FINAL

ENVIRONMENTAL ASSESSMENT — GROUNDWATER PLUME TREATMENT FACILITY DUMP ROAD AREA, MARTIN STATE AIRPORT, MIDDLE RIVER, MARYLAND

PREPARED FOR:

MARYLAND AVIATION ADMINISTRATION

September 2015

This Environmental Assessment becomes a Federal document when evaluated and signed by the responsible Federal Aviation Administration official.

15 SEP 2015

Responsible Federal Aviation Administration Official
Federal Aviation Administration — Washington Airport District Office

Date

PREPARED BY:
TETRA TECH, INC.
20251 Century Boulevard, Suite 200
Germantown, Maryland 20874

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

APPENDICES

TABLE OF CONTENTS (continued)

LIST OF FIGURES

TABLE OF CONTENTS (continued)

LIST OF TABLES

Page

This page intentionally left blank.

ACRONYMS

AC	Advisory Circular
ACHP	Advisory Council on Historic Preservation
ALP	airport layout plan
APE	area of potential effect
ANG	Air National Guard
APHIS	Animal and Plant Health Inspection Service
AWOS	automated weather observing system
AZP	airport zoning permit
BGE	Baltimore Gas and Electric
BGEPA	Bald and Golden Eagle Protection Act
bgs	below ground surface
BMC	Baltimore Metropolitan Council
BMP	best management practice
BTEX	benzene, toluene, ethylbenzene, and xylenes
BWI Marshall	Baltimore/Washington International Thurgood Marshall International Airport
CAA	Clean Air Act
CAC	Critical Area Commission
CBCA	Chesapeake Bay Critical Area
cDCE	*cis*-1,2-dichloroethene
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CF	cubic feet
CFR	Code of Federal Regulations
CHS	controlled hazardous substance
cis-1,2-DCE	*cis*-1,2-dichloroethene
CO	carbon monoxide
COC	chemical(s) of concern
COMAR	Code of Maryland Regulations
cVOCs	chlorinated volatile organic compounds
CWA	Clean Water Act
CY	cubic yards
CZMA	Coastal Zone Management Act

CZMP	Coastal Zone Management Program
dB	decibels
DNL	day-night average sound level
DR 3.5 - 16	density residential (zoning designation)
DRA	Dump Road Area
E2	estuarine wetland (Cowardin classification)
EA	environmental assessment
EFH	essential fish habitat
ERA	ecological risk assessment
ESD	environmental site design
FCWMA	Flood Control and Watershed Management Act
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIDS	forest interior dwelling species
FIRM	flood insurance rate maps
FMCs	fishery management councils
FMPs	fishery management plans
FPPA	Farmland Protection Policy Act
FS	feasibility study
ft/day	feet per day
GHG	greenhouse gas
GIS	geographic information system
gpm	gallons per minute
HCA	high concentration area
HDPE	high-density polyethylene
HHRA	human health risk assessment
HPAs	habitat protection areas
HVAC	heating, ventilation, and air conditioning
IDA	intensely developed areas
IRA	interim remedial action
ISR	cyber/intelligence, surveillance, and reconnaissance
JPA	joint permit application (for CWA permitting)
LDA	Limited Development Area
lf	linear feet
Lockheed Martin	Lockheed Martin Corporation

LOD	limit(s) of disturbance
LRS	Logistics Readiness Squadron
MAA	Maryland Aviation Administration
MARMAP	Marine Resources Monitoring, Assessment, and Prediction
MCL(s)	maximum contaminant level(s)
MCLG(s)	maximum contaminant level goals
MDANG	Maryland Air National Guard
MDE	Maryland Department of the Environment
MDHSRP	Maryland Hazardous Substance Response Plan
MDNR	Maryland Department of Natural Resources
MDOT	Maryland Department of Transportation
MEP	maximum extent practicable
MHT	Maryland Historical Trust
MHW	mean high water
MHWL	mean high water line
μ/m^3	micrograms per cubic meter
MOA	Memorandum of Agreement
MSL	mean sea level
MSPGP-4	Maryland State Programmatic General Permit–4
MTN	Martin State Airport
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
NAAQS	National Ambient Air Quality Standards
NAVAIDs	navigational aids
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2 (or NO_x)	nitrogen dioxide (or nitrogen oxides)
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service
NRHP	National Registry of Historic Places
NWG	Network Warfare Group
O_3	Ozone
O&M	operation and maintenance
OSHA	Occupational Safety and Health Administration

Pb	lead
PEM	palustrine emergent wetland (Cowardin classification)
PL	public law
PM_{10}	respirable particulate matter
$PM_{2.5}$	fine particulate matter
POTW	publically-owned treatment works
POW	palustrine open water (Cowardin classification)
PRG(s)	preliminary remediation goal(s)
PTC	permit to construct
PTO	permit to operate
PUB	palustrine unconsolidated bottom wetland (Cowardin classification)
RAO(s)	remedial action objective(s)
RCA	Resource Conservation Area
RCRA	Resource Conservation, Compensation, and Recovery Act
RCP	reinforced concrete pipe
RI	remedial investigation
RTE	rare, threatened, or endangered (species)
SCIF	Sensitive Compartmented Information Facility
sf	square feet
SFA	Sustainable Fisheries Act
SIP	State Implementation Plan
SPCC	spill prevention control and countermeasure
SO_2	sulfur dioxide
TIPs	transportation improvement plans
TCE	trichloroethene
TMDL	total maximum daily load
TPH DRO	total petroleum hydrocarbons – diesel range organics
TPH GRO	total petroleum hydrocarbons – gasoline range organics
TSCA	Toxic Substances Control Act
TSDF	treatment, storage and disposal facility
USACE	United States Army Corps of Engineers
USC	United States Code
USCG	United States Coast Guard
USDA	United States Department of Agriculture
USDA-WS	United States Department of Agriculture, Animal and Plant Health Inspection Services, Wildlife Services
USDOI	United States Department of the Interior
USDOT	United States Department of Transportation

USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VC	vinyl chloride
VOC	volatile organic compound
VGAC	vapor phase granulated activated carbon
WHA	wildlife hazard assessment
WHMP	wildlife hazard management plan

This page intentionally left blank.

Section 1
Introduction and Background

1.1 INTRODUCTION

Lockheed Martin Corporation (Lockheed Martin) proposes to construct and operate a facility at the Dump Road Area (DRA) at Martin State Airport (MTN) in Middle River, Maryland to limit the off-site migration of contaminated groundwater from the DRA. Past site investigations conducted over the past several years have determined that groundwater in the DRA is currently impacted by elevated levels of volatile organic compounds (VOCs), petroleum hydrocarbons, 1,4-dioxane, and heavy metals. Recently, the groundwater plume containing these contaminants was found to be migrating into adjacent Frog Mortar Creek, a tidal estuary of Chesapeake Bay. Based on this, the Maryland Department of the Environment (MDE) has issued a water contact advisory for Frog Mortar Creek, near the DRA.

The proposed facility will pump and extract groundwater from the DRA in order to gain hydraulic control of the contamination plume and limit the migration of the plume into Frog Mortar Creek. Extracted groundwater will be treated to reduce the level of contaminants to acceptable levels before being discharged to Frog Mortar Creek. This action will address MDE's current public water contact advisory and mitigate potential risks to human health by limiting the migration of the contaminated groundwater plume into Frog Mortar Creek. Pumping/extracting groundwater from the DRA is not intended to directly address the groundwater contamination itself, nor is it intended to address the source of the groundwater contamination; it is simply the means by which hydraulic control over the groundwater plume will be achieved, preventing migration of the plume into Frog Mortar Creek.

The proposed system will be in place for an indefinite period, possibly as long as several decades. Although indefinite in duration, the United States Environmental Protection Agency (USEPA) typically refers to this type of action as an interim remedial action (IRA). An IRA is taken at a contaminated site to reduce the chances of human or environmental exposure to site contaminants, and to protect public health before a full remedial investigation of the site is complete. A separate

complete. A separate feasibility study, scheduled to be completed following the final site investigation in 2015, will evaluate possible measures for addressing other possible contamination issues in the DRA, such as existing soil and buried waste contamination. However, these issues are separate from, and not directly associated with, the groundwater plume migrating into Frog Mortar Creek. In addition, potential future measures for addressing additional contamination issues in the DRA, including the source of the groundwater contamination and the groundwater contamination itself, are undetermined and may involve no action.

The DRA is not listed by the USEPA on the National Priorities List (NPL) and nor has it been designated by the USEPA as an NPL caliber site. Therefore the DRA does not fall under the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Based on the 1997 Superfund Memorandum of Agreement (MOA) between USEPA Region III and MDE, investigation, remediation, review and approval of cleanup of non-CERCLA sites, including the DRA, are the responsibility of the MDE Land Management Administration, Controlled Hazardous Substances Enforcement Division (State Superfund Program). A copy of the Superfund MOA can be found in Appendix A. Per the MOA, remediation of state superfund sites is conducted under the authority of Title 7, Subtitle 2 of the Environmental Article of the Annotated Code of Maryland (1996). Under Title 7, Subtitle 2, MDE has the authority to require responsible parties to investigate and remediate sites at which releases of hazardous substances occurred or may occur; therefore, MDE Land Management Administration, Controlled Hazardous Substances Enforcement Division, has direct oversight of the remediation project and acts on behalf of both MDE and USEPA to review and approve the proposed action.

The project area consists of the DRA, an approximately 25-acre area between Taxiway T and Frog Mortar Creek on the east side of the airport property, and a narrow utility corridor extending south from Eastern Boulevard along Lynbrook Road to the DRA (Figure 1-1). The Maryland Aviation Administration (MAA), the airport authority of the Maryland Department of Transportation, owns and operates Martin State Airport (MTN), a Federal Aviation Administration (FAA) Part 139-certified facility in Baltimore County, Maryland, located approximately 8 miles north of Baltimore City. As a tenant, Lockheed Martin has prepared this environmental assessment (EA) for MAA to evaluate the impacts to the environment associated with construction and operation of the proposed remediation project. This EA has been prepared

in compliance with the National Environmental Policy Act (NEPA) (42 United States Code [USC] 4321 et seq.) and the Council on Environmental Quality (CEQ) implementing regulations (40 *Code of Federal Regulations* (CFR) 1500-1508), and follows guidelines for EA preparation contained in Federal Aviation Administration (FAA) Orders 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures* (FAA, 2006a); and 5050.4B, *National Environmental Policy Act Implementing Instructions for Airport Actions* (FAA, 2006b) as supplemented by FAA's *Environmental Desk Reference for Airport Actions* (FAA, 2007a). References for this EA are found in Appendix B. Documentation of agency consultation is included in Appendix C.

1.2 BACKGROUND AND HISTORY OF THE PROPOSED ACTION

The DRA was historically used as an industrial landfill where waste material from former aircraft manufacturing activities was deposited. Environmental issues associated with the DRA site were initially identified in July 1991 when MAA encountered four buried drums adjacent to Taxiway T during trenching to install an electrical cable. Discovery of the buried drums led to a remedial investigation (RI) of the surrounding area. That investigation currently includes data from more than 500 groundwater, soil, surface water and sediment samples, site geophysical surveys, and hydrologic modeling to determine the nature and extent of soil and groundwater contamination. An RI report and accompanying human health risk assessment (HHRA) and ecological risk assessment (ERA) was prepared in 2010 to summarize the results of the investigation and identify specific chemicals of concern (COC) (Tetra Tech 2012b); a summary of the RI results follows:

- DRA groundwater is impacted by a range of chemicals of concern associated with former nearby industrial operations, including: chlorinated volatile organic compounds (cVOCs) such as trichloroethene (TCE), *cis*-1,2-dichloroethene (*cis*-1,2-DCE), and vinyl chloride (VC) all exceeding United States Environmental Protection Agency (USEPA) federal maximum contaminant levels (MCLs) and Maryland groundwater cleanup standards.

- 1,4-Dioxane is at relatively high concentrations based on current USEPA guidance.

- Concentrations of the metals cadmium, chromium, lead, and mercury in groundwater exceed USEPA MCL and Maryland groundwater cleanup standards in some samples.

- Concentrations of benzene, toluene, ethylbenzene, and xylene (BTEX), associated with petroleum constituents in groundwater, exceed USEPA MCLs and Maryland groundwater cleanup standards in some samples.

- Total petroleum hydrocarbons-diesel range organics (TPH-DRO) total petroleum hydrocarbons-gasoline range organics (TPH-GRO) in groundwater exceed Maryland standards in the upper surficial aquifer

In addition, groundwater sampling from monitoring wells set at various depths revealed that the groundwater contaminant plume extends from the water table to a depth of approximately 90 to 100 feet below ground surface (bgs). This plume was determined to be migrating east-southeast toward Frog Mortar Creek. Figures 1-2 through 1-5 provide a graphic representation of the groundwater plume and the concentrations of the cVOCs (TCE, cis 1,2-DCE, and VC) and BTEX within the DRA.

Also, beginning in 2004, surface water samples along the shoreline of Frog Mortar Creek were collected to evaluate surface water for COC that might have migrated from the DRA (Tetra Tech, 2012c http://www.lockheedmartin.com/content/dam/lockheed/data/corporate/documents/remediation/msa/SWReport2012-062013.pdf). Concentrations of TCE, VC, and/or xylene have been found to exceed applicable water quality criteria in some surface water samples, including site-specific swimming screening criteria that were developed using accepted USEPA and MDE protocols. As a result, MDE issued a water contact advisory for the portion of Frog Mortar Creek adjacent to the DRA (see Appendix D, and MDE, 2012 http://www.mde.state.md.us/programs/Land/MarylandBrownfieldVCP/ERRP_Superfund/Pages/FrogMortarCreekWaterContactAdvisory.aspx). The water contact advisory indicates that some surface water samples were found to contain COC concentrations that exceed lifetime risk screening levels; however, these estimates, which are based on lifetime exposures, are inherently conservative and do not represent any short-term health hazard. In addition, the water contact advisory states that while the contaminants are not at levels that represent an acute health risk and there is no "ban" on swimming in the area, out of an abundance of caution, MDE has issued the water contact advisory to make the public aware of the potential risks and limit their exposure through swimming or wading in the waters adjacent to MTN on the western shore of Frog Mortar Creek. The advisory also states that until lateral migration of contaminants from the DRA can be limited through the proposed groundwater extraction/treatment system and reductions in surface water concentrations are confirmed, the advisory will remain in effect. Text included on the signs posted in Frog Mortar Creek adjacent to the DRA states:

> "Water Contact Advisory – Limit Swimming Exposure – The Maryland Department of the Environment (MDE) has determined that the levels of hazardous substances along portions of the Martin Airport shoreline may at times exceed MDE's recommended lifetime health-risk levels from repeated exposure due to swimming or other activities. MDE recommends limiting exposure through swimming or wading in these waters".

In 2012, following the completion of the RI report, Lockheed Martin prepared an *Interim Remedial Action Feasibility Study for the Groundwater Operable Unit at the Dump Road Area Site* (groundwater plume FS) to identify a preferred strategy and technology for minimizing off-site migration of contaminants, thus addressing the most immediate concern regarding potential impacts to human health and the environment. Note that a separate feasibility study, scheduled to be completed following the final site investigation in 2015, will evaluate possible measures for addressing other possible contamination issues in the DRA such as existing soil and buried waste contamination. However, these issues are separate from, and not directly associated with, the groundwater plume migrating into Frog Mortar Creek. In addition, potential future measures for addressing other contamination issues in the DRA, including the source of the groundwater contamination, are undetermined and may involve no action.

The groundwater plume feasibility study (FS) developed overall remedial action objectives (RAOs), and, based on standardized evaluation criteria, a suitable remediation strategy.

RAOs developed during the groundwater plume FS included:

1. limiting the lateral migration of contaminated groundwater toward Frog Mortar Creek at concentrations that would cause exceedances of ambient water quality or risk-based exposure criteria
2. preventing human exposure (through showering, drinking, or irrigation) to groundwater containing COC concentrations greater than preliminary remediation goals (PRGs)
3. preventing worker exposures to volatile organic compounds (VOCs) through vapor intrusion into buildings

To address RAO No. 1, the groundwater plume FS evaluated five alternative strategies/technologies for limiting lateral migration of contaminated groundwater. Based on

standardized evaluation criteria, the groundwater plume FS determined that the most practicable strategy/technology for achieving RAO No. 1 is to limit groundwater migration by extracting groundwater using groundwater extraction wells, treating the extracted groundwater in an aboveground treatment facility, then discharging the treated groundwater to existing surface waters. As shown in the hydrological analysis and groundwater modeling completed as part of the RI, pumping and extracting groundwater within the DRA will establish hydraulic control of the contaminant plume and limit groundwater flow toward Frog Mortar Creek. The groundwater plume FS also determined that RAOs Nos. 2 and 3 will be achieved primarily through future land use restrictions.

The groundwater plume FS was reviewed by MDE to verify that the evaluations and recommendations made within were consistent with state and federal guidelines and requirements. Following MDE review, the local community was engaged by Lockheed Martin through presentations to local civic organizations, and through a formal public notification and comment period. A Proposed Plan was developed and published to present the alternatives and selected strategy from the groundwater plume FS to the public. An initial public information session on February 8, 2012 was followed by a formal public meeting and 30-day public-comment period from February 8 to March 8, 2012. MDE monitored and participated in the public review process and supports the final selection of the strategy/technology for limiting lateral migration of contaminated groundwater from the DRA. Both the groundwater plume FS and the proposed plan are included in Appendix E.

Following selection of the strategy/technology for preventing off-site migration of contaminated groundwater, Lockheed Martin prepared a *DRA Building Location and Remedial Action Plan Review Memorandum* (Appendix F) to identify a preferred location for the treatment building/facility. Specific build options that were evaluated for the groundwater treatment building/facility included 1) extracting groundwater within the DRA and piping this groundwater to an off-site treatment building, 2) extracting groundwater within the DRA and piping this groundwater to an on-site treatment building. On-airport locations were limited by a lack of available space within the developed portion of the Air National Guard leasehold at the airport, minimal suitable nearby locations within other areas of the airport, and no available parcels nearby the airport that could be purchased or leased to accommodate the treatment building. Any off-airport location would be at least one mile distant, introducing additional risks associated

with conveying contaminated water off-site. The most feasible build option was therefore determined to be to construct the treatment building/facility on-site, within the DRA.

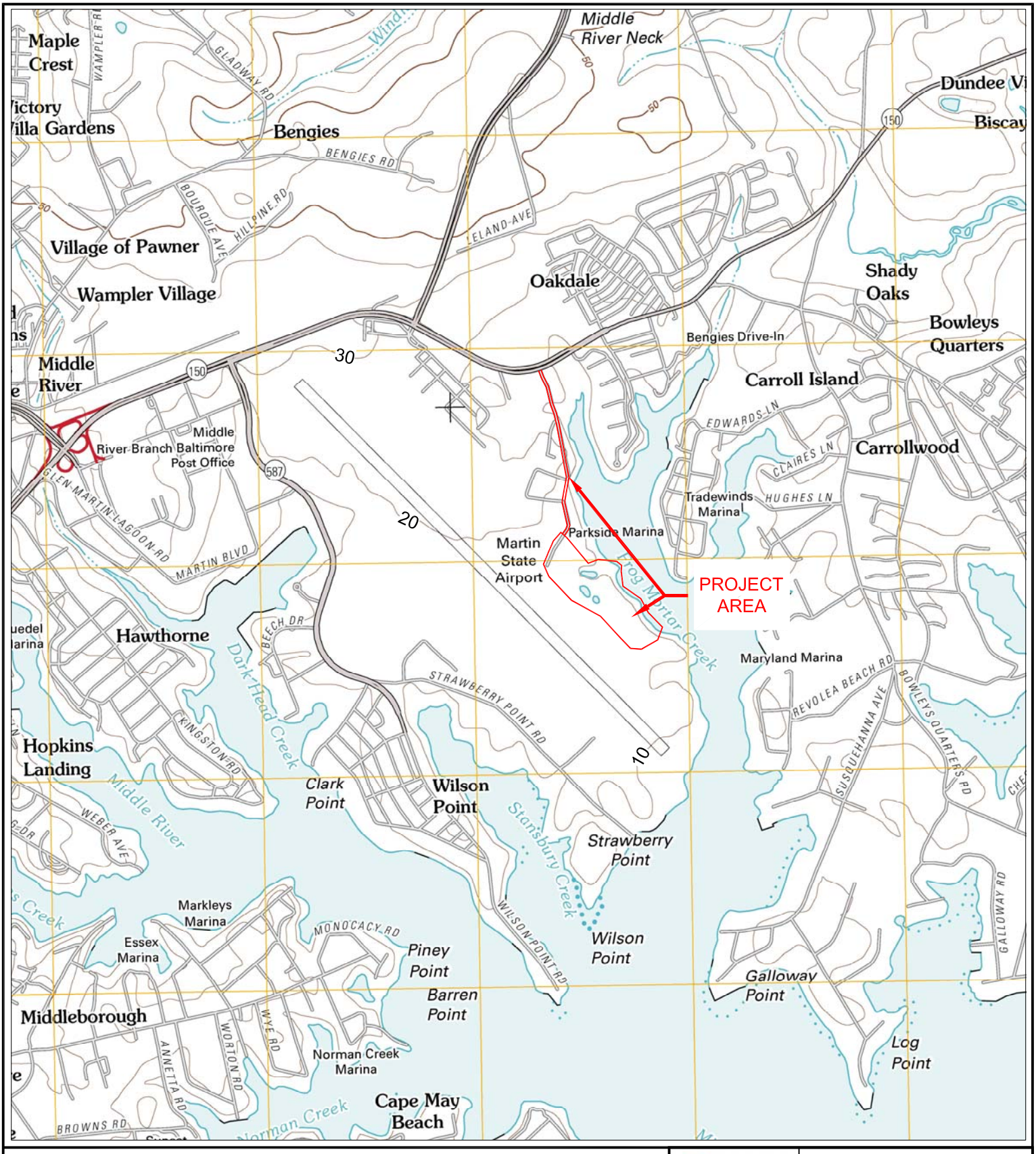
As stated previously, the DRA is not listed by the USEPA on the NPL and nor has it been designated by the USEPA as an NPL caliber site. Therefore it does not fall under CERCLA and, based on the 1997 Superfund MOA between USEPA Region III and MDE, investigation, remediation, review and approval of cleanup of non-CERCLA sites such as the DRA are the responsibility of the MDE. USEPA Region III recognizes that Maryland has successfully developed and implemented strategies to clean up properties such as the DRA and has agreed to consider sites that have been investigated or remediated under the authority of the MDE to be of "no federal interest".

In addition, the regulatory framework for MDE's authority and responsibilities is described in the MOA, which indicates that MDE's review and approval of state superfund sites shall be conducted under the authority of Title 7, Subtitle 2 of the Environmental Article of the Annotated Code of Maryland (1996). Under Title 7, Subtitle 2, MDE has the authority to require responsible parties to investigate and remediate sites at which releases of hazardous substances occurred or may occur. Therefore, MDE Land Management Administration, Controlled Hazardous Substances Enforcement Division, has direct oversight of the remediation project and acts on behalf of both MDE and USEPA to review and approve the proposed action.

Also, Section IV of the MOA describes the specific compliance requirements to be met by MDE as part of the MOA. These requirements include annual reporting to USEPA on the specific sites being addressed by MDE under the MOA and providing USEPA with access to documents for all sites covered by the agreement, upon request. MDE has successfully met the reporting requirements each year as part of the MOA and will continue to report the DRA as a state superfund site under their review.

The selected remediation strategy (limiting lateral migration of contaminated groundwater by extracting/treating groundwater to establish hydraulic control) and treatment plant build option (constructing the treatment building on-site) have therefore been identified as being the preferred action alternative to be evaluated, along with the no action alternative under this EA. No other remediation strategy/technology (action alternative) was found to fully meet the standardized evaluation criteria identified in the groundwater plume FS (see Section 3 — Alternatives

Analysis). In addition, the selected remediation strategy (limiting lateral migration of contaminated groundwater by extracting and treating groundwater) has been reviewed and approved by MDE per regulations found in the Maryland Hazardous Substance Response Plan (Code of Maryland Regulations [COMAR], Title 26, Subtitle 14).



MIDDLE RIVER, MD

2011

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

MARYLAND

MN
11° 16′
200 MILS
GN
0° 55′
16 MILS

UTM GRID AND 2011 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

MARTIN STATE AIRPORT

Environmental Assessment for Groundwater Remediation at the Dump Road Area

PROJECT AREA AND VICINITY MAP

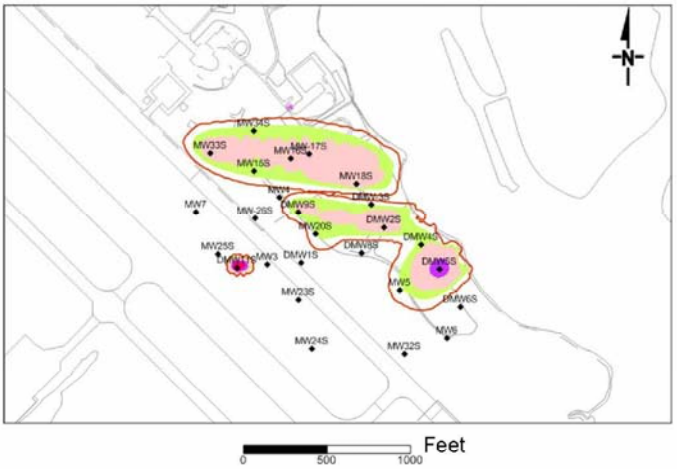
TETRA TECH

SCALE: AS SHOWN

FIGURE: 1-1

S:\03-Projects\Commercial\LMC\103IP2599 Task 13 (permitting)-DRA-GWTP\NEPA EA\DWG\ Figure 1-1.dwg

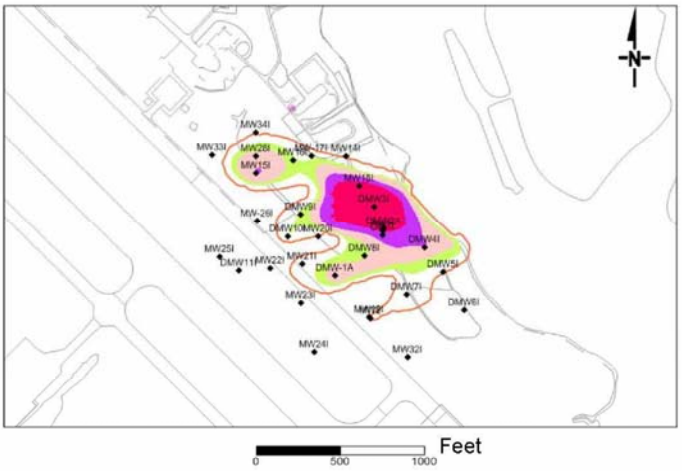
TCE - Upper Surficial Aquifer



TCE Concentration ug/L

10000
5000
1000
500
100

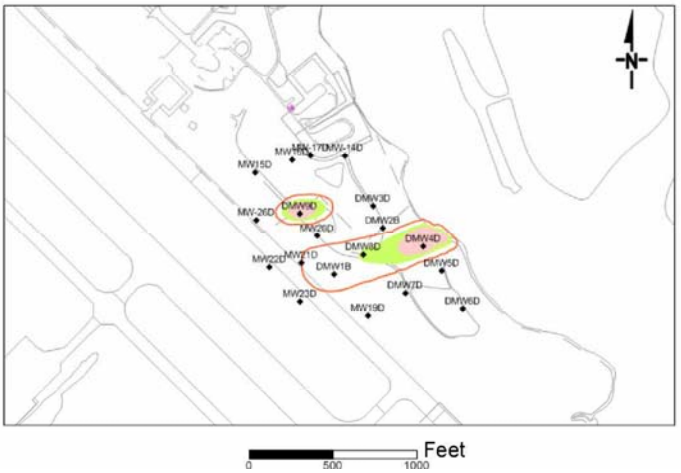
TCE - Intermediate Surficial Aquifer



TCE Concentration ug/L

10000
5000
1000
500
100

TCE - Lower Surficial Aquifer



TCE Concentration ug/L

10000
5000
1000
500
100

MARTIN STATE AIRPORT

Environmental Assessment for Groundwater Remediation at the Dump Road Area

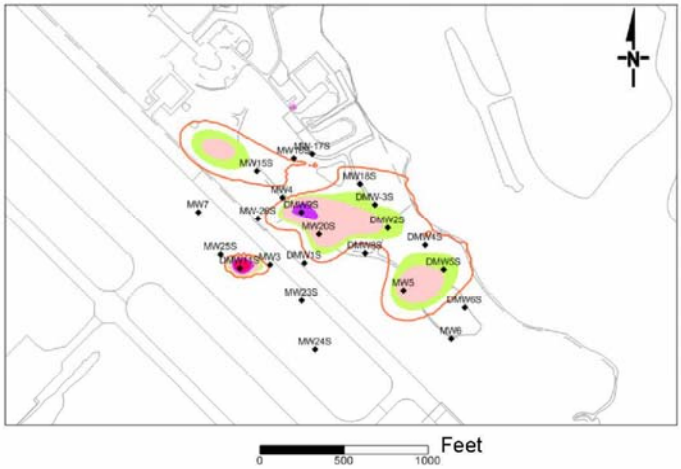
Contour Plots of TCE for the Upper, Intermediate, and Lower Surficial Aquifers - August - September 2009

TETRA TECH

SCALE: AS SHOWN

FIGURE: 1-2

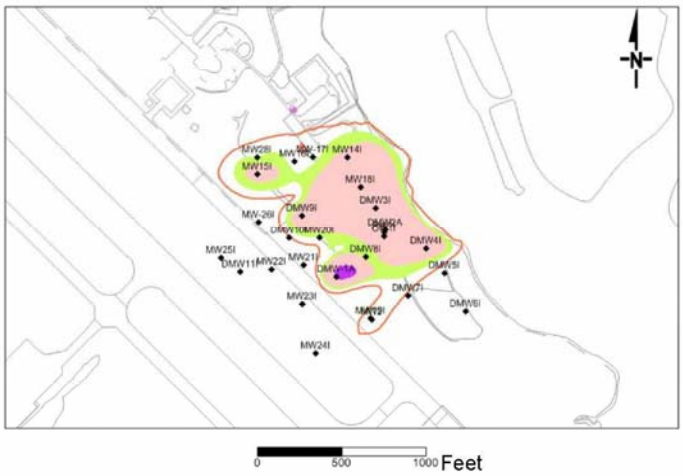
CIS-1,2-DCE - Upper Surficial Aquifer



cDCE Concentration ug/L

10000
5000
1000
500
100

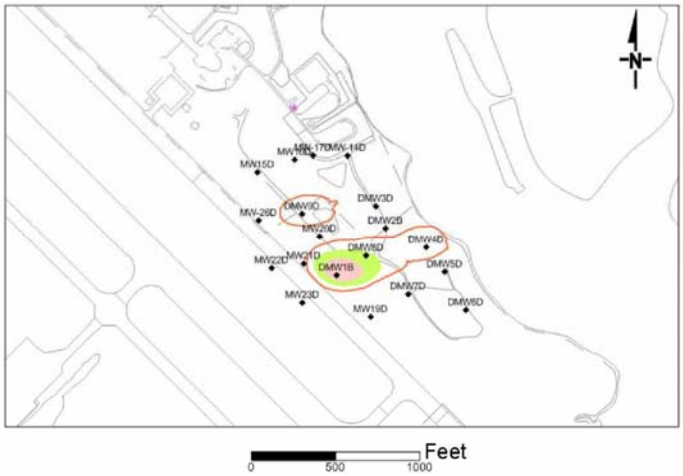
CIS-1,2-DCE - Intermediate Surficial Aquifer



cDCE Concentration ug/L

10000
5000
1000
500
100

CIS-1,2-DCE - Lower Surficial Aquifer



cDCE Concentration ug/L

10000
5000
1000
500
100

MARTIN STATE AIRPORT

Environmental Assessment for Groundwater Remediation at the Dump Road Area

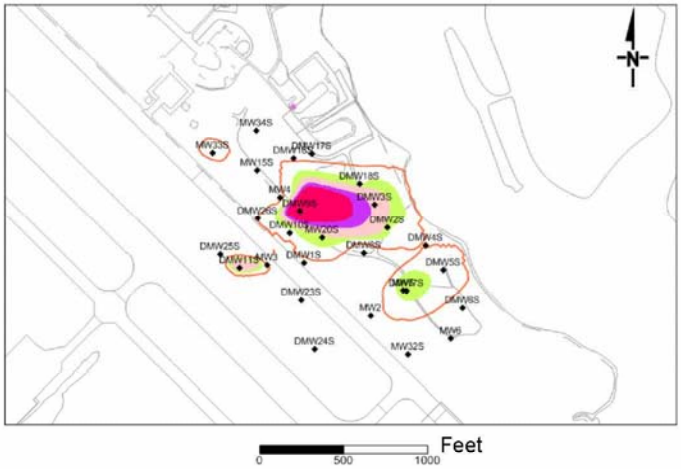
Contour Plots of cDCE for the Upper, Intermediate, and Lower Surficial Aquifers - August - September 2009

TETRA TECH

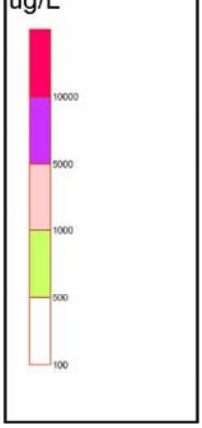
SCALE: AS SHOWN

FIGURE: 1-3

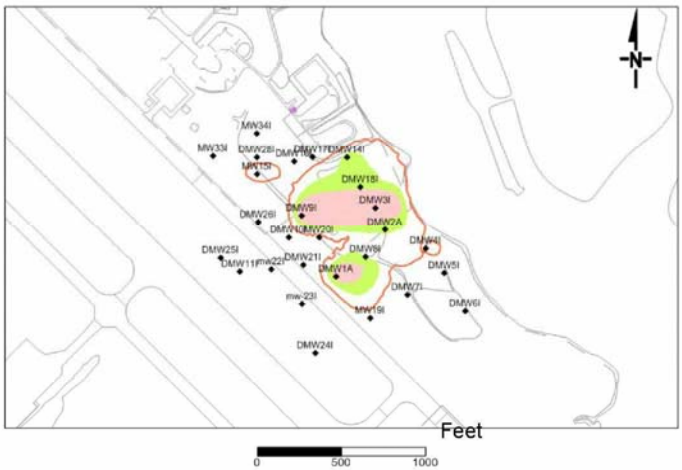
VINYL CHLORIDE - Upper Surficial Aquifer



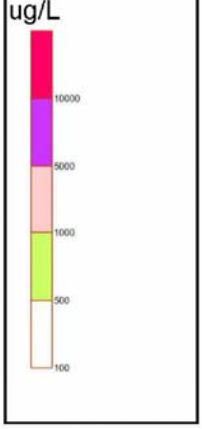
Vinyl Chloride Concentration ug/L



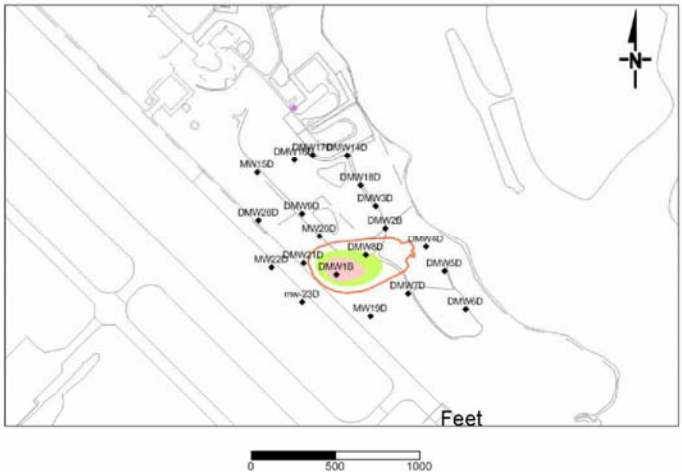
VINYL CHLORIDE - Intermediate Surficial Aquifer



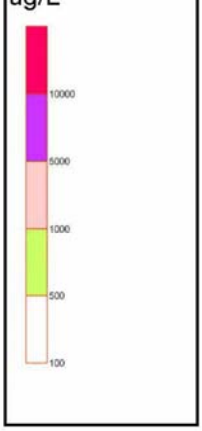
Vinyl Chloride Concentration ug/L



VINYL CHLORIDE - Lower Surficial Aquifer



Vinyl Chloride Concentration ug/L



MARTIN STATE AIRPORT

Environmental Assessment for Groundwater Remediation at the Dump Road Area

Contour Plots of Vinyl Chloride for the Upper, Intermediate, and Lower Surficial Aquifers - August - September 2009

TETRA TECH

SCALE: AS SHOWN

FIGURE: 1-4

MW34S
MW34I
MARYLAND AIR NATIONAL GUARD
Conrad's Ruth Villa
MW33S
MW33I
Gate
MW28I
MW27D
MW16S
MW16I
MW16D
MW17S
MW17I
MW17D
Gate
MW14I
MW14D
POND #2
MW15S
MW15I
MW15D
FROG MORTAR CREEK
MW18S
MW18I
MW18D
MW4
PETROLEUM HYDRO-CARBON AREA
MW7
MW26S
MW26I
MW26D
DMW9S
DMW9I
DMW9D
POND #1
DMW3S
DMW3I
DMW3D
DMW2A
DMW2B
RW1I
OW1I
RW1I
OW1I
DMW2S
DMW10S
DMW10I
MW20S
MW20I
MW20D
DMW8S
DMW8I
DMW8D
DMW4S
DMW4I
DMW4D
MW25S
MW25I
MW3
MW21I
MW21D
MW22I
MW22D
DMW1S
DMW1A
DMW1B
DMW5S
DMW5I
DMW5D
DMW11S
DMW11I
MW23S
MW23I
MW23D
DRUM AREA
MW5
DMW7S
DMW7I
DMW7D
DMW6S
DMW6I
DMW6D
MW19I
MW19D
MW2
TAXIWAY TANGO
AIRPORT RUNWAY
MW1
Gate
MW6
MW24S
MW24I
MW32S
MW32I
MW30D
MW29D
MW31D

Legend

- Groundwater Well Location
- Ponds
- 0 - 5
- >=5 - 50
- >=50 - 500
- >=500 - 5000
- >= 5000

Ranges are based on Micrograms Per Liter (ug/l)

Lockheed Martin Martin State Airport
Middle River, Maryland

0 50 100 200 Feet

N

DATE MODIFIED: 12/12/09

CREATED BY: BJ

MARTIN STATE AIRPORT

Environmental Assessment for Groundwater Remediation at the Dump Road Area

BTEX Concentrations in Groundwater (2007-2009 Maximum Concentration)

TETRA TECH

SCALE: AS SHOWN

FIGURE: 1-5

S:\03-Projects\Commercial\LMC\103IP2599 Task 13 (permitting)-DRA-GWTP\NEPA EA\DWG\ Figure 1.0-2.3.4.5.dwg

Section 2
Purpose and Need

2.1 PURPOSE

The primary purpose of the proposed project is to control migration of contaminated groundwater from the DRA at concentrations that can lead to exceedances of water quality standards in Frog Mortar Creek. This action will also comply with the regulatory requirements of the Maryland Hazardous Substance Response Plan (MDHSRP) as required under Title 7, Subtitle 2 of the Environmental Article of the Maryland Annotated Code and under the authority of MDE per the Superfund MOA. With respect to meeting the requirements of MDHSRP, the purposes of the proposed project are to:

- assist in compliance with COMAR Title 26, Subtitle 14
- fulfill the intent of the initial cleanup phase of the MDHSRP process, which is to achieve the applicable cleanup criteria at the property, as defined by the groundwater plume FS.

2.2 NEED

As demonstrated in the RI report and the groundwater plume FS, concentrations of COC in DRA groundwater exceed federal/Maryland ambient water quality standards or risk-based exposure criteria. Individually, or taken together, these impacts render the groundwater in the affected area a risk to human health and the environment which requires remedial action. Remediation of the site is also necessary to address the VOC levels in Frog Mortar Creek, and to comply with COMAR Title 26, Subtitle 14.

To satisfy both purpose and need, Lockheed Martin proposes to limit the lateral migration of contaminated groundwater to Frog Mortar Creek by constructing a groundwater extraction and treatment system that will gain hydraulic control of contaminated water migrating towards Frog Mortar Creek, thereby reducing risk to human health and the environment to regulatory acceptable levels. Implementation of the project constitutes an effective remedy to alleviate the potential for off-site migration and potential human exposure, and complies with MDHSRP requirements.

This page intentionally left blank.

Section 3
Alternatives Analysis

3.1 INTRODUCTION

This section provides a description of the preferred action and no action alternatives that were selected as a result of the Groundwater plume FS and associated public comment process. The groundwater plume FS and the selection of the preferred action alternative was reviewed and approved by MDE per the regulations found in the Maryland Hazardous Substance Response Plan (COMAR Title 26, Subtitle 14), in accordance with the authority delegated to MDE by USEPA in the Superfund MOA (Appendix A).

In addition, this section contains a summary of the formal evaluation of remedial action alternatives included in the groundwater plume FS, the rationale for the selection of the preferred action alternative, and the rationale for the elimination of the remaining alternatives from further consideration. This section therefore demonstrates compliance with the provisions of Federal Aviation Administration (FAA) Order 5050.4B, which requires that all reasonable alternatives that could either avoid or minimize adverse environmental impacts, or enhance the quality of the environment, be explored.

3.2 PREFERRED ACTION ALTERNATIVE

The preferred alternative consists of extracting groundwater from the portion of the plume adjacent to Frog Mortar Creek to gain hydraulic control over the contaminated groundwater plume beneath the DRA. Extracted groundwater will then be conveyed to the nearby treatment facility located within the DRA, where it will undergo a multi-stage treatment process to reduce COC concentrations to permissible discharge standards. Treated water from the facility will then be discharged to the nearby surface water in Frog Mortar Creek. This alternative will include the installation of groundwater extraction wells, construction of the treatment facility, placement of an outfall discharge in Frog Mortar Creek, widening of access roads, trenching of utilities, and development of a stormwater management system (Figure 3–1). The total area within the limits of disturbance (LOD) for the project will be approximately 25 acres. The following sections

provide a detailed description of both the construction and overall operations of the groundwater treatment system.

3.2.1 Extraction Wells and Treatment Plant

An array of 16 groundwater extraction wells will be installed within the DRA parallel to and near Frog Mortar Creek (Figure 3–2). Well installation will include clearing and grading an approximately 100 square foot (sf) area for each well. The wells will be advanced to a depth of up to 80 feet below ground surface (bgs) using standard drilling techniques and equipment including a Rotosonic drill rig. Each well will also be fitted with a pump. Extracted groundwater will be conveyed to the treatment plant through pipe installed in trenches beneath the access roadbed.

The constructed treatment plant will be a maximum of 80 feet wide by 180 feet long (14,400 sf), and will be 30 feet tall at the roof peak. The building will be an engineered steel and concrete panel structure located near the center of the DRA in close proximity to the groundwater extraction wells. The building will contain all operational components of the treatment system, including a feed tank to which extracted groundwater will be pumped. The final elevations of the treatment building are estimated as follows:

- finished grade elevation — maximum 30 feet above mean sea level
- finished floor elevation — maximum 31 feet above mean sea level
- top of building elevation — maximum 61 feet above mean sea level

The treatment building itself will be within an approximately one-acre fenced compound. The additional space adjacent to the plant will be paved and used for parking, access, deliveries, storage, maintenance, and truck turnaround.

3.2.2 Treatment Plant Operations

Extracted groundwater will first be pumped to a feed tank located inside the treatment building. The treatment plant will be sized to accommodate an average flow rate of 50 gallons per minute (gpm) and a maximum flow rate of 100 gpm to allow for future system expansion. Based on groundwater modelling conducted as part of the FS, operation of this pump-and-treat system is expected to last 50 years or longer; however, if project goals are met prior to this time system

operation will be discontinued and the treatment system dismantled. The extracted water will be transferred from the feed tank and treated in a two-step process: the first step will pre-treat and filter water to remove inorganics (metals) and suspended solids, and the second step will remove organics using advanced oxidation, air stripping, and liquid phase activated carbon. Air emissions from the air stripper will be treated through vapor-phase carbon prior to discharge, and regulated through an MDE-required permit. Sludge generated by the pre-treatment process will be thickened and dewatered using a sludge thickener and filter press system. The dewatered solids will be characterized in accordance with relevant state and federal solid waste and hazardous waste regulations for appropriate off-site disposal at an MDE-approved disposal facility (COMAR Title 26, Subtitle 13); the disposal facility will be identified at a later date, prior to system start-up. Figure 3–3 provides a flow diagram of overall treatment plant processes and unit operations.

Chemicals used to treat groundwater will include sulfuric acid, caustic soda, and hydrogen peroxide, each of which will be stored in separate tanks or containers within the treatment building. Chemical storage tanks and containers will be provided with secondary containment to meet all National Fire Protection Association (NFPA) and spill prevention control and countermeasure (SPCC) requirements. The monthly chemical requirements are estimated at 3,000 gallons of caustic, 400 gallons of sulfuric acid, and 1,500 gallons of hydrogen peroxide. Following treatment, the treated groundwater will be tested for COC concentrations and discharged to Frog Mortar Creek. The treatment plant will be designed to meet Maryland's National Pollution Discharge Elimination System (NPDES) discharge permit requirements, ambient water quality standards, and/or drinking water MCLs, as appropriate. Discharge samples collected to show NPDES compliance will be collected via a sample port located on the effluent line in the treatment building.

3.2.3 Outfall Discharge

The outfall discharge will consist of a six-inch high-density polyethylene (HDPE) discharge pipe extending approximately 200 feet from the treatment facility to Frog Mortar Creek. A 70-foot portion of the discharge pipe will extend below the mean high water line (MHWL) of Frog Mortar Creek. Three two-inch Tideflex® diffusers will be installed on the end of the discharge

pipe, and will be anchored to the bottom of Frog Mortar Creek. The diffusers will be submerged at least one foot below the low-tide water level.

3.2.4 Infrastructure

Access to the DRA will be on existing roads beginning at Eastern Boulevard and extending south along Lynbrook Road to the DRA. However, due to the existence of a bald eagle nest in the wooded area north of the DRA, vehicle access during the nesting season (from January 1 to July 31) will involve rerouting traffic through the MDANG facility beginning at a point approximately 1,000 feet south of Eastern Boulevard. This route will take traffic to the west around the wooded area and over 600 feet from the bald eagle nest and will then reconnect with the DRA access point at the north end of the project site (see Figure 3-1). Vehicle traffic during construction of the facility is expected to average 10 to 15 trucks per day over the 1 year construction period; however, vehicle traffic numbers will likely be less during certain phases of construction.

Existing access roads within the DRA will be widened and improved to accommodate construction vehicles and to facilitate access to the treatment plant and groundwater extraction wells for maintenance and fire protection, as required by the Baltimore County Fire Department. The existing 1,500-foot long dirt/gravel access road will be widened from its current width (of eight feet) to 20 feet, and will be paved with asphalt. Road improvements will also include replacing the existing 36-inch reinforced concrete pipe (RCP) culvert that crosses over the existing intermittent tributary at the north end of the DRA with a suitable substitute that accommodates the widening of the road to 20 feet. All road improvements will take place on roads within the MAA property boundary. No improvements/work will be done on publicly owned roadways.

The new building will have an asphalt-paved parking and truck maneuvering area. The building footprint and its surrounding asphalt area will occupy approximately one acre. Existing paths near the proposed well locations will be improved (widened to 12 feet) and/or extended, and will be converted to reinforced grass turf. Access to each well location from the existing path will also be cleared and reinforced with reinforced grass turf as necessary.

3.2.5 Stormwater Management System

A stormwater management system will be required to mitigate stormwater runoff from the additional impervious areas created for the preferred action alternative, which includes the treatment plant, parking area, and access roads. Each wellhead pad is about 100 sf, for a total new impervious area of about 1670 sf. Stormwater management of traditional site development areas (building and asphalt) will include non-rooftop disconnects (filter strips), bioretention, grass swales, and a storm sewer system that will discharge to a swale located between the DRA and Taxiway T. This discharge swale is part of the existing MTN stormwater management system. The access roads to the extraction wells will themselves provide stormwater management via the reinforced grass turf. Stormwater management for the preferred action alternative has also been designed per MAA design standards so as to not be a wildlife attractant pursuant to FAA Advisory Circular (AC) 150/3200-33B.

3.2.6 Utility Installation

Utilities including water, electric, and communication will be installed via open trench along Lynbrook Road and the DRA access road to the treatment plant (Figure 3–1). The maximum length of new trenching is 4,000 linear feet (lf). Utility installation will involve tapping into existing utilities, open cut trenching, and restoration of the surfaces. Multiple trenches will be required in existing areas because separation of some utilities is required, and because tapping will be within existing asphalt roads or within 10 feet of either side of the roads. Utilities will be installed under the improved road in the DRA area, which will be 20 feet wide. In addition, the HDPE piping and electrical conduits from the groundwater extraction wells and the treatment facility, which will be installed under or adjacent to the reinforced grass turf access roads, will be installed in trenching extending about 1,200 lf. Any construction work along the access road where the bald eagle nest is located will be conducted outside of the nesting season.

3.2.7 Initial Construction and Overall Facility Operations, Traffic, Transportation

Facility construction will use standard practices and will follow FAA/MAA plans for site development including those defined in the Airport Zoning Permit (MAA-010), Notice of Construction or Alteration (FAA Form 7460-1), and MAA Trenching and Excavation Permit to be submitted for approval prior to construction. Facility operation will follow the process

described in Section 3.2.2, and the treatment facility will operate continuously using a small (two-to four-person) staff, with the exception of brief shut downs for scheduled maintenance activities. All construction and operational activities will follow approved SPCC, NFPA, and NPDES plans for chemical containment and water discharges. In addition, construction and operations will comply with the requirements of any necessary state and federal air permits.

Vehicles will enter the DRA through Maryland Air National Guard (MDANG) via existing roads. The USFWS Bald Eagle Coordinator of the Chesapeake Bay Field Office commented on the Draft EA that the expected average vehicle traffic of 10 to 15 trucks per day during construction may constitute harassment (take) of the existing bald eagle nest site located along the preferred access road as depicted in Figure 3-1 (see Appendix C). Therefore, to avoid/minimize potential impacts on the bald eagle nest site, vehicle traffic will be rerouted over 600 feet to the west of the eagle nest as described above in Section 3.2.4 and as depicted in Figure 3-1.

Vehicle use and frequency at DRA during facility operation is expected to be as follows:

- four to five standard personal vehicles or work trucks per day
- FedEx/United Parcel Service type delivery trucks twice a week
- medium-sized chemical delivery and carbon change-out trucks thrice a month
- drill rigs for well redevelopment once a quarter (includes access to wells)
- provisions for emergency vehicle access (e.g., fire trucks)

3.3 ALTERNATIVE 2 – NO ACTION

The no-action alternative would not address groundwater migration in any way. No facilities would be constructed, the current migration of groundwater contamination towards Frog Mortar Creek will remain as is, and the concentrations of COC in Frog Mortar Creek surface water that led to the MDE water contact advisory would not be mitigated.

Based on the evaluation of action alternatives conducted as part of the 2012 Groundwater plume FS, the alternatives for the project that are being analyzed further under this NEPA analysis are limited to the Preferred Action and No Action alternatives as described above.

For completeness, the following sections provide an overview/summary of the evaluations conducted during the Groundwater plume FS and the treatment building location review, and the rationale for selecting the Preferred Action Alternative.

3.4 EVALUATION OF ACTION ALTERNATIVES CONDUCTED AS PART OF THE GROUNDWATER PLUME FS

Details of the comparison of action alternatives can be found in the Dump Road Area groundwater feasibility study in Appendix E; however, the following provides a summary of the findings and determination from the Groundwater plume FS.

The Groundwater plume FS evaluated five strategies/technologies (action alternatives) for limiting lateral migration of contaminated groundwater from the DRA to Frog Mortar Creek. These included:

Alternative G-2 **—** hydraulic control by extraction, *ex situ* treatment of groundwater, discharge to publicly owned treatment works/surface water, monitoring, and land use controls

Alternative G-3 **—** hydraulic control by extraction, *ex situ* treatment of groundwater, reinjection of groundwater, discharge to publicly owned treatment works/surface water, monitoring, and land use controls

Alternative G-4 **—** hydraulic control by extraction in high concentration areas, *ex situ* treatment of groundwater, reinjection of groundwater, discharge to publicly owned treatment works/surface water monitoring, and land use controls

Alternative G-5 **—** hydraulic control by extraction, *ex situ* treatment of groundwater, *in situ* bioremediation of high concentration areas, discharge to publicly owned treatment works/surface water, monitoring, and land use controls

Alternative G-6 **—** installation of a zero-valent iron permeable reactive barrier (PRB), monitoring, and land use controls

Alternative G-2 was developed as a base case with hydraulic control of the plume only. Groundwater contaminants upgradient of the extraction wells would eventually flow to the

extraction wells, but the design did not incorporate provisions that could have been used to accelerate groundwater cleanup.

Alternative G-3 was an enhanced version of Alternative G-2, in that some of the treated groundwater could, during future operations, would have been amended with an electron-donor compound and then reinjected upgradient of areas of the site containing high COC concentrations to promote biological remediation. The treatment system in this alternative was sized for a larger flow rate to address the potential for flexibility in future operations. Alternative G-4 was a more aggressive extraction and treatment approach that included extraction, treatment of highly contaminated groundwater, and reinjection of treated groundwater (with amendments to promote biological activity). Treating additional groundwater would reduce the time required to restore groundwater quality.

Alternative G-5 was similar to Alternative G-4 in that highly contaminated groundwater would be treated. In Alternative G-5, highly contaminated groundwater in the High Concentration Area HCAs would be treated *in situ* by enhanced bioremediation to reduce the time to restore groundwater quality, but extracted groundwater would have not been reinjected. The treatment system in this alternative was also sized for a larger flow rate to permit flexibility in future operations.

Alternative G-6 proposed using a PRB for passive treatment instead of a groundwater extraction and treatment system. Specialized construction equipment and techniques would be utilized to excavate a trench to depths as deep as 90 feet below grade, and then the trench would be filled with a mixture of reactive material that could passively treat COCs in-situ.

A detailed evaluation and comparison of each of the above alternatives was conducted with respect to the following standardized evaluation criteria set forth in USEPA's *National Oil and Hazardous Substances Pollution Contingency Plan* (NCP) [40 CFR, Part 300]: (1) Overall Protection of Human Health and the Environment; (2) Compliance with Applicable, or Relevant and Appropriate Requirements (ARARs); (3) Long-Term Effectiveness and Permanence; (4) Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment; (5) Short-Term Effectiveness; (6) Implementability; (7) Sustainability; and (8) Cost. The following is a summary of these criteria:

(1) Protection of Human Health and the Environment - remedial alternatives were assessed for adequate protection of human health and the environment, in both the short and long term, from unacceptable risks posed by hazardous substances or contaminants at the site. This is accomplished by eliminating, reducing, or controlling exposure to contaminant levels exceeding remediation goals. Overall protection draws on the assessments pursuant to other evaluation criteria, especially long-term effectiveness and permanence, short-term effectiveness, and compliance with ARARs.

(2) Compliance with Applicable, or Relevant and Appropriate Requirements – remedial alternatives were evaluated for compliance with all regulatory guidance and requirements with jurisdiction over the project. For the DRA project the applicable regulations fall under the Maryland Hazardous Substance Response Plan.

(3) Long-Term Effectiveness and Permanence - Alternatives were assessed for the long-term effectiveness and permanence they offer, along with the degree of certainty that the alternative would prove successful.

(4) Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment - The degree to which an alternative uses recycling or treatment to reduce the toxicity, mobility, or volume of contaminants was assessed, including how treatment addresses principal threats posed by the site.

(5) Short-Term Effectiveness - Short-term effects of each alternative was evaluated for short-term risks that might be posed to the community during implementation, potential effects on workers during remedial action and the effectiveness and reliability of protective measures, and potential environmental effects of the remedial action and the effectiveness and reliability of mitigation measures during implementation

(6) Implementability - The ease or difficulty of implementing each alternative was evaluated.

(7) Sustainability - The sustainability of each alternative was evaluated considering the following factors:

- *Environmental factors*, such as energy use and greenhouse gas emissions

- *Resource consumption*

- *Waste generation* as compared to recycling and reuse of materials. The percentage of contaminants destroyed rather than removed is also considered under this category. This component is evaluated as part of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) criteria, under the "Reduction of Toxicity, Mobility, or Volume through Treatment" criterion

- *Economic factors*, such as life cycle costs, and the development potential of the site after remediation. Costs are considered as part of the CERCLA criteria, under the "Cost" criterion

- *Social factors*, such as traffic and noise. These factors are also considered as part of the CERCLA criteria, under the "Short-Term Effectiveness" criterion

(8) Cost - Capital costs, including both direct and indirect costs, and annual operation and maintenance (O&M) costs were evaluated for each alternative.

Table 3-1 provides a summary of the comparison of each alternative that was conducted as part of the groundwater plume FS. Based on that comparison, Alternative G-3 (hydraulic control by extraction, *ex situ* treatment of groundwater, reinjection of groundwater, discharge to publically-owned treatment works (POTW)/surface water, monitoring, and LUCs) was selected as the remedial action to address lateral migration of the groundwater contamination plume at the DRA Site. This alternative was found to meet the remedial action requirement in that it would provide hydraulic containment to limit migration of site COC to the surface water. It would also provide additional groundwater treatment capacity so that the groundwater extraction system can be expanded in the future, as a potential component to a future remedy or remedies to address contaminated groundwater and other media in the DRA.

This alternative is economical and provides both effective treatment of all COC and operational flexibility. Alternative G-3 is moderately sustainable, but this sustainability is comparable to the levels of Alternatives G-2, G-4, and G-5.

Alternative G-2 was not selected primarily because it offers too little flexibility for future operations if higher flow rates or extraction of groundwater from other areas is required. In addition, the overall time to meet PRGs under Alternative G-2 is the second-longest. Alternative G-6 was not selected because 1,4-dioxane, DRO, and GRO would not be affected and the level of treatment of metals is uncertain (although treatment of the COC associated with

the MDE water contact advisory has been well-proven). Alternative G-6 has the highest capital cost, and installation of the PRB to the required depth would be very difficult. Alternative G-6 would also likely cause the largest disturbance, requiring clearing and grading of several acres of the DRA during construction. Alternatives G-4 and G-5 were not selected because they require a commitment to a greater capital expenditure before the effects of the hydraulic barrier can be fully evaluated.

Alternatives G-4 and G-5 also include features such as additional extraction wells and injection wells that may need to be abandoned and re-installed as part of the soil and landfill waste remediation. Finally, after several years of Alternative G-3 system operation, components of Alternatives G-4 and/or G-5 could be optimally phased in using data and observations from the Alternative G-3 system operation and knowledge of the details of the final DRA remedy. Therefore, Alternative G-3 was selected to provide hydraulic containment and to allow for a phased approach to remediation of other parts of the DRA.

3.5 EVALUATION OF TREATMENT BUILDING LOCATIONS

Following the selection of Alternative G-3 as the optimal treatment strategy, an additional analysis evaluated the most suitable location for the treatment building. This evaluation is detailed in Appendix F. Building location options evaluated included locating the building off-site outside the DRA and airport property as well as three potential locations within the DRA. The three on-site locations evaluated included (a) constructing the facility near the boundary of the DRA on the MDANG leasehold, (b) locating the facility at the south end of the DRA, and (c) constructing the facility near the center of the DRA, near the groundwater extraction wells.

The evaluation compared each alternative by assessing the overall advantages and disadvantages of each option. Based on this evaluation it was determined that an off-site location for the treatment building outside the DRA would not be favorable. Disadvantages included a lack of available land parcels near the DRA portion of the airport, significant maintenance challenges due to piping runs that could approach two miles in length, the need to construct over large distances across public ways, and risks associated with piping contaminated groundwater across uncontaminated areas owned by other parties. Piping contaminated groundwater across uncontaminated areas could potentially introduce contamination off-site in the event of a leak.

Constructing the facility on-site near the boundary of the DRA on the MDANG leasehold was found to have the primary disadvantage of being on land currently under MDANG control. Locating the treatment building on MDANG leasehold would require modifying a federal lease between the United States government and MAA, and it is unknown how readily such a modification could be accomplished. MDANG also indicated the most suitable locations could also interfere with future MDANG operations and expansion.

Locating the treatment building at the south end of the DRA was found to have the primary disadvantage of being located in a wooded portion of the site. This would require tree clearing, which must be minimized for all work within the Chesapeake Bay Critical Area. Additionally, this option would require longer piping and utility trenches than would be required for a location closer to the center of the DRA.

Locating the facility near the center of the DRA was determined to be the most advantageous location for the treatment building. The advantages over the other two locations include shorter piping distances, the lack of need for a pumping station necessary for off-site locations, and the fact that minimal tree removal or other impacts to protected resources would be required as the proposed building location is in a currently cleared, upland area.

In addition, various alternatives for discharging the treated water were considered. These alternatives included (a) discharging to a POTW, (b) discharging to Frog Mortar Creek, (c) spray irrigation, and (d) reinjection.

Discharge to the local POTW was eliminated from consideration because of POTW capacity concerns. Discussions with Baltimore County Public Works, Engineering and Regulation Division, indicated that the County would allow discharge only as a last resort. A consent order is in place between the United States Environmental Protection Agency (USEPA) and Baltimore County that is intended to eliminate sanitary sewer overflows, primarily during wet weather. The consent order is still in force and is applicable to this project.

Two other discharge options considered were spray irrigation and reinjection. Spray irrigation of treated water was eliminated because it cannot be used during cooler weather (late fall, winter, and early spring), or approximately five months per year. Reinjection of treated groundwater in order to enhance the biodegradation of contaminants may be possible in the future. However, the

volume of reinjected water must be limited in order to capture the contaminant plume and maintain general groundwater flow.

The outfall discharge alternatives evaluated include discharging to either Frog Mortar Creek or to the existing stormwater outfall/drainage ditch. Direct discharge to a storm swale would impose more strict discharge criteria per Maryland stormwater management regulations (Code of Maryland Regulations [COMAR] 26.17.02) that may be beyond the technological limits of the treatment equipment. Moreover, the storm swale is already regulated through existing stormwater permits that are not suited to be amended for an industrial discharge. Therefore, the selected treatment plant design includes a treated water discharge to Frog Mortar Creek, which would be regulated by a National Pollutant Discharge Elimination System (NPDES) permit.

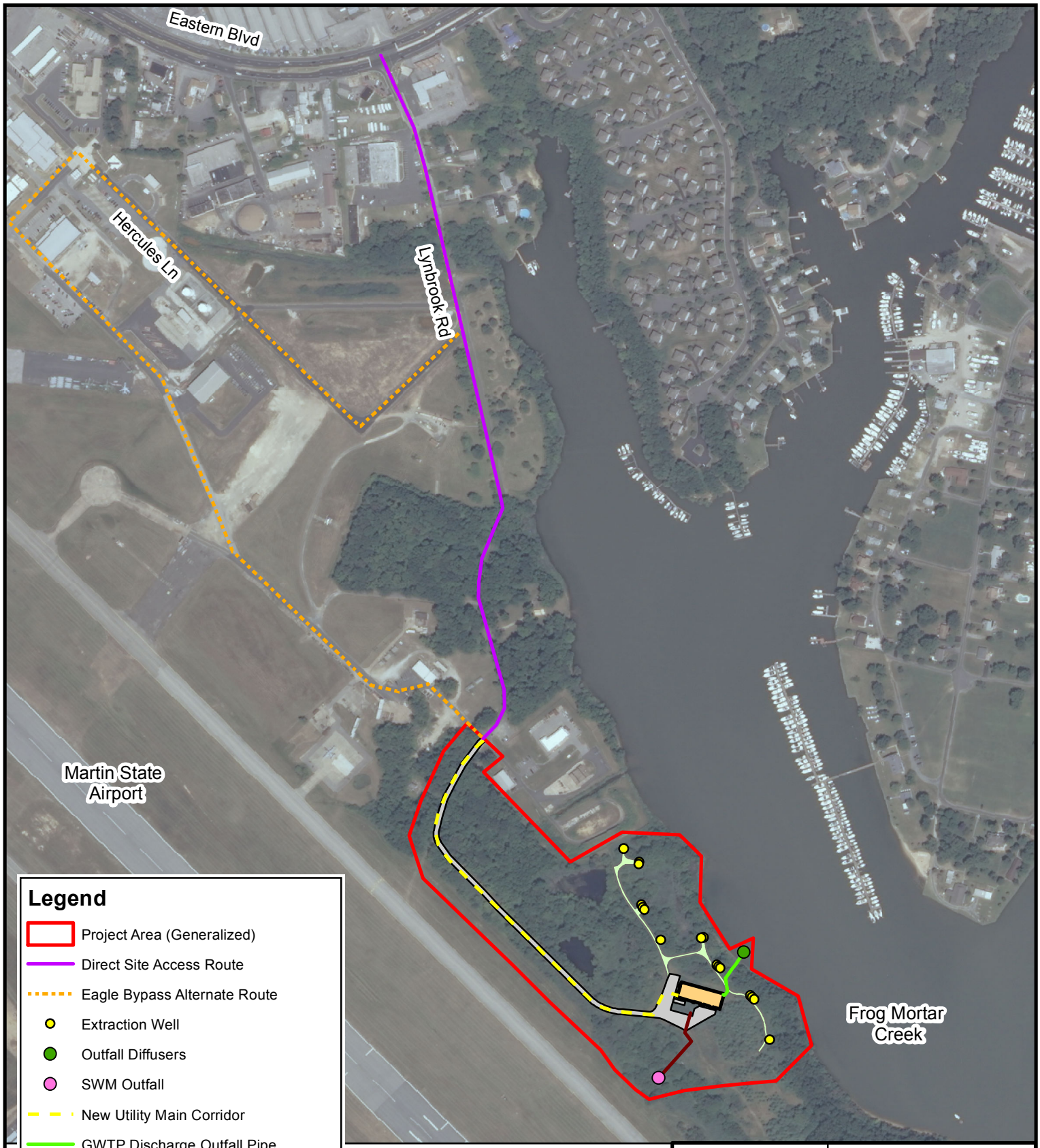
The aforementioned studies led to the conclusion that the alternate strategies/technologies for limiting lateral migration of contaminated groundwater into Frog Mortar Creek and alternate building site locations are not feasible or reasonable alternatives, or are less effective than the Preferred Action Alternative. Although the alternatives considered throughout the screening process (and eliminated prior to this EA) would likely accomplish, at least in part, the goal of restricting off-site migration of the groundwater contamination plume, the Preferred Action Alternative more fully meets all designated criteria. Therefore, the Preferred Action Alternative and the No Action Alternative are further evaluated in Sections 4 and 5 of this document.

Table 3-1 provides a summary of the preliminary analysis of remediation strategies, including treatment facility location and configuration options.

Table 3–1

Summary of Preliminary Alternative Development and Analysis
Dump Road Area, Martin State Airport

Evaluation Criterion	Alternative G-1: No Action	Alternative G-2: Hydraulic Control by Extraction, *Ex Situ* Treatment of Groundwater, Discharge to Publicly Owned Treatment Works / Surface Water, Monitoring, and Land Use Controls	Alternative G-3: Hydraulic Control by Extraction, *Ex Situ* Treatment of Groundwater, Re-injection of Groundwater, Discharge to Publicly Owned Treatment Works / Surface Water, Monitoring, and Land Use Controls	Alternative G-4: Hydraulic Control by Extraction, Extraction of High Concentration Areas, *Ex Situ* Treatment of Groundwater, Re-injection of Groundwater, Discharge to Publicly Owned Treatment Works / Surface Water, Monitoring, and Land Use Controls	Alternative G-5: Hydraulic Control by Extraction, Ex-Situ Treatment of Groundwater, *In Situ* Bioremediation of High Concentration Areas, Discharge to Publicly Owned Treatment Works / Surface Water, Monitoring, and Land Use Controls	Alternative G-6: Zero-Valent Iron Permeable Reactive Barrier, Monitoring, and Land Use Controls
Implementability	Technical and administrative implementation would be extremely simple because there would be no action to implement.	Easy to implement extraction, treatment, and monitoring. Less difficult to implement than Alternatives G-3 through G-6. Land use controls (LUCs) would be relatively easy to develop and implement. Permit for discharge to POTW still needs to be negotiated. Use of property may be affected by extraction wells.	Easy to implement extraction, treatment, injection, and monitoring. More difficult to implement than Alternative G-2. Less difficult to implement than Alternatives G-4 through G-6. LUCs would be relatively easy to develop and implement. Permit for discharge to POTW still needs to be negotiated. Use of property may be affected by extraction and injection wells.	Easy to implement extraction, treatment, injection, and monitoring. More difficult to implement than Alternatives G-2 and G-3. Less difficult to implement than Alternatives G-5 and G-6. LUCs would be relatively easy to develop and implement. Permit for discharge to POTW still needs to be negotiated. Use of property may be affected by extraction, HCA, and injection wells.	Easy to implement extraction, treatment, injection, in-situ bioremediation, and monitoring. More difficult to implement than Alternatives G-2, G-3, and G-4. Less difficult to implement than Alternative G-6. LUCs would be relatively easy to develop and implement. Permit for discharge to POTW still needs to be negotiated. Use of property may be affected by extraction, in-situ bioremediation of HCA, and injection wells.	Difficult to install deep PRBs, but monitoring is easy to implement. Most difficult alternative. Bench-scale treatability testing would be required. LUCs would be relatively easy to develop and implement. Use of property may be affected by PRB. Management of excavated soil as hazardous waste requires Resource Conservation, Compensation, and Recovery Act (RCRA) treatment, storage, and disposal facility (TSDF) permit. Corrective action may be triggered.
Sustainability	Would be highly sustainable. No energy or resources consumed. No greenhouse gas (GHG) or wastes generated. No traffic or noise. Site development would be limited by the contaminated groundwater.	Would be moderately sustainable. Consumes energy and resources, and generates GHG and wastes. Slight increase in traffic and noise. More sustainable than G-3, G-4, and G-5.	Would be moderately sustainable. Consumes energy and resources, and generates GHG and wastes. Slight increase in traffic and noise. Less sustainable than G-2 and G-5. More sustainable than G-4.	Would be moderately sustainable. Consumes energy and resources, and generates GHG and wastes. Slight increase in traffic and noise. Less sustainable than G-2, G-3, and G-5.	Would be moderately sustainable. Consumes energy and resources, and generates GHG and wastes. Slight increase in traffic and noise. Less sustainable than G-2. More sustainable than G-3 and G-4.	Would be moderately to highly sustainable. Consumes energy and resources, and generates GHG and wastes during PRB installation. Slight increase in traffic and noise during construction periods.
Costs: Capital NPW of Annual Costs NPW Current Value	$0 $0 $0 $0	$12,000,000 $8,200,000 (30-Year) $20,200,000 (30-Year) $37,000,000	$12,900,000 $8,600,000 (30-Year) $21,500,000 (30-Year) $38,700,000	$13,100,000 $11,700,000 (30-Year) $24,800,000 (30-Year) $46,900,000	$14,000,000 $8,800,000 (30-Year) $22,800,000 (30-Year) $40,000,000	$13,300,000 $5,700,000 (30-Year) $19,000,000 (30-Year) $33,500,000



Note: the project area shown is generalized. The limit of disturbance is limited to the features shown within the project area.

MARTIN STATE AIRPORT

Environmental Assessment for Groundwater Remediation at the Dump Road Area

PROJECT OVERVIEW

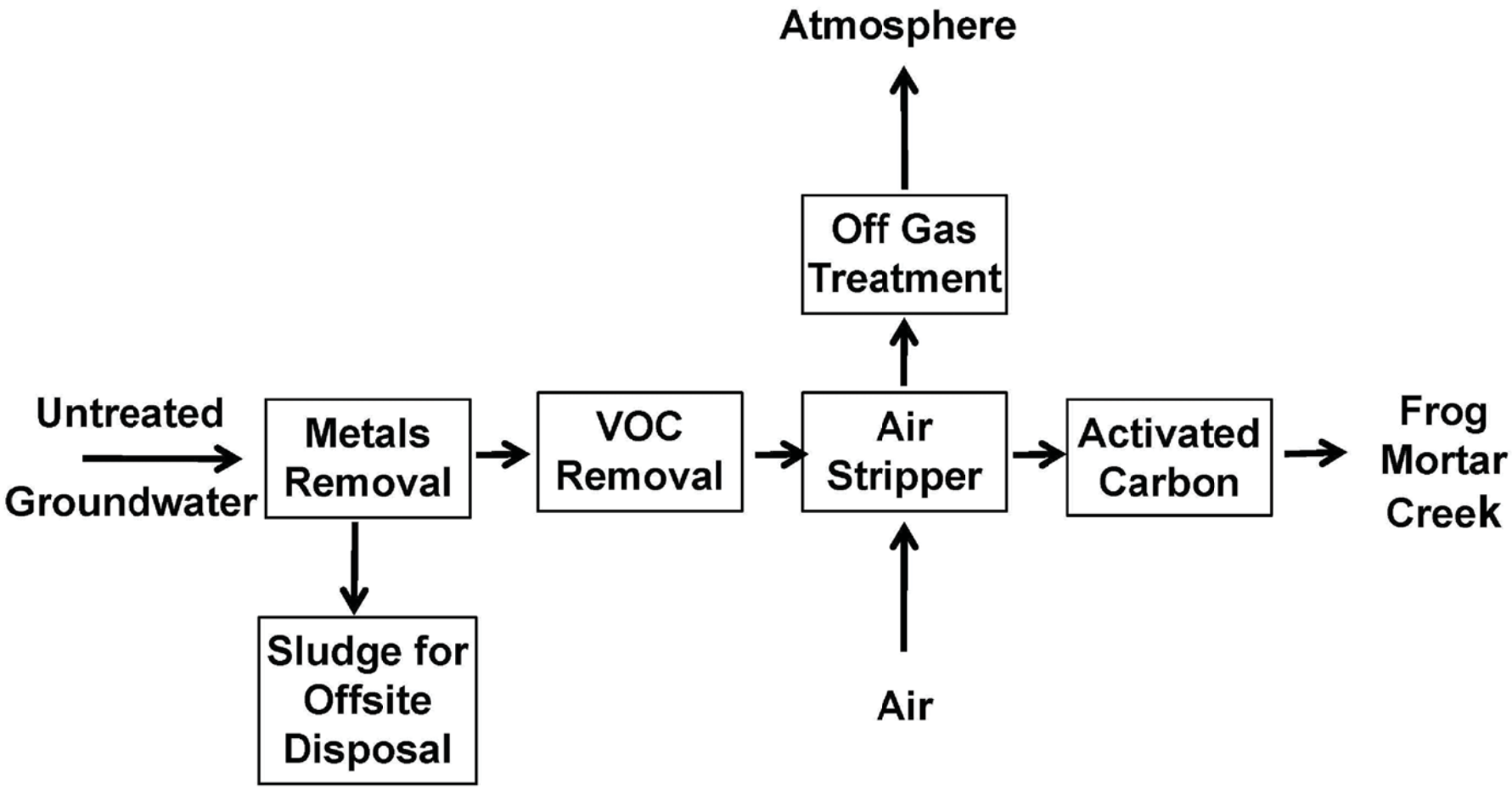
TETRA TECH

SCALE: AS SHOWN

FIGURE: 3-1

Map Document: (S:\03-Projects\Commercial\LMC\103IP2599 Task 13 (permitting)-DRA-GWTP\NEPA EA\DWG\Figure_3-1.mxd)
12/4/2014 5:59:31 PM


MDANG
SWM Areas
EW-1S
EW-3S
EW-2I
EW-4D
EW-6I
EW-5S
Frog Mortar Creek
EW-7D
EW-9I
EW-8S
GWTP Outfall Location
EW-10S
EW-12D
EW-11I
EW-13I
EW-15S
EW-14D
GWTP
EW-16S
Taxiway Tango
SWM Outfall Location
N
W
E
S
0
100
200
400 Feet
Legend
Extraction Well
Groundwater Treatment Plant (GWTP)
Main Access Road and Parking Lot (Asphalt)
Well Access Road (Reinforced Turf or equal)
Stormwater Management Area (SWM)
Limit Of Disturbance (LOD)
MARTIN STATE AIRPORT
Environmental Assessment for Groundwater Remediation at the Dump Road Area
DUMP ROAD AREA LAYOUT
TETRA TECH
SCALE: AS SHOWN
FIGURE: 3-2



MARTIN STATE AIRPORT	*Environmental Assessment for Groundwater Remediation at the Dump Road Area*
TREATMENT PROCESS	
TETRA TECH	SCALE: AS SHOWN / FIGURE: 3-3

S:\03-Projects\Commercial\LMC\103IP2599 Task 13 (permitting)-DRA-GWTP\NEPA EA\DWG\ Figure 2-3.dwg

Section 4
Affected Environment

4.1 INTRODUCTION

This section identifies the existing resource values and uses near the Dump Road Area (DRA) that would be affected by the preferred action alternative and the no action alternative. The existing resource conditions presented here establish a resource baseline against which the effects of the alternatives are evaluated.

To provide a basis for evaluating existing conditions at the DRA, a study area was established. This study area encompasses the physical limits of disturbance of the preferred action alternative as described in Section 2.0, all of which is located within the DRA and adjacent Martin State Airport (MTN) property.

In accordance with *FAA Order 1050.1E,* the following 18 categories have been evaluated as part of the affected environment:

- Air quality
- Coastal resources
- Compatible land use
- Construction
- Section 4(f)
- Farmlands
- Fish, wildlife and plants
- Floodplains
- Hazardous materials, pollution prevention, and solid waste
- Historic, cultural, and archaeological resources
- Light emissions and visual effects energy supplies, natural resources, and sustainable design
- Noise
- Secondary (induced) impacts
- Socioeconomic impacts, environmental justice, and children's health and safety
- Water quality
- Wetlands
- Wild and scenic rivers

4.2 AIR QUALITY

This section contains summary information pertaining to existing air quality conditions in Baltimore County including the DRA and MTN. Information provided below includes a description of relevant air quality regulations, air quality standards, management agencies, and current air quality conditions in the project region.

4.2.1 Air Quality Regulations and Standards

To safeguard human health and environmental welfare against the harmful effects of outdoor air pollution, the United States Environmental Protection Agency (USEPA) has issued National Ambient Air Quality Standards (NAAQS) under the Clean Air Act (CAA) that create threshold levels for ambient (i.e. outdoor) air concentrations of six criteria air pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and sulfur dioxide (SO_2). While individual states have the prerogative to issue stronger standards than those listed in the CAA, Maryland has opted to retain the NAAQS.

4.2.2 Air Quality Management Agencies

The USEPA promulgates national clean air regulations and sets air NAAQS under the authority of the CAA. In Maryland, the responsibility of enforcing these regulations and ensuring that these standards are met falls upon the Maryland Department of Environment (MDE). Pursuant to this responsibility, the MDE prepares state-wide strategies and programs (called the State Implementation Plan [SIP]) to meet air quality goals and standards. The local metropolitan planning organization, the Baltimore Metropolitan Council (BMC), assists the MDE with SIP development and compliance with transportation conformity regulations for air quality

The Maryland Department of Transportation (MDOT) is involved in air quality management of Maryland's surface transportation facilities in coordination with the BMC and Federal Highway Administration (FHWA). The agencies also coordinate to develop transportation improvement plans (TIPs) and strategies that can be used to adhere to the transportation conformity rules. Finally, FAA is the primary agency involved in and responsible for ensuring that air quality impacts associated with proposed airport projects adhere to the reporting and disclosure requirements of NEPA and to the CAA general conformity rule.

4.2.3 Attainment/Non-attainment Designations

According to the USEPA Green Book website (USEPA, 2013a), last updated February 7, 2013, Baltimore County is currently in attainment for CO, NO_2, Pb, SO_2 and PM_{10}, but has non-attainment status for the ozone 1-hour standard, moderate non-attainment for the ozone 8-hour standard, and non-attainment for the $PM_{2.5}$ 24-hour standard. National, which are the same as Maryland, ambient air quality standards are listed in Table 4-1.

4.3 COASTAL RESOURCES AND COASTAL ZONE MANAGEMENT PROGRAM

FAA is required to comply with regulations set forth in the Coastal Zone Management Act of 1972 (CZMA), as amended by the 1996 Coastal Zone Protection Act through Public Law (PL) 104-105. CZMA requires that each state with coastal boundaries establish a Coastal Zone Management Program (CZMP). In Maryland, the CZMP is administered by the MDE and Maryland Department of Natural Resources (MDNR). These governing agencies are charged with identifying land uses that (individually or cumulatively) may cause or contribute significantly to the degradation of coastal waters, especially where there is a failure to attain or maintain applicable water quality standards or protect designated uses. Maryland's CZMP identifies all of Baltimore County as being within Maryland's coastal zone.

Coastal Barriers – The DRA project area is located in the upper Chesapeake Bay where no barrier islands are found.

4.4 COMPATIBLE LAND USE

4.4.1 Existing Land Use

The DRA is located entirely within the MTN 775-acre property in Middle River, Baltimore County, Maryland. MTN is approximately eight miles east of the city of Baltimore. The DRA is in the southeastern portion of the airport property and is bounded on the west by Taxiway T, on the north by the Maryland Air National Guard (MDANG) leasehold, and on the east and south by Frog Mortar Creek. The proposed utility corridor will be along Lynbrook Road from Eastern Boulevard south to the DRA, and will be bounded on both sides by portions of the airport property and MDANG leasehold. The DRA and utility corridor encompass approximately 25 acres.

Baltimore County describes the land use in the DRA and the airport property as commercial (Figure 4-1). The airport property includes all runways, taxiways, safety areas, aircraft parking aprons, navigational and lighting aids, utilities, service roads, support facilities, maintenance facilities, and lands within the MDANG leasehold.

This discussion of surrounding land use focuses on lands and parcels immediately adjacent to and contiguous with the DRA, including the airport property located north, west, and south of the DRA, and the off-airport lands to the east bordering Frog Mortar Creek. The lands located to the north, west, and south of the DRA, as well as the DRA land itself, are owned by the Maryland Aviation Administration (MAA) and are part of MTN.

The area north of DRA is part of the MDANG leasehold, which consists of several MDANG buildings/facilities, access roads and parking areas, mowed areas, and small woodland or forest stands. The MDANG munitions facility is immediately north of and adjacent to the DRA. The main MTN runway and Taxiway T are west of the DRA. Navigational and lighting aids are present in mowed areas. The airport compass rose, a woodland, and tidal wetlands associated with Frog Mortar Creek are south of the DRA.

Land use designations for off-airport areas east of the DRA (across Frog Mortar Creek) are designated low and medium density residential by Baltimore County; single-family homes and a few commercial establishments are located in this area. The Baltimore County 2020 Master Plan indicates that the county plans to encourage mixed use development east of the airport along Frog Mortar Creek, while protecting sensitive natural and tidal areas (Baltimore County Planning and Zoning, 2010).

4.4.2 Hazardous Wildlife Attractants

FAA's Advisory Circular 150/5200-33B, *Hazardous Wildlife Attractants on or Near Airports* (FAA, 2007), provides guidance on certain land uses on/near airports, including recommendations to discourage the placement of new stormwater management facilities, wetlands, streams, or forest that have the potential to attract hazardous wildlife on/near public-use airports. As part of this advisory circular, FAA recommends that the design of water management facilities includes a maximum 48-hour detention period, and that no plant species known to attract potentially hazardous wildlife are used on the airport. The circular also states

that airport operators should develop a wildlife hazard assessment (WHA) and wildlife hazard management plan (WHMP) to protect aviation safety. MAA has engaged the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Services, Wildlife Services (USDA-WS) to comply with this advisory circular.

4.5 UNITED STATES DEPARTMENT OF TRANSPORTATION (USDOT) SECTION 4(F) RESOURCES

Section 4(f) lands are publicly owned public parks, recreation lands, or wildlife and waterfowl refuges located adjacent to the existing highways and roads. Pursuant to the Department of Transportation Act [49 United States Code [USC] §303(c)], the Secretary of Transportation will not approve any program or project that requires the use of Section 4(f) lands or the use of land from an historic site of national, state, or local significance. If there is no feasible and prudent alternative to the use of land or program, the project must include all possible planning to minimize harm resulting from its use. These policies are widely known as "Section 4(f)" matters.

No Section 4(f) properties are located within the DRA project area, and the closest Section 4(f) properties (Chesapeake Village Park and Kingston Point Park) are located over one mile west of the DRA.

4.6 FARMLANDS

The Farmland Protection Policy Act (FPPA), Public Law 97-98, 7 USC 4201-4209, was enacted as part of the Agriculture and Food Act of 1981. FPPA's intent is to minimize the extent to which federal programs contribute to unnecessary and irreversible conversion of farmland to nonagricultural uses. Important farmlands include all pasturelands, croplands, and forestlands that are considered to be prime, unique, and statewide- or locally- important lands. The USDA's Natural Resource Conservation Service (NRCS) has defined prime farmland as land that has chemical and physical characteristics that support food production, feed, and/or fiber production. Statewide important soils are Maryland's most productive soils for agriculture and forestry. Unique soils are classified as those that are unique to the region and are used for specific agriculture or industrial purposes. FPPA does not apply to land that is already committed to urban development, regardless of whether it has been classified as prime or statewide- important farmland by the NRCS. A review of the Baltimore County soil data via the NRCS Web Soil Survey did not identify any prime farmland soils, unique soils, or statewide- or locally-important

soils in the vicinity of the proposed action (Figure 4-2). MTN, including the DRA, is predominately underlain with Mattapex-urban and Lenoir-urban land complexes; these soils are not considered important farmland soils. Additionally, no active farmland exists on or near MTN.

4.7 FISH, WILDLIFE, AND PLANTS

4.7.1 Habitat Types in the Dump Road Area

A visual survey of field conditions conducted by Tetra Tech in 2013 found that the majority of the DRA (approximately 90%) consists of early successional forest that has recently colonized the site following large-scale soil disturbance (i.e., associated with fill material historically placed in the DRA) in the disposal area. Much of the remaining area in the DRA contains open stands of common reed (*Phragmites australis*). Other habitats include small areas of scrub-shrub wetlands, two man-made ponds, and tidal shoreline and open tidal waters associated with adjacent Frog Mortar Creek. Given the disturbed nature of the site the DRA appears to support plant and wildlife species common to the region. However, the waters of adjacent Frog Mortar Creek may provide anadramous fish spawning habitat.

4.7.2 Habitat Protection - Regulatory Context

Because the entire DRA is located within the Chesapeake Bay Critical Area, impacts to habitats are regulated by provisions in the Chesapeake Bay Protection Act (Natural Resources Articles 8-1801 and 8-1814). The Chesapeake Bay Critical Area Act was passed by the Maryland General Assembly in 1984 in response to the decline in the Chesapeake Bay natural resources. The Act required the 16 counties surrounding the bay to implement a land use and resource management program to mitigate the damaging impact of water pollution and the loss of wildlife habitat. The Maryland General Assembly designated all areas 1,000 feet landward from the tidal waters and wetlands of the Chesapeake Bay and its tributaries as the Chesapeake Bay Critical Area (CBCA); in addition, the area 100 feet landward of the Critical Area that serves as a habitat protection area was designated as the Critical Area Buffer.

In 1986, the State of Maryland approved the final regulation and guidelines (Subtitle 8-1801-1816) establishing the Critical Area Commission (CAC), and promulgated criteria for compliance with the CBCA Act (COMAR 14.15). The CBCA Act provides the CAC authority to

regulate activities within the critical area so that water quality and habitats in the bay area improve. Subtitle 1 of the CBCA Act requires local governments within the CBCA to develop and implement a management plan to protect critical area forests, tidal waters, riparian habitat, and wetlands. Subtitle 2 of the Act provides similar compliance criteria, but for state projects on state-owned land, and requires direct coordination with and approval by CAC. As such, projects at MTN (including the proposed action) must comply with Subtitle 2.

Land uses for areas within the CBCA are classified into three categories. Regulations associated with development for each category vary according to land use, as follows:

Intensely Developed Areas (IDA) are areas where residential, commercial, institutional, and industrial development predominate. Public water and sewer serve the area. CBCA regulations (COMAR 27.02.05.03) state that development required within the CBCA should be directed to IDA whenever possible. Development in an IDA must comply with the 10% rule for stormwater that states that post-construction runoff must be 10% lower than pre-construction values.

Limited Development Areas (LDA) are areas currently developed at low to moderate density. The quality of runoff in these areas is not substantially impaired. Public water and/or sewer serve the area.

Resource Conservation Areas (RCA) are areas characterized by wetlands, forests, abandoned fields, agriculture, forestry, fisheries, and residential density of less than one unit per five acres.

The entire DRA project area is located within the CBCA boundary classified as IDA.

The CBCA Act also requires establishing a buffer of natural vegetation landward from the mean high water line of tidal waters, or from the edge of tidal wetlands and tributary streams. This buffer must be at least 100 feet landward, and may be expanded where it is contiguous with protected features or resources such as steep slopes and wetlands. No disturbance or new development within the buffer is authorized unless it is free of impacts to water quality, plants, fish, or wildlife habitats, including the clearance of forested areas. The only exception allowed is for access of water-dependent facilities.

In addition to the 100-foot buffer, the CBCA Act regulates and protects certain habitat types within the Critical Area. These areas are called habitat protection areas (HPAs) and include:

- 100-foot tidal buffer (as described above)
- non-tidal wetlands
- state and federally listed species habitat
- anadromous fish spawning areas
- steep slopes
- significant plant and wildlife habitat
    - colonial waterbird nesting areas
    - aquatic areas of historic waterfowl concentrations
    - riparian forests
    - large forest tracts (50 to 100 acres or more) and forest interior dwelling species (FIDS) habitat

4.7.3 Protected Habitats in the DRA – Habitat Protection Areas

Existing HPAs, including the 100-foot buffer, in the DRA have been either delineated in the field (wetlands and streams) or plotted using geo-referenced software (the 100-foot tidal buffer and steep slopes). As depicted in Figure 4-3**,** HPAs that occur in the DRA include a 100-foot tidal buffer, several non-tidal wetlands, and areas of steep slopes.

4.7.4 Forest Resources in the DRA

Forest resources were identified qualitatively in the field and by reviewing aerial photographs and using geographic information system (GIS) to map their spatial extent within the DRA. As stated in Section 4.7.1, approximately 90% of the 25-acre DRA project area is forested (see Figure 4-3). These forest areas are primarily young, early successional stands that have recently regenerated following large-scale soil disturbance (i.e., associated with fill material historically placed in the DRA) in the disposal area. Forest stands also contain a relatively large percentage of non-native and invasive vegetation, again due to previous disturbance at the site. An approximately two-acre stand of planted white pine trees are located near the center of the project area. None of the forested areas in the DRA meet criteria as being large interior forest tracts (50 to 100 acres) or areas that would support breeding FIDS species per critical area guidelines.

4.7.5 Threatened and Endangered Species

Section 7(c) of the Endangered Species Act of 1973 (16 USC 1531 et seq.) requires the identification of rare, threatened, and endangered (RTE) species of flora and fauna and their critical habitats, so that adverse impacts to these species can be avoided. Consultation with the United States Fish and Wildlife Service (USFWS) and MDNR Wildlife Heritage Division was conducted to determine the potential for RTE species to occur within or near the study area (see Appendix C).

In their letter dated May 9, 2013, the MDNR Wildlife and Heritage Service indicated that there were no records of state listed species in the project area, and further stated that they therefore have "no specific comments or requirements pertaining to protection measures for the project." In a letter dated June 12, 2013, the USFWS stated that "except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist in the project area. Therefore, no Biological Assessment or further Section 7(c) consultation with the U.S. Fish and Wildlife Service is required."

In a letter dated June 3, 2013, the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) indicated that while there are currently no records of federally listed aquatic species under NMFS jurisdiction in Frog Mortar Creek or the associated tidal river communities abutting the DRA, the endangered shortnose sturgeon (*Acipenser brevirostrum*) and all five distinct population segments of the endangered Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) are known to occur in the Maryland portion of the Chesapeake Bay. In addition, four sea turtle species, including leatherback (*Dermochelys coriacea*), Kemp's ridley (*Lepidochelys kempi*), loggerhead (*Caretta caretta*), and green (*Chelonia mydas*) sea turtles, are also known to occur within the Chesapeake Bay, particularly during the spring, summer, and fall when water temperatures are warm. A brief discussion of these species follows:

- Atlantic sturgeon are currently known to spawn in the James River tributary of Chesapeake Bay (NMFS, 1998). They have also historically spawned in the Potomac River and possibly other nearby tributary rivers. Atlantic sturgeon prefers to spawn in deeper portions of large, clean rivers between the salt front (the location of where salt water and fresh water converge) and the Fall Line; however, when not spawning they can be found throughout the estuary and in coastal waters. Because suitable habitat for this species in Frog Mortar Creek is generally lacking, it is unlikely that Atlantic sturgeon use

the creek during spawning; however, transient or foraging individuals could occur in the general vicinity.

- Shortnose sturgeon are currently known to spawn in the Potomac River and estuarine area of the Chesapeake Bay (United States Geological Survey [USGS], 2007). This species has also been recorded in many other river systems on the east coast. Like Atlantic sturgeon, the shortnose sturgeon prefers to spawn in large, clean rivers; however, they can be found throughout the estuary and in coastal waters when not spawning. Because suitable habitat for this species in Frog Mortar Creek is generally lacking, it is unlikely that shortnose sturgeon use the creek during spawning; however, transient or foraging individuals could occur in the general vicinity.

- Sea turtles have been found in the Chesapeake Bay, and occur primarily during times when water temperatures are warm in the spring, summer, or fall. Occurrences of the four sea turtle species have mostly been recorded in the lower bay, with occurrences north of the Potomac River being considered rare (MDNR, 2011).

4.7.6 Bald Eagle

The Bald and Golden Eagle Protection Act (BGEPA) of 1940 (16 U.S.C. 668-668d, 54 Stat. 250) provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession and commerce of such birds. The term "taking" refers to both direct killing of the birds, as well as causing disturbance to nest locations and other important habitats and aspects of their life history. The USFWS further defines "disturb" as "agitating or bothering an eagle to a degree that causes, or is likely to cause, injury, or either a decrease in productivity or nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (50 CFR 22.3). If a project may cause disturbance to a bald eagle, the National Bald Eagle Management Guidelines must be consulted and followed to avoid a take, if possible. Based on the National Bald Eagle Management Guidelines, activities that may cause disturbance are typically those that occur within 660 feet of a bald eagle nest (USFWS, 2011).

In 2009, the USFWS promulgated a final rule on two new permit regulations, 50 CFR 22.26 and 50 CFR 22.27, that specifically authorize the take of eagles and eagle nests in certain situations under BGEPA. The permits authorize limited, non-purposeful take of bald and golden eagles, thus authorizing individuals, companies, government agencies (including tribal governments), and other organizations to disturb or otherwise take eagles in the course of conducting lawful activities. Applicants for permits under 50 CFR 22.26 (non-purposeful eagle take) are required to avoid and minimize the take of eagles to the maximum degree practicable. Therefore, a permit

can be issued for taking eagles when the take is associated with, but not the purpose of, an activity, and cannot practicably be avoided.

A single bald eagle nest occurs along the shoreline of Frog Mortar Creek at MTN, approximately 1,500 feet north of the DRA. The nest, which is located in a large tree near the edge of Frog Mortar Creek, has been used by a mating pair for several years (Koppie, 2013). The existing/proposed access road (Lynbrook Road) passes by and is 80 feet from the nest at its closest point. However, during the nesting season vehicle traffic will be rerouted over 600 feet to the west of the eagle nest through the MDANG facility.

4.7.7 Essential Fish Habitat

Essential fish habitat (EFH) is defined under the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) (Public Law [PL] 94-265), as amended by the Sustainable Fisheries Act (SFA) of 1996 (PL 104-267), as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The SFA requires that EFH be identified for species actively managed under federal fishery management plans (FMPs). This includes species managed by the eight regional fishery management councils (FMCs) established under the MSFCMA, and those managed by NMFS under FMPs developed by the Secretary of Commerce. NOAA's NMFS Guide to Essential Fish Habitat Designations in the Northeastern United States (NMFS, 1999) and the agency's associated website (http://www.nero.noaa.gov/ro/doc/webintro.html) provide a geographic guide to "the species and life stages of fish, shellfish, and mollusks for which EFH has been designated in a particular area" (NMFS, 2013).

EFH designations emphasize the importance of habitat protection to healthy fisheries and serve to protect and conserve the habitat of marine, estuarine, and anadromous finfish; mollusks; and crustaceans. EFH includes both the water column (including its physical, chemical, and biological growth properties) and its underlying substrate (including sediment, hard bottom, and other submerged structures). Under the EFH definition, necessary habitat is the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem. EFH is designated for a species' complete life cycle, including spawning, feeding, and growth to maturity, and may be specific for each life stage (eggs, larvae, juvenile and adult). EFH designations are based on various levels of information available for a species' life stage

distribution, abundance, and habitat-productivity relationships. Information levels include: presence/absence (Level 1); habitat-related densities (Level 2); growth, reproduction, and survival rates within habitats (Level 3); and production rates by habitat types (Level 4). Several long-standing and comprehensive sources of information are available to develop EFH designations, including the NMFS bottom trawl survey (1963-97) conducted for NMFS Marine Resources Monitoring, Assessment, and Prediction (MARMAP).

EFH has been designated for the mainstem of the Chesapeake Bay for juvenile and adult life stages of windowpane flounder, bluefish, summer flounder, clearnose skate, little skate, winter skate, king mackerel, Spanish mackerel, cobia, and red drum (NMFS, 2010). The Chesapeake Bay has also been designated EFH for larval phase of summer flounder (*Paralichthys dentatus*), juvenile and adult stage of black sea bass (*Centropristis striata*), and the egg, larval, juvenile, and adult stages of the Atlantic butterfish (*Peprilus triacanthus*). The EFH description for each of these species follows:

Windowpane flounder (juvenile and adult) – bottom substrate of mud to fine-grained sand in depths from one to 100 meters and salinity from 5.5% to 36%

Bluefish (juvenile and adult) – waters of the mixing and seawater zone

Summer flounder (larval, juvenile, and adult) – salt water creeks, mudflats, and open bay estuaries of the mixing and seawater salinity zones

Skates (juvenile and adult) – bottom substrate of mud, sand, gravel in the estuarine zone

King mackerel, Spanish mackerel, and cobia (juvenile and adult) – seawater zones of sandy shoals, offshore bars, bays, and estuaries having submerged aquatic vegetation.

Red drum – juvenile EFH is shallow backwaters of the Chesapeake Bay, while adult EFH is somewhat deeper bay areas and oyster reefs; salinity is generally mixing to seawater with depth being less than 50 meters

Black sea bass (egg. larval, juvenile, and adult) – mixing and seawater salinity zones of all in shore estuaries

Atlantic butterfish (egg. larval, juvenile, and adult) – mixing and seawater salinity zones of all in-shore estuaries from one to 1,820 meters in depth

Based on the EFH descriptions for each of the above species, it appears that Frog Mortar Creek, including the portion with the DRA project area, may contain EFH for windowpane flounder, summer flounder, skates, red drum, black sea bass, and Atlantic butterfish. Essential Fish Habitat for these species includes shallow water areas of inshore estuaries and tidal creeks of low to moderate salinity, habitat that is found in Frog Mortar Creek. However, as stated above, EFH for king mackerel, Spanish mackerel, and cobia is limited to seawater zones of sandy shoals and offshore bars or estuaries with submerged aquatic vegetation. Because Frog Mortar Creek is a tidal creek located relatively far from areas with higher salinity levels it is unlikely to provide conditions suitable for EFH for these species.

4.8 FLOODPLAINS AND FLOODWAYS

Executive Order 11988 – Floodplain Management defines floodplains as the "lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum, the area subject to a one percent or greater chance of flooding in a given year." Order 11988 directs federal agencies to avoid (to the extent possible) adverse impacts associated with the occupancy and modification of flood plains, and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. Agencies are to take action to minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by floodplains. Maryland regulates construction activities within floodplains under COMAR 26.17.04 (Construction on Nontidal Waters and Floodplains). The Federal Emergency Management Agency (FEMA) has adopted the 100-year floodplain as the base flood for floodplain management. This is a flood that has a one (1) percent probability of occurring in any given year. Flood insurance rate maps (FIRM) show the floodplain areas and define those areas as "zones".

According to MDE's *Floodplain Management Plan, Five-Year Work Plan* (MDE, 2004), Maryland passed the Flood Control and Watershed Management Act (FCWMA) of 1976 to provide the foundation for watershed planning and flood management. Five goals were established: (1) reduction of existing flood hazards; (2) prevention of future flood hazards; (3) adequate emergency preparedness; (4) preservation of the environmental quality of watersheds;

and (5) reduction of economic and social losses. FCWMA also stated the need for better coordination among agencies that have flood hazard mitigation responsibilities, and mandated the preparation of local flood management plans and the development of a list of priority watersheds to be studied for the 100-year flood.

Under Executive Order 11988 and USDOT Order 5650.2 – Floodplain Management and Protection, before FAA takes any action that may encroach on a 100-year floodplain, they must find that there is no practicable alternative. Encroachment is defined as any action that would cause the 100-year water surface profile to rise by one foot or more.

Project Area Floodplains—State and federal properties in the state of Maryland are not mapped by FEMA; therefore, the national FEMA flood maps (FIRMs) for the Middle River area do not show floodplains at MTN. However, MDNR has indicated that MTN is located within the Middle River tidal floodplain. According to the Baltimore County Department of Public Works, the 100-year floodplain elevation for Middle River is approximately 9 feet msl. This same technique was applied to determine the location of the 500-year floodplain at MTN, using the 500-year elevation at approximately 12 feet msl (Figure 4-4).

4.9 HAZARDOUS MATERIALS

4.9.1 Definition and Policy

The statutory requirements for governing the handling and disposal of hazardous materials, chemicals, substances and wastes are vested in both federal and state law. As previously noted, Lockheed Martin is conducting the environmental activities which have resulted in the development of the proposed alternative under the statutory and regulatory authority of the State of Maryland. Although the actions are subject to oversight by the MDE, they also are subject to federal statutes.

The two primary federal statutes most relevant to implementation of the proposed alternative are the RCRA and CERCLA. Regulations for identifying and listing hazardous waste (40 CFR Part 261, Subpart C) define hazardous wastes (sometimes called “characteristic wastes”) as solid wastes that are ignitable, corrosive, reactive, or toxic. In addition, 40 CFR Part 261, Subpart D contains a list of solid wastes that USEPA has deemed hazardous (sometimes called “listed wastes”). CERCLA [42 USC &9601(14)] defines hazardous substances broadly:

- Hazardous wastes, hazardous air pollutants, and hazardous substances designated as such pursuant to the Clean Water Act (CWA) and the Toxic Substances Control Act (TSCA); and

- Elements, compounds, mixtures, solutions, or substances listed in 40 CFR Part 302 that pose substantial harm to human health or environmental resources.

Petroleum and natural gas substances and material are not classified as hazardous substances under CERCLA. RCRA generally focuses on the use, storage, and disposal of hazardous waste, while CERCLA focuses on management and remediation of media contaminated with hazardous substances. The DRA is not on the CERCLA National Priority List.

Maryland's primary statutory and regulatory authority governing the environmental activities associated with the DRA is the Controlled Hazardous Substance Act (Section 7-201 et seq., Environment Article, Annotated Code of Maryland, [1987]) and the Controlled Hazardous Substance Response Plan (Code of Maryland Regulations [COMAR] 26.14.). Section 7-201(l) of the Controlled Hazardous Substance Act defines a hazardous substance as:

- A hazardous substance under Section 101(14) of the federal act; or

- Any substance identified as a controlled hazardous substance by the Department in the Code of Maryland Regulations.

Section 7-222 of the Environment Article authorizes the MDE to conduct removal and remedial actions at sites where a release or threat of release of hazardous substances have occurred. The statute also authorizes the MDE to determine if the responsible party can conduct the work properly and in a timely manner.

The DRA site (identified by MDE as MD0304) also is on the State's Brownfield Master Inventory, formerly known as the State Master List, and the USEPA's CERCLIS database (identified as both MD7570025901 and MDD980918973). Since July 1, 1984, the MDE has been required by Section 7-223 of the Environment Article to publish a master list of all sites at which there is reason to believe, or MDE has been notified, that controlled hazardous substances may be present. The Maryland Department of the Environment has included Martin State Airport on this list since 1985.

When the USEPA entered into the 1997 (MOA with the State of Maryland, it acknowledged that the State's statutory and regulatory authorities described above were consistent with the relevant

federal statutes so that the responsibilities described in those statutes could be faithfully executed. Since that time, the USEPA has evaluated the viability of the MOA in light of Maryland's statutory authority to conduct hazardous substance cleanups as part of the CERCLA Section 128(a) State Response Grant. This evaluation is conducted annually in conjunction with Maryland's grant application.

4.9.2 Hazardous Materials Assessment

The primary objectives of this environmental assessment are to identify and evaluate sites, facilities, or properties where hazardous materials (including previous environmental contamination) could hinder or affect proposed projects. The existing facilities and land uses at MTN are typical of a standard airport: servicing and refueling of aircraft; aircraft deicing facilities; ground vehicle operations; a control tower and operations center; parking lots or garages; general aviation facilities; fire and rescue facilities; and aircraft maintenance facilities.

No active use, handling, storage or disposal of hazardous materials occurs within the DRA. Only previously disposed hazardous materials found at the site are considered for this assessment because the DRA is in a wooded "non-active" portion of the airport. Historical practices and activities in the project area consisted of the disposal of waste materials and chemicals associated with former aircraft manufacturing. Disposal of these materials has led to contamination of both soil and groundwater in the DRA, with the contamination appearing to migrate from groundwater into Frog Mortar Creek.

As stated in Section 1.2, soil and groundwater sampling and associated geophysical investigations within the DRA over the past two decades have identified waste material (and associated soil and groundwater contamination) over approximately 25 acres. These investigations are detailed in the remedial investigation report for this site (Tetra Tech, 2012a).

Soils at the site contain VOCs, semivolatile organic compounds, polychlorinated biphenyls, and metals. Groundwater at the DRA is currently impacted by elevated levels of VOCs, cVOCs, and heavy metals. Section 1.2 includes more detailed descriptions of the nature and extent of soil and groundwater contamination at the site. Because the hazardous materials at the site are associated with a former landfill, an inventory of hazardous materials and/or solid wastes cannot be made.

4.9.3 Solid Waste

Nonhazardous solid waste currently found within the DRA has not been evaluated or inventoried due to the nature of contamination at the site, but may include scrap, paper, aluminum, plastic, textiles, rubber, construction and demolition debris, and natural wood wastes. No facilities currently operate within the DRA, and no other solid wastes are currently generated.

4.10 HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Under Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (16 USC 470-470w-6), the FAA must take into account the effect any project may have on any property listed or eligible for listing in the National Registry of Historic Places (NRHP). In addition, the FAA must afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the project or the license or permit for the project. All this must be completed before approval of an airport layout plan (ALP) and issuance of a grant for (and funding of) proposed airport improvements.

The NHPA has established four basic criteria to evaluate properties for the NRHP:

Criteria A: properties associated with events that have made a significant contribution to the broad pattern of American history

Criteria B: properties associated with the lives of people who are significant in American history

Criteria C: properties that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction

Criteria D: properties that have yielded, or may be likely to yield, information important in prehistory or history

4.10.1 Area of Potential Effect

For aboveground historic structures, an area of potential effect (APE) is defined as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties" (36 CFR§ 800.16[d]). The APE includes potential

direct or indirect impacts to historic resources from project activities, such as acquisition of property, property easements, and/or visual and audible effects. Such changes may include [36 CFR § 800.5(a)(2)]:

- physical destruction, damage, or alteration of a property
- change of the property's character, use, or physical features within its setting that contribute to its historic significance
- introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features

Based on these factors, and the nature and location of the proposed remediation project, the APE associated with historic architectural and archaeological resources is defined as the project's physical limits of disturbance.

4.10.2 Historic and Archaeological Investigations

Maryland Historical Trust (MHT) was consulted to document any known historic resources within the project's APE. According to MHT, no listed properties occur within the APE, and no properties eligible for listing on the NRHP occur within the APE (see Appendix C). Portions of MTN are considered eligible for listing in the NRHP by MHT, including the Glenn L. Martin Airport and Glenn L. Martin Production Plant. Both are currently eligible for listing on the NRHP under Criteria A, B, and C. However, both sites and properties occur outside the DRA and the APE.

Several additional studies have been conducted to evaluate the possible archaeological and historic resources at MTN; no significant archaeological resources were found during these investigations. A summary of these studies and their locations follow:

Phase I Archaeological Survey of the Runway 4/22 Area (Engineering Science, Inc., 1990a): This survey was centered on the southwestern portion of former Runway 4-22 in the area south of the main terminal area of the airport. The purpose of the survey was to determine the presence of archaeological sites within the area so that the impact of planned development on any site can be assessed. No significant archaeological resources were discovered during the survey.

Phase I Archaeological Survey of MTN Shoreline (Waporo, Inc., 1990): This survey was conducted along the banks of Frog Mortar Creek at Strawberry Point before erosion control work began to determine if archaeological sites were present in the area; no significant archaeological resources were discovered during the survey.

Phase I Archaeological Survey of Runway 14/32 and the Midfield Complex (Engineering Science, Inc. 1990b): The Midfield Complex and runway 14/32 areas were surveyed to determine if archeological sites existed. Eight locations were found to contain cultural materials. Of these, one (site 18Ba398) was identified as possibly eligible for listing in the NRHP. A Phase II archaeological survey was conducted as a result (discussed below).

Phase II Archaeological Investigation at Site 18Ba398 (Joseph Hopkins Associates, 1999): Site 18Ba398 represented a historic occupation from the mid-nineteenth century and appeared to have been in use through at least the first half of the twentieth century. Earlier grading, possibly associated with construction of MTN, destroyed much of the site. The study concluded that the site was not eligible for inclusion in the NRHP.

Evaluation and Synthesis of Existing Information **(**AD Marble, Inc., 2000): This investigation evaluated existing information, including previously conducted studies, surveys, and information contained within the MHT data files. Historic and archeological resource recommendations for the site were also provided. AD Marble found that no potentially significant resources existed within the proposed area of airport expansion, including the proposed corporate hangers, T hangers, and parking areas.

4.11 LIGHT EMISSIONS AND VISUAL EFFECTS

Existing light emissions within the MTN property are consistent with the emissions from a typical regional airport. Existing light emission sources include the runway, control tower, and aircraft, as well as standard lighting associated with airport hangers, cargo loading/unloading areas, and airport parking facilities. There are no light emission sources found within the DRA portion of MTN.

4.12 EXISTING NOISE

MAA has extensively evaluated and measured the existing noise environment at MTN. MAA found that noise levels from airport operations and aircraft activity were acceptable in nearby residential areas, using criteria from the United States Department of Housing and Urban Development in 24 CFR Part 51b. These criteria set noise restrictions to protect citizens against excessive noise in their residences and communities. No excessive noise levels extend beyond the airport property in areas that would impact people or residences.

4.13 SOCIOECONOMICS, ENVIRONMENTAL JUSTICE, AND CHILDREN'S HEALTH AND SAFETY

This section addresses social, economic, and demographic characteristics in the DRA/airport region. Potential socioeconomic impacts evaluated are any that could be associated with the preferred alternative, including any relocation of residences and businesses in and around the neighborhoods immediately surrounding the DRA and MTN. Community disruption to social institutions and services, including the alteration of surface transportation patterns adjacent to the airport, are also considered.

4.13.1 Community Profile

Baltimore County is broken down into specific "Revitalization Areas" within which the County has identified strategies to improve the regional economy. Within these revitalization areas are "Commercial Revitalization Districts", developed to foster business growth and appropriate quality redevelopment via direct technical and financial assistance. A healthy regional economy contributes to county resident employment and helps to maintain standards of living. According to the Baltimore County Master Plan 2020, Middle River is located within the "Eastern Revitalization Area."

United States census data (2010) for the DRA and its adjacent and contiguous parcels are presented below; data is segregated by census tracts and block groups. Census Tract 451600, Block Group 1 covers the entire airport property, including the DRA and adjacent areas to the north and west, while Census Tract 451802 Block Group 1 covers the east side of Frog Mortar Creek (see Figure 4-5). According to information provided by the 2010 census, 681 and 1,350

residents (respectively) have homes within these tracts. No hospitals, churches, childcare facilities, and/or schools are located within the DRA or adjacent parcels.

4.13.2 Children's Environmental Health and Safety Risks

Pursuant to Executive Order 13045, Protection of Children from Environmental Health and Safety Risks (April 21, 1997), the FAA recently revised their policies and procedures for compliance with NEPA (FAA Order 1050.1E) to include the assessment of environmental health and safety risks. According to FAA Order 1050.1E, airport development projects may pose disproportional risks to children including "risks to health and safety that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they might use or be exposed to" (FAA, 2006a). Current operations at MTN and the DRA are not associated with any known source that adversely impacts the health or safety of children in the Middle River area.

4.13.3 Environmental Justice

No low income, minority, or indigenous populations occur within the DRA study area; however, certain low-income populations do occur along the roadways that will be used by trucks to access the project area during construction. During construction, truck traffic would be expected to reach the site from I-95 via either MD-43 or via MD-700 (Martin Blvd) or MD-702/Pulaski Highway and I-695. Data show that while all census tracts along the above described access route (census tracts 451600, 451500, 451802, 450,800, 492300, 450300, 451300, and 451701) have a median household income above the federal poverty level, certain neighborhoods within this area do have incomes at or below this level (U.S Census 2010). These neighborhoods include the Hawthorne area located south of MD-150 (Eastern Blvd) and just west of Cow Pen Creek, neighborhoods along MD-700 and US-40 (Pulaski Hwy), and a small area north of the junction of MD-150 and Carroll Island Road. These neighborhoods are predominately located in the town of Middle River, Maryland. The overall percentage of the population below the poverty level in Middle River, Maryland in 2013 was 9.4%.

Traffic volume along each of the above described roads has been evaluated by the Maryland Department of Transportation. Recent traffic volumes recorded on MD-150 (Eastern Blvd) range between 35,032 and 36,972 annual average daily traffic (AADT) (Maryland Department of Transportation, 2014). Traffic counts on MD-702 have been recorded at 52,630 AADT, while on

MD-700 recent traffic volume has been recorded at 23,843 AADT. Traffic volume on MD-43 is 17,731 AADT.

4.14 WATER QUALITY

MTN and DRA lie within the Middle River/Browns watershed (Maryland 8-digit watershed code 02130807), which is part of the larger Gunpowder-Patapsco watershed of Chesapeake Bay. The Maryland 12-digit sub-watershed code for the study area is 021308070291; sub-watershed boundaries are shown on Figure 4-6.

4.14.1 Surface Water

The Middle River/Browns watershed, in which the DRA is located, is listed as a Category 5 Water on the *Integrated Report of Surface Water Quality in Maryland* [303(d) list] (MDE, 2010a). Category 5 Waters are impaired waters that do not attain water quality standards. Pollution abatement such as establishing a total maximum daily load (TMDL) is required for discharge into these waters. A TMDL is an estimate of the maximum pollutant volume (from point and non-point sources) that a water body can receive without violating ambient water quality standards.

Surface waters within the DRA are limited to the tidal stream Frog Mortar Creek, an unnamed intermittent/ephemeral tributary stream, and two ponds that are remnants of past filling and waste disposal practices. Frog Mortar Creek is a relatively large tidal stream on the east side of the project area that flows into the Middle River and ultimately to the Chesapeake Bay. Frog Mortar Creek is classified by MDE as a "Use I" stream. Use I waters are defined as being suitable for water contact sports; fishing, propagation of fish (excluding trout), other aquatic life and wildlife; and use as an agricultural and industrial water supply (COMAR 26.08.02.02 B[1]).

An unnamed tributary to Frog Mortar Creek at the north end of the DRA was identified in 2010 as documented in the *Waters of the US Delineation Report, Martin State Airport, Wetland Verification* (Chesapeake Environmental Management, Inc., 2012). Other than the description of this feature found in the comprehensive wetland inventory, no additional characterization or water quality data for this stream are available. This is also true for the two manmade ponds at the site.

Several wetland areas were also identified within the project area. A more detailed description of delineated wetlands and waterways within the project area is provided in Section 4.15.

The DRA project area is located within the Frog Mortar Creek stormwater drainage area. The drainage areas in the DRA vicinity were evaluated and identified for the *Draft Site Development Phase, Stormwater Management Report* (Tetra Tech, 2013); this study revealed that a number of drainage paths or areas drain to Frog Mortar Creek. Stormwater within these drainage areas follows small drainage paths entering wetlands, channels, or culverts that ultimately discharge into Frog Mortar Creek (Tetra Tech, 2013).

4.14.2 Surface Water Sampling and Monitoring

As described in Section 1.2, surface water samples have been collected along the shoreline of Frog Mortar Creek since 2004 to evaluate migration of groundwater COC to the creek. Surface water sampling of Frog Mortar Creek has identified concentrations of TCE and/or vinyl chloride and/or xylene exceeding applicable water quality criteria, including site-specific swimming screening criteria that were developed using accepted USEPA and MDE protocols (Tetra Tech, 2012c). Surface water sampling results from 2012 can be found at http://www.lockheedmartin.com/content/dam/lockheed/data/corporate/documents/remediation/msa/SWReport2012-062013.pdf. The source of the surface water contamination appears to be groundwater migrating from the DRA to Frog Mortar Creek. MDE issued a water contact advisory (See Appendix D) for the portion of Frog Mortar Creek adjacent to the DRA (MDE, 2012) after reviewing the surface water sampling results. Currently, the portion of Frog Mortar Creek adjacent to DRA does not conform to the MDE Use I stream classification for this creek because it currently fails to meet the Use I definition of a "water contact for recreation" stream.

4.14.3 Groundwater Quality

The principal source of groundwater in Baltimore County is the Patuxent formation of the Potomac group of aquifers (Maryland Geological Survey, 1969). The Patuxent formation ranges between 100 and 300 feet thick and consists of sand, gravel, and variegated clay. The Patuxent aquifer dips southeasterly at a rate of 85-90 feet per mile. The Patuxent aquifer outcrops in bands several miles wide roughly parallel to the Fall Line. The formation crops out in a belt in the central part of the County, west of the DRA project area and MTN. The Patapsco aquifer is used as a water supply in Baltimore County and typically occurs above the Patuxent aquifer.

Groundwater quality in Baltimore County varies within different areas of the same aquifer. Some County groundwater may be used without treatment, although high mineral content may require some treatment before use. No federal or state standards have been established for raw (i.e., pre-extraction) groundwater. Drinking water standards exist for public water sources, but these are applied within the water distribution system, and are not applicable for groundwater. The Water Management Administration of MDE regulates the discharge of pollutants to groundwater sources.

Geologic mapping of Baltimore County shows that MTN and the DRA project area is underlain by the Potomac group, a Lower Cretaceous-age inter-bedded gravel, sand, silt, and clay unit ranging from 0 to 800 feet thick. The Potomac group at the site consists of three units (from the top elevation down and thus from the youngest to oldest): the Patapsco formation, the Arundel Clay, and the Patuxent formation. Potomac group sediments were deposited in a river delta environment (Hansen, 1969). The Patapsco formation includes the surficial aquifer underlying the project area. The Arundel Clay likely acts as an impermeable barrier (i.e., the aquifer is confined) to the downward movement of groundwater to the underlying Patuxent formation. The Patuxent formation is a multi-aquifer unit because of its various inter-bedded sand and silt/clay layers, and the rapid changes (over short distances) of deposited material types (Glaser, 1969).

The hydrogeological system beneath MTN consists of relatively continuous zones of sand and gravel that provide the primary pathways for groundwater flow and contaminant transport. These zones are interlayered with zones of lower permeability sediments, resulting in a relatively complex stratigraphic sequence. Water from these units (primarily via natural infiltration of precipitation [i.e., recharge]) infiltrates through shallow fill material to the water table. Groundwater then migrates along various pathways depending on location, with some groundwater flowing vertically downward to recharge units below the water table. Eventually, most groundwater flows laterally through permeable zones, and discharges to estuaries surrounding the peninsula. The estuary of relevance at DRA is Frog Mortar Creek.

Site data indicate that the surficial aquifer is divided into three hydraulically connected monitoring zones: upper (shallow), intermediate, and lower (deep). The surficial aquifer is underlain at approximately 75 to 85 feet below mean sea level (msl) by a relatively thick clay unit that acts as a basal confining unit. Deep borings at the site indicate deeper sand zones that

are confined above and below by clay units. These are most likely from the Arundel formation, a regionally extensive, thick, dense, clay confining unit.

Frog Mortar Creek is influenced by tidal fluctuations, with average amplitudes of approximately 1.2 feet and thus a tidal range of about 2.4 feet. Water level recordings for the upper surficial aquifer zone indicate that tidal fluctuation amplitudes decrease to less than 0.1 foot within a few hundred feet from Frog Mortar Creek. This damping effect is most likely due to the relatively high storage coefficient of the water table aquifer: primary storage space just above the water table readily fills and drains. In the intermediate and lower surficial aquifer zones, tidal fluctuations diminish less rapidly with distance from the creek because these zones are semi-confined or confined by Arundel Clay. Much less damping of tidal variation occurs under these conditions because the aquifer units are fully saturated and under artesian pressure.

Groundwater flow in the surficial aquifer is generally easterly toward Frog Mortar Creek. At monitoring well clusters, the concurrently measured water levels for a given cluster indicate that groundwater vertical head differences in the surficial aquifer are generally downward in the upland areas and near Frog Mortar Creek.

Slug tests at the site yielded hydraulic conductivity estimates ranging from 5 to 20 feet per day (ft/day) (sand zones) to 0.01 to 0.2 ft/day (clay zones) [Tetra Tech, 2004]. Pumping tests were performed in both the upper and intermediate zones of the surficial aquifer. Pumping tests for the intermediate surficial aquifer zone indicate an average horizontal hydraulic conductivity ranging from 42 to 140 ft/day, with a mean of 68 ft/day (Tetra Tech, 2010a). No pumping tests have been performed in the lower zone.

No designated sole source aquifers are reported in the vicinity of the DRA according to USEPA's Sole Source Aquifer Program website (USEPA, 2012). USEPA defines a sole- or principal-source aquifer as one which supplies at least 50% of the drinking water consumed. The only sole-source aquifers in Maryland are the Maryland Piedmont aquifer in Montgomery, Howard, and Carroll Counties, and the Maryland Poolesville aquifer extension of the Maryland Piedmont aquifer in Montgomery County.

Groundwater within the DRA project area is not currently used for drinking water or as a source for the public water supply, and no drinking water wells are present on airport property.

Municipal drinking water supplies the study area; the public water supply is drawn from three surface water reservoirs. Groundwater in the surficial aquifer (within the Patapsco Formation) beneath the DRA project area currently contains elevated levels of volatile organic compounds (VOCs), chlorinated volatile organic compounds (cVOCs), and heavy metals; based on groundwater samples collected from several deep wells installed in the DRA, the lower, confined Patuxent aquifer is believed to not be impacted by contamination due to the overlying and confining clay layer associated with the Arundel Formation.

4.15 WETLANDS

Wetlands are areas characterized by hydric soils, hydrophytic vegetation, and frequent flooding or inundation during the growing season. They are included in the broad definition of "Waters of the United States" in the Clean Water Act (CWA) which includes lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, and natural ponds.

4.15.1 State and Federal Regulations

Federal and Maryland regulations address activities conducted in wetlands and Waters of the United States to minimize the continuing degradation of these resources and achieve a no net loss policy. Maryland's Non-tidal Wetland Protection Act (1991) is based on Section 404 of the CWA, and the United States Army Corps of Engineers' (USACE) implementation regulations (33 CFR, Parts 320- 330). In addition, Executive Order 11990 directs all federal agencies to avoid, then minimize, the destruction, loss and degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands and waters of the United States. The Wetland and Waterways Division of MDE is tasked with administering Section 404 of the CWA at the state level, and coordinates with USACE to determine the jurisdictional status of wetlands and waterways (COMAR § 26.23 and § 26.24). The Wetland and Waterways Program encompasses two regulatory divisions: the Nontidal Wetlands and Waterways Division, and the Tidal Wetlands Division. Maryland nontidal law is somewhat broader in its jurisdiction and differs from federal law through its regulation of isolated wetlands, vegetation and hydrology alteration; and the inclusion of a 25-foot wetland buffer. This regulated wetland buffer is increased to 100 feet for nontidal wetlands of Special State Concern. These are wetlands the state

designates as having exceptional statewide ecological or educational value. No nontidal wetlands of Special State Concern are present within the DRA or surrounding MTN property.

In 1970, the Maryland General Assembly enacted the Tidal Wetlands Act to manage tidal wetlands to provide reasonable use while furnishing essential resource protection. Regulated activities include: shoreline protection projects including marsh creations, stone revetments and bulkheads; piers; dredging; boat ramps; jetties; cable crossings; storm drain systems; groins; breakwaters; vegetative stabilization; and stormwater discharges. Tidal wetlands do not include a standard 25-foot buffer as do non-tidal wetlands.

4.15.2 Wetland Delineation

MAA continuously updates the wetland inventory for MTN and closely coordinates with both the MDE and USACE regarding the jurisdictional status of their wetland resources. A complete wetland delineation of MTN property, including the DRA, was completed between July and September 2011. A preliminary Jurisdictional Determination was performed by USACE and MDE in 2012. Detailed information regarding the wetlands and waterways delineated at MTN can be found in the *"Waters of the US" Report, Martin State Airport, Wetland Verification* (Chesapeake Environmental Management, Inc., 2012) (Appendix G). Boundaries of jurisdictional wetlands delineated within the DRA are depicted on Figure 4-7.

Identified wetlands were field delineated using routine on-site methodology in accordance with the 1987 *USACE Wetland Delineation Manual* (USACE, 1987) and the 2010 *Regional Supplement to the Manual: Atlantic and Gulf Coastal Plain* (Regional Supplement). All potential wetland areas were examined for appropriate hydrophytic vegetation, hydric soils, and wetland hydrology. No wetlands of Special State Concern are found within the DRA or within the surrounding airport property. Tidal wetlands within the DRA are limited to the mean high water (MHW) line of Frog Mortar Creek. The MHW line in this area is about elevation 0.6; this elevation is based upon the conversion of NOAA data to North American Vertical Datum of 1988. All other wetlands and waterways delineated within the DRA were found to be non-tidal.

Information regarding wetland areas delineated within DRA is presented in Table 4-2. These wetlands/waterways are classified as palustrine emergent (PEM), palustrine open water (POW), palustrine unconsolidated bottom wetland (PUB), and estuarine wetlands (E2).

4.16 WILD AND SCENIC RIVERS

The Wild and Scenic Rivers Act (October 2, 1968) declares that certain selected rivers of the United States that possess outstandingly remarkable scenic, recreational, geologic, fish, wildlife, historic, cultural and other similar values, will be preserved in free-flowing condition. It further states that these rivers and their immediate environments must be protected for the benefit and enjoyment of present and future generations. The United States Department of the Interior's (USDOI's) National Park Service maintains a national inventory of river segments that may qualify for inclusion in the National Wild and Scenic River System; Maryland has no rivers on this list (USDOI, 2009). Maryland created its own Scenic and Wild Rivers System in 1968. This program maintains an inventory of rivers in Maryland that possess remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. Like the USDOI website, the MDNR Scenic and Wild Rivers System website also indicates that no federal- or state-designated wild and scenic rivers (or potentially eligible rivers) are in the MTN vicinity (MDNR, 2013).

Table 4-1

National and Maryland Ambient Air Quality Standards [a]
Dump Road Area, Martin State Airport

Pollutant	Averaging Time	Primary Standards [b]		Secondary Standards [b]	
		µ/m³	ppm	µ/m³	ppm
CO	1-hour	40,000	35	40,000	35
	8-hour	10,000	9	10,000	9
Ozone	1-hour	235	0.12	235	0.12
	8-hour	N/A	0.08	N/A	0.08
NO_x	Annual	100	0.05	100	0.05
SO_2	3-hour	None	None	1,300	0.5
	24-hour	365	0.14	None	None
	Annual	80	0.03	None	None
$PM_{2.5}$	24-hour	35		35	
	Annual	12		15	
PM_{10}	24-hour	150		150	
	Annual	50		50	
Lead	Quarterly	1.5		1.5	

Sources: CRF, Title 40, Part 50, Section 121 and Title 26 of the Code of Maryland Regulations, Subtitle 11, Chapter 4

[a] National and Maryland standards, except for annual means, are not to be exceeded more than once per year

[b] The tabulated thresholds are for primary standards, which are for the protection of public health. Secondary standards are for the protection of public welfare. All secondary standards are the same as primary standards, except for the 3-hour SO_2, which is a secondary standard only.

Abbreviations:
CO – carbon monoxide
µ/m³ - micrograms per cubic meter
NOx – nitrogen oxides (or nitrogen dioxide)
$PM_{2.5}$ - fine particulate matter
PM_{10} - respirable particulate matter
ppm – parts per million
SO_2 – sulfur dioxide

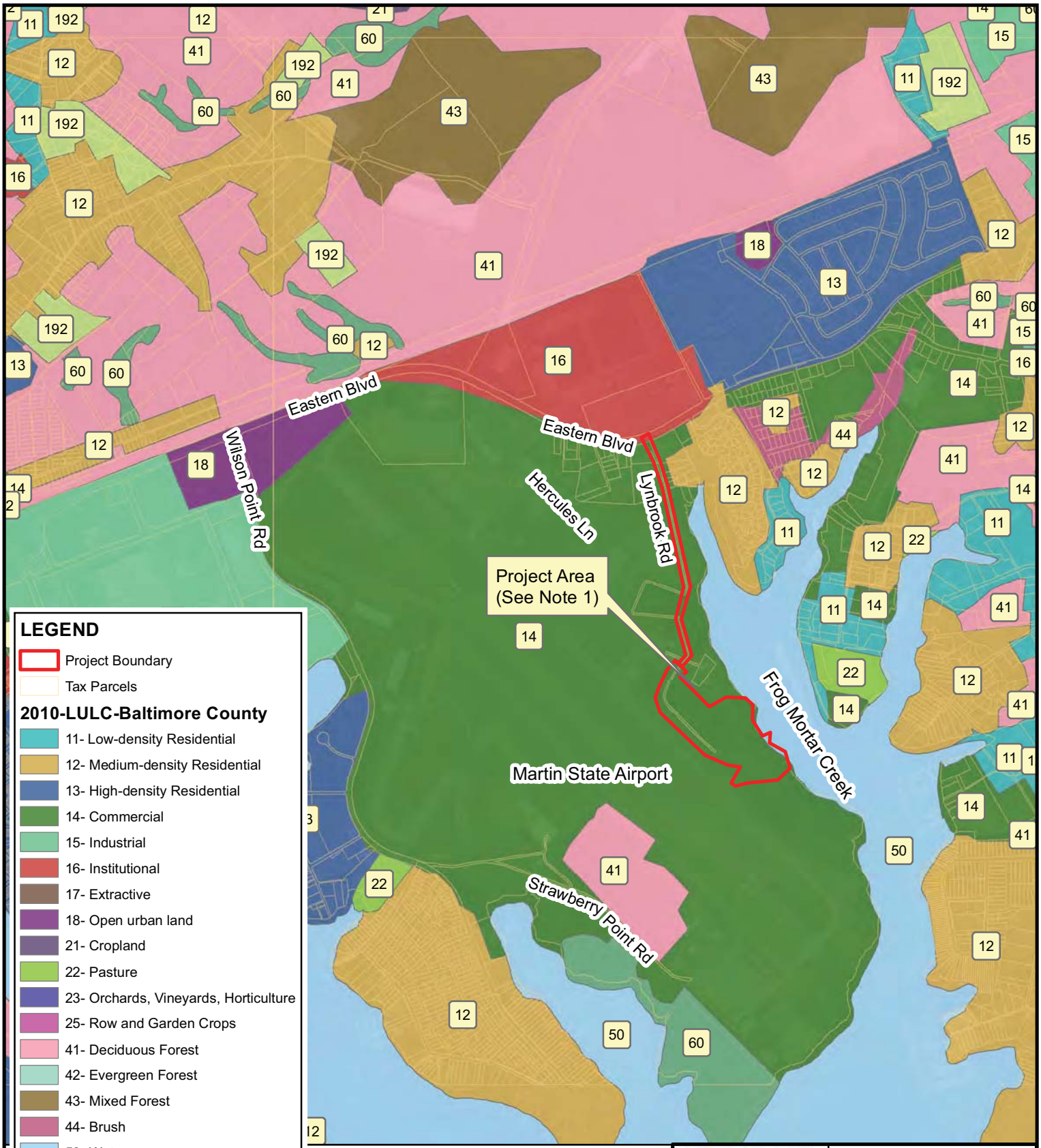
Table 4-2

Delineated Wetlands and Waterways
Dump Road Area of Martin State Airport

Wetland identification	Wetland type and classification 1	Tidal/ nontidal	General description
Wetland PP	PEM	nontidal	isolated phragmites dominated wetland
Wetland V	PEM, POW, PUB	nontidal	excavated pond with adjacent wetland
Wetland NN	PEM, POW	nontidal	excavated pond with adjacent wetland
Wetland TT	PEM	nontidal	phragmites dominated emergent wetland – highly disturbed by past land disturbance activities
Wetland OO	PEM	nontidal	phragmites dominated emergent wetland that drains to Frog Mortar Creek
Frog Mortar Creek	E2	tidal	includes Frog Mortar Creek seaward from the mean high water line
Stream WL6	ephemeral unnamed stream	nontidal	likely a manmade or altered small drainage channel that flows into Wetland V
Stream WL7	intermittent unnamed stream	nontidal	small stream channel that drains the emergent wetland portion of Wetland NN and flows into Wetland V

1. Based on the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al, 1979):

PEM – Palustrine Emergent
POW – Palustrine Open Water
PUB – Palustrine Unconsolidated Bottom Wetland
E2 – Estuarine Wetlands



MARTIN STATE AIRPORT

Environmental Assessment for Groundwater Remediation at the Dump Road Area

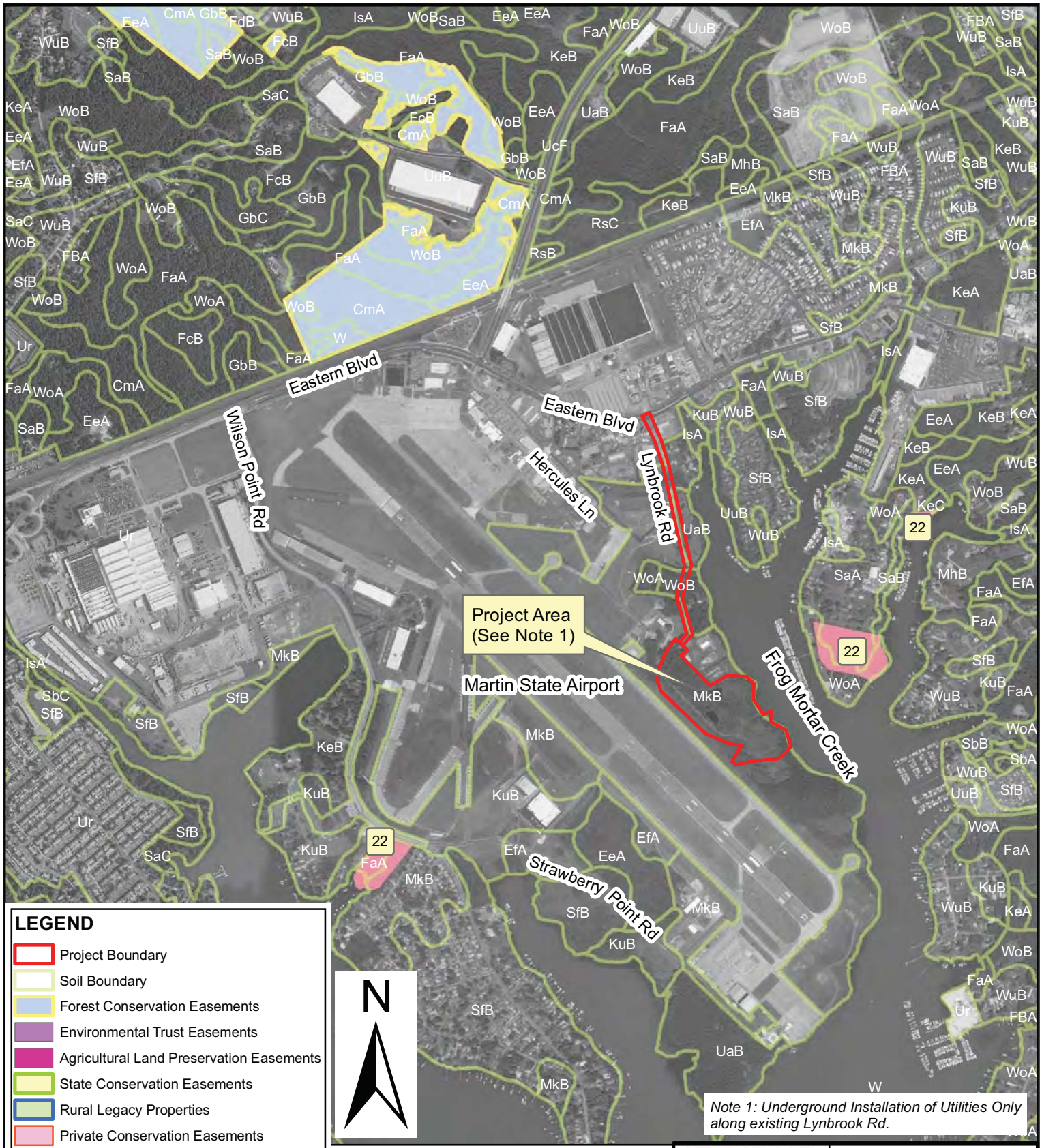
EXISTING LAND USE / LAND COVER

TETRA TECH

SCALE: AS SHOWN

FIGURE: 4-1

Map Document: (S:\03-Projects\Commercial\LMC\103IP2599 Task 13 (permitting)-DRA-GWTP\NEPA EA\DWG\Figure_3-1.mxd)
9/13/2013 3:22:46 PM



LEGEND

- Project Boundary
- Soil Boundary
- Forest Conservation Easements
- Environmental Trust Easements
- Agricultural Land Preservation Easements
- State Conservation Easements
- Rural Legacy Properties
- Private Conservation Easements

2010-LULC-Baltimore County

- 21-Cropland (None)
- 22-Pasture
- 23-Orchards/vineyards/horticulture (None)
- 25-Row and garden crops (None)
- 241-Feeding operations (None)
- 242-Agricultural building (None)
- 191-Large lot subdivision w/ Ag (None)

Soil Boundary Source: U.S. Department of Agriculture, Natural Resources Conservation Service (2010) Soil Survey Geographic (SSURGO) database for Baltimore County, MD (2010)
Protected Lands Source: Maryland Department of Natural Resources

MARTIN STATE AIRPORT

Environmental Assessment for Groundwater Remediation at the Dump Road Area

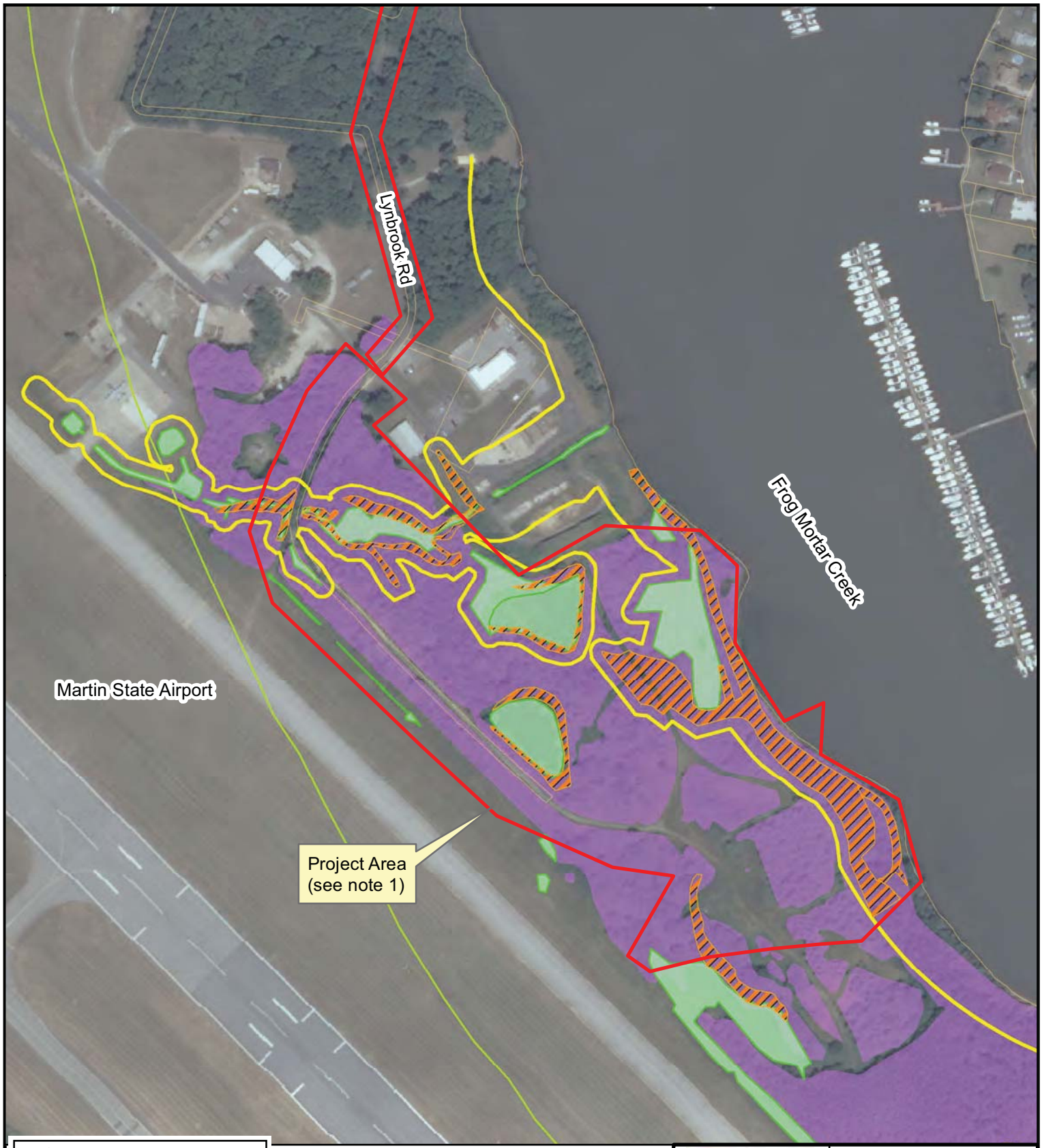
PRIME AND UNIQUE FARMLANDS

TETRA TECH

SCALE: AS SHOWN

FIGURE: 4-2

Map Document: (S:\03-Projects\Commercial\LMC\103IP2599 Task 13 (permitting)-DRA-GWTP\NEPA EA\DWG\Figure_3-8.mxd)
10/10/2013 2:23:11 PM



LEGEND

- Project Boundary
- Tax Parcels
- SteepSlopes 10% or Greater
- Expanded Tidal Buffer
- Site-Specific Wetlands Study
- Forest Area, April 2012 Mapping
- Critical Area - Baltimore County

Note 1: Underground Installation of Utilities Only along existing Lynbrook Rd.

Protected Lands Source: Maryland Department of Natural Resources
LULC Source: State of Maryland Department of Planning (2010)
Critical Area Boundary Source: Maryland Department of Natural Resources

N

0 150 300 600 Feet

MARTIN STATE AIRPORT

Environmental Assessment for Groundwater Remediation at the Dump Road Area

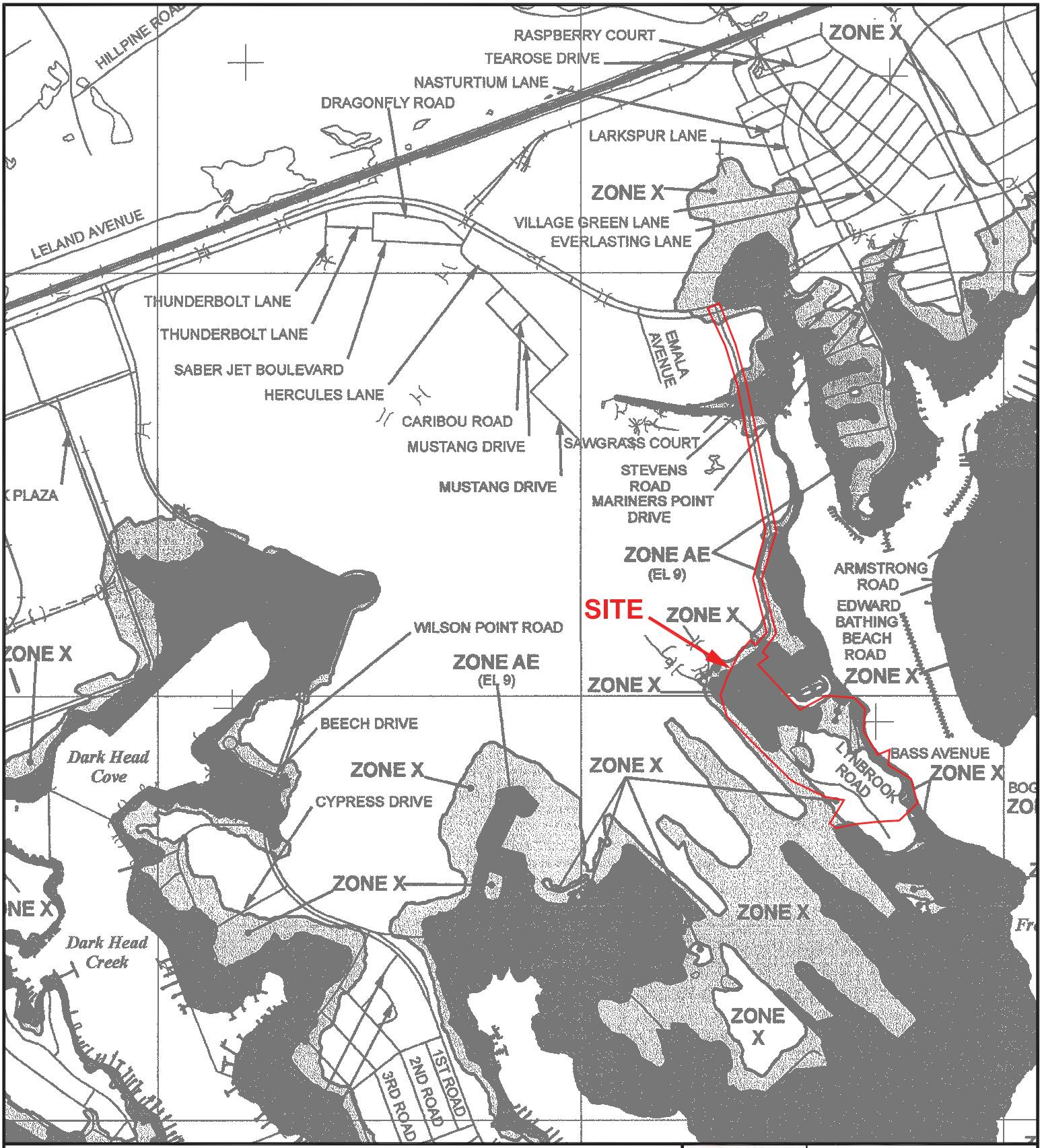
FORESTS AND OTHER PROTECTED HABITATS

TETRA TECH

SCALE: AS SHOWN

FIGURE: 4-3

Map Document: (S:\03-Projects\Commercial\LMC\103IP2599 Task 13 (permitting)-DRA-GWTP\NEPA EA\DWG\Figure_3-5.mxd)
10/10/2013 2:12:20 PM



BALTIMORE COUNTY
MARYLAND
UNINCORPORATED AREAS

PANEL 435 OF 580

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BALTIMORE COUNTY	240010	0435	F

MAP NUMBER
2400100435F

MAP REVISED
SEPTEMBER 26, 2008

Federal Emergency Management Agency

N

DATE: 07-18-2013

MARTIN STATE AIRPORT

Environmental Assessment for Groundwater Remediation at the Dump Road Area

FEMA FLOOD INSURANCE RATE MAP (FIRM)

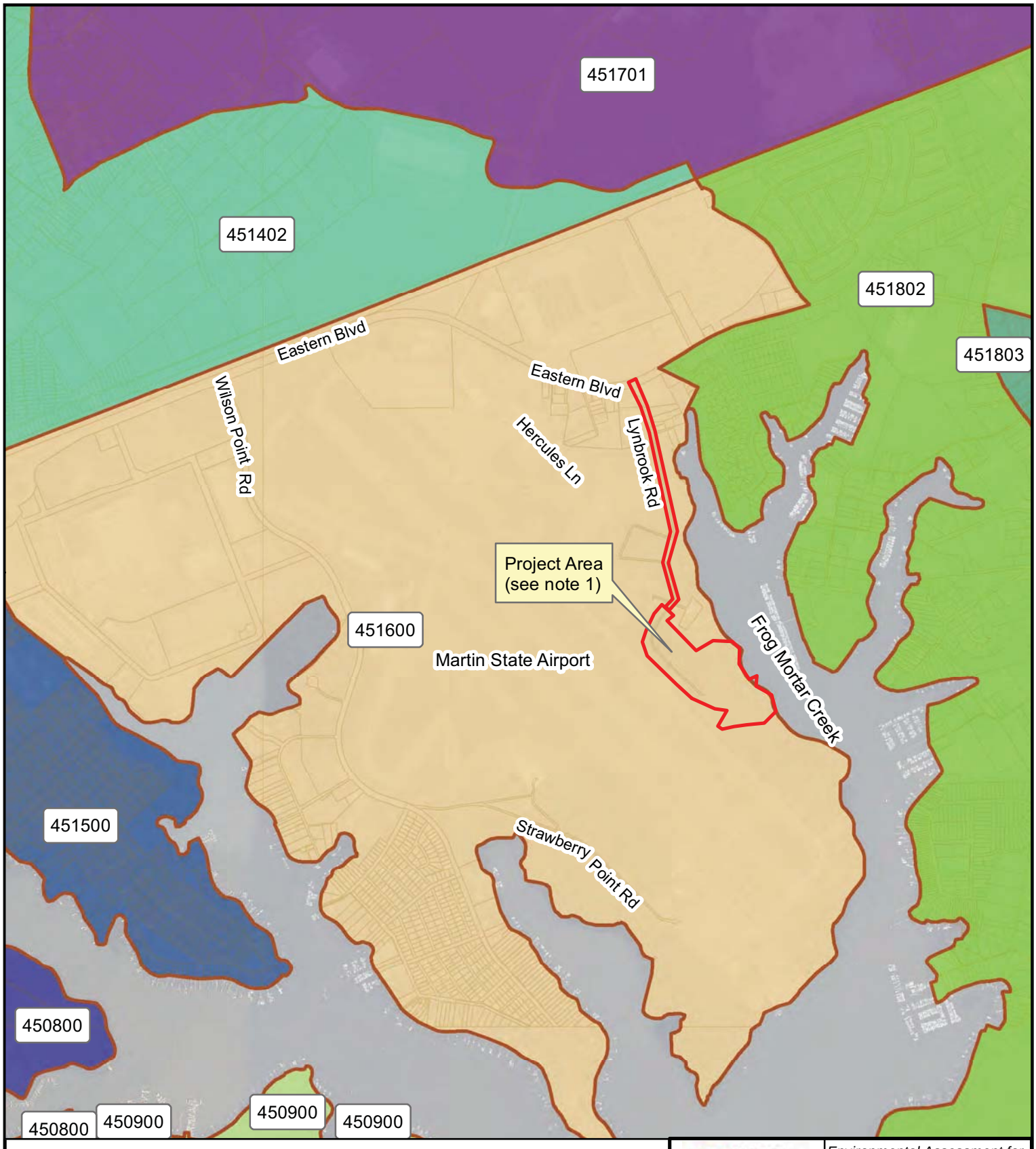
0' 1000' 2000'

TETRA TECH

SCALE: AS SHOWN

FIGURE: 4-4

S:\03-Projects\Commercial\LMC\103IP2599 Task 13 (permitting)-DRA-GWTP\NEPA EA\DWG\ Figure 3-7.dwg



Note 1: Underground Installation of Utilities Only along existing Lynbrook Rd.

LEGEND

- Project Boundary
- Tax Parcels

Sources: Census Tract from Maryland State Planning Data Center

0 750 1,500 3,000 Feet

N

MARTIN STATE AIRPORT

Environmental Assessment for Groundwater Remediation at the Dump Road Area

CENSUS TRACTS

TETRA TECH

SCALE: AS SHOWN

FIGURE: 4-5

Map Document: (S:\03-Projects\Commercial\LMC\103IP2599 Task 13 (permitting)-DRA-GWTP\NEPA EA\DWG\Figure_3-3.mxd)
9/13/2013 3:10:55 PM

LEGEND

- Project Boundary
- Tax Parcels
- Watersheds

Source: Baltimore County

Note 1: Underground Installation of Utilities Only along existing Lynbrook Rd.

0 750 1,500 3,000 Feet

N

MARTIN STATE AIRPORT

Environmental Assessment for Groundwater Remediation at the Dump Road Area

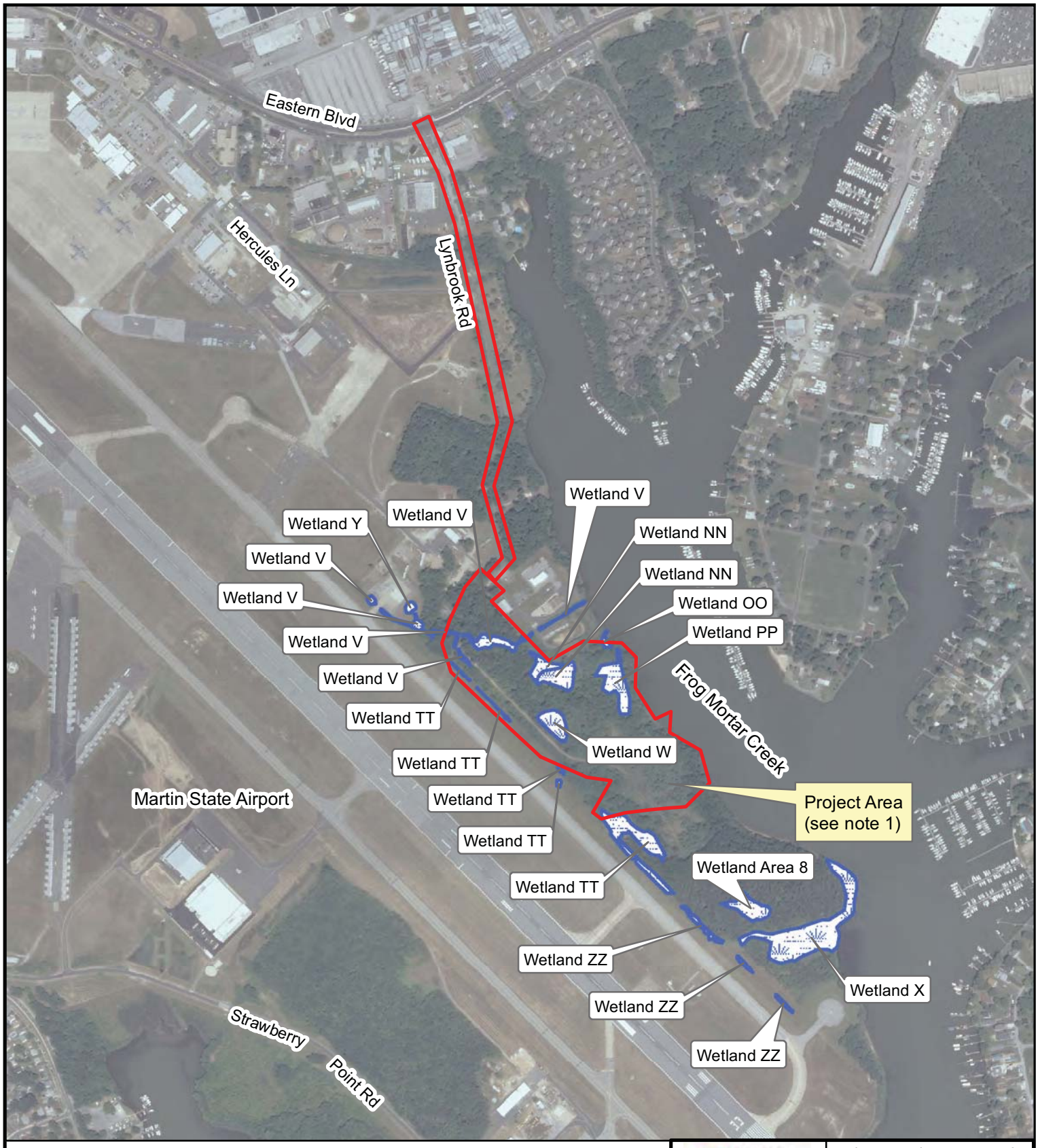
SUB-WATERSHEDS (WATERSHEDS)

TETRA TECH

SCALE: AS SHOWN

FIGURE: 4-6

Map Document: (S:\03-Projects\Commercial\LMC\103IP2599 Task 13 (permitting)-DRA-GWTP\NEPA EA\DWG\Figure_3-4.mxd)
9/13/2013 3:12:22 PM



LEGEND

- Project Boundary
- Site-Specific Wetlands Determination

N

Note 1: Underground Installation of Utilities Only along existing Lynbrook Rd.

0 375 750 1,500 Feet

MARTIN STATE AIRPORT

Environmental Assessment for Groundwater Remediation at the Dump Road Area

SITE SPECIFIC WETLANDS SURVEY

TETRA TECH

SCALE: AS SHOWN

FIGURE: 4-7

Map Document: (S:\03-Projects\Commercial\LMC\103IP2599 Task 13 (permitting)-DRA-GWTP\NEPA EA\DWG\Figure_3-6.mxd)
10/10/2013 2:15:43 PM

Section 5
Environmental Consequences

This section presents an assessment of the environmental impacts associated with the proposed project alternatives. An evaluation of the environmental impacts associated with both the preferred alternative (proposed action) and the no-action alternative are presented for each resource category or topic. Mitigation strategies that can be used to avoid and minimize the identified impacts are also presented, where appropriate. An analysis of potential impacts for each of the resource categories described as part of the Affected Environment section above (Section 4.0) is presented below.

It should be noted that while oversight of the overall remedial action is conducted by MDE, certain resource impacts (as described below) are regulated by USEPA independently of the MOA with MDE. These include the NPDES permit for stormwater and outfall discharges to waters of the U.S. (under the Clean Water Act) and air emissions (under the Clean Air Act). However, permitting for these activities has likewise been granted by USEPA to MDE in the state of Maryland, with MDE having review and approval authority. USEPA also regulates discharge of fill and dredge material to wetlands under the Clean Water Act; permitting authority for this activity has been granted by USEPA to USACE. As discussed further in this section, permits will be required for the project from these agencies.

5.1 AIR QUALITY

This analysis involves the evaluation of the USEPA priority pollutants (and their precursors) associated with the proposed remediation project, and include VOCs, nitrogen oxides (NO_x), sulfur dioxide (SO_2), carbon monoxide (CO), and particulate matter (PM_{10} and $PM_{2.5}$).

5.1.1 Impact Potential – Preferred Alternative

MTN, including the DRA, is located within Baltimore County, which is designated as being in non-attainment status for the ozone one-hour standard, in "moderate" non-attainment for the ozone 8-hour standard, and in non-attainment for the $PM_{2.5}$ 24-hour standard. The applicability

of the federal Clean Air Act (CAA) General Conformity Rule (40 CFR 90 Sec 153) has been evaluated because of these designations. The Rule defines *de minimis* levels (i.e., minimum threshold levels) for standard criteria pollutants for which a conformity determination must be performed. A summary of the estimated construction related air emissions inventory associated with the proposed action is found in Table 5-1. These estimates are based on USEPA's *AP-42, Compilation of Air Pollutant Emissions Factors* (AP-42). Due to the small area of ground disturbance (<3.5 acres) associated with proposed construction and plans to employ standard dust control measures, site-specific modeling of construction emissions was not warranted.

An applicability analysis was conducted to evaluate *de minimis* thresholds, and the estimated construction-related emissions using AP-42 were found to be within the General Conformity Rule *de minimis* levels for $PM_{2.5}$, for NO_x and SO_2 precursors, and for ozone (O_3) precursors of NO_x and VOCs. Therefore, the proposed project automatically conforms to the State Implementation Plans (SIP) for $PM_{2.5}$ and O_3 and no further assessment is necessary.

While there are no anticipated changes to aircraft operations (e.g., number of operations, fleet mix, delay periods) or significant motor vehicle increases attributable to the implementation of the proposed project, air emissions associated with operation of the Groundwater plume treatment facility on MTN property would include minor emissions of certain VOCs including methylene chloride; however, the facility will treat emissions prior to discharge and any emissions will be small percentage of the treated mass. As depicted in Table 5-1, the expected emissions of methylene chloride from the groundwater treatment process following treatment using vapor phase granulated activated carbon (VGAC) will be less than 1 pound per year. This estimated annual emission level would not be detectable in ambient air surrounding the DRA; therefore, no significant effect on local or regional air quality would occur and dispersion modeling and more detailed estimates of airborne concentrations are not warranted.

5.1.2 Impact Potential – No Action Alternative

The no action alternative does not involve construction or operation of a remediation facility, nor does it affect the operational characteristics of the airport. Therefore, it would have no impact on the existing air quality conditions at the airport.

5.1.3 Mitigation Measures

Emissions associated with the remediation facility are anticipated to be below state and federal exceedance levels. A permit to construct (PTC) and (potentially) a permit to operate (PTO) must be acquired before construction and operation of the facility for the air stripper. The PTC/PTO will include any necessary mitigation in the form of emission minimization measures to be employed to ensure that emissions are within permissible levels. Other minor emissions, such as VOCs coming off mixing tanks, will be below permit thresholds and will be managed with small carbon vessels. So therefore for air quality, no mitigations measures are required according to 4.2.1. "This estimated annual emission level would not be detectable in ambient air surrounding the DRA; therefore, no significant effect on local or regional air quality would occur and dispersion modeling and more detailed estimates of airborne concentrations are not warranted".

5.2 COASTAL RESOURCES AND COASTAL ZONE MANAGEMENT PROGRAM

MAA is required to comply with the regulations set forth and administered by the MDE and MDNR. These governing agencies are charged with identifying land uses which, individually or cumulatively, may cause or contribute significantly to the degradation of coastal waters where there is a failure to attain or maintain applicable water quality standards or protect designated uses.

5.2.1 Impact Potential – Preferred Alternative

The proposed project area is located within the Maryland Coastal Zone. Therefore, MDE is required to conduct a project review and determination of consistency for the project, referencing the goals and objectives of the Maryland Coastal Zone Management Program (CZMP). In Maryland, this review and determination process is conducted following submittal of state and/or federal permit applications such as the Joint Permit Application (JPA). The state's permit decision constitutes the states' consistency determination. .

In an email dated November 20, 2014, Mr. Elder Ghigiarelli, Federal Consistency Coordinator with MDE indicated that the proposed project is consistent with the Maryland Coastal Zone Management Program, as required by Section 307 of the CZMA, contingent upon authorization of the proposed wetlands and waterways impacts by the Wetlands and Waterways Program, and compliance with the Chesapeake Bay Critical Area requirements (see Appendix C).

5.2.2 Impact Potential – No Action Alternative

The no action alternative would cause no impact to the coastal waters and water quality within the Maryland coastal zone; however, groundwater contamination from the DRA would continue to impact Frog Mortar Creek.

5.2.3 Mitigation Measures

Proposed mitigation measures for impacts to water quality (Section 4.14) and wetlands (Section 4.15) are discussed below. MDE will review the draft EA document and will provide any additional mitigation recommendations that will be required to ensure consistency with the Maryland CZMP.

5.3 COMPATIBLE LAND USE

According to FAA environmental policy and procedures (FAA, 2006a), the compatibility of existing and planned land use in the vicinity of airports is typically associated with the extent of the airport's future noise impacts. If the noise analysis conducted in support of a project concludes that there are no significant noise impacts, the same conclusion can generally be drawn regarding the compatibility of land use in the areas around the airport. As described below, noise levels would not be affected by the proposed action.

In addition, a July 2003 interagency Memorandum of Agreement (MOA) addressing wildlife hazards to airports states that any proposed project near an airport must not create a wildlife hazard for airport operations (Appendix H). Because the proposed DRA project would not create additional wildlife attractants (e.g., wetlands), and would, in fact, decrease the available wildlife habitat in the vicinity of the airport (due to the removal of trees and brush for the building and access roads), it would not create a wildlife hazard. In addition, the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS), Wildlife Service has stated in a letter dated November 9, 2012 that they "do not see anything at this time that would pose an increased threat to aircraft safety resulting from the proposed project" (see Appendix C).

5.4 CONSTRUCTION IMPACTS

The construction of the preferred action alternative would cause temporary impacts associated with roadway construction, utility construction, and building construction. Anticipated temporary

impacts would include construction noise, dust and noise from heavy equipment traffic, disposal of construction debris, and air and water pollution. Specific construction related impacts are discussed in greater detail under each of the individual resource categories in this section.

Mitigation for construction impacts would be addressed by using the guidelines established for Erosion and Sediment Control as defined by the *2010 Maryland Standards and Specifications for Soil Erosion and Sediment Control* (Draft October 2009), MDE - Water Management Administration - *Maryland Stormwater Design Manual, Volumes I & II*, and *General Permit for Stormwater Associated with Construction Activity* effective January 1, 2009) and other best management practices for avoiding/minimizing/mitigating construction related impacts to air, water, and soils.

5.5 SECTION 4(F) RESOURCES

No Section 4(f) properties are located within the DRA project area, and the closest Section 4(f) properties (Chesapeake Village Park and Kingston Point Park) are located over one mile west of the DRA. As such, the proposed project would have no direct or indirect impact on Section 4(f) resources.

5.6 FARMLANDS

No agricultural zoned areas, existing agricultural land uses, or farmlands are located within the vicinity of the proposed project. Therefore, no farmlands would be converted to non-agricultural use, and the proposed project would not be subject to the provisions of the Farmland Protection Policy Act (FPPA). In addition, a review of the Baltimore County soil data via the NRCS Web Soil Survey did not identify any prime farmland soils. Lastly, implementation of the preferred alternative would not be affected by FPPA because MTN qualifies as an urban development area.

5.7 FISH, WILDLIFE, AND PLANTS

For this analysis, impacts to biotic resources, including fish, wildlife, and plants were considered by evaluating the expected impact to habitats and forested areas within the DRA. To quantify these impacts the limits of both Habitat Protection Areas (HPAs) and forest boundaries were compared with the proposed limits of disturbance for the project.

5.7.1 Habitat Protection Areas - Impact Potential – Preferred Alternative

Portions of HPAs including non-tidal wetlands, non-tidal wetland buffers, steep slopes, steep slope buffers, as well as areas within the 100-foot tidal buffer that will be impacted by project activities are depicted in Figure 5-1. The 100-foot buffer has been expanded to include contiguous wetland or steep slope areas (referred to as the "expanded tidal buffer"). In addition, the 25-foot buffer surrounding both the non-tidal wetlands and steep slopes are shown on Figure 5-1. Most of these habitats have been highly disturbed in the past and contain mostly disturbance-oriented species.

Table 5-2 presents the proposed impacts to these HPAs and the 100-foot buffer. Impacts located within and outside of the expanded tidal buffer are indicated in the table. Note that during the final design and permitting process, as described in 5.7.3 and Appendix C, the amount of impact has been revised from the Draft EA.

Area 1 - Access road crossing of unnamed tributary — Impacts in this area will be within the 100-foot expanded tidal buffer and will include clearing and grading a small wetland area and a steep slope area. These areas will be disturbed when the existing road is widened and at the stream channel crossing during culvert installation. The total impact area is 18,384 square feet (sf), and includes a small emergent wetland and its surrounding 25-foot buffer, an area of steep slopes and the surrounding 25-foot steep slope buffer, and 174 linear feet of stream channel.

This impact is unavoidable because the road must be widened to meet construction traffic needs and to meet local/airport safety and fire protection requirements. Crossing the unnamed tributary stream is also necessary for DRA access. These changes will have a permanent impact; however, given the relatively small nature of the impacted area, previous disturbance in the DRA, and lack of unique wildlife habitat, no significant ecological impact to the habitat in the general vicinity is expected to occur as a result of this activity.

Area 2 - Northern well access — Impacts in this area will be within the 100-foot expanded tidal buffer, and will include clearing and grading of a small wetland area and steep slope area to widen the paths to the well locations. The total impact area is 544 sf and includes impact to a small emergent wetland and an area of steep slopes; each of these areas includes a surrounding 25-foot buffer.

The proposed project will require clearing along the edge of existing DRA paths or trails to allow for piping and equipment transport to and from the well locations. Minor forest clearing along the expanded tidal buffer boundary is necessary because groundwater wells must be located near Frog Mortar Creek in order to capture migration of the groundwater plume.

Area 3 - Central well access — Impacts in this area will be within the 100-foot expanded tidal buffer and will include clearing and grading of a small steep slope area to widen the paths to the well locations. The total area of impact is 9,069 sf and includes a small area of steep slopes and its surrounding 25-foot buffer. Minor forest clearing along the expanded tidal buffer boundary is necessary because groundwater wells must be located near Frog Mortar Creek in order to capture migration of the groundwater plume.

Area 4 - Outfall discharge pipe — Impacts in this area will also be within the 100-foot expanded tidal buffer and include clearing and grading of a small steep slope area to widen the access paths to the well locations near the treatment plant and to install the outfall discharge pipe. The total impacted area is 13,726 sf and includes a small area of steep slopes and its 25-foot buffer. Minor forest clearing along the expanded tidal buffer boundary in this area is necessary because groundwater wells must be located near Frog Mortar Creek in order to capture migration of the groundwater plume, and for placement of the outfall discharge pipe.

Area 5 - Southern well access — Impacts in this area will be within the 100-foot expanded tidal buffer, and include clearing and grading of a small steep slope area to widen the paths to the well locations. The total impact area is 5,452 sf and includes a small area of steep slopes and their 25-foot buffer. Minor forest clearing along the expanded tidal buffer boundary is necessary because groundwater wells must be located near Frog Mortar Creek in order to capture migration of the groundwater plume.

Area 6 - Access road south of unnamed tributary and treatment plant area — Impacts in this area are related to widening the road and treatment plant area and include clearing and grading of a small wetland area and a steep slope area. Affected areas are outside the 100-foot expanded tidal buffer. The total impacted area is 3,832 sf and includes impacts to a small emergent wetland and its surrounding 25-foot wetland buffer, and an area of steep slopes and its 25-foot buffer.

This impact is unavoidable as it is necessary to widen the road to meet construction traffic needs and local/airport safety and fire protection requirements. This will be a permanent impact; however, given the relatively small nature of the impacted area, previous disturbance at the DRA, and the lack of unique wildlife habitat, no significant ecological impacts to habitat in the general vicinity is expected to occur as a result of this activity.

Area 7 – Stormwater management area at south end— Impacts in this area will be outside the 100-foot expanded tidal buffer, and include clearing and grading of a small wetland buffer area. The total impact area is 129 sf and includes a small area of wetland 25-foot buffer. This minor impact is necessary for development of adequate stormwater management at the site.

Area 8 - Stormwater discharge pipe — Impacts in this area would be outside the 100-foot expanded tidal buffer, and will include clearing and grading of a small steep slope area to install the pipe. The total impact area is 3,579 sf and includes impact to an area of steep slopes and its surrounding 25-foot buffer. A narrow clearing for the stormwater discharge corridor will cause minor forest clearing, but will be necessary to minimize the length of corridor needed to convey stormwater to a discharge location.

5.7.2 Habitat Protection Areas - Impact Potential – No Action Alternative

Because the no action alternative would leave the site in its current condition, there would be no impacts to critical area resources (including HPAs) or the 100-foot tidal buffer.

5.7.3 Habitat Protection Areas - Avoidance, Minimization, and Mitigation Measures

Avoidance and Minimization Measures — The preferred action alternative avoids critical area resources to the maximum extent practicable. The treatment plant, parking area, and the vast majority of the well pads and infrastructure have been intentionally placed outside the boundaries of critical area HPAs to avoid and minimize impacts to these resources. Remaining impacts associated with the main access road are unavoidable due to the need for widening the existing road for safety/emergency vehicle traffic and because no other access to the site exists. The remaining impacts associated with the well pad locations are likewise unavoidable due to the physical limitations of the site and the need to locate the wells where groundwater flow modeling indicates is necessary to provide capture of migrating groundwater. Finally, the remaining

impacts to Frog Mortar Creek resulting from installation of the outfall discharge pipe are unavoidable due to the need for the pipe to extend below mean low water to allow for proper mixing with ambient water and to comply with the requirements of the NPDES permit for the project. In addition, all remaining impacts to HPAs will be minimized through use of best management practices to be implemented under an approved MDE erosion and sediment control and stormwater management plan.

Mitigation Measures — Compliance with Chesapeake Bay Critical Area Commission guidelines requires mitigation measures to offset the lost functions and values within HPAs. MAA has been coordinating with staff of the Critical Area Commission (CAC) to identify impacts to critical area resources and determine the appropriate level of mitigation for these impacts for compliance with Critical Area Act requirements. During the Critical Area Commission meeting held on December 3, 2014 the CAC approved the proposed project with the following three conditions:

1. Submittal of various permits to the commission (E&S, stormwater, wetlands) – this is standard and usually the board does not vote on a project until these permits are complete.

2. Two years to identify a mitigation site for forest impacts (see Section 5.7.6 below) with progress reports submitted every three months.

3. One year to complete planting after CAC approves the planting plan for the mitigation site.

Appendix C provides a description of the agency consultation and coordination efforts conducted as part of the preparation of this EA, which have included conducting an initial agency scoping/pre-application meeting to gain early feedback on proposed project plans, a subsequent Joint Evaluation Committee meeting to review specific design details and resource impacts, and approval of the proposed project by the CAC during the December 3, 2014 meeting. MAA will continue to coordinate with the CAC to develop a final, detailed mitigation plan to offset anticipated impacts, and ensure compliance with the critical area act. Implementation of, and adherence to the final CAC approved mitigation requirements will ensure that impacts resulting from the preferred action alternative are offset and are therefore below significance. It should be noted that mitigation of impacts to critical area resources will be conducted off-site to avoid creation of wildlife attractants in accordance with *FAA AC 150/5200-33B, Hazardous Wildlife*

Attractants On or Near Airports and will be accomplished by planting, preservation, in lieu fee, or a combination of these measures. In accordance with the provisions of the Critical Care Act, the final mitigation measures will be established in consultation with the Critical Area Commission.

5.7.4 Forest Resources – Impact Potential – Preferred Alternative

As described in Section 4.7.4, forested areas in the DRA are mostly early successional stands comprised of disturbance-oriented species. These stands are relatively young and have matured following use of the area for disposal. Since the project area is within an area classified as an intensely developed area (IDA), and DRA forest stands are less than 50 acres in size, none of the forested areas in the DRA qualify as forest interior dwelling species (FIDS) habitat. The location of the treatment facility was chosen to be in the largest non-forested area available on-site, thus minimizing forest-related impacts to the maximum extent practicable.

The limits of forest resources identified within the DRA were compared with the proposed limits of disturbance for preferred alternative. Several forest stands will be impacted by the proposed remediation project (Figure 5-2). However, most of these stands consist of relatively young forest and contain mostly disturbance-oriented species.

Table 5-3 presents the proposed impacts to existing forest stands. Because the entire DRA is located within the Chesapeake Bay Critical Area, the impacts within the expanded buffer are separated from those outside the buffer. Forest clearing associated with the preferred alternative is expected to total approximately 158,424 sf (3.6 acres), 120,467 sf (2.8 acres) of which is outside the expanded tidal buffer, with the remaining 37,957 sf (0.80 acres) occurring within the expanded tidal boundary. Note that during the final design and permitting process, as described in Appendix C, the amount of impact has been revised from the Draft EA.

The exact nature and extent of these impacts to existing forest stands will be refined and minimized to the extent practicable during the final design of the project.

Area 1- Access Road Crossing of Unnamed Tributary — Forest clearing in this area will include 13,200 sf within the expanded tidal buffer. Forest clearing surrounding the unnamed stream crossing will be necessary to widen the road to meet the needs for truck construction traffic and local/airport safety and fire protection requirements. This will be a permanent impact;

however, given that only a narrow portion of the forest edge along the existing road will be affected, it is not expected that any significant wildlife impacts, particularly to species preferring interior forest, will occur. Also, runoff and infiltration functions will be lost in the cleared area; however, stormwater management design plans that will include BMPs, ESD to the MEP, and compliance with the Critical Area 10% rule for reducing post development sediment loads will offset these lost functions and values. In addition, while this clearing will occur within the expanded tidal buffer it is unavoidable due to the need to cross the unnamed tributary stream to access the DRA.

Areas 2, 3, and 5 - Well Access Roads and Outfall Discharge Pipe — Forest clearing will be 30,465 sf, both within and outside of the expanded tidal buffer. Access from the treatment facility to the groundwater wells will require clearing along the edge of existing paths or trails in the DRA to allow for piping and equipment transport to and from the well locations. Several hundred square feet of forest clearing is needed for installation of the outfall discharge pipe between the treatment plant and Frog Mortar Creek. Much of this impact is within the expanded tidal buffer. Minor forest clearing along the expanded tidal buffer boundary is unavoidable because groundwater wells must be located near Frog Mortar Creek in order to capture the migrating groundwater plume.

Area 4 - Access Road North of Unnamed Tributary — Forest clearing in this area would include 7,964 sf outside of the expanded tidal buffer, and is necessary to widen the road to meet construction traffic needs and local/airport safety and fire protection requirements. This impact will be permanent, but only a narrow portion of forest "edge" along the existing road would be affected. Clearing is not expected to significantly impact wildlife, particularly to species preferring interior forest. Although runoff and infiltration functions will be lost in the cleared area, design plans will include best management practices (BMPs) for stormwater management, environmental site design (ESD) to the maximum extent practicable (MEP), and compliance with the CAC 10% rule for reducing post development sediment loads to offset these lost functions and values.

Area 6 - Access Road South of Unnamed Road and Treatment Facility — Forest clearing in this area will include 106,795 sf outside of the expanded tidal buffer. Forest clearing along the edge of the existing road will be necessary to widen the road to meet the needs for truck

construction traffic and local/airport safety and fire protection requirements. This will be a permanent impact; however, given that only a narrow portion of the forest edge along the existing road would be affected, it is not expected that any significant wildlife impacts, particularly to species preferring interior forest, will occur. Also, runoff and infiltration functions will be lost in the cleared area; however, stormwater management design plans that will include BMPs, ESD to the MEP, and compliance with the Critical Area 10% rule for reducing post development sediment loads will offset these lost functions and values.

In addition, this impact area will include some clearing of the forest edge surrounding the location of the treatment facility, as well as a narrow corridor for the stormwater discharge location. These will be permanent impacts. The treatment facility location was chosen to be located in the largest non-forested area available on site and therefore to minimize the amount of forest related impacts to the maximum extent practicable. The amount of forest clearing surrounding the edge of the treatment facility is necessary to accommodate parking and storage areas and was likewise reduced in size to the maximum extent practicable to minimize tree clearing. A narrow clearing for the stormwater discharge corridor will cause minor forest clearing but will be necessary to minimize the length of corridor needed to convey stormwater to a discharge location.

5.7.5 Forest Resources – Impact Potential – No Action Alternative

Because the no action alternative would leave the site in its current condition, there would be no impacts to forest resources.

5.7.6 Forest Resources – Avoidance, Minimization and Mitigation Measures

Avoidance and Minimization Measures — The preferred action alternative avoids forest resources to the maximum extent practicable. The treatment plant, parking area, and the vast majority of the well pads and infrastructure have been intentionally placed outside the boundaries of forested areas to avoid and minimize impacts to these resources. Remaining impacts associated with the main access road are unavoidable due to the need for widening the existing road for safety/emergency vehicle traffic and because no other access to the site exists. The remaining impacts associated with the well pad locations is likewise unavoidable due to the physical limitations of the site and the need to locate the wells where groundwater flow modeling

indicates is necessary to provide capture of migrating groundwater. Finally, the remaining impacts resulting from installation of the outfall discharge pipe are unavoidable due to the need for the pipe to discharge to Frog Mortar Creek to allow for proper mixing with ambient water and to comply with the requirements of the NPDES permit for the project. In addition, all remaining impacts to forested areas will be minimized through use of best management practices to be implemented under an approved MDE erosion and sediment control and stormwater management plan.

Mitigation Measures — Compliance with Chesapeake Bay Critical Area Commission guidelines requires mitigation measures to offset the lost forest resources. MAA has been coordinating with staff of the Critical Area Commission (CAC) to identify impacts to critical area resources including forest and to determine the appropriate level of mitigation for these impacts for compliance with Critical Area Act requirements. During the Critical Area Commission meeting held on December 3, 2014 the CAC approved the proposed project with the following three conditions:

1. Submittal of various permits to the commission (E&S, stormwater, wetlands) – this is standard and usually the board does not vote on a project until these permits are complete.

2. Two years to identify a mitigation site for forest impacts with progress reports submitted every three months.

3. One year to complete planting after CAC approves the planting plan for the mitigation site.

As part of the CAC approval, forest impacts within the expanded tidal buffer (37,957 sq. ft.) will be mitigated at a 2:1 ratio, while impacts outside of the buffer (120,567 sq. ft.) are to be mitigated at a 1:1 ratio. Therefore, the total forest mitigation to be provided in order to offset the proposed impacts to forest resources is 196,481 sq. ft (4.5 acres).

Appendix C provides a description of the agency consultation and coordination efforts conducted as part of the preparation of this EA, which have included conducting an initial agency scoping/pre-application meeting to gain early feedback on proposed project plans, a subsequent Joint Evaluation Committee meeting to review specific design details and resource impacts, and approval of the proposed project by the CAC during the December 3, 2014 meeting. MAA will continue to coordinate with the CAC to develop a final, detailed mitigation plan to offset

anticipated impacts, and ensure compliance with the critical area act. Implementation of, and adherence to the final CAC approved mitigation requirements will ensure that impacts resulting from the preferred action alternative are offset and are therefore below significance. It should be noted that mitigation of impacts to forest resources will be conducted off-site to avoid creation of wildlife attractants in accordance with *FAA AC 150/5200-33B, Hazardous Wildlife Attractants On or Near Airports* and will be accomplished by planting, preservation, in lieu fee, or a combination of these measures. In accordance with the provisions of the Critical Care Act, the final mitigation measures will be established in consultation with the Critical Area Commission.

5.7.7 Rare, Threatened and Endangered Species

As noted in Section 4.7.5, the Maryland Department of Natural Resources (MDNR) Wildlife and Heritage and the United States Fish and Wildlife Service (USFWS) stated that no state or federally proposed or listed endangered or threatened species are known to exist in the project area. Therefore, no further consultation with these agencies is required, and it is expected that the proposed remediation project would have no effect or impact on listed species under MDNR and USFWS jurisdiction.

The National Marine Fisheries Service (NMFS) indicated that while there are currently no records of federally listed aquatic species under NMFS jurisdiction in Frog Mortar Creek, the endangered shortnose sturgeon and all five distinct population segments of the endangered Atlantic sturgeon are known to occur in the Maryland portion of the Chesapeake Bay. In addition, four sea turtle species, including leatherback, Kemp's riddle, loggerhead, and green sea turtles are also known to occur within Chesapeake Bay, particularly during the spring, summer, and fall, when water temperatures are warm.

While not listed under the Endangered Species Act, the bald eagle is currently protected by the USFWS under the Bald and Golden Eagle Protection Act (BGEPA). Also, as noted previously, an existing bald eagle nest is located adjacent to Frog Mortar Creek approximately 1,500 feet north of the DRA project area and approximately 80 feet east of utility installations planned for Lynbrook Road.

Frog Mortar Creek appears to contain EFH for several species and life stages as listed in Section 4.7.7 above. This includes the portion of the DRA where the proposed outfall discharge system would be located.

An analysis of potential impacts to shortnose sturgeon, Atlantic sturgeon, and sea turtles under the Endangered Species Act, as well as an analysis of potential impacts to the bald eagle under the BGEPA and EFH under the MSA for both the preferred and no action alternatives, is provided below.

5.7.8 Rare, Threatened and Endangered Species - Impact Potential – Preferred Alternative

Threatened and Endangered Species — Both shortnose and Atlantic sturgeon typically spawn in deeper portions of large rivers such as the Potomac River and other sizeable river systems in the Chesapeake Bay. Given the relatively small size and general lack of suitable habitat within the project area, it is unlikely that Atlantic sturgeon will use Frog Mortar Creek during spawning; however, occasional transient individuals could occur in the general vicinity.

The proposed project primarily affects terrestrial habitats adjacent to Frog Mortar Creek; however, construction and operation of the treatment facility and related stormwater and outfall discharges do have the potential to impact aquatic resources. All stormwater management in the project area will be completed using the design plans described in Section 3.2.5, which employ BMPs and ESD to the MEP. These plans were approved by MDE on December 2, 2014 as indicated in 5.16.3 and as found in Appendix C). Therefore, stormwater runoff in the project area is not expected to significantly impact the adjacent tidal and estuarine habitats.

Installation and operation of the outfall discharge pipe below the mean high water line and the release of treated groundwater into Frog Mortar Creek could cause physical disruption of creek bottom habitat. However, the spatial extent (footprint) of the pipe and anchoring system would be small (approximately 700 sf and 80 linear feet [lf]); therefore, impact to available bottom habitat along the shoreline of Frog Mortar Creek should be minimal. Discharge of treated groundwater must be in compliance with NPDES and TMDL requirements to maintain water quality standards. Therefore, it is not expected that any significant chemical or discharge-related impacts would occur to Frog Mortar Creek or the nearby estuarine habitat.

Because any sturgeon that may occur in the DRA vicinity would be occasional and transient, any physical and chemical impacts to Frog Mortar Creek sturgeon are expected to be minor, as little, if any, impact to sturgeon would occur as a result of project activities. While a point source discharge of treated groundwater will result from implementation of the groundwater remediation project, the overall water quality in the portion of Frog Mortar Creek adjacent to the DRA should be improved by the proposed project due to the reduction of contamination from groundwater discharge.

Several sea turtles are known to use portions of the Chesapeake Bay; however, use of the bay is typically during spring, summer, and fall when water temperatures are warm. As with the shortnose and Atlantic sturgeon, sea turtle occurrence in Frog Mortar Creek adjacent to the DRA is most likely transient; so little if any impact to its estuarine habitat is expected. In addition, in an email dated May 15, 2015 (see Appendix C), Mr. Brian Hopper with NOAA Fisheries stated:

> "Although four species of sea turtles and Atlantic sturgeon originating from five listed Distinct Population Segments (DPS) are known to occur in the Chesapeake Bay, based on the activities associated with the project and the project's location, we do not object to the determination that these species will not be exposed to any direct or indirect effects of the action. We have not identified any effects on listed species from this proposed action and do not see a need to consult, however, under the statute and our regulations it is up to the action agency to make the determination of whether to consult. As such, no further coordination on this activity with the NMFS Protected Resources Division is necessary at this time".

Therefore, based on the analysis described above and the assessment received from NOAA Fisheries it is expected that the project will have no effect on listed species under NOAA Fisheries jurisdiction.

Bald Eagle — The existing bald eagle nest located 1,500 feet north of the DRA is outside the standard distance of 660 feet that is defined as the distance at which potential disturbance to nesting can occur. Given the distance from the nest, construction activities in the DRA would not affect the eagle nest or nesting behavior. In addition, operation of the groundwater plume

treatment facility would include only low level noise, little or no air emissions, and minimal human activity. Therefore, operation of the facility would also have no effect on the eagle nest.

Trenching of utilities during construction along Lynbrook Road has the potential to disturb nesting bald eagles, because the road is less than 100 feet from the nest. However, construction activity will not take place during the nesting/fledgling season (time of year restriction) in accordance with the National Bald Eagle Management Guidelines, to avoid disturbance to the nesting pair. Therefore, no impact to nesting bald eagles is expected from proposed utility construction work.

Also, vehicle traffic on the Lynbrook Road adjacent to the nest will only take place outside the nesting season; therefore, this traffic is expected to have no impact on bald eagles. During the nesting season vehicle traffic will be rerouted to the west over 600 feet from the existing eagle nest. While the rerouted traffic volume of 10 to 15 trucks per day on average will still be within the standard 660 foot buffer, the distance from the nest will be over 600 feet and very close to the regulated distance. In addition, the route during the nesting season has been located as far from the nest as possible without either interfering with airport activities or necessitating the development of an entirely new roadway. Therefore, the bald eagle nest will be avoided to the maximum extent practicable and no impact to nesting bald eagles is expected from vehicular traffic during the nesting season.

The nesting bald eagle pair likely forages in Frog Mortar Creek and nearby Middle River and the Chesapeake Bay. Therefore, construction and operation of the outfall discharge has potential to affect foraging eagles. However, because construction is temporary, will use best management practices, and will take place over a relatively small portion of the available foraging habitat in Frog Mortar Creek, construction is expected to have little or no effect on eagle foraging habitat and prey species in the area. In addition, operation of the outfall discharge will comply with the appropriate NPDES discharge permit, thereby minimizing any negative impact on water quality and prey species. In fact, it is expected that the outfall discharge from the treatment facility will actually improve water quality in Frog Mortar Creek near the DRA. Therefore, no adverse impact to bald eagle foraging habitat is expected.

Essential Fish Habitat — NMFS (2004) EFH guidance provides the following definition of adverse effects:

"Adverse effect means any impact that reduces quality and/or quantity of EFH, including direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810(a))."

Potential impacts to EFH are limited to direct physical disturbance of tidal bottom habitat and indirect effects of increased sedimentation due to installation of the outfall discharge. The physical size and footprint of the outfall discharge would eliminate a small (approximately several hundred square feet) area of shallow bottom habitat in comparison to the amount of existing bottom habitat found in Frog Mortar Creek. In addition, increases in sedimentation would be minimal based on the use of BMPs.

A letter to the NMFS requesting scoping on the EA including coordination and review of potential effects on EFH was sent to the NMFS on April 14, 2013. Currently, no response has been received from NMFS regarding issues or concerns related to potential effects on EFH from the proposed action.

5.7.9 Rare, Threatened and Endangered Species - Impact Potential – No Action Alternative

Because the no action alternative would leave the site in its current condition there would be no impacts associated with stormwater runoff, installation of the outfall discharge, and no discharge of treated groundwater to nearby estuarine habitat would occur. However, the contaminated groundwater plume would continue to migrate toward Frog Mortar Creek, thereby reducing the quality of the aquatic system in the vicinity of the DRA for these sensitive species.

5.7.10 Rare, Threatened and Endangered Species - Mitigation Measures

As stated above, time of year restrictions will be used for construction and access on Lynbrook Road and MDE approved stormwater management (see Section 5.16.3 and Appendix C) and in-water construction BMPs will be employed to reduce or eliminate sediment migration into Frog Mortar Creek during construction and operation of the remediation facility. In addition, treated

groundwater discharges will comply with all conditions and requirements of an MDE NPDES permit, thereby maintaining water quality standards. Therefore, no significant or adverse effects are expected to threatened and endangered species, bald eagle, and EFH.

5.8 FLOODPLAINS AND FLOODWAYS

Executive Order 11988 directs federal agencies to take action to avoid/minimize the risk of flood loss; to minimize potential flood impacts of floods to human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains. Agencies are required to make a finding that there is no practicable alternative before starting an action that would encroach the base 100-year floodplain. Impacts to the 100-year floodplain can occur in two forms: directly through the changes to volumetric capacity of the floodplain, or indirectly through an increase in the total volume of water arriving at, and being conveyed by, the floodplain.

5.8.1 Impact Potential – Preferred Alternative

State and federal properties in the State of Maryland are not mapped by Federal Emergency Management Agency (FEMA); therefore, the FEMA national flood insurance rate maps (FIRM) for the Middle River area do not show specific floodplains at MTN. Coordination with MDNR indicated that MTN is located within the Middle River tidal floodplain. According to the Baltimore County Department of Public Works, the 100-year floodplain elevation for Middle River is approximately 9 feet above msl. While the airport property is not specifically included on FIRM maps, a review of these maps was conducted to identify the surrounding floodplain locations. The proposed limits of disturbance for the proposed project was compared to floodplain limits to determine the extent of encroachment, and the only floodplain encroachment anticipated involves a small portion of the Frog Mortar Creek tidal floodplain that will be impacted by installation of the outfall discharge pipe.

Discharge of treated groundwater is a necessary component of the proposed action, and discharging to Frog Mortar Creek is the only feasible discharge location. Every attempt to minimize impacts to the creek will be made during final design. Placement of fill will not be expected below the floodplain boundary; therefore, no changes to floodplain elevation are anticipated. Final grades for the outfall discharge pipe grading and associated installation within

the floodplain will be maintained at existing elevations to the maximum extent practicable, thereby minimizing potential impacts to 100-year flood elevations.

5.8.2 Impact Potential – No Action Alternative

With implementation of the No Action Alternative, no development would occur; therefore, there would be no impact to floodplains.

5.8.3 Avoidance, Minimization, and Mitigation Measures

Avoidance and Minimization Measures — While floodplains in the study area are tidal, and are therefore not formally regulated under either Section 404 of the CWA or MDE regulations associated with alteration of wetlands, waterways, or floodplains, the preferred action alternative avoids floodplains in the project area to the maximum extent practicable. The treatment plant, parking area, and the vast majority of the well pads and infrastructure have been intentionally placed outside of floodplain boundaries to avoid and minimize impacts to these resources. Remaining impacts associated with the main access road are unavoidable due to the need for widening the existing road for safety/emergency vehicle traffic and because no other access to the site exists. The remaining impacts associated with the well pad locations is likewise unavoidable due to the physical limitations of the site and the need to locate the wells where groundwater flow modeling indicates is necessary to provide capture of migrating groundwater. Finally, the remaining impacts resulting from installation of the outfall discharge pipe are unavoidable due to the need for the pipe to discharge to Frog Mortar Creek to allow for proper mixing with ambient water and to comply with the requirements of the expected NPDES permit for the project. In addition, all remaining impacts to floodplain areas will be minimized through use of best management practices to be implemented under an approved MDE erosion and sediment control and stormwater management plan.

Mitigation Measures — Anticipated impacts to floodplains are not considered a significant encroachment, as there is no likelihood of loss of human life, no adverse effect on the safe operation of the airport, and no notable adverse effect on the natural and beneficial value of the floodplain. Also, any impacts to the floodplain will be confined to MAA-owned property. Therefore, no mitigation is expected to be required by the CAC or other relevant agencies.

5.9 HAZARDOUS MATERIALS, POLLUTION PREVENTION, AND SOLID WASTE

As described in Section 1.0, groundwater and soils in the DRA are contaminated by VOCs, petroleum hydrocarbons, 1,4-dioxane, and heavy metals. Contaminated groundwater also appears to be migrating off-site into Frog Mortar Creek. A complete summary of hazardous materials found in soil and groundwater in the DRA can be found in Section 1.0. An RI report and accompanying human health risk assessment (HHRA) and ecological risk assessment (ERA) was prepared in 2010 to summarize the results of the investigation and identify specific COC (Tetra Tech 2012b); The RI was reviewed and approved by MDE, a summary of the RI results follows:

- DRA groundwater is impacted by a range of chemicals of concern associated with former nearby industrial operations, including: chlorinated volatile organic compounds (cVOCs) such as trichloroethene (TCE), *cis*-1,2-dichloroethene (*cis*-1,2-DCE), and vinyl chloride (VC) all exceeding United States Environmental Protection Agency (USEPA) federal maximum contaminant levels (MCLs) and Maryland groundwater cleanup standards.

- 1,4-Dioxane is at relatively high concentrations based on current USEPA guidance.

- Concentrations of the metals cadmium, chromium, lead, and mercury in groundwater exceed USEPA MCL and Maryland groundwater cleanup standards in some samples.

- Concentrations of benzene, toluene, ethylbenzene, and xylene (BTEX), associated with petroleum constituents in groundwater, exceed USEPA MCLs and Maryland groundwater cleanup standards in some samples.

- Total petroleum hydrocarbons-diesel range organics (TPH–DRO) total petroleum hydrocarbons-gasoline range organics (TPH-GRO) in groundwater exceed Maryland standards in the upper surficial aquifer

As described in the RI report, contamination of soil and groundwater currently exceeds certain state/federal criteria. The immediate remedial focus that is represented by the Preferred Alternative is to mitigate potential human exposure due to the apparent migration of contaminated groundwater into Frog Mortar Creek. Potential alternatives for addressing other impacted media in the DRA will be evaluated in a feasibility study currently scheduled for completion in 2015.

FAA Order 1050.1E, Change 1 requires consideration of a pollution prevention plan for actions that involve hazardous materials and solid wastes. Federal, state, and local laws strictly regulate

the handling and disposal of hazardous substances and hazardous materials. Currently, no facilities or operations occur within the DRA. While no waste is normally generated at the DRA, site investigation activities do generate wastes (groundwater from well sampling activities, soil cuttings from soil borings, decontamination fluids, etc.) that are containerized, characterized, and properly disposed of off-site. Occasionally some of this waste is characterized as hazardous in accordance with RCRA.

Solid waste will also be generated during the operation of the treatment plant. Solid waste will be produced during the pre-treatment process, where filtration will remove inorganics (metals) and suspended solids. The resulting sludge generated by the pre-treatment process will be thickened and dewatered, and dewatered solids will be characterized for appropriate off-site disposal in accordance with all applicable state, federal, and local laws at an MDE approved disposal facility. The solids will be primarily iron, but will also include other metals removed from the treated groundwater. If the solids are characterized as hazardous, they will be managed as described above. Should they be non-hazardous, they will be managed as described in Section 5.9.4. Waste characterization will not be possible until the treatment facility begins operation. The expected volume of solid waste generated during the pre-treatment process is approximately 12 cubic feet (CF) per day, or approximately 3 CY per week.

5.9.1 Impact Potential – Preferred Alternative

While the proposed project is intended to remediate groundwater contamination at the site, potential impacts could result if construction activities disturb existing hazardous materials or contaminated soil, causing them to be released into the surrounding environment. However, best management practices will be used to contain soils in place to the maximum extent practicable under the MDE approved erosion and sediment control plan (see Section 15.6.3 and Appendix C). Also, an approved construction stormwater permit will be obtained from MDE that will include measures for treatment and/or containment and disposal of stormwater runoff that comes into contact with contaminated soils. Plans will be in place to ensure any spills that occur during construction or any waste that is generated are properly managed to prevent impacts. Appendix C provides a description of the consultation and coordination with MDE's erosion and sediment control and stormwater management divisions that has been conducted as part of the development of this EA, as well as the approval of the project's stormwater management and

erosion and sediment control plans. MAA will comply with the terms and conditions of the MDE approved stormwater management and erosion and sediment control plans, thereby ensuring that impacts on the environment associated with soil disturbance are reduced to a level below significance.

Impacts could also occur via introduction and use of hazardous materials (sulfuric acid, caustic, and hydrogen peroxide) associated with the operation of the treatment facility. Estimated monthly chemical requirements are approximately at 3,000 gallons for caustic, 400 gallons for sulfuric acid, and 1,500 gallons for hydrogen peroxide.

The use and volume of these hazardous materials could increase the risk of accidental spills or leaks, resulting in the release of these products into the environment. Procedures such as ensuring proper equipment maintenance and functionality, best management practices such as containment and double-walled tanks, containing or treating, as necessary, on-site stormwater during construction, developing standardized operating procedures for material handling and storage, and providing spill prevention and control measures will greatly reduce the likelihood of any potential releases.

Pollution prevention, in accordance with the Federal Pollution Prevention Act, involves source reduction, and recycling, treating, and disposing of materials in an environmentally safe manner. Maryland regulations support reduction, recovery, and re-use practices to reduce the generation of hazardous materials [COMAR 14.14.05B(1)].

The proposed project will have requirements for the handling of hazardous wastes. Prevention methods may include, but are not limited to, oil spill prevention (40 CFR 112) and stormwater discharge (COMAR 26.08.04). Construction requires documentation that all hazardous materials will be disposed of in accordance with local, state, and federal requirements. In addition, construction contracts and plans will require appropriate measures that protect the health and safety of all employees involved with the proposed improvements. Environmental hazards may require contractors to have additional training or certification (such as Occupational Safety and Health Act [OSHA] hazardous material worker training), and specialized equipment. Worker certification, and specialized personal protective equipment, particularly when disturbing soil and working with groundwater in the DRA, may also be needed.

In addition, the proposed action is expected to have a beneficial effect on existing impacts at the site by limiting contaminated groundwater flow to Frog Mortar Creek. This action has been reviewed and approved by MDE per the Superfund MOA and regulations found in the Maryland Hazardous Substance Response Plan (Code of Maryland Regulations [COMAR], Title 26, Subtitle 14). A copy of the Draft EA was forwarded directly to MDE Land Management Administration, Controlled Hazardous Substances Enforcement Division, for review and comment. MDE had no specific comments on the EA and found the project to be generally consistent with their plans, programs, and objectives (see Appendix C).

5.9.2 Impact Potential – No Action Alternative

The no action alternative does not involve the construction of any new facilities within the DRA, nor does it affect the operational characteristics of the MTN. Therefore, it would have no impact on the existing hazardous waste and solid waste in the DRA. Existing wastes would remain in place, and contaminated groundwater would continue migrating into Frog Mortar Creek.

5.9.3 Avoidance, Minimization, and Mitigation Measures

All hazardous materials and wastes will be managed in accordance with applicable state and federal regulations and guidelines to avoid and minimize associated impacts. In addition, solid waste generated during construction and during the treatment process will be disposed of at an appropriate facility designated by the state for disposal of such materials. The MAA Division of Environmental Compliance must be consulted before construction on contaminated soils begins to determine if any mitigation measures will be needed for site development.

5.9.4 Solid Waste/Pollution Prevention

Solid waste will also be generated during the operation of the treatment plant. Solid waste will be produced during the pre-treatment process, where filtration will remove inorganics (metals) and suspended solids. The resulting sludge generated by the pre-treatment process will be thickened and dewatered, and dewatered solids will be characterized for appropriate off-site disposal at an MDE approved disposal facility. The expected volume of solid waste generated during the pre-treatment process is approximately 12 cubic feet (CF) per day, or approximately 3 CY per week.

In addition, activated carbon will need to be periodically replaced. This will include approximately 6,000 pounds per year of liquid-phase activated carbon and approximately 5,000 pounds of vapor phase carbon every nine months. Carbon waste will be disposed of at an approved regeneration or disposal facility.

Other solid waste will include standard office and bathroom trash including paper, boxes, and other similar rubbish. The volume of this material is expected to be approximately 1 CY per week. This material will be disposed of at the local municipal facility or will be recycled.

The operation of the Proposed Action once constructed, would not generate a significant amount of solid waste compared to solid waste already generated by adjacent airport operations and would therefore not burden either the local municipal landfill or the approved disposal facility to be used for disposal of hazardous solid waste.

During construction, the developer/contractor will use disposal methods in accordance with state and local regulations. Any solid waste generated from the project will be temporary and relatively minor and will be properly disposed of at a permitted solid waste facility, or recycled, if possible and would therefore not burden the permitted solid waste facility. MAA will advise the selected developer/contractor to consider Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance,* during construction and implementation of the Proposed Action. The Order sets forth Federal energy requirements in several areas and states that Federal agencies should enhance efforts toward sustainable buildings and communities.

5.10 HISTORIC AND ARCHEOLOGICAL RESOURCES

The Maryland Historical Trust (MHT) was consulted in order to document historic resources within the project's area of potential effect (APE). Coordination with the MHT indicated that no listed historic properties (or properties eligible for listing) on the National Register of Historic Places (NRHP) occur within the DRA APE (see Appendix C). In addition, based on extensive historic and archaeological investigations conducted at the airport, only two nearby sites are currently eligible for listing in the NRHP: the Glenn L. Martin Airport and Glenn L. Martin production plant. Both of these sites and properties occur outside the DRA APE, and would

therefore not be affected by the proposed project. MHT indicated on April 30, 2014, that the project will have no adverse effect on historic properties (see Appendix C).

5.11 LIGHT EMISSIONS AND VISUAL EFFECTS

The proposed project would include only standard lighting associated with a business or commercial building, with no high intensity lighting being required. In addition, the treatment facility and its outdoor lights are not expected to be directly visible to the surrounding area, as the facility would be mostly surrounded by forest, and its height will not exceed 30 feet above ground surface at the roof peak. Light fixtures will use standard shielding to direct lighting to target areas and minimize light emissions to the surrounding region. Given that much of the surrounding area consists of residential and commercial development, the proposed development would add little to the existing light emissions in the area and would not detract from the area's visual quality.

5.12 NATURAL RESOURCES, ENERGY SUPPLIES, AND SUSTAINABLE DESIGN

Energy requirements associated with the proposed project normally fall into two categories: those related to increased consumption from stationary facilities (i.e., buildings that require heating, cooling, and other energy consuming systems), and those involving substantial increases in ground vehicle movement and their related fuel consumption. Direct and indirect increases in energy consumption caused by the planned remediation project are not anticipated to be significant, and would be accommodated by the regional power supply company and the extension of existing utility lines. The proposed project would not involve the use of any unusual or scarce materials and/or resources. In addition, there are no known deposits of valuable natural resources located on or in the vicinity of the DRA that would be affected by the proposed project. In addition, MAA will advise the selected contractor to consider Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance,* during construction and implementation of the Preferred Action. The order sets forth federal energy requirements in several areas and states that Federal agencies should enhance efforts toward sustainable buildings and communities.

5.13 NOISE

FAA policy (FAA, 2006a) dictates that a complete noise analysis must be completed for general aviation activities involving use or increases in aircraft operations, runway improvements, and helicopter traffic. Because the proposed project would not involve any of these activities, a noise analysis is therefore not required.

However, noise from non-aviation sources must also be considered for purposes of cumulative impacts analyses. Those noise sources include, but are not limited to, project-related construction activities and/or surface transportation in the project area. To determine surface transportation impacts, the Federal Highway Administration's (FHWA) *Procedures for Abatement of Highway Traffic Noise and Construction Noise* (23 Code of Federal Regulations [CFR] Part 772) was used (FHWA, 2011).

FAA Order 1051.1E defines noise impacts associated with build alternatives as being significant if they cause noise sensitive areas to experience an increase of 1.5 decibels (dB) or more in day-night Average Sound Level (DNL), at or above the "acceptable" 65 dB DN. Noise associated with construction of the proposed remediation facility would be temporary and cause only minor increases in noise. Noise sources during operation of the remediation facility would include groundwater and treatment pumps and other electrical equipment; however, generated noise would mostly be contained within the treatment building and would therefore be well below the threshold of significance, and would not contribute to a measurable increase over current background noise levels.

Also, because the DRA is located in a portion of MTN where no potential noise receptors or residential areas are located, noise levels associated with implementing the preferred alternative at the DRA are not expected to produce unacceptable noise levels.

5.14 INDUCED SOCIOECONOMIC IMPACTS

As stated in FAA Order 1050.1E, Change 1, Appendix B, Section 15, induced socioeconomic impacts are normally not significant unless there are also significant impacts in other categories, especially with regard to noise, land use, or direct social impacts. Implementing the proposed remediation project at the DRA would not affect existing noise (see Section 4.12) or land use

(see compatible land use section above) and would lead to only minor social impacts. Therefore, no affect is expected resulting from induced socioeconomic impacts.

5.15 SOCIAL IMPACTS AND CHILDREN'S HEALTH AND SAFETY

The analysis of socioeconomic impacts evaluates the proposed project's effects on the social and economic characteristics of affected communities. An analysis of significant potential socioeconomic impacts was performed using the following guidelines as thresholds:

- The project causes extensive relocation of the population, but sufficient replacement housing is unavailable
- The project causes extensive relocation of community businesses that would cause severe economic hardship for affected communities
- The project causes a disruption of local traffic patterns that substantially reduces the level of service of roads serving the airport and its surrounding communities
- The project causes a substantial loss in community tax base

An analysis of potential socioeconomic impacts was performed to determine whether the proposed projects would cause relocation of residences without sufficient available replacement housing; extensive relocation of community businesses creating a severe economic hardship for the community; disruption of local traffic patterns that would substantially reduce the Level of Service of roads serving the Airport and its surrounding communities; or a substantial loss in community tax base.

In addition, the analysis also considered potential effects on children's health and safety. Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, defines the risks to children's safety as those risks that are attributable to products or substances that the child is likely to touch or ingest. Per FAA's *Environmental Desk Reference for Airport Actions*, environmental documents should assess project-related impacts such as the generation of substances with the potential to have a disproportionate effect on children's environmental health or safety.

5.15.1 Impact Potential – Preferred Alternative

The proposed project will not cause the relocation of residences; disruption of local traffic patterns that would substantially reduce the service level of roads in the airport vicinity and its surrounding communities; or a substantial loss in community tax base. No residential or commercial areas, other than the airport itself, are adjacent to the DRA. In addition, the proposed project will not generate significant levels of noise, or visual or ecological impacts that could affect nearby communities. Implementation of the proposed action should actually enhance the water quality of Frog Mortar Creek, a water body used for local recreation. Therefore, the project will not cause the relocation of residences, land acquisition, or a subsequent loss in the community tax base.

The existing road (Lynbrook Road) that links the DRA with the surrounding airport and off-airport road system will see only a minor increase in traffic during facility operation. These increases would include:

- four to five standard personal vehicles or work trucks per day
- FedEx/United Parcel Service type delivery trucks twice a week,
- medium-sized chemical delivery and carbon change-out trucks thrice a month
- drill rigs for well redevelopment once a quarter (includes access to wells)
- provision for emergency vehicle access (fire trucks)

The proposed action also includes upgrades to the south end of Lynbrook Road; the current dirt road will be upgraded to accommodate the vehicle traffic described above. Because this increase in vehicle traffic would be minor, particularly in proportion to the expected increase in vehicle traffic as part of MDANG's plan to make this a main entrance/exit road for their operations, implementation of the proposed action will not significantly add to or disrupt local traffic patterns on airport service roads and roads in the surrounding communities.

Children's health and safety risk **–** The proposed project would not expose children to be in contact with or ingest substances that would affect their health and safety. In fact, the proposed project would reduce the potential for children to be exposed to toxic substances by containing the migration of existing contaminants in groundwater in the DRA to Frog Mortar Creek.

Environmental Justice - In accordance with Executive Order 12898 and as stated in the Draft Technical Guidance for Assessing Environmental Justice in Regulatory Analysis (USEPA, 2013b) the type of information that is useful for evaluating whether an action disproportionately impacts low income and/or minority populations includes the severity and nature of health consequences, the magnitude of the estimated differences in impacts between population groups, mean or median exposures or risks to relevant groups, distribution of exposures or risks to population groups, and a discussion of factors that may make population groups more vulnerable.

The overall environmental effect of the proposed action will be to improve water quality and therefore the health and safety of all populations who use the waterway and/or who live in the general project vicinity. Elements that could have a negative impact on local populations include increased truck traffic on the routes described in Section 4.13.3 leading to and from the project area and an associated increase in air pollution.

The expected increase in truck traffic of between 10 and 15 trucks per day on these roadways will be negligible in comparison with the high volume of traffic currently found on these roads. As noted in Section 4.13.3, traffic volumes along the roads currently range between approximately 17,000 to over 50,000 vehicles per day. Also, this increase will be temporary and will only be during project construction. In addition, while small segments of these roads pass near a few low income neighborhoods, the majority of these roadways pass through commercial areas used by high income, low income, minority and non-minority populations.

In October 2014, the FAA published a Notice of Availability in the Baltimore Sun, notifying the public of the EA 30-day public comment period and a subsequent Public Information Session held in November 2014. No comments from the public were received. MAA/Lockheed Martin supplemented the FAA's Notice of Availability with an extensive public outreach effort using an established network of civic associations, community mailings, and newsletters to ensure the community was aware of the opportunity for public comment. It should be noted that two of the civic associations that have been engaged during these efforts, which include the Hawthorne Civic Association and the Arrow Acres Civic Association, have within their purview several of the low income neighborhoods near the project area. These additional outreach efforts have included numerous public informational meetings held at local facilities and open to all members

of the public as well as publication and distribution of informational materials throughout the community and made available through publicly-available facilities.

Therefore, based on the temporary and proportionally minor amount of additional truck traffic, it is expected that the magnitude/severity of health consequences will be low. Also, because all populations would be equally affected by the increase in truck traffic the project would not disproportionately impact low income or minority populations. In addition, all population groups, including civic associations who represent several of the surrounding low-income neighborhoods, have been engaged as part of the public involvement process.

5.15.2 Impact Potential – No Action Alternative

Because the No Action Alternative does not involve the construction, modification, or relocation of any new or existing facilities; it does not affect aircraft operation. In addition, no land acquisition would be required. Therefore there would be no socioeconomic impacts attributable to the no action alternative, although water quality would remain unchanged and the water quality advisory would remain in effect, which may continue to adversely affect recreational activities (e.g., jet skiing and boating) and users associated with the local marinas and residents.

5.16 WATER QUALITY

5.16.1 Impact Potential – Preferred Alternative

A segment of the unnamed tributary stream located within the DRA, as well as a small area below the mean high water line (tidal boundary) of Frog Mortar Creek will be impacted by the proposed project. Widening of the existing access road where it crosses the unnamed tributary requires removing and replacing the existing culvert and realigning the stream channel. These impacts will alter the stream channel, potentially altering hydrology at the site, and its upstream and/or downstream locations. Hydrological changes may destabilize the channel and stream banks, increase erosion and sediment loads in the stream, and affect downstream water quality and aquatic habitats that support macroinvertebrates and fish.

Approximately 30 linear feet of the unnamed tributary stream in the DRA will be affected by widening the existing roadbed from eight to 20 feet. Road widening will include removing the existing 36-inch RCP culvert and replacing it with a bottomless box culvert. The unnamed tributary is an intermittent/ephemeral stream that ranges in width from four to 12 feet; depths

range from zero inches during dry periods to several inches during runoff events. The unnamed tributary mostly runs perpendicular to the existing roadbed, but parallels the road for a short distance south of the crossing. The use of best management practices including silt fencing will be employed to reduce sedimentation in the channel during construction. In addition, a bottomless box culvert helps to maintain a more natural stream bottom and hydrologic regime. Small swale wetlands adjacent to the stream channel will be impacted by road widening at and near the stream crossing. A more detailed description of wetland impacts is in Section 5.17.

Construction and placement of the proposed six-inch outfall discharge pipe in Frog Mortar Creek will impact a relatively small area below the mean high water (tidal) line. Introducing treated groundwater from a point discharge at this newly constructed outfall could destabilize the channel and banks, impact tidal bottom habitat, increase sediment loads and turbidity. This discharge will require compliance with National Pollutant Discharge Elimination System (NPDES) and TMDL requirements for Frog Mortar Creek.

A maximum of 80 linear feet of six-inch pipe and bottom anchoring will be placed below the mean high water line of Frog Mortar Creek. The total width of the pipe and bottom anchoring system is not expected to exceed 10 feet. Pipe will be placed in Frog Mortar Creek at a level that is at least one-foot under water at low tide. Pipe will be installed on a marginally abrupt section of shoreline; no emergent or other wetlands extend below the mean high water line in this area. Also, a cofferdam or Portadam™ will be used during construction to greatly reduce any sedimentation of the water column around the installation area. In addition, operation of the outfall will result in a reduction in the amount of contamination flowing into Frog Mortar Creek via groundwater.

Small portions of non-tidal wetlands V, W, and NN (see Figure 4-7) will be impacted by access road widening and well installation. These impacts will reduce the typical functions and values of wetlands of this type, including attenuation of sediment loads and runoff, groundwater recharge, and wildlife habitat. An analysis of the impacts to wetlands is found in Section 5.17.

Approximately 3.5 acres of ground disturbance within the 25 acre study area (LOD) are required to grade and construct the facility and infrastructure for the proposed action. Temporary impacts to water quality during construction may occur due to stream diversion, erosion, or vegetation removal. An additional one acre of impervious surfaces will be added to the DRA after

construction is completed, resulting in increased runoff. Stormwater treatment will be required for the increased impervious area including the treatment plant, parking area, and access roads and to address any TMDL requirements that will be imposed. As described in Section 3.2.5, stormwater management of traditional site development areas (building and asphalt) will include non-rooftop disconnects (filter strips), bioretention, grass swales, and a storm sewer system that will discharge to a swale that is part of the existing MTN stormwater management system. These plans, including those for stormwater management and erosion and sediment control were approved by MDE on December 2, 2014 as indicated in Section 5.16.3 and found in Appendix C.

Table 5-4 presents the proposed impacts to existing streams, including the tidal portion of Frog Mortar Creek. Impacts to existing streams and tidal areas will be refined and minimized to the extent practicable during the final design of the project.

5.16.2 Impact Potential – No Action Alternative

Because this alternative does not involve construction, modification, or relocation of any new or existing facilities within the DRA, there would be no water quality impacts associated with these construction activities; however, there would be no reduction in contamination entering Frog Mortar Creek from the DRA or the contamination's associated impacts on the aquatic environment.

5.16.3 Avoidance, Minimization, and Mitigation Measures

The FAA *Environmental Desk Reference for Airport Actions* (FAA, 2007a) defines an action significant when it has the "potential to exceed water quality standards, there are water quality problems that cannot be avoided or satisfactorily mitigated, or there would be difficulty in obtaining a permit or authorization, there may be a significant impact".

Pursuant to Section 404 of the Clean Water Act (CWA) and the Maryland Nontidal Wetlands Protection Act, a Joint Federal/State Permit for the Alteration of any Floodplain, Waterway, Tidal or Nontidal Wetland in Maryland will be obtained from the United States Army Corps of Engineers (USACE) and MDE before any surface water resources are disturbed. The permitting process ensures that water quality concerns are addressed, and that mitigation plans, if required, are incorporated into the final design of the proposed project.

The Maryland Aviation Administration (MAA) has been coordinating with the USACE and MDE regarding the proposed project and has been seeking continued guidance and support through the Section 404 permitting process of the CWA (as amended) for unavoidable impacts to wetlands and waters of the United States (see Appendix C). MAA anticipates obtaining authorization or this project under the Maryland State Programmatic General Permit (MSPGP-4). No compensatory mitigation under Section 404 of the CWA is anticipated, because impacts to streams and wetlands are limited.

Work within Frog Mortar Creek will be restricted to certain times of year to protect the spawning and nursery periods of migratory fish. Generally, no in-stream work is permitted by MDE in Use I streams between March 1 and June 15, inclusive, of any year.

Short-term construction stormwater impacts will be minimized by strict adherence to stormwater management and erosion and sediment control procedure. A stormwater management and erosion and sediment control plan has been developed and was approved by MDE on December 3, 2014 (see Appendix C). Implementation of this plan will avoid and/or minimize erosion and sedimentation. Appropriate drainage, infiltration, and sediment control measures will be implemented in accordance with the MDE approved plan to minimize disturbance to the area and reduce the risk of contamination to water resources. All construction related stormwater planning will also comply with an MDE Construction General Permit.

Long-term stormwater impacts will also be avoided and minimized through strict adherence to the MDE approved stormwater management and erosion and sediment control plan, which was developed in accordance with the *Maryland Stormwater Management Guidelines for State and Federal Projects* (MDE, 2010b). Design of the preferred alternative was developed in compliance with the stormwater management regulations (Code of Maryland Regulations [COMAR] 26.17.02) and the *Maryland Stormwater Design Manual, Volumes I and II* and its latest supplement (MDE, 2000). These regulations require the use of environmental site design (ESD) to the maximum extent practicable (MEP).

Stormwater management planning has also been developed to comply with the "10% rule" for projects occurring within an intensely developed area (IDA) of the Chesapeake Bay Critical Area (Critical Area Commission [CAC], 2003). This guidance states that projects must use practices that are capable of reducing stormwater pollutant loads to a level at least 10% below the load

prior to development. Long-term stormwater discharges, including the stormwater discharge to the existing swale located between the DRA and Taxiway T will be subject to and comply with the existing NPDES stormwater management permit for MTN.

Additionally, an NPDES permit for the point source discharge from the outfall discharge must be acquired from MDE/USEPA. Acquisition and adherence to the conditions (if any) imposed by this permit will ensure that discharges from the outfall discharge will not exceed state and federal water quality standards.

5.17 WETLANDS

A wetland delineation was conducted in the project area in accordance with the *United States* Army Corps of Engineers (USACE) Wetlands Delineation Manual, Technical Report Y-87-1 (USACE, 1987), and Interim Regional Supplement to the Corps of Engineers Wetland Delineation *Manual: Atlantic and Gulf Coastal Plain Region* (USACE, 2008). The limits of the identified wetlands were then compared to the limits of disturbance for the proposed project.

5.17.1 Impact Potential – Preferred Alternative

Several unavoidable impacts to wetland areas and wetland buffers will result from implementation of the proposed project (Figure 5-3). Table 5-5 details the proposed impacts to wetlands and wetland buffers. Note that during the permitting and design process, as described in Section 5.17.3 and found in Appendix C, the amount of impact has been revised from the Draft EA.

Unnamed Tributary Stream Crossing – The proposed project will require road widening over the unnamed tributary crossing so access to the DRA can meet construction traffic needs and local/airport safety and fire protection requirements. Impacts to the stream and adjacent wetlands will be avoided and minimized to the maximum extent practicable, so that the overall impact necessary is minimal. Total impacts would be 1,995 sf of wetland impact, 13,391 sf of wetland buffer, and 1,048 sf (174 linear feet) of intermittent stream channel.

The proposed impact to the stream channel will include removal of the existing 36-inch RCP culvert and installation of an open-bottom box culvert. Thirty linear feet of the channel will be

placed within the new box culvert. Impacts to the adjacent wetland and its buffer are unavoidable because the road must be widened to the required 20-foot width.

While the proposed action will increase the length of stream channel within the culvert, the use of an open-bottom box culvert will maintain a natural stream bottom and associated aquatic habitat. Also, the design of culvert system will be such that the natural hydrologic regime of the stream is maintained. While impacts such as increased sedimentation and disturbance to the riparian area will certainly occur, these impacts will primarily be temporary and will be managed using BMPs.

Access Road South of Unnamed Tributary – The proposed project will require widening of the access road to meet construction traffic needs and local/airport safety and fire protection requirements. Impacts to the wetland buffer adjacent to the existing road will be avoided and minimized to the maximum extent practicable, so that the overall impact is minimal. The proposed impact to the wetland buffer will include grading/filling approximately 600 sf, a relatively small portion of the outer perimeter of the Wetland W buffer. Although a portion of the wetland buffer will be affected, the wetland area itself will not be disturbed. Impacts to the Wetland W buffer will be managed using BMPs.

Well Installation Area – The proposed project will require widening of the existing path to allow for access and installation of groundwater wells. Impacts to the adjacent wetland buffer will be avoided and minimized to the maximum extent practicable, and the overall impact to the area will be minimal. The proposed impact to the wetland buffer will include grading/filling approximately 310 sf, a relatively small portion of the outer perimeter of the Wetland NN buffer and 375 sf of the Wetland PP buffer. Although a portion of these wetland buffers will be affected, the wetland area itself will not be disturbed. Impacts to the Wetland NN buffer and Wetland PP buffer will be managed using BMPs.

Outfall Discharge Pipe – The proposed project will require installation of a 70-foot, six-inch diameter outfall discharge pipe with end diffusers and bottom anchoring system below the mean high water (tidal) line of Frog Mortar Creek. Impacts below the tidal boundary line will be avoided and minimized to the maximum extent practicable to minimize overall impact to the creek. The preferred alternative's impact on bottom habitat will be approximately 1,400 sf. A marker, buoy, or other aid to navigation may be placed near the discharge pipe to alert boaters to

the location of this structure; a final determination of the need for this feature will be made in coordination with the United States Coast Guard (USCG). If a navigation aid is required, this feature will be employed in full compliance with USCG regulations under 33 CFR Part 66.

While the action will disturb bottom habitat, the impacts would be minor, as the overall affected footprint is small in comparison to the amount of existing shoreline habitat in the general vicinity. In addition, installation will be completed using BMPs and diffusers to minimize sedimentation in Frog Mortar Creek, and operation of the facility will be in full compliance with applicable NPDES requirements to minimize overall turbidity.

Potential Wetland Dewatering – The proposed project will require installation of 16 groundwater extraction wells that may create a draw-down, or dewatering effect on the wetland area located nearest the wells (Wetland #3). De-watering could lower the water level in this wetland, and may, over time, reduce the amount of area meeting wetland criteria along the perimeter of this wetland.

An analysis for potential for dewatering of this wetland was conducted; results are provided in Appendix I. As described in the analysis, soil logs from the project area indicate that soils are mostly low permeability clays. As such, it is likely that most of the hydrology in Wetland #3 is from direct precipitation and runoff from the surrounding landscape, and that little interaction with groundwater occurs. In addition, preliminary modeling (using the assumption of 0.1 foot of dewatering to be the level of significance) found that the likely low vertical hydraulic conductivity of the sediments beneath Wetland #3 (less than 1×10^{-8} centimeters per second) indicates that the water balance of the recovery well system will not impact the wetland (< 0.1 foot decrease). Therefore, no significant impact or reduction in wetland area would occur resulting from groundwater extraction.

5.17.2 Impact Potential – No Action Alternative

Because the no action alternative does not involve construction of any new facilities within the DRA, there would be no impacts to wetlands; however, groundwater contamination would continue to impact tidal wetlands.

5.17.3 Avoidance, Minimization, and Mitigation Measures

Avoidance and Minimization Measures — The preferred action alternative avoids wetland resources to the maximum extent practicable. The processing plant, parking area, and the vast majority of the well pads and infrastructure have been intentionally placed outside the boundaries of delineated wetland areas to avoid and minimize impacts to these resources. Remaining impacts associated with the main access road are unavoidable due to the need for widening the existing road for safety/emergency vehicle traffic and because no other access to the site exists. The remaining impacts associated with the well pad locations is likewise unavoidable due to the physical limitations of the site and the need to locate the wells in close proximity to Frog Mortar Creek to ensure capture of migrating groundwater. Finally, the remaining impacts resulting from installation of the outfall discharge pipe are unavoidable due to the need for the pipe to discharge to a minimum depth in Frog Mortar Creek to allow for proper mixing with ambient water and to comply with the requirements of the NPDES permit for the project. In addition, all remaining impacts to wetland areas will be minimized through use of best management practices to be implemented under the approved MDE erosion and sediment control and stormwater management plan.

Mitigation Measures — Pursuant to Section 404 of the CWA and the Maryland Tidal and Nontidal Wetlands Protection Acts, a Joint Federal/State Permit for the Alteration of any Floodplain, Waterway, Tidal or Nontidal Wetland in Maryland must be obtained from the USACE and MDE before any wetland resources are disturbed. The permitting process will ensure that proper avoidance, minimization, and mitigation requirements are addressed, and will ensure that all measures to avoid and minimize impacts are incorporated into the final design of the proposed project.

MAA has been coordinating with both MDE and USACE throughout the permitting process regarding Section 404 CWA and MDE Tidal and Non-tidal Wetland Protection Act requirements. Appendix C provides a description of the agency consultation and coordination efforts conducted as part of the preparation of this EA, which have included conducting an initial agency scoping meeting to gain early feedback on proposed project plans, as well as a subsequent Joint Evaluation Committee meeting to review specific design details and resource impacts. A joint permit application for coverage under the MDSPGP-4 was submitted to both the

USACE and MDE Tidal and Non-tidal Wetlands Divisions on July 8, 2014. The MDSPGP-4 applies to projects that have total impacts to wetlands and other waters of the U.S. that do not exceed 1.0 acre (43,560 square feet) and/or 2,000 linear feet of streams. Because the total amount of wetland and buffer impact is 0.43 acres and total stream impacts are 94 linear feet, it is expected that the project will be authorized under this general permit.

Because all of the proposed impacts to wetlands and their associated buffers are considered to be minimal and qualify for coverage under the MDSPGP-4 wetland impacts are not considered significant and no mitigation is expected to be required.

5.18 WILD AND SCENIC RIVERS

There are no federal- or state-designated or potentially eligible wild and scenic rivers in the vicinity of MTN. The Severn River, located over 20 miles southeast of MTN, is the closest state-designated scenic river. The relatively small physical footprint of the proposed remediation facility would not affect the visual, scenic, or recreational values of this river. The Severn River is located in a separate watershed from MTN, so the proposed remediation project would neither positively or negatively impact water quality in this river system. Therefore, the proposed project would have no effect on any federal or state protected wild and scenic rivers.

5.19 SUMMARY OF POTENTIAL NATURAL RESOURCE IMPACTS

The potential environmental impacts for each proposed project element and the Sponsor's Preferred Alternative have been discussed in detail in this section. Table 5-6 provides an overview of the proposed impacts to streams, forests, floodplains, wetlands, and wetland buffers associated with the preferred alternative. The proposed impacts to these resources will be mitigated in coordination with the appropriate Federal and State agencies during the permit process.

5.20 CUMULATIVE IMPACTS

In accordance with Council of Environmental Quality (CEQ) regulations (Title 40 CFR Part 1508.7), this EA was prepared to consider both the direct and cumulative impacts of the preferred action alternative as well as other reasonably foreseeable projects in the area of MTN. Cumulative impacts represent the "impact on the environment which results from the

incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The analysis of cumulative impacts has been limited to an evaluation of potential projects occurring within the DRA and immediately adjacent and contiguous portions of MTN for a distance of 500 feet from the DRA boundary. The rationale for this cumulative effects study area boundary is based on the range and extent of potential impacts on the affected environment from the proposed action, which are limited primarily to physical disturbance of the immediate landscape. Little, if any, effects of the project (such as impacts on visual or air quality) would extend beyond the boundaries of the DRA.

5.20.1 Cumulative Projects

This section describes those environmental resources or impact categories (as described in Sections 5.1 – 5.18) that could potentially be impacted by cumulative projects (past, present, and reasonably foreseeable actions).

A review of several information sources (noted in the individual discussions below) was conducted to determine past, present, and reasonably foreseeable development actions at MTN and surrounding areas. This review identified potential improvement projects. The information sources included the project description for the environmental assessment for Phase I development projects at MTN (in process), which depicts proposed development at the airport and MDANG's description of proposed projects for a supplemental EA (in process). Other sources of information included contacting the Baltimore County Planning and Public Works Departments to identify any upcoming County Capital Improvement projects.

The analysis of cumulative impacts in this EA considered the potential impacts of the proposed project and other development actions on the airport property that are related in terms of time or proximity.

5.20.2 On-airport Projects

MAA continuously manages the planning, design and construction of various airport projects at MTN to improve the functionality of the airport as well as maintaining its economic vitality. Currently proposed projects are identified in the Environmental Assessment for Phase I Development Projects at Martin State Airport that is currently being prepared by MAA. Airfield projects identified in that EA are designed to improve the functional use and geometry of runways, taxiways, and holding aprons; lighting, marking, and signage of runways and taxiways; navigational aids (NAVAIDs); visual approach aids, instrument approach procedures, and Federal Aviation Regulation (FAR) Part 77 obstructions. General aviation and support facility projects identified in the Phase I Development Projects EA are designed to provide additional aircraft hangars and improved aircraft traffic control facilities. Landside facility/land use projects identified in the EA are designed to improve airport infrastructure and parking facilities and remove identified Part 77 related obstructions.

As part of the Phase I Development Projects, several areas of tree clearing will occur within and along the border of the DRA adjacent to Taxiway T. Tree clearing in this area is primarily due to the relocation of certain NAVAIDS including the glide slope and automated weather observing system (AWOS) station. Relocation of the glide slope requires a cleared critical surface in which to operate, and the AWOS will require tree clearing in order to function properly. Also, tree clearing in this area includes Part 77 obstruction removal to clear transitional surfaces for both the runway and taxiway. Relocation of the NAVAIDS is necessary to comply with the FAA Advisory Circular 5300-13A.

In addition to MAA, MDANG currently has a lease on a portion of MTN property and operates military facilities on site. MDANG projects currently proposed include developing an Intelligence/Reconnaissance and Surveillance Facility, expanding existing roads and parking areas, and construction of flight simulator, vehicle inspection, and warehouse buildings. Table 5-7 contains a list of recently completed and future projects in order to qualitatively assess potential cumulative impacts.

5.20.3 Potential Cumulative Impacts

The following is a qualitative assessment of environmental resources and impact categories in which the potential for cumulative impact associated with the projects described previously is

considered along with the proposed action. These categories include air quality; compatible land use; construction; fish, wildlife, and plants; floodplains; water resources, and wetlands. These categories were chosen based on the nature of the proposed activities and the resources that may be affected.

5.20.3.1 Air Quality

The total amounts of air emissions within the DRA and surrounding airport are not expected to increase appreciably with or without the proposed remediation project. This outcome is largely attributable to the fact that overall air traffic is not expected to greatly increase over the next several years (MAA, 2013). Also, no additional significant emissions sources are planned at the airport. In general, most increases in air emissions at the airport over the next several years would likely come as population continues to rise along with an accompanying rise in motor vehicle traffic. Therefore, the minor air emissions resulting from the proposed remediation project combined with little additional new emission sources planned in the vicinity would not have a significant cumulative impact on air quality.

5.20.3.2 Compatible Land Use

The proposed remediation project along with proposed future MTN and MDANG projects would not create significantly incompatible land uses. This is primarily due to the fact that these projects would be confined to the airport with little, if any effect on surrounding land use, and the projects should be consistent with the industrial nature of current property uses. Also, proposed projects at MTN and MDANG would necessarily comply with FAA and Air National Guard (ANG) requirements for ensuring land use compatibility. Land use impacts would likely occur from off-airport land development projects; however, no major projects appear to be currently planned. Also, for any off-airport projects that may be planned or proposed in the near future, it is expected that these cumulative projects would comply with the land use and transportation goals of Baltimore Counties Development Plan which would reduce the potential for significant land use impact.

5.20.3.3 Construction

Overall, construction of the cumulative projects would have a moderate potential to result in significant construction impacts. In general, construction activities associated with the

cumulative projects at MTN would consist of land clearing, roadway and building construction, mostly occurring during daylight hours. Impacts from construction would include increased noise from construction operations, temporary minor increase in water turbidity, temporary minor increase in air emissions and disposal and management of construction and/or demolition wastes. Also, not all construction activities will be taking place during the same time period.

Grading and scraping operations are the noisiest activities, with equipment generating noise levels as high as 70 to 95 dBA within 50 feet of their operations. However, distance would rapidly attenuate noise levels so area residences would only experience a slight increase in ambient background conditions.

Temporary increases in water turbidity in drainage areas could occur during the period when excavated areas are exposed prior to paving or cover stabilization. It is expected that runoff from construction projects would be minimized by BMPs that would limit sediment transport. In addition, it is expected that efforts would be made to schedule construction operations to minimize the exposure of excavated areas and re-vegetate them as soon as possible after grading and all work will include employing an MDE accepted erosion and sediment control plan.

Construction equipment emissions and fugitive dust pollution from excavated areas can result in temporary impacts to ambient air quality. However, it is expected that these impacts would be minimized by the use of BMPs to minimize air quality impacts by treating excavated areas with water, and covering graded areas with stabilizing materials.

Land clearing and grading operations associated with the construction of the cumulative projects could generate air emissions, with particulate matter (dust) having the greatest potential for impact. Most of this dust would redeposit close to the source, since it is generated low to the ground. Heavy construction equipment utilized would emit exhaust that contains CO, NOx, VOCs, and PM. Temporary air quality impacts associated with these sources would vary depending on the local weather conditions, level of construction activity, and the nature of the construction operation. The types of waste generated by construction activities could include materials such excess asphalt or excess concrete washed out of mixer trucks, excess wiring, conduits, and other electrical materials, excess soil, and empty construction supply containers. These materials are not anticipated to significantly impact existing waste handling and disposal at MTN or at regional waste management facilities. During construction of the proposed

remediation project additional pollution prevention measures will be implemented, as needed, to avoid or minimize any potential impacts.

The impacts discussed above would be temporary in nature, and not all projects would be carried out during the same timeframe. Temporary pollution controls employed by MAA would include limiting work activities to normal business hours; wetting of active equipment work areas; covering of all trucks hauling loose materials; use of stabilizing materials, mulch, sandbags, slope drains, sediment checks, artificial covering, and berms. All applicable local, state, and Federal environmental construction controls should be incorporated into the specifications and construction plans necessary for the individual cumulative projects. These controls would help minimize temporary construction impacts.

5.20.3.4 Fish, Wildlife, and Plants

No rare, threatened or endangered plant or animal species are known to occur within the proposed project area; however, as noted above, the NMFS has indicated that two species of sturgeon and several sea turtle species have been found in the Chesapeake Bay, tidal rivers, and estuaries. It is not expected that there will be any impact on these species from the proposed remediation project. Also, based on the fact that all cumulative projects are to be carried out in terrestrial areas and that it is expected that all projects will necessarily comply with standard stormwater and erosion and sediment control requirements that no significant cumulative impacts would occur to these aquatic species.

In addition, a bald eagle nest is located north of the DRA along Frog Mortar Creek. As noted above, the project is not likely to cause disturbance to the eagles due to the use of an alternate access route to be used during the nesting season that will reroute traffic over 600 feet to the west of the existing eagle nest. Also, because all cumulative projects at MTN are to be carried out under the National Bald Eagle Guidance Act and minimize and avoid disturbance, no significant cumulative impacts would occur to this species.

Additional tree clearing along the DRA border resulting from implementation of the MAA Phase I Development Projects will result in additional cumulative impact to forest resources in the cumulative effects study area by removing a relatively large proportion of the forest cover in and immediately surrounding the DRA. However, the additional clearing will represent only a

relatively minor portion of the forest cover in the Middle River area and will be carried out under regulations pursuant with the Critical Area Act to minimize and/or mitigate impacts to forest resources. Also, because the DRA and surrounding area is part of an operational airport, tree cover and other wildlife attractants must be reduced when there is potential to interfere with airport safety.

5.20.3.5 Floodplains

The cumulative projects have a low potential to result in impacts to 100-year floodplains. Potential impacts would occur from the creation of additional impervious surface, and the subsequent increase in stormwater runoff within the floodplains of the region. The increased stormwater runoff has the potential to flow into a floodplain. This could result in increased flooding and flood-related hazards during moderate to high-intensity storm events. However, potential floodplain encroachment associated with the cumulative projects could be avoided, and if unavoidable, mitigated, during the planning and design phases of the cumulative projects such that changes to the 100-year flood elevations would be minimized.

5.20.3.6 Water Resources

Implementation of the cumulative projects would result in localized, temporary impacts to water resources. These impacts would result from land clearing and temporary construction activities and primarily consist of potential increases in sediment runoff and transport, siltation, and changes in storage volumes, flow velocities and pollutant levels in receiving water bodies. All airport construction activities should adhere to the design standards and guidelines contained in state and local specifications. These standards would help minimize any cumulative water quality impacts.

As described previously, the point discharge for the proposed remediation project will discharge treated groundwater to Frog Mortar Creek and will comply with all applicable NPDES requirements to ensure that water quality standards are maintained. Therefore, it is not expected that this discharge along with the other cumulative projects will have a significant impact on surface water resources.

The cumulative projects are not anticipated to have any impact on groundwater resources or quality; however, the proposed remediation project would contain the flow of contaminated groundwater into Frog Mortar Creek.

As described previously, implementation of the proposed project would impact 174 linear feet of an intermittent tributary and 70-feet of the tidal bottom of Frog Mortar Creek. A Joint Federal/State Permit Application for the Alteration of any Floodplain, Waterway, Tidal or Nontidal Wetland in Maryland was submitted to the USACE and MDE on July 8, 2014 and authorization will be obtained from the USACE and MDE prior to the disturbance of any jurisdictional surface water resource. Along with best management practices, adherence to the Maryland Stormwater Management and Chesapeake Bay Critical Area Guidelines for State and Federal Projects, and an NPDES permit, potential water resources impacts of the proposed remediation project and cumulative projects would be minimized.

5.20.3.7 Wetlands

Implementation of the preferred alternative will result in impacts to four wetlands and/or their 25-foot buffers. This includes a total of approximately 1,995 sf of impact to a non-tidal wetland, 1,048 sf of intermittent stream channel, 1,400 sf of impact to the tidal portion of Frog Mortar Creek, and 14,676 sf of impact to the 25-foot wetland buffer.

MAA will coordinate with the USACE and MDE to gain final approval for the joint permit application submitted on July 8, 2014. Data for other airport development projects was not available to fully quantify wetland impacts in proximity to the DRA. However, each project would be subject to Clean Water Act requirements. It would be the responsibility of the project's sponsoring agency, corporation, or individual to avoid wetlands and other waters of the U.S. where possible, and where impacts are unavoidable, to minimize the impacts, and then provide mitigation for unavoidable impacts. Required mitigation would presumably result in no net loss of wetlands within the region, consistent with Federal policies. The sponsoring agency, corporation, or individual would be required to obtain the necessary Federal and/or state permits and certifications prior to the initiation of construction activities. Therefore, the potential cumulative impact to wetland resources as a result of implementing the proposed remediation project and cumulative projects is considered low.

5.20.3.8 Summary of Potential Cumulative Impacts

Through the use of BMPs and mitigation measures, the potential impacts of the proposed remediation project will be in accordance with all Federal, state, and local laws and regulations and therefore not result in a significant impact. As described previously, the cumulative projects would result in environmental impacts. The government agency responsible for the development of each cumulative project will be responsible for obtaining all necessary approvals and permits to minimize impacts. Based on the types of cumulative projects planned for the area surrounding MTN, MAA has concluded that the implementation of the proposed project along with the cumulative projects would not result in a significant cumulative impact.

Table 5-1

Air Emissions Inventory
Dump Road Area, Martin State Airport

Emissions Source	Source area or discharge type	Emissions Factor [1]	Estimated Emissions – Pre-treatment	Control Measure	Total Emissions – Post Treatment
Construction related dust	~ 3.5 acres of total ground disturbance during construction	1.2 tons/per acre/per month for total suspended particulate (TSP)	4.2 tons/month[2]	1 ton/acre/month wet suppression	0.7 tons/month[3]
Treatment Plant Emissions	Methylene Chloride from groundwater treatment process	Not applicable	<10 pounds/year	~ 90% removal using vapor phase granular activated carbon (VGAC)	~ 1 pound/year

1. Based on **AP-42,** ***Compilation of Air Pollutant Emission Factors***
2. Using 3.5 (acres of disturbance) X 1.2 (emissions factor) = tons/acre/month
3. Using 3.5 (acres of disturbance) X (1.2 [emissions factor] – 1.0 [control factor]) = tons/acre/month

Table 5-2

Critical Area Impacts to Habitat Protection Areas and the 100-foot Tidal Buffer
Dump Road Area, Martin State Airport

Impact location	Description	Impact area –within the expanded tidal buffer (in square feet) [1]	Impact area –outside the expanded tidal buffer (in square feet) [1]
Area 1 - Access road crossing of unnamed tributary	Impacts to wetland, stream crossing, steep slopes, and 25-foot buffer for culvert installation and grading and widening the existing road crossing the unnamed tributary stream	18,384	0
Area 2 - Northern well access	Impacts to wetlands, steep slopes, and 25-foot buffer for grading to widen access to well locations	544	0
Area 3 - Central well access	Impacts to wetlands, steep slopes, and 25-foot buffer for grading to widen access to well locations	9,069	0
Area 4 - Outfall discharge pipe	Impacts to steep slopes and 25-foot buffer for clearing/grading for placement of the outfall discharge pipe	13,726	0
Area 5 - Southern well access	Impacts to wetlands, steep slopes, and 25-foot buffer for grading to widen access to well locations	5,452	
Area 6 - Access road south of unnamed tributary	Impacts to wetlands, steep slopes, and 25-foot buffer for grading and widening the existing road	0	3,832
Area 7 – Stormwater management at south end	Impacts to steep slopes for grading for stormwater management	0	129
Area 8 – Stormwater discharge pipe	Impacts to steep slopes and 25 foot buffer for clearing/grading for placement of the stormwater discharge pipe	0	3,579
SUBTOTAL		47,175	7,540
Total Area	**54,715 square feet**		

1. The exact nature and extent of impacts will be refined and minimized to the extent practicable during final design.

Table 5-3

Forest Impacts
Dump Road Area, Martin State Airport

Impact Location	Description	Impact area –within the expanded tidal buffer (in square feet) [1]	Impact area –outside the expanded tidal buffer (in square feet) [1]
Area 1 - Access road crossing of unnamed tributary	Tree clearing along existing access road for road widening	13,200	0
Areas 2 and 5 - Well access road	Tree clearing for road widening and grading to access well locations	6,904	5,708
Area 3 – Outfall discharge area	Clearing for outfall discharge	17,853	0
Area 4 - Access road north of unnamed tributary	Tree clearing along existing access road for road widening	0	7,964
Area 6 - Access road south of unnamed road and treatment facility	Tree clearing along existing access road for road widening, clearing for grading around treatment building, clearing for stormwater outfall	0	106,795
SUBTOTAL		37,957	120,467
TOTAL Area	**158,424 square feet**		

4. The exact nature and extent of impacts will be refined and minimized to the extent practicable during final design.

Table 5-4

Stream Impacts
Dump Road Area Martin State Airport

Impacted Stream	Type	Impacts [1]	Description
Unnamed tributary	Intermittent/ephemeral non-tidal channel	174 linear feet – permanent	Resulting from widening of the existing access road over stream. Includes removal and replacement of existing culvert
Frog Mortar Creek	Tidal perennial stream	20 linear feet of shoreline – permanent	Installation of 6-inch diameter outfall discharge pipe extending 70 feet beyond the mean high water line. Will include bottom anchoring system

1. The exact nature and extent of impacts will be refined and minimized to the extent practicable during final design.

Table 5-5

Impacts to Wetlands and Other Waters of the United State and the State of Maryland
Dump Road Area, Martin State Airport

Location	Wetland Identification	Tidal/ Non-tidal	Impact Description	Impact Amount	
				Wetland (square feet.)/ stream (linear feet) [1]	25-foot buffer (square feet) [1]
Existing road crossing unnamed tributary	Wetland V	Non-tidal	Removal of existing 36-inch culvert, box culvert installation in stream channel, and grading and fill in adjacent wetland area to widen existing road	1,995 sf / 174 lf(1,048 sf of channel)	13,391
Access road south of unnamed tributary stream	Wetland W	Non-tidal	Grading and fill in wetland to widen existing road	not applicable (N/A)	600
Well installation area	Wetland NN	Non-tidal	Grading and fill to widen existing path for access to well locations	N/A	310
Well Installation Area	Wetland PP	Non-tidal	Grading and fill to widen existing path for access to well locations	N/A	375
Outfall discharge pipe	Frog Mortar Creek	Tidal	Installation of 6-inch diameter discharge pipe and bottom anchoring system below the tidal boundary	1,400	N/A
Total Area				**4,443/174**	**14,676**

1. The exact nature and extent of impacts will be refined and minimized to the extent practicable during final design.

Table 5-6

Summary of Natural Resource Impacts for the Preferred Alternative
Dump Road Area, Martin State Airport

Wetlands			Streams		Forest		HPAs	
	Wetland Area (sf)	**Buffer (sf)**	**Non-tidal (lf)**	**Tidal (lf)**	**Inside 100-foot Buffer (sf)**	**Outside 100-foot Buffer (sf)**	**Inside 100-foot buffer (sf)**	**Outside 100-foot buffer (sf)**
	4,443	14,676	174	20	37,957	120,467	47,175	7,540
Total[1]	**19,119 (0.43 acres)**		**194 lf**		**158,424 (3.6 acres)**		**54,715 (1.0 acres)**	

1. The exact nature and extent of impacts will be refined and minimized to the extent practicable during final design.

Table 5-7

Martin State On-Airport Cumulative Projects
Dump Road Area, Martin State Airport
Page 1 of 3

	Project Name	Year	Description
Recently Completed or Ongoing	MTN Taxiway K Pavement	2010	Taxiway paving
	MDANG Operation and Medical Training Facility (Building F-34)	2013	Construction of a new MDANG operation and training facility on MDANG leasehold within MTN.
	MDANG Fire and Rescue Facility Complete – no building # on ALP.	2011	Construction of a new MDANG Fire and Rescue Facility on MDANG leasehold within MTN.
Future	MAA Phase I Development Including Runway 33/15, Hangars (Buildings F-2 through F-7, F-11, F-25, F-31, F-32), Traffic Control Tower (Building F-1), and Infrastructure Improvements	2016	Runway 15/33 improvements including runway modifications/extensions, tree clearing associated with Part 77 obstruction removal, taxiway modifications/creation, NAVAID modifications/improvements, relocated existing hangars, develop new hangars, construct new air traffic control tower, and construct new parking areas.
	MDANG Cyber/Intelligence, Surveillance, and Reconnaissance (ISR) Facility (Building F-36)	2014	The project would construct a single-or two-story facility with reinforced concrete foundation and floor slab, with steel-framed masonry walls and a steel roof structure. The project would include interior infrastructure and utilities. A portion of the facility would be designed to meet Sensitive Compartmented Information Facility (SCIF) requirements. Exterior work includes installation of utilities and parking and pavements, site and drainage improvements, and installation of communication support
	MDANG to Expand Hercules Road Project (Labeled on ALP, but no building #)	2016	The project would widen and lengthen the current roadway by an additional 30,346 sf. The project would include resurfacing and widening of the road bed and reconstruction of associated shoulders and drainage structures
	MDANG to Construct new Mobile Fuel Tanker Parking Area (Building F-43)	2016	The project would construct a new 32,280 sf, concrete-paved parking area to store the five R-11 mobile fuel tankers. The parking area would be designed with integral secondary containment to capture potential releases of petroleum. Approximately half (16,140 sf) of the proposed parking area would be constructed on existing pavement

Table 5-7

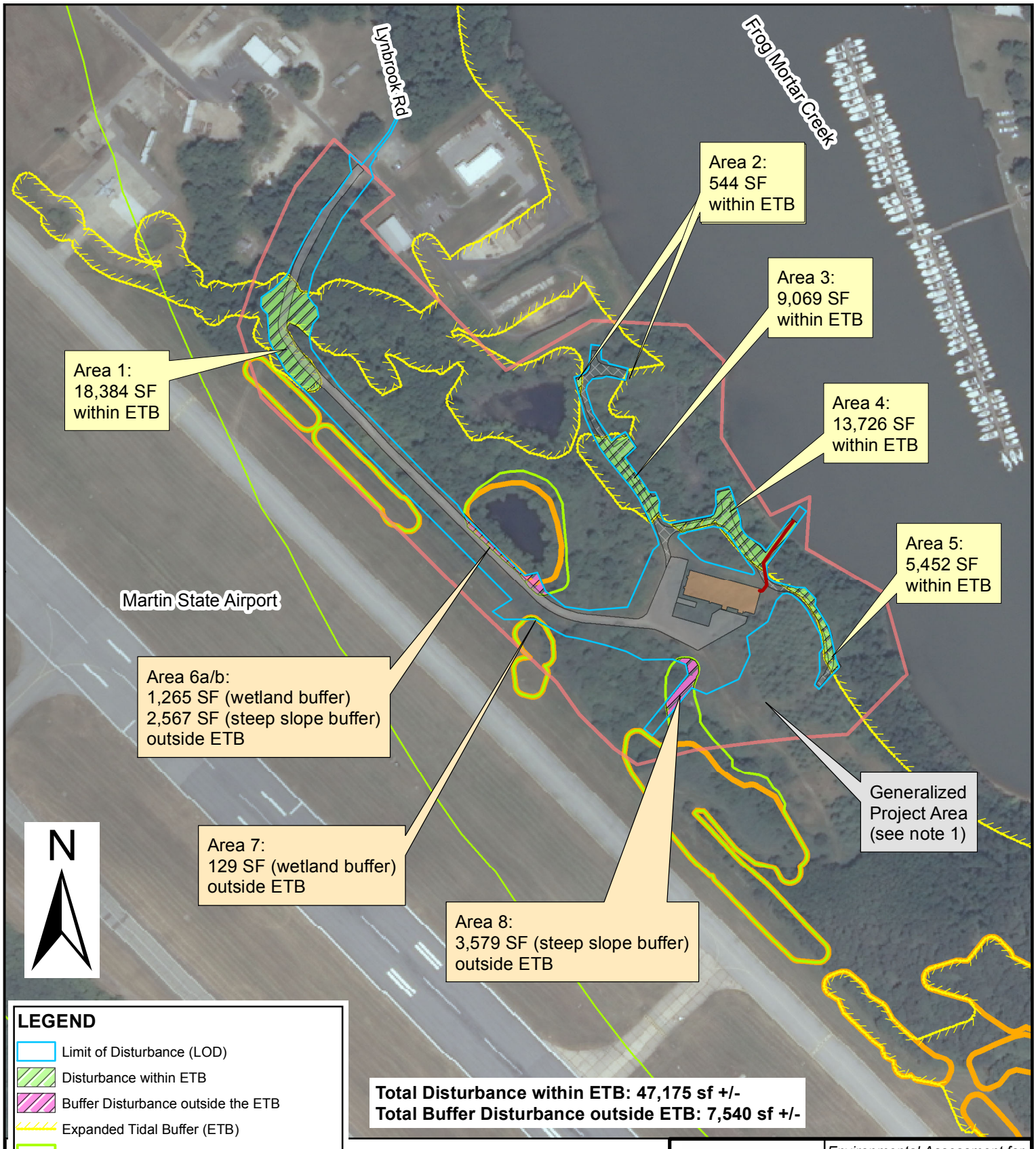
Martin State On-Airport Cumulative Projects
Dump Road Area, Martin State Airport
Page 2 of 3

	Project Name	Year	Description
Future Cont.	MDANG to Construct Vehicle Inspection Area at Lynbrook Gate (Canopy Project) (Labeled on ALP, but no building #)	2015	The project would construct a new 5,000 sf inspection area near the gate entry point. The new asphalt-paved area would be constructed adjacent to the existing roadway
	MDANG to Construct Vehicle Parking Areas (Labeled on ALP, but no building #)	2015	The project would construct three new vehicle parking areas capable of accommodating 25 (4,250 sf), 50 (8,500 sf), and 75 (12,750 sf) vehicles. Two of the parking areas (for 25 and 75 vehicles) would be constructed on existing pavement at the current location of Buildings 1080 and 1120, which are being demolished
	MDANG Temporary SCIF Bldg. Project (Building F-39)	2014	The base requires adequately sized and appropriately configured space for the temporary establishment of a new Cyber/ISR Squadron and Network Warfare Group (NWG) while awaiting a MILCON project of a permanent facility. The facility will provide Air Force Intelligence Surveillance Agency with a limited surge-to-war capability accomplished through the use of Digital Network Intelligence at Martin State Airport/Warfield. The project includes a 5,000 sf facility with a perimeter equaling 12,600 sf secured with fencing. This facility is temporary, with expected removal in Fiscal Year 2015.
	MDANG Taxiway T Mill and Overlay (Labeled on ALP, but no building #)	2015-2016	

Table 5-7

Martin State On-Airport Cumulative Projects
Dump Road Area, Martin State Airport
Page 3 of 3

	Project Name	Year	Description
Future Cont.	MDANG A-10 Flight Simulator. Bldg. 2042 (Building F-30)	2014	The purpose of this facility is to house and facilitate the operation of two A-10 flight simulators. Space is provided for a two-bay simulator room, instructor and technician stations, and two debriefing rooms. Each bay will be designed to accommodate an eight-channel, 360-degree full field of view display with adequate space for servicing. Adjacent to the flight simulator bay will be an office for an instructor and a separate office for a technician. Both of these rooms will have interior windows viewing the simulator bay
	MDANG Logistics Readiness Squadron (LRS) Warehouse Facility Bldg. 4020 (Building F-42)	2014	The project involves installing a prefabricated and insulated metal building with overhead roll up doors, interior lights, heating, ventilating, and air conditioning (HVAC) and fire protection. Exterior work includes constructing access pavement and a loading dock; installing utilities, communications and fire protection support; and construction of proper stormwater runoff and drainage measures
	MDANG Repair A-10 Drop Tank Storage Area/Access Road (Existing area/facility improvement – no ALP #)	TBD	The project will repair an asphalt storage lot with required environmental spill protection and site clearances. The maximum size of the asphalt area to be repaired will be 1,280 square yards



MARTIN STATE AIRPORT

Environmental Assessment for Groundwater Remediation at the Dump Road Area

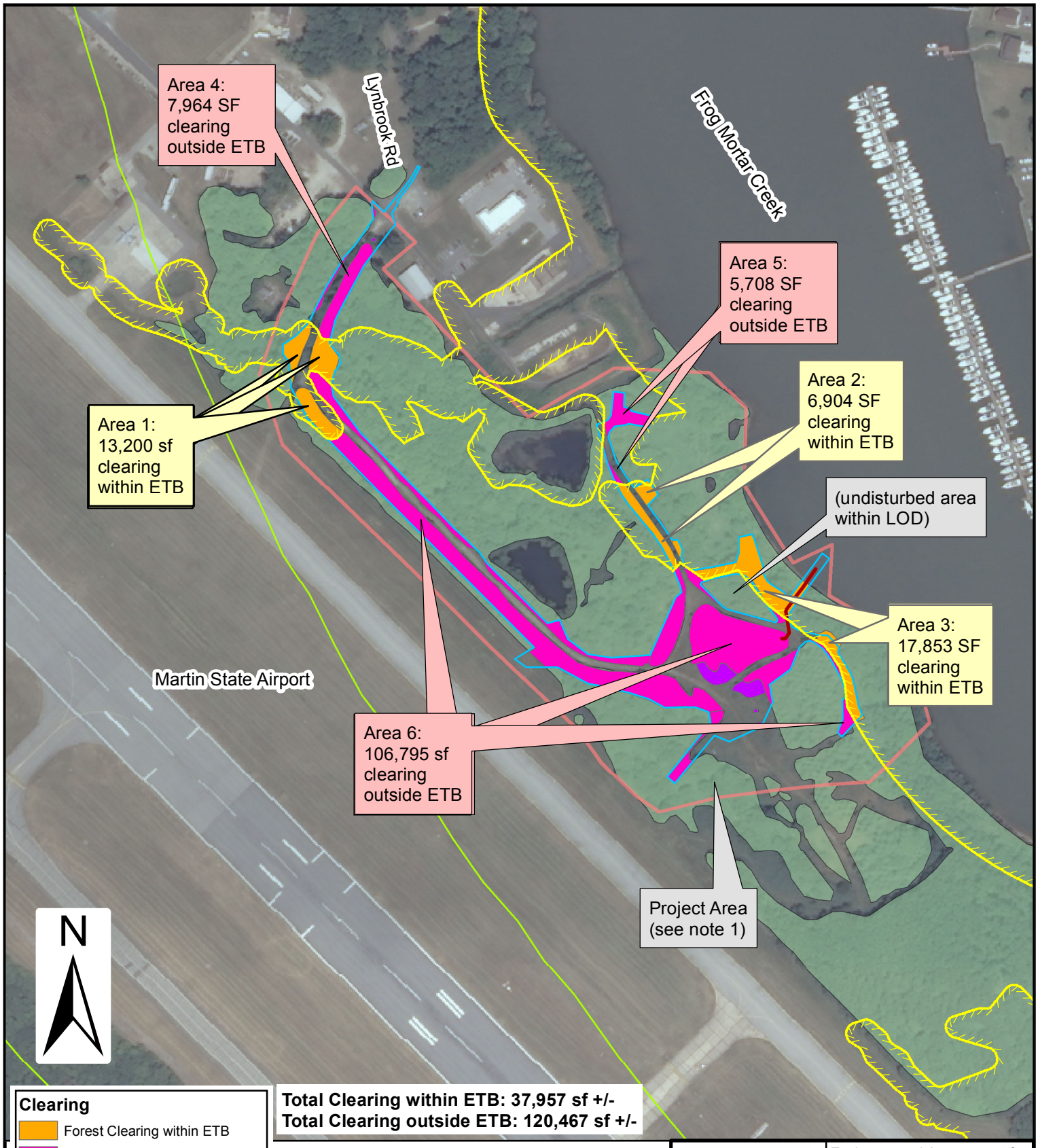
CRITICAL AREA IMPACTS
Buffer Disturbances

TETRA TECH

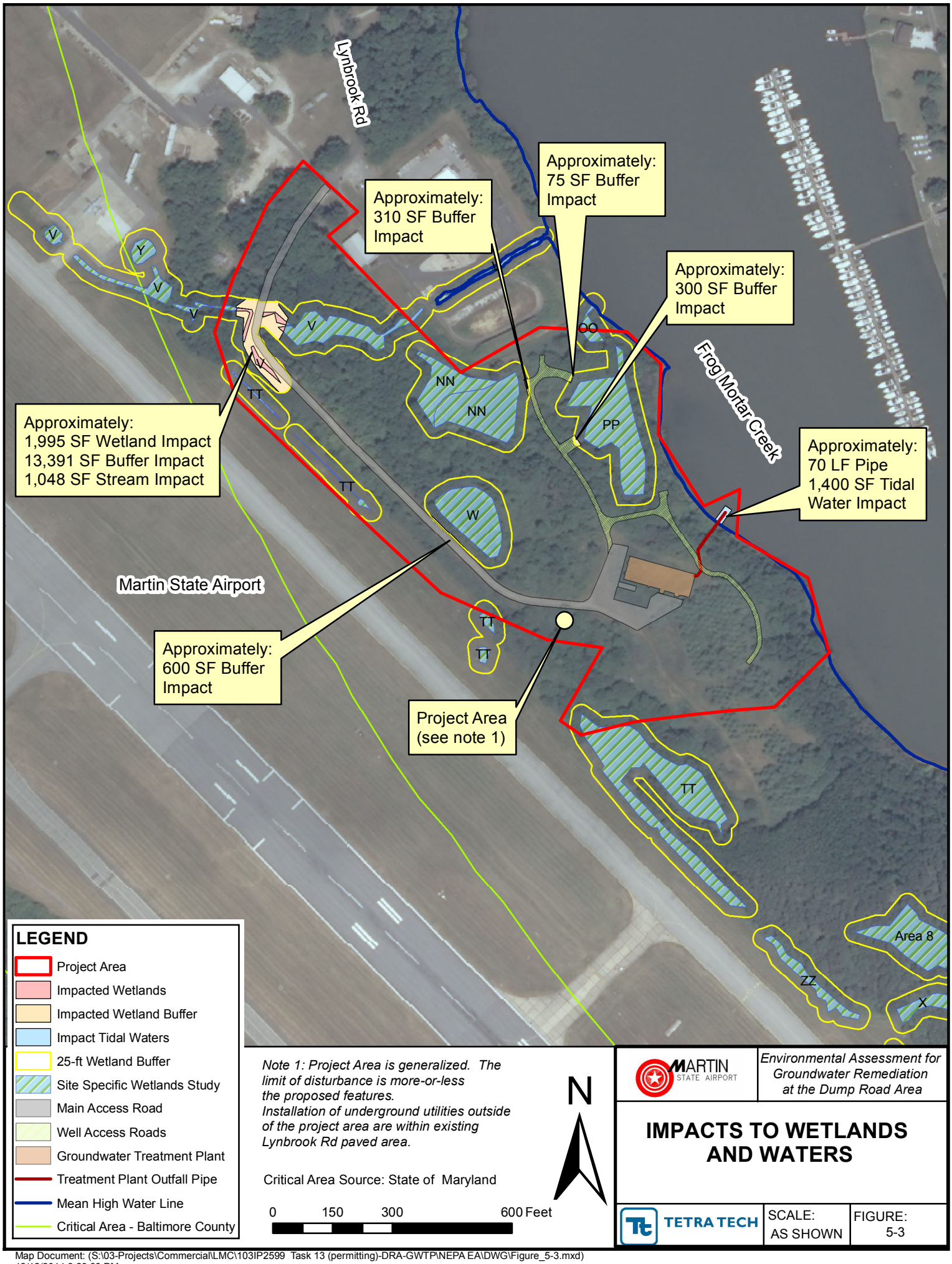
SCALE: AS SHOWN

FIGURE: 5-1

Map Document: (S:\03-Projects\Commercial\LMC\103IP2599 Task 13 (permitting)-DRA-GWTP\CriticalArea\Figure_5-1.mxd)
8/8/2014 1:51:58 PM



Map Document: (S:\03-Projects\Commercial\LMC\103IP2599 Task 13 (permitting)-DRA-GWTP\CriticalArea\Figure_5-2.mxd)
8/8/2014 1:58:33 PM



Map Document: (S:\03-Projects\Commercial\LMC\103IP2599 Task 13 (permitting)-DRA-GWTP\NEPA EA\DWG\Figure_5-3.mxd)
12/12/2014 3:23:38 PM

Section 6

List of Preparers

The following personnel have had primary responsibility in preparing this National Environmental Policy Act (NEPA) environmental assessment (EA).

Table 6-1

List of Authors

Personnel	Title	Years of Experience	Project Responsibilities
Maryland Aviation Administration			
Robin Bowie	Manager, Division of Environmental Planning	23	Project Manager
John Hurt	Environmental Analyst	26	Quality Assurance/ Quality Control
Tetra Tech, Inc.			
Paul Myers	Senior Environmental Scientist	20	Alternatives Analysis, Affected Environment, Environmental Consequences
Joe Lucas	Senior Environmental Scientist	20	Air Quality
CDM Smith, Inc.			
Laura Burbage	Environmental Scientist	12	Technical Review/ Quality Assurance/ Quality Control
Mark Salvetti	Project Engineer	29	Technical Review/ Quality Assurance/ Quality Control

This page intentionally left blank.

Section 7

Required Permits and Regulatory Approvals

The following table provides a list of the regulatory statutes that pertain to activities associated with the proposed remediation project. This table also contains the associated permits and regulatory approvals that will be necessary for project implementation, and provides a description of the public involvement process for each permit.

Table 7-1

Required Permits and Regulatory Approvals
Dump Road Area, Martin State Airport
Page 1 of 9

Regulation/Statute	Agency	Permit Description	Contact	Public Comment Process
Section 404 Clean Water Act (33 United States Code [USC] 1344) United States Army Corps of Engineers (USACE) Regulations 33 Code of Federal Regulations (CFR) Part 320-330	United States Army Corps of Engineers (USACE) and Environmental Protection Agency (USEPA)	Section 404 Clean Water Act Joint Permit: Dredge and Fill of Waters of the U.S. Including Wetlands	Abbie Hopkins 410-962-6080 abbie.hopkins@usace.army.mil Jon Romeo 410-692-6079 jon.romeo@usace.army.mil	30 day public comment period following submittal of draft joint application (JA)
Section 10 Rivers and Harbors Act -33 USC 401, et seq.	USACE and USEPA	Section 10 Rivers and Harbors Act Joint Permit: Work in Navigable Waters of the United States	Abbie Hopkins 410-962-6080 abbie.hopkins@usace.army.mil Jon Romeo 410-692-6079 jon.romeo@usace.army.mil	30 day public comment period following submittal of draft JA
Markers for Navigation - 33 CFR, chapter I, subchapter C, part 66	United States Coast Guard (USCG)	USCG review authority for potential impacts on navigation and installation of markers for navigation	Ron Houck (410)-576-2674 Ronald.L.Houck@uscg. mil.	30 day public comment period following submittal of draft JA

Table 7-1

Required Permits and Regulatory Approvals
Dump Road Area, Martin State Airport
Page 2 of 9

Regulation/Statute	Agency	Permit Description	Contact	Public Comment Process
Essential Fish Habitat - Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act	National Oceanic and Atmospheric Administration (NOAA) fisheries	Essential fish habitat (EFH) consultation and review: potential impacts on EFH	Kristy Beard 410-267-5675 Kristy.beard@noaa.gov	Not applicable (N/A)
Section 7 Endangered Species Act Consultation	United States Fish and Wildlife Service (USFWS) and the NMFS	Section 7 Endangered Species Act consultation and review: potential impacts to listed species and/or critical habitat	Bob Zepp 410-573-4536 bob_zepp@fws.gov Cherry Keller 410-573-4532 cherry_keller@fws.gov Kristy Beard 410-267-5675 kristy.beard@noaa.gov	N/A
Bald and Golden Eagle Protection Act (16 USC 668-668c), enacted	United States. Fish and Wildlife Service	USFWS review of potential impacts on bald eagle	Craig Koppie 410-573-4534 craig_koppie@fws.gov	N/A
Maryland Department of the Environment (MDE) Tidal Wetlands Protection Act Code of Maryland Regulations (COMAR) 26.24	Maryland Department of the Environment (MDE)/Board of Public Works	MDE Tidal Wetlands Protection Act License Joint Permit: Impacts to Tidal Wetlands and Waters of the State	Robert Rushlow 410-537-4023 rrushlow@mde.state.md.us	30 day public comment period following submittal of draft JA
MDE Non-Tidal Wetlands Protection Act COMAR 26.23	MDE Wetlands/Waterways Division	MDE Non-Tidal Wetlands Protection Permit: Impacts to Non-tidal Wetlands and Waters of the State	Cheryl Kerr 410-537-3911 ckerr@mde.state.md.us	30 day public comment period following submittal of draft JA

Table 7-1

Required Permits and Regulatory Approvals
Dump Road Area, Martin State Airport
Page 3 of 9

Regulation/Statute	Agency	Permit Description	Contact	Public Comment Process
Section 307 Federal Coastal Zone Management Act	Maryland Department of Natural Resources (MDNR)	Section 307 Federal Coastal Zone Management, Coastal Zone Consistency: Federal actions must be consistent with state's coastal management program	Elder Ghigiarelli 410-537-3763 eghigiarelli@mde.state.md.us	30 day public comment period following submittal of draft JA
Section 401 Water Quality Certification	MDE	Section 401 Water Quality Certification: State certifies that Section 404 permit meets state water quality standards	Cheryl Kerr 410-537-3911 ckerr@mde.state.md.us	30 day public comment period following submittal of draft JA
Section 402 Clean Water Act (33 USC 1342) and 40 CFR 122.26; Maryland Environment Article, Title 9, Subtitle 3: COMAR 26.08.04	MDE Construction Stormwater Division	Section 402 Clean Water Act, Construction General Permit for Construction Stormwater: discharges to waters of the United States. and state	Karen Smith ksmith@mde.state.md.us	30 - 45 day public comment period following submittal of notice of intent (NOI)
Section 402 Clean Water Act National Pollutant Discharge Elimination System (NPDES) - 40 CFR Part 122 through 125, and 131	MDE NPDES Program	Section 402 Clean Water Act NPDES Discharge Permit: treated outfall discharges to waters of the United States	Ed Gertler 410-537- 3651 egertler@mde.state.md.us	Public comment following notification of draft permit
Section 402 Clean Water Act (33 USC 1342) and 40 CFR 122.26; Environment Article, Title 4, Subtitle 1 for erosion and sediment control and Subtitle 2 for stormwater management (COMAR 26.17.01 and 26.17.02)	MDE Stormwater Management Program	Stormwater management plan approval: stormwater management and sedimentation impacts to waters of the state	Amanda Malcolm 410-537-3551 Amanda.malcolm@maryland.gov	N/A

Table 7-1

Required Permits and Regulatory Approvals
Dump Road Area, Martin State Airport
Page 4 of 9

Regulation/Statute	Agency	Permit Description	Contact	Public Comment Process
Section 106 of the National Historic Preservation Act (Public Law 89-665; 16 USC. 470 et seq.)	Maryland Historical Trust	Section 106 of the National Historic Preservation Act Historic/Cultural Resource Review: Potential impacts to any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register	Beth Cole 410-514-7631 bcole@mdp.state.md.us	N/A
Maryland Nongame and Endangered Species Conservation Act (Annotated Code of Maryland 10-2A-01; also, COMAR 08.03.08	Maryland DNR	Nongame and Endangered Species Conservation Act, Listed Species and Habitat Review: Potential impacts to state listed species and habitat	Marian Honeczy 410-260-8511 mhoneczy@dnr.state.md.us	N/A
MDE Groundwater Appropriation and Use Permit, Environment Article, Title 5, §5-203 and §5-501 through §5-516 and §5-5B-01 through §5-5B-05, Annotated Code of Maryland; COMAR 26.17.06 and COMAR 26.17.07.	MDE	For extraction of groundwater	Norman Lazarus 410-537-4167 nlazarus@mde.state.md.us	Public notice for request for public hearing for period of 14 days following submission of complete application. Public hearing date TBD if a hearing is requested

Table 7-1

Required Permits and Regulatory Approvals
Dump Road Area, Martin State Airport
Page 5 of 9

Regulation/Statute	Agency	Permit Description	Contact	Public Comment Process
Section 7-222 of the Environmental Article and COMAR 26.14	MDE Controlled Hazardous Substance (CHS) Enforcement Division	Oversees assessment and cleanup of hazardous waste sites	Art O'Connell 410-537-3493 aoconnell@mde.state.md.us	N/A
MDE Permit to Construct (PTC) and Permit to Operate (PTO)Environment Article, Title 2, Subtitle 4; COMAR 26.11.02 –	MDE	Air emissions permit	Nolan Penney 410-537-3230 npenney@mde.state.md.us	MDE issues draft air permit available for public review at local library. Also, public notice is prepared indicating a public hearing.

Table 7-1

Required Permits and Regulatory Approvals
Dump Road Area, Martin State Airport
Page 6 of 9

Regulation/Statute	Agency	Permit Description	Contact	Public Comment Process
Critical Area Commission, Title 8, Subtitle 18 of the Natural Resources Article of the Annotated Code of Maryland	Chesapeake Bay Critical Area Commission	Critical Area Plan/permit approval: potential impacts to critical area resources	Julie Roberts 410-260-3476 jroberts@dnr.state.md.us	Opportunities for public participation during critical area commission project review meeting(s)
Maryland Aviation Administration (MAA) – building permit	MAA	An MAA Building Permit is required for all new construction, renovation, alteration, or site improvement work on State-owned property under the jurisdiction of MAA. Any installation that affects the existing electrical, mechanical, plumbing, or structural systems also requires a Building Permit. As part of obtaining a Building Permit, approvals from the Federal Aviation Administration (FAA), other Federal, State and local regulatory agencies may be required.	MAA	N/A

Table 7-1

Required Permits and Regulatory Approvals
Dump Road Area, Martin State Airport
Page 7 of 9

Regulation/Statute	Agency	Permit Description	Contact	Public Comment Process
MAA – Airport Zoning Permit	MAA	The purpose of the Airport Zoning Permit (AZP) is to identify land uses, obstructions, and wildlife attractants that are incompatible with airport operations. The AZP application must be submitted for projects within a certified noise zone and/or airport zoning district (the area defined by a four-mile radius of Baltimore Washington International [BWI] or a three-mile radius of Martin State Airport [MTN]). For any construction or modification that will increase the height, change the use, or alter the exterior finish of an existing structure, or create a new structure, the applicant must obtain an Airport Zoning Permit (Maryland Aviation Administration [MAA]-010) before an MAA building permit will be issued. In addition, applicants may be required to file a Notice of Construction or Alteration (Federal Aviation Administration [FAA] Form 7460-1) requesting that the FAA perform an obstruction evaluation.	MAA	N/A

Table 7-1

Required Permits and Regulatory Approvals
Dump Road Area, Martin State Airport
Page 8 of 9

Regulation/Statute	Agency	Permit Description	Contact	Public Comment Process
Federal Aviation Administration (FAA) – Notice of Construction or Alteration	MAA	Notifies the FAA of construction or alteration that might affect navigable airspace (49 CFR part 77)	MAA	N/A
MAA – Trenching and Excavation Permit	MAA	Required before any trenching and excavation work can proceed The Contractor must obtain "Utility Modification/Digging Authorization" form that has been signed off by MAA utilities, MAA facilities department, MAA IT department, and FAA. This part of the approval process is coordinated through tenant improvement section's inspectors. In the second step, the contractor, acting on his/her own, is required to get the form signed off by Baltimore Gas and Electric (BGE) and Miss Utility	MAA	N/A

Table 7-1

Required Permits and Regulatory Approvals
Dump Road Area, Martin State Airport
Page 9 of 9

Regulation/Statute	Agency	Permit Description	Contact	Public Comment Process
MDE/Baltimore County – Well Construction Permit	MDE	A well construction permit is required before installing any well that will explore for water, obtain or monitor ground water, or inject water into any underground formation from which ground water may be produced. The well construction permit is obtained by the well driller from the local health department. Permits are obtained through a well driller licensed in the State of Maryland Environment Article Section 9-1307 allows up to $160 per permit. Each county establishes the fee, but may not exceed $160 per permit	MDE - Barry Glotfelty 410-537-3784 bglotfelty@mde.state.md.us	N/A