pathways at the site are improbable. None-the-less, to confirm that DRO and GRO do not pose a health threat, I recommend you check the check the basis of the MDE standard is risk-based. If not,	E	MDE Guidance states “The Cleanup Standards have been developed to represent concentration levels at which no further remedial action would be required at a property based upon the harm posed by these substances to human health within the constraints of current knowledge.” Therefore, because the DRO and GRO numbers are risk based additional human health risk assessment outside of the comparison to MDE standards is not necessary.	

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Draft CS-C503 Draft RI Phase 1 Report
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			the a breakdown of the DRO and GRO analyses is needed to adequately evaluate the risk.			
USEPA Hydrogeologist (Ryan Bower) – 1 July 2013 (Comments compiled by Andy Sochanski, USEPA Remedial Project Manager)						
3.			The conclusions and recommendations for no further action are questionable. However, I will defer to the BTAG decisions regarding PCBs and TPH-GRO/DRO in slope and sediment samples.		Comment noted.	
4.			No additional comments			
BTAG – 1 July 2013 (Comments compiled by Andy Sochanski, USEPA Remedial Project Manager)						
5.		Section 7.2	Section 7.2 states that none of the PCB concentrations in soil exceed freshwater or freshwater sediment screening values. The concentrations found in soil should be compared to soil screening values. Region 3 uses the EPA's Ecological Soil Screening Levels (Eco-SSL); however, there is no value for PCB-1260 or total PCBs. EPA EcoTox values or NOAA SQuiRT values should be used for those contaminants in soil without an Eco-SSL	E	The analytical results were compared to screening criteria in accordance with the approved Final UFP-QAPP. Please also see response to comment #8.	

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 Performance-Based Restoration
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6.			GRO and DRO were selected analytes. As stated in the report, Region 3 BTAG screening values are not available for GRO and DRO; however this is insufficient rationale for not further evaluating ecological risk. Ecotoxicological information should be presented for these compounds to support no further evaluation. An alternative would be to analyze and evaluate individual contaminants in these classes.	E	See response to comment #5.	
7.		Section 8.1	Conceptual Site Model. Please describe how DRO is regulated under NPDES and RCRA regulations and if any action is required based on the detections.	E	DRO is not monitored under the National Pollution Discharge Elimination System (NPDES) General Permit for JBA. Current monitored parameters include: <ul style="list-style-type: none"> • VOCs by Method 624; • SVOCs by Method 625; • Cyanide by Method 335.4; • Pesticide/PCB by Method 608; • Total Metals by Method 200.7; • Total Nitrate/Nitrite by Method 353.2; • Nitrogen, Kjeldahl by Method 351.2; • Ammonia by Method 350.1; • Phosphorus by Method 365.1; • Chemical Oxygen Demand (COD) by Method 410.4; • Oil/Grease by Method 1664A; • Propylene Glycol by Method SW 8015C; • Total Dissolved Solids (TDS) by Method SM 2540C; 	

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 Draft CS-C503 Draft RI Phase 1 Report
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					<ul style="list-style-type: none"> • Total Suspended Solids by Method SM 2540D; and • pH. <p>RCRA regulations would be applicable for waste sediment generated during future pond maintenance activities. Waste sediment will be handled in accordance with the JBA stormwater management plan (where applicable).</p>	
8.		Section 8.2	<p>Data Gaps. It is somewhat unclear how the COPCs were selected from a CERCLA perspective and/or why an RI was conducted under CERCLA. However from a CERCLA perspective, there is a data gap in that metals and other CERCLA related contaminants were not analyzed for. Please provide further supporting information to exclude these CERCLA contaminants.</p>	E	<p>Section 6.7.4 of the 2011 FFA between the USAF and the USEPA, states that the CS-C503 was to be a removal action. Furthermore, the FFA states that "PCBs were discovered in the excavated sediment, which were removed and disposed off-site. The source of the PCBs and the extent of PCB contamination remaining, if any, are unknown".</p> <p>The scope of the Phase I RI was to investigate the pond sediment for residual PCB contamination and investigate the associated stormwater drainage area for a source of PCB contamination prior to initiating a removal action if residual contamination is identified.</p> <p>COPCs identified in the Final UFP-QAPP for the Phase I RI at CS-C503 were based on the FFA, multiple Tier I Partnering Meeting discussions, 27 June 2013 UFP-QAPP scoping call, Tier I Meeting minutes</p>	

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 Joint Base Andrews, Camp Springs, Maryland
 July 2013

Comment #	Page	Section/ Paragraph/ Line No.	Comment	A, D, E, FD or X ¹	Response	A or D ²
					<p>and previous sampling results during the 2007 Retention Pond Maintenance project. Based on this information PCBs were determined to be the primary COPC. DRO and GRO were included as PCBs are commonly present in petroleum-based oils.</p> <p>PCBs were not detected in the stormwater pond sediment, surface water, and do not exceed applicable screening criteria in the adjacent soil. No further action is warranted to further investigate CS-C503 under CERCLA. The stormwater pond will continue to be managed in a accordance with the stormwater management plan for JBA under the on-going NPDES permit.</p>	
End of comments						

¹A = agree D = disagree E = explanation FD = needs further discussion X = take exception to