

**FINDING OF NO SIGNIFICANT IMPACT  
CONSTRUCTION OF STORM WATER DETENTION SYSTEM  
AT STORM WATER OUTFALL #3  
MALMSTROM AIR FORCE BASE, MONTANA**

**AGENCY:** United States Air Force, 341st Space Wing

**BACKGROUND**

The United States Air Force (USAF) conducted an Environmental Assessment (EA) of the potential environmental and social consequences of constructing and operating a storm water detention pond at storm water Outfall #3 at Malmstrom Air Force Base (AFB), pursuant to the National Environmental Policy Act (NEPA) of 1969 (42 United States Code §4321 to §4370d), Council on Environmental Quality's (CEQ) implementing regulations (40 Code of Federal Regulations [CFR] Part 1500-1508), and the USAF Environmental Impact Analysis Process (EIAP) as promulgated in 32 CFR Part 989 (EIAP, 6 July 1999, as amended by 66 FR 16866, 28 March 2001). The EA is incorporated by reference herein.

**PROPOSED ACTION**

This project proposes to construct a storm water detention pond at Malmstrom AFB storm water Outfall #3 to address flooding and erosion issues historically experienced at that outfall; improve water quality at the discharge boundary of Malmstrom AFB; and control peak flow discharge rates. Outfall #3 is one of 9 outfalls discharging storm water runoff from Malmstrom AFB. It is located on the north boundary of the base discharging water into the Middle Fork of Whitmore Ravine. The detention pond will detain water from the 10-year 24-hour storm to prevent erosion, provide settling of sediments before discharge, and control the 10-year 24-hour storm event peak flow at the proposed site.

Additional design parameters used in the design of the proposed pond include the *City of Great Falls Storm Drain Design Manual* definition of the hourly precipitation distribution for a 10-year 24-hour storm; a maximum discharge rate from the detention pond of 12.9 cubic feet per second (cfs) in order to maintain predevelopment peak flow rates from the 100-year 2-hour storm; and a maximum slope of 3:1 for the old Milwaukee Railroad fill. The proposed pond will store approximately 494,700 cubic feet of water and reduce outflow to the Middle fork of Whitmore Ravine to 12.9 cfs. Construction of the pond will require approximately 10,400 cubic yards of material to be excavated. The 341st Civil Engineer Squadron (341 CES/CEV) will determine the location of the storage site for excavated clean fill material prior to construction.

The Proposed Action will also require modifying Outfall #3 with an orifice plate to regulate the outlet flow rate into Whitmore Ravine. The outlet structure would be modified as needed to provide for the proper retention pond water depth. The outlet gate will be moved upstream of the orifice plate to allow for closure of the outfall in the event of a contaminant release. The existing structure would be modified to include 4.75 feet of 3-foot diameter corrugated metal pipe (CMP) to the inner CMP overflow pipe and an orifice plate with a 0.96-inch diameter orifice to the 3-foot diameter CMP outflow pipe.

**ALTERNATIVES CONSIDERED**

In addition to the Proposed Action, a No-Action Alternative (as prescribed by CEQ regulations) was considered and evaluated in the EA. Under the No Action Alternative, the storm water detention pond would not be built and there would be no assurances of proper drainage and reduced flow rates of storm water off base. Erosion issues would remain an issue for the installation.

# Report Documentation Page

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4. TITLE AND SUBTITLE <b>EA FOR CONSTRUCTION OF STORM WATER DETENTION SYSTEM AT STORM WATER OUTFALL #3</b>		5a. CONTRACT NUMBER			
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12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release; distribution unlimited</b>					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT <b>The United States Air Force (USAF) has prepared this EA to assess the environmental and social impacts resulting from the proposed action to construct a storm water detention pond at storm water Outfall #3 planned for late Fiscal Year (FY) 2007 at Malmstrom AFB.</b>					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT <b>Same as Report (SAR)</b>	18. NUMBER OF PAGES <b>88</b>	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			

## SUMMARY OF ANTICIPATED ENVIRONMENTAL IMPACTS

Consideration of effects described in the EA and a finding that they are not significant is a necessary and critical part of this Finding of No Significant Impact (FONSI) as required by 40 CFR 1508.13. Significance criteria are defined in 40 CFR 1508.27 to consider direct, indirect, and cumulative impacts and the context and intensity of impacts. The potential impacts of constructing and operating the detention system are analyzed in detail in the Affected Environment and Environmental Consequences section of the EA for the following resource areas and conditions: air quality, noise, soils, water resources, hazardous materials and waste, and solid waste and pollution prevention. The analyses indicated that implementing the Proposed Action would have no significant direct, indirect, or cumulative effects on the quality of the natural or human environment. Best management practices described in the EA and incorporated into the Proposed Action, including post-construction monitoring and documentation, are generally required of the proponent by laws, regulations, or USAF policies and are adopted by this decision.

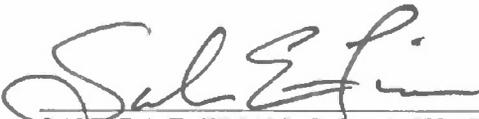
## PUBLIC INVOLVEMENT

NEPA, CEQ regulations, and the EIAP at 32 CFR Part 989 require public review of the EA before approval of the FONSI and implementation of any Proposed Action. The Draft EA and Draft FONSI was made available for a 30-day federal, state, and local agency and public review and comment period through publication of a notice of availability in the Thursday, June 14, 2007 edition of the Great Falls Tribune. Copies of the Draft EA and Draft FONSI were distributed to individuals on the project mailing list and to various federal, state, and local agencies. A hard copy of the Draft EA and Draft FONSI was made available for public review in the Arden G. Hill Memorial Library at Malmstrom AFB and the Great Falls Public Library in Great Falls, Montana. The public comment period on the EA began on June 14, 2007 and closed on July 16, 2007. The USAF received comments on the project from two agencies: Montana Fish, Wildlife & Parks, and the Cascade County Conservation District.

## FINDING OF NO SIGNIFICANT IMPACT

Based on the requirements of NEPA, CEQ regulations, and the EIAP at 32 CFR Part 989, I conclude the environmental effects of the Proposed Action are not significant and therefore, an environmental impact statement is not required for this projects and thus will not be prepared. The signing of this FONSI completes the USAF EIAP.

Approved:

  
SANDRA E. FINAN, Colonel, USAF  
Commander, 341st Space Wing

28 Aug 07  
Date

ENVIRONMENTAL ASSESSMENT  
FOR CONSTRUCTION OF STORM WATER  
DETENTION SYSTEM  
AT STORM WATER OUTFALL #3

Malmstrom Air Force Base, Montana



*Prepared by*

Headquarters Air Force Center for Environmental Excellence  
Project Execution Division

August 2007

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**COVER SHEET**  
**ENVIRONMENTAL ASSESSMENT**  
**FOR CONSTRUCTION OF STORM WATER DETENTION SYSTEM AT STORM WATER OUTFALL #3**  
**AT MALMSTROM AIR FORCE BASE, MONTANA**  
**Prepared by**  
**Headquarters Air Force Center for Environmental Excellence**  
**Project Execution Division**  
**Brooks Air Force Base, Texas 78235-5122**

10 a. **Responsible Agency:** U.S. Air Force, 341 Space Wing

11  
12 b. **Proposed Action:** The proposed action analyzed in the Environmental Assessment (EA) is to construct and  
13 operate a storm water detention pond at storm water Outfall #3 at Malmstrom Air Force Base (AFB) planned for late  
14 Fiscal Year 2007.

15  
16 c. **Written comments and inquiries regarding this document should be directed to:** Ms. Karen J. Clavin, 341  
17 CES/CEV, 39 78<sup>th</sup> Street North, Malmstrom AFB, Montana 59402-7536; telephone (406) 731-6369; e-mail  
18 [karen.clavin@malmstrom.af.mil](mailto:karen.clavin@malmstrom.af.mil).

19  
20 d. **Privacy Advisory:** Your comments on this EA are requested. Letters or other written or oral comments provided  
21 may be published in the Final EA and made available to the public. Any personal information provided will be used  
22 only to identify your desire to make a statement during the public comment portion of any public meeting or  
23 hearings or to fulfill requests for copies of the Final EA or associated documents. Private addresses will be  
24 compiled to develop a mailing list for those requesting copies of the Final EA. However, only the name of  
25 individuals making comments and specific comments will be disclosed. Personal home addresses and phone  
26 numbers will not be published in the Final EA.

27  
28 e. **Designation:** EA

29  
30 f. **Abstract:** The United States Air Force (USAF) has prepared this EA in accordance with the National  
31 Environmental Policy Act to evaluate the potential environmental and social impacts from the construction and  
32 operation of the proposed storm water detention pond at storm water Outfall #3. The EA considers the No Action  
33 Alternative and the Proposed Action, for the proposed action. The proposed pond is required to ensure proper  
34 drainage of storm water off of Malmstrom AFB; and minimize momentum-induced erosion issues on the base.

35  
36 The environmental resources potentially affected by the proposed action include: air quality; noise; soils; water  
37 resources; hazardous materials and waste; and solid waste and pollution prevention. Based on the nature of the  
38 activities that would occur during the construction and operation of the storm water detention pond at storm water  
39 Outfall #3, the USAF has determined that minimal or no adverse impacts to the above resources are anticipated.

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41 g. **Comments must be received by:** July 16, 2007

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29		#3	

# Acronyms

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1	341 CES/CEV	341 Civil Engineering Squadron
2	AAM	annual arithmetic mean
3	AAQS	Ambient Air Quality Standards
4	ACC	Air Combat Command
5	ACHP	Advisory Council on Historic Preservation
6	AFB	Air Force Base
7	AFI	Air Force Instruction
8	AFSPC	Air Force Space Command
9	AGM	annual geometric mean
10	AICUZ	Air Installation Compatible Use Zone
11	AQCR	Air Quality Control Region
12	ARM	Administrative Rule of Montana
13	As	arsenic
14	bgs	below ground surface
15	BMPs	best management practices
16	°C	degrees Celsius
17	CAA	Clean Air Act
18	CAAA	Clean Air Act Amendment
19	CEQ	Council on Environmental Quality
20	CERCLA	Comprehensive Environmental, Response, Compensation, and Liability Act
21	CFR	Code of Federal Regulations
22	cfs	cubic feet per second
23	CIP	Capital Improvements Program
24	cm	centimeter
25	CMP	corrugated metal pipe
26	CO	carbon monoxide
27	Cu	copper
28	cu ft	cubic feet
29	cu yd	cubic yard
30	CWA	Clean Water Act
31	dB	decibel
32	DNRC	Montana Department of Natural Resources and Conservation
33	DoD	Department of Defense

# Acronyms

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1	EA	Environmental Assessment
2	EIAP	Environmental Impact Analysis Process
3	EIS	Environmental Impact Statement
4	EO	Executive Order
5	ERP	Environmental Restoration Program
6	°F	degrees Fahrenheit
7	FEMA	Federal Emergency Management Agency
8	FONSI	Finding of No Significant Impact
9	ft	foot or feet
10	FY	Fiscal Year
11	g/m <sup>2</sup>	grams per square meter
12	HQ	Headquarters
13	H <sub>2</sub> S	hydrogen sulfide
14	ICBM	Intercontinental Ballistic Missile
15	in	inch(es)
16	IRP	Installation Restoration Program
17	Leq	energy equivalent sound level
18	LF	Launch Facility
19	MAF	Missile Alert Facility
20	MCA	Montana Code Annotated
21	MDEQ	Montana Department of Environmental Quality
22	mi	miles
23	MPDES	Montana Pollutant Discharge Elimination System
24	mph	miles per hour
25	m/s	mean speed
26	NAAQS	National Ambient Air Quality Standards
27	NEPA	National Environmental Policy Act
28	NHPA	National Historic Preservation Act
29	NO <sub>2</sub>	nitrogen dioxide
30	NO <sub>x</sub>	nitrogen oxides
31	NPDES	National Pollutant Discharge Elimination System
32	NRHP	National Register of Historic Places
33	NRCS	Natural Resource Conservation Service

# Acronyms

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1	O <sub>3</sub>	ozone
2	ODS	ozone depleting substances
3	OSHA	Occupational Safety and Health Administration
4	P2	Pollution Prevention
5	Pb	lead
6	PCB	polychlorinated biphenyl
7	pCi/L	picocuries per liter
8	PM <sub>10/2.5</sub>	particulate matter particles equal to or less than 10/2.5 microns
9	POL	petroleum, oils, and lubricants
10	ppm	parts per million
11	PSD	Prevention of Significant Deterioration
12	QRP	Qualified Recycling Program
13	RCRA	Resource Conservation and Recovery Act
14	RV	recreational vehicle
15	SHPO	State Historic Preservation Officer
16	SIP	State Implementation Plan
17	SO <sub>2</sub>	Sulfur dioxide
18	SO <sub>x</sub>	Sulfur oxides
19	SPCC	Spill Prevention Control and Countermeasures
20	sq ft	square foot/feet
21	sq mi	square mile
22	SW	Space Wing
23	SWMM	Storm Water Management Model
24	SWMP	Stormwater Management Program
25	SWMU	Storm Water Management Unit
26	SWPPP	Storm Water Pollution Prevention Plan
27	TMDL	Total Maximum Daily Loads
28	TPH	Total Petroleum Hydrocarbons
29	TSP	total settleable particulates
30	µg/g	micrograms per gram
31	µg/m <sup>3</sup>	micrograms per cubic meter
32	U.S.	United States
33	USACE	U.S. Army Corps of Engineers

# Acronyms

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1	USAF	U.S. Air Force
2	USC	U.S. Code
3	USEPA	U.S. Environmental Protection Agency
4	VOC	volatile organic compound
5		
6		

1 This chapter describes the purpose of and need for the proposed action at Malmstrom Air Force  
2 Base (AFB), provides summaries of the scope of the environmental review and the applicable  
3 regulatory requirements, and presents an overview of the organization of the document.  
4

5 Federal agencies are required to consider the environmental consequences of proposed actions in  
6 the decision-making process under the National Environmental Policy Act (NEPA) of 1969 (42  
7 United States Code [USC] §4321 to §4370d) and the Council on Environmental Quality's (CEQ)  
8 implementing regulations (40 Code of Federal Regulations [CFR] Part 1500-1508). This  
9 Environmental Assessment (EA) for the proposed construction of a storm water detention system  
10 at Malmstrom AFB was prepared in accordance with NEPA and CEQ regulations. Additionally,  
11 this EA complies with the Air Force Environmental Impact Analysis Process (EIAP) for the  
12 proposed action as promulgated in 32 CFR Part 989 (EIAP, 6 July 1999, as amended by 66 FR  
13 16866, 28 March 2001), which implements NEPA, CEQ regulations, and Department of Defense  
14 (DoD) Instruction 4715.9 (Environmental Planning and Analysis).

## 15 **1.1 BACKGROUND**

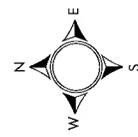
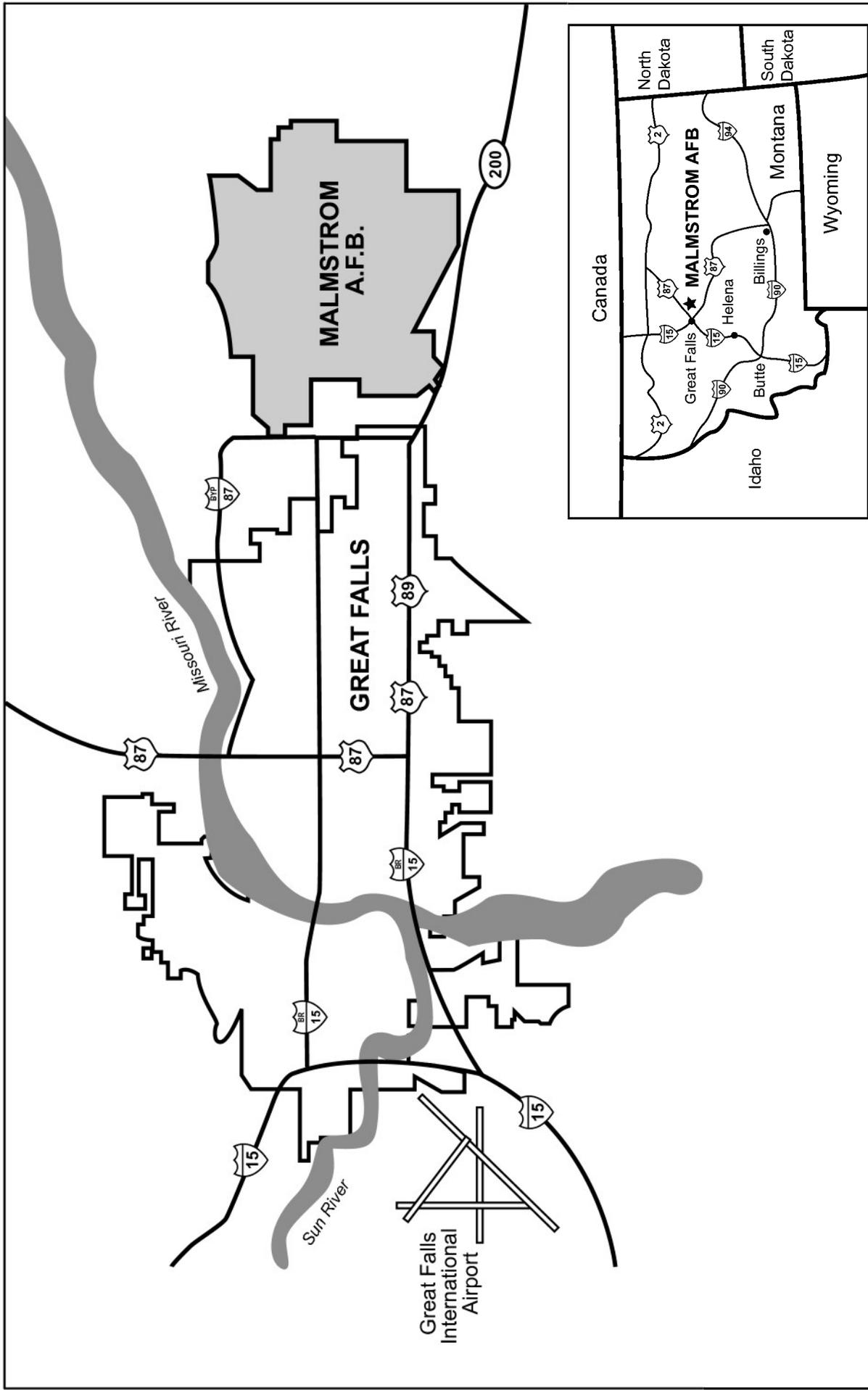
16 Malmstrom AFB is situated in a section of rolling plains, occupying approximately 3,600 acres  
17 in Cascade County in west central Montana (Figure 1). Its elevation is at 3,525 feet (ft) above  
18 sea level on a plateau that slopes away from the Little Belt Mountains, north towards the  
19 Missouri River. The Missouri River flows north and northeast of the Base. Stream valleys are  
20 interspersed throughout the area, but most of the year these valleys are dry. The base lies  
21 approximately 0.3 miles (mi) east of the City of Great Falls city limit at its closest point, and is  
22 5 mi from the central business district of the city. The city has a population of approximately  
23 56,700 people. Interstate Highway 15 passes along the western boundary of Great Falls. Access  
24 to the base main gate is off U.S. Highway 87/89, east of Interstate Highway 15, via 2<sup>nd</sup> Avenue  
25 North. Land to the south, east and north is used for production of small grain cereals, livestock  
26 grazing, and similar agricultural uses.

27 The 341 Space Wing (SW) is the current host of the installation and their mission is to keep  
28 America free and strong by providing combat-ready people and aerospace forces. Since 1961,  
29 the 341 SW has provided the nation's strategic deterrent intercontinental ballistic missile  
30 capability. Malmstrom is one of three U.S. Air Force Bases that maintains and operates the  
31 Minuteman III intercontinental ballistic missile (ICBM). The 341 SW operates 200 Launch  
32 Facilities (LF) and 20 Missile Alert Facilities (MAF), which provide the critical component of  
33 America's on-alert strategic forces. The SW also operates 7 UH-1N "Huey" helicopters  
34 throughout a 23,500-square mile (sq mi) missile complex in north central Montana. The  
35 helicopters are used as a force-multiplier in day-to-day security of the missile complex. The 341  
36 SW reports directly to 20th Air Force, F.E. Warren AFB, Wyoming, and is part of Air Force  
37 Space Command (AFSPC), headquartered at Peterson AFB, Colorado.

38 Approximately 4,100 people, including more than 3,640 active-duty and more than 430 civilians,  
39 comprise the 341 SW. Malmstrom AFB is also host to several tenant units, including the 819  
40 RED HORSE Squadron, which accounts for another 404 personnel. The 819 RED HORSE is a  
41 rapidly deployable Air Combat Command (ACC) engineering and construction unit that trains at  
42 Malmstrom for deployment around the globe.

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NOT TO SCALE

**Figure 1**  
 Regional Context Map for Malmstrom Air Force Base  
 EA for Construction of Storm Water Detention System  
 at Storm Water Outfall #3 at Malmstrom AFB, MT

**1.2 PURPOSE AND NEED FOR THE PROPOSED ACTION**

The United States Air Force (USAF) has prepared this EA to assess the environmental and social impacts resulting from the proposed action to construct a storm water detention pond at storm water Outfall #3 planned for late Fiscal Year (FY) 2007 at Malmstrom AFB (Figure 2).

This project proposes to construct a storm water detention pond at Malmstrom AFB storm water Outfall #3 to address flooding and erosion issues historically experienced at that outfall; improve water quality at the discharge boundary of Malmstrom AFB; and control peak flow discharge rates. The detention pond would retain water from the 10-year 24-hour storm to control and minimize erosion, provide settling of sediments before discharge, and control the 10-year 24-hour storm event peak flow at the proposed site.

**Drainage Area 3**

Outfall #3 is one of 9 outfalls discharging storm water runoff from Malmstrom AFB. It is located on the north boundary of the base discharging water into the Middle Fork of Whitmore Ravine. The area draining to Outfall #3 is considered Drainage Area 3 (341 CES/CEVC 2006a) (Figure 3).

Drainage Area 3 is bounded on the east by the east edge of the runway; on the north by the base boundary extending from the former pole yard storage area to the coal-fired heating plant; on the west by Drainage Areas 1 and 2 (Goddard Drive from 80th Street North to 72<sup>nd</sup> Street North; and on the south by Drainage Area 1 (72<sup>nd</sup> Street North from Goddard to the old aircraft operations apron to Taxiway R) (Figure 3). Drainage Area 3 collects and discharges storm water from the majority of the old aircraft operations pavements, the primary petroleum operations, storage and supply systems, several industrial facilities, and light commercial and residential (dormitory) areas. Two sub-drains are included in this drainage. These sub-drains collect and discharge shallow groundwater in the area. The easternmost sub-drain collects groundwater from beneath the runway, taxiways, and aircraft parking ramps.

**Existing Storm Drain**

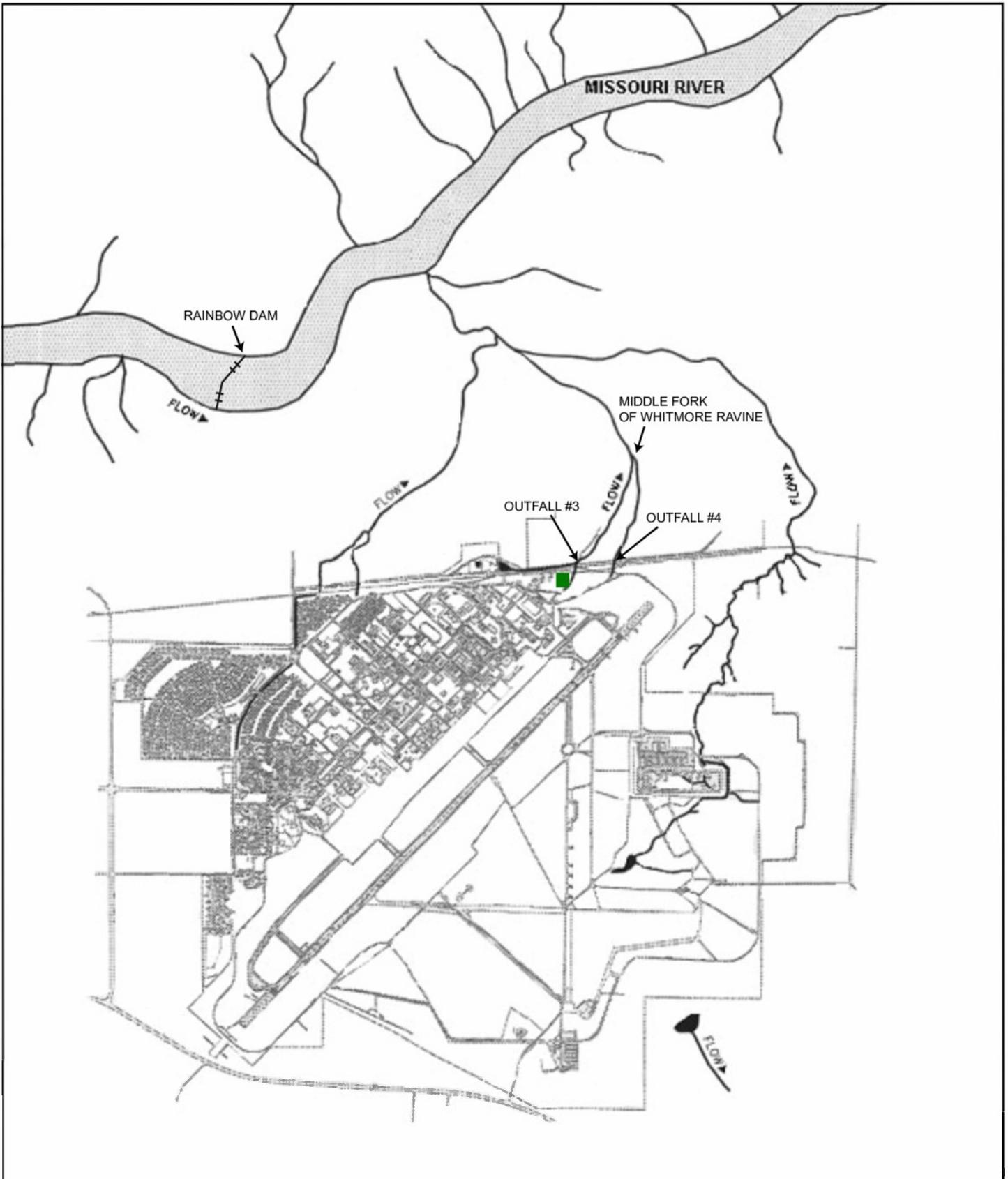
Storm water runoff for Drainage Area 3 is collected by four storm drain mains. These mains, shown in Figure 4, converge at 80<sup>th</sup> Street North, north of Building 1708, and are conveyed through a series of concrete channels and culverts past an abandoned oil/water separator by the intersection of Perimeter and Rescue Roads to a 40-inch (in) reinforced concrete culvert under Pole Yard Road. Storm water then flows by natural channel to Outfall #3, under the old Chicago, Milwaukee, St. Paul, and Pacific (referred heretofore as the old Milwaukee Railroad) right-of-way fill, and into the Middle Fork of Whitmore Ravine.

**Existing Outfall #3 Outlet Structure**

Figure 5 shows the existing Outfall #3 outlet structure. The structure was constructed so that in the event of a contaminant spill within Drainage Area 3, a gate could be closed to prevent the contaminant from moving off the base property. The outflow structure has two vertical steel culverts, one inside the other. The outer culvert is placed around the inner culvert with the top of the culvert higher than the inner culvert. This allows water discharged over the top of the inner culvert to come from beneath the water surface, preventing any floating contaminants from being discharged into Whitmore Ravine.

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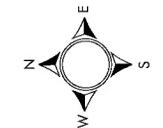
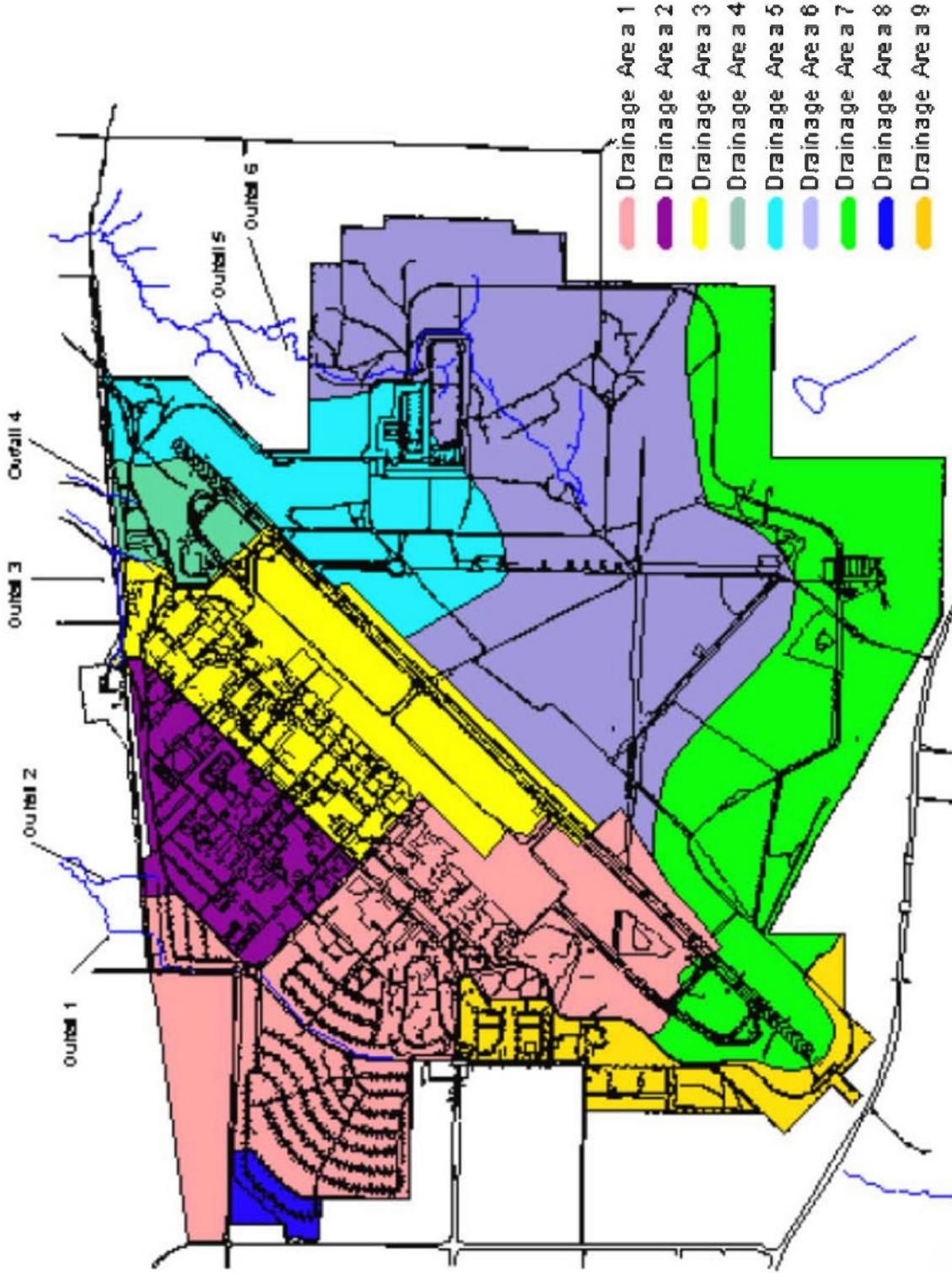
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**Legend**

■ Proposed Project Area

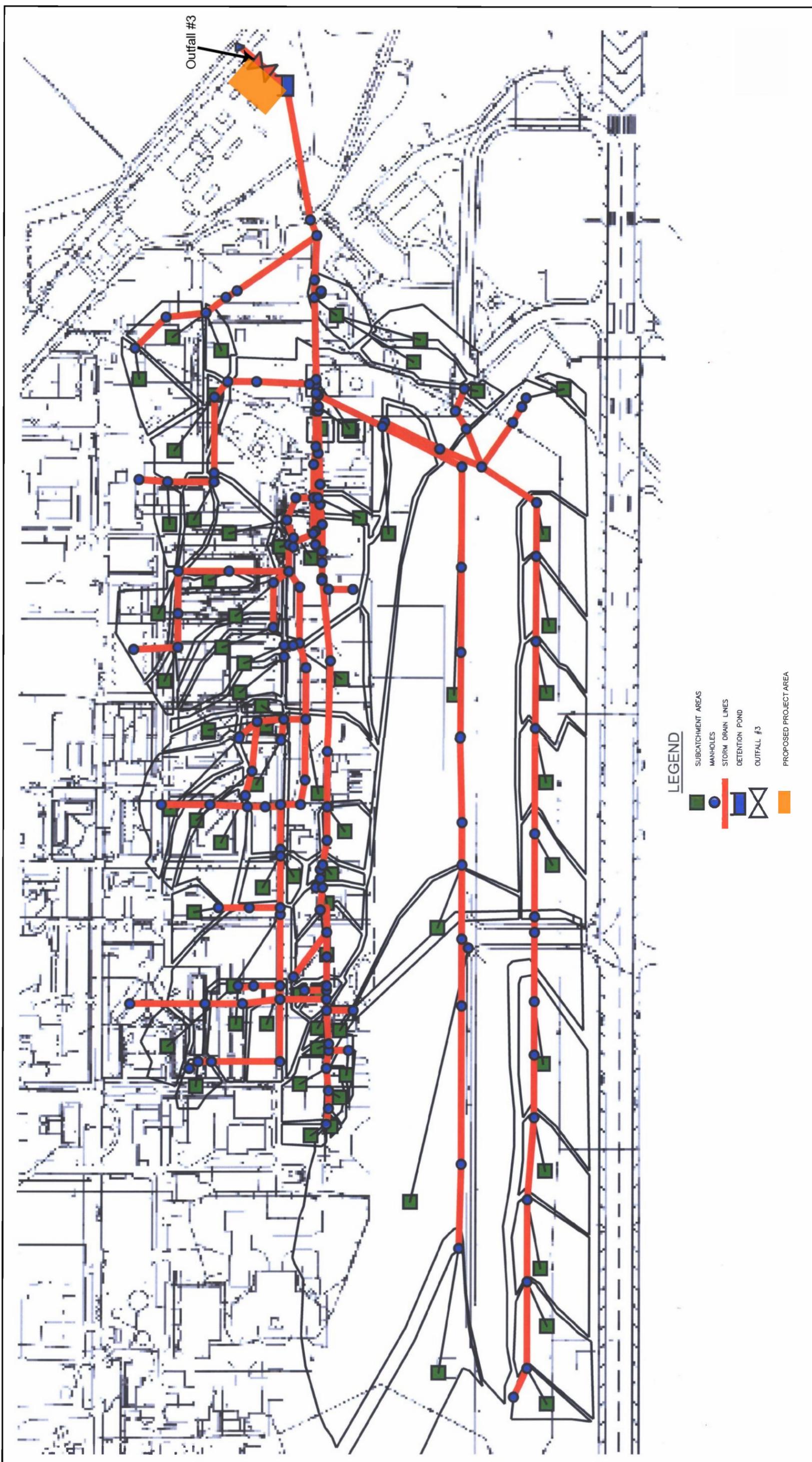
**Figure 2**

Surface Water Drainage Patterns at Malmstrom Air Force Base  
 EA for Construction of Storm Water Detention System  
 at Storm Water Outfall #3 at Malmstrom AFB, MT

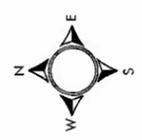


Source: Final Integrated Natural Resources Management Plan for Malmstrom Air Force Base. 341 CES/CEVC. December 2001.

**Figure 3**  
 Drainage Area and Outfall Locations at Malmstrom Air Force Base  
 EA for Construction of Storm Water Detention System  
 at Storm Water Outfall #3 at Malmstrom AFB, MT



- LEGEND**
- SUBCATCHMENT AREAS
  - MANHOLES
  - STORM DRAIN LINES
  - DETENTION POND
  - OUTFALL #3
  - PROPOSED PROJECT AREA



**Figure 4**  
 Drainage Area 3 with Subcatchment Areas, Storm Drain Lines, and Manhole Locations  
 EA for Construction of Storm Water Detention System at Storm Water Outfall #3  
 at Malmstrom AFB, MT

Source: Type A Submittal Final for Retention Area, Outfall #3, October 2006.



**Figure 5**  
Existing Outlet Structure at Outfall #3  
EA for Construction of Storm Water Detention System  
at Storm Water Outfall #3 at Malmstrom AFB, MT

1

2 **1.3 SCOPE OF THE ENVIRONMENTAL ASSESSMENT**3 **1.3.1 Resources to be Analyzed in this EA**

4 This EA addresses the potential impacts of the proposed action to air quality; noise; soils; water  
5 resources, including surface water and groundwater; hazardous materials and wastes; and solid  
6 waste and pollution prevention.

7 The draft EA was made available for public and agency review and comment during a 30-day  
8 review period commencing on June 14, 2007 and ending on July 16, 2007 (See newspaper  
9 advertisement in Appendix B). The USAF received comments on the project from two agencies:  
10 Montana Fish, Wildlife & Parks, and the Cascade County Conservation District. These  
11 comments and USAF responses to these comments are contained in Appendix C. After  
12 reviewing the analysis in this EA, a decision by the USAF will be made as to whether to issue a  
13 finding of no significant impact (FONSI) or to proceed with the development of an  
14 environmental impact statement (EIS) to further analyze the potentially significant impacts  
15 resulting from implementation of the proposed action or alternatives.

16 **1.3.2 Resources Eliminated from Detailed Analysis**

17 The following environmental issues were initially considered, but were determined to not be  
18 relevant to the proposed action being considered. By utilizing standard measures such as  
19 avoidance and best management practices (BMPs), the resources listed below would not be  
20 impacted by the proposed action. Consequently, these resources have been eliminated from  
21 detailed analysis.

22 **Floodplains:** Executive Order (EO) 11988, "Floodplain Management," requires all federal  
23 agencies to avoid construction within the 100-year floodplain unless no other practicable  
24 alternative exists. The proposed project area is located outside of the 100-year floodplain.  
25 Therefore, floodplain management was dismissed as an environmental issue.

26 **Wetlands:** EO 11990, "Protection of Wetlands," requires federal agencies to take action to  
27 avoid, to the extent practicable, the destruction, loss, or degradation of wetlands and to preserve  
28 and enhance the natural and beneficial values of wetlands. The intent of EO 11990 is to avoid  
29 direct or indirect construction in wetlands if a feasible alternative is available. All federal and  
30 federally supported activities and projects must comply with EO 11990.

31 In addition, activities occurring in jurisdictional wetlands and other Waters of the U.S. require  
32 compliance with Section 404 of the Clean Water Act (CWA) administered by the U.S. Army  
33 Corps of Engineers (USACE) and Section 401 of the CWA administered by the U.S.  
34 Environmental Protection Agency (USEPA) for on-base lands and the Montana Department of  
35 Environmental Quality for off-base lands. Proposed actions that have the potential to adversely  
36 impact wetlands must be addressed in a statement of findings. No jurisdictional wetlands  
37 currently exist on the base, nor are there any wetlands regulated by EO 11990 in the immediate  
38 project area. The 2006 Malmstrom Air Force Base Draft Wetland Delineation Report  
39 (Ecosystem Research Group 2006a) identifies two sites, NWI-5.1 and NWI-5.3, as inventoried  
40 during the 2006 wetlands inventory conducted during preparation of this report. Neither is

1 afforded federal protection under EO 11990. Therefore, wetlands were dismissed as an  
2 environmental issue.

3 **Biological Resources:** Native and non-native wildlife, wetlands, and vegetation, as well as  
4 threatened, endangered, and other sensitive species known or likely to occur at Malmstrom AFB  
5 are documented in the *Final Integrated Natural Resources Management Plan for Malmstrom Air*  
6 *Force Base*, December 2001.

7 The Endangered Species Act (§16 USC 1531-1543) requires federal agencies that authorize,  
8 fund, or carry out actions to avoid jeopardizing the continued existence of endangered or  
9 threatened species or destroying or adversely modifying their critical habitat. Federal agencies  
10 must evaluate the effects of their actions on endangered or threatened species of fish, wildlife,  
11 and plants and their critical habitats and take steps to conserve and protect these species. This  
12 Act requires the avoidance or mitigation of all potentially adverse impacts to endangered and  
13 threatened species. No federally-listed threatened or endangered species, or potential habitat for  
14 these species have been identified on the base. In addition, little native vegetation exists on the  
15 proposed project area and the project area generally does not support wildlife. Therefore,  
16 biological resources were dismissed as an environmental issue.

17 **Geology:** Because there are no active faults near the project area or Malmstrom AFB, the  
18 occurrence of geologic hazards and seismic activity in the study area is low. Bedrock is not  
19 encountered within 11 to 12 feet of the surface, therefore geologic resources are not anticipated  
20 to be impacted by the pond, which is estimated to be at a maximum depth of 11.4 feet. The  
21 proposed project area would have little to no effect on the geology of the area. Therefore,  
22 geology was dismissed as an environmental issue.

23 **Cultural, Paleontological, and Archaeological Resources:** The National Historic Preservation  
24 Act (NHPA), as amended (16 USC 470 *et seq.*) and NEPA require the consideration of impacts  
25 on cultural resources listed on or eligible for listing on the National Register of Historic Places  
26 (NRHP). No NRHP-listed resources are located on Malmstrom AFB. A segment of the  
27 Chicago, Milwaukee, St. Paul, and Pacific Railroad (now Burlington Northern Santa Fe) lies  
28 offsite and traverses the northern border of the base, adjacent and to the north of the proposed  
29 project area (*Cultural Resources Management Plan for Malmstrom Air Force Base, Montana*,  
30 July 2005). This railroad segment (Site 24CA264) was determined to be potentially eligible for  
31 listing on the NRHP based on its role in the Euro-American settlement of the region. The USAF  
32 does not anticipate that this railroad segment nor any other historic structures or buildings, or  
33 archaeological sites would be impacted by the proposed project. There are no known historical  
34 and or archaeological resources on the proposed site; therefore, impacts to cultural resources are  
35 not expected.

36 Previous contacts with the Montana State Historic Preservation Officer (SHPO) confirmed the  
37 presence of one of many known potentially eligible cultural resource (historic railroad tract  
38 segment) adjacent to, but not within the proposed project area (USACE 2005).

39 Should any cultural or archaeological resources be uncovered during construction of the storm  
40 water detention system, work would stop and the site would be evaluated prior to the  
41 continuation of the project. Therefore, historic structures and buildings, and archaeological  
42 resources were dismissed as an environmental issue.

1 **Visual Resources:** The Malmstrom AFB Master Plan describes lands on the base as industrial.  
2 Because the proposed project takes place within the industrial confines of the base, there would  
3 be no new impacts to visual or scenic resources. In addition, the proposed project does not  
4 intrude on the vertical visual landscape and would not further degrade visual resources. Minor,  
5 adverse, and short-term impacts could result from construction activities. Therefore, visual  
6 resources were dismissed as an environmental issue.

7 **Air Space:** Because the proposed project would not involve any flying and/or flying missions,  
8 there would be no new impacts to airspace. Therefore, air space was dismissed as an  
9 environmental issue.

10 **Land Use:** The term “land use” refers to real property classifications that indicate either natural  
11 conditions or the types of human activity occurring on a parcel of land. In many cases, land use  
12 descriptions are codified in local zoning laws. There is, however, no nationally recognized  
13 convention of uniform terminology for describing land use categories. As a result, the meanings  
14 of various land use descriptions, “labels”, and definitions vary among jurisdictions. Present land  
15 use in the proposed project area, as outlined in the *Integrated Natural Resources Management*  
16 *Plan at Malmstrom Air Force Base*, December 2001, is industrial. Because the proposed project  
17 takes place within this industrial area, there would be no impacts on existing land use patterns.  
18 Therefore, land use was dismissed as an environmental issue.

19 **Socioeconomics:** Socioeconomics is defined as the basic attributes and resources associated with  
20 the human environment, particularly population and economic activity. The proposed action  
21 would not alter the number of personnel assigned to Malmstrom, or change local population  
22 densities or distribution, or result in any increased development. Therefore, there would be no  
23 changes in area population or associated demands for housing and support services.

24 Also included with socioeconomics are concerns pursuant to EO 13045, “Protection of Children  
25 from Environmental Health Risks and Safety Risks.” This EO directs federal agencies to identify  
26 and assess environmental health and safety risks that might disproportionately affect children. The  
27 proposed action would not pose any adverse or disproportionate environmental health and safety  
28 risks to children living on or in the vicinity of Malmstrom AFB. The proposed project area  
29 would be fenced (TD&H Engineering Consultants. 2006), and the likelihood of the presence of  
30 children at the site of the proposed action is considered minimal, which further limits the  
31 potential for any effects. Therefore, socioeconomics was dismissed as an environmental issue.

32 **Environmental Justice:** Executive Order 12898, “General Actions to Address Environmental  
33 Justice in Minority Populations and Low-Income Populations,” requires that all federal agencies  
34 address the effects of policies on minorities and low-income populations and communities.  
35 There are no environmental justice populations identified that would be impacted by the  
36 proposed action. Therefore, there would be no disproportionately high and adverse human  
37 health or environmental effects to minority or low-income populations or communities in the  
38 area. Therefore, environmental justice was dismissed as an environmental issue.

39 **Transportation:** The proposed project does not include any changes to the transportation  
40 network at Malmstrom AFB. In addition, increases in traffic volumes associated with  
41 construction activity would be temporary. Upon completion of construction, no long-term  
42 impacts to on-base transportation systems would result. Therefore, transportation was dismissed  
43 as an environmental issue.

1 **Utilities:** Issues and concerns regarding infrastructure are related to creating stress on  
2 infrastructure systems, such that the existing infrastructure must be updated or changed.  
3 Assessing impacts to infrastructure entails a determination of infrastructure that would be used as  
4 a result of the Proposed Action. There is an existing transformer on the proposed project area  
5 (Building 1537), however it does not contain polychlorinated biphenyls (341 CES/CEVC 2006).  
6 No upgrades are expected to be needed for potable water, electric, natural gas, and sanitary  
7 networks. The proposed project would not place a demand for public utility services and would  
8 not be a major impact to regional or local energy supplies. Therefore, utilities was dismissed as  
9 an environmental issue.

## 10 **1.4 APPLICABLE REGULATORY REQUIREMENTS**

11 This EA is documentation of the EIAP, and complies with NEPA, CEQ regulations, and DoD  
12 Instruction 4715.9. The EA addresses all applicable federal, state, and local laws and  
13 regulations, including but not limited to the Clean Air Act (CAA); Endangered Species Act; Air  
14 Force Instruction (AFI) 32-7040, Air Quality Compliance; AFI 32-7088, Pollution Prevention  
15 Program; AFI 32-7042, Solid and Hazardous Waste Compliance; Resource Conservation and  
16 Recovery Act (RCRA); and Comprehensive Environmental, Response, Compensation, and  
17 Liability Act (CERCLA). Each environmental resource is regulated and/or protected by federal  
18 and State of Montana regulations. In establishing the background conditions and assessing the  
19 potential environmental consequences of the proposed action, the following regulations were  
20 also considered.

### 21 **1.4.1 Air Quality**

22 The Montana Clean Air Act (Montana Code Annotated [MCA], Title 75, Chapter 2) implements  
23 the federal CAA. The Montana Clean Air Act, implemented by the Air Quality Procedural  
24 Regulations, the Air Quality Regulations, and the National Ambient Air Quality Standards  
25 (NAAQS), establishes ambient air quality standards and permitting and monitoring procedures.

26 The Clean Air Act Amendment (CAAA) of 1990 established new federal non-attainment  
27 classifications, new emission control requirements, and new compliance dates for non-attainment  
28 areas. The requirements and compliance dates are based on the severity of non-attainment  
29 classification.

### 30 **1.4.2 Water Quality**

31 The Water Pollution Control Law (MCA 75.05) sets forth water conservation, water quality  
32 protection, and pollution prevention and abatement measures. Implementing regulations include  
33 the Water Pollution Control Regulations (Administrative Rule of Montana [ARM], Title 17,  
34 Chapter 30, Subchapter 7).

35 The Montana Pollutant Discharge Elimination System (MPDES) Rules (ARM 17.30.12-13)  
36 establish effluent limitations, treatment standards, and other requirements for point source  
37 discharge of waste into State waters, including storm water runoff.

38 The Groundwater Pollution Control Regulations (ARM 17.30.10) establish groundwater  
39 classification, and set forth protection and permitting requirements, while the Surface Water

1 Quality Standards (ARM 17.30.06) establish surface water quality criteria to ensure public health  
2 and safety and provide for water conservation.

### 3 **1.4.3 Public Health and Safety/Hazardous Waste**

4 The Solid Waste and Litter Control Act (MCA 75.10) provides for coordinated state solid waste  
5 management and a resource recovery plan. The Integrated Waste Management Act (MCA  
6 75.10) provides for waste reduction and recycling programs.

7 The Hazardous Waste Act (MCA 75.10) and the Hazardous Waste Management Regulations  
8 (ARM 16.44) control the generation, storage, transportation, treatment, and disposal of  
9 hazardous wastes; this Act also authorizes the state to implement a program pursuant to RCRA.

10 The Refuse Disposal Regulations (ARM 16.14.05) implement the Hazardous Waste Act and  
11 regulations. These regulations provide uniform standards for the storage, treatment, recycling,  
12 recovery, and disposal of solid waste, including hazardous waste, and the transportation of  
13 hazardous waste.

## 14 **1.5 ORGANIZATION OF THE ENVIRONMENTAL ASSESSMENT**

15 Pursuant to 32 CFR Part 989 implementing the CEQ regulations (40 CFR 1502), this document  
16 consists of the following sections:

17 **Acronyms and Abbreviations:** provides a list of acronyms and abbreviations used throughout  
18 the document.

19 **Section 1 – Purpose and Need for the Proposed Action:** provides background information  
20 about the installation; the purpose and need for the proposed action; the scope of the  
21 environmental review; applicable regulatory requirements; and a brief description of how the  
22 document is organized.

23 **Section 2 – Description of the Proposed Action and Alternatives:** provides the selection  
24 criteria; a detailed description of the proposed action and the No Action Alternative; other  
25 alternatives that were considered but not carried forward in the evaluation process; and an  
26 alternatives comparison table.

27 **Section 3 – Affected Environment and Environmental Consequences:** provides a description  
28 of the existing conditions of the areas potentially affected by the alternatives identified to  
29 implement the proposed action; standards of significance for comparison of impacts against  
30 existing conditions; and an analysis of the direct and indirect impacts to resources from the  
31 alternatives.

32 **Section 4 – Cumulative Impacts:** provides an analysis of present and reasonably foreseeable  
33 projects, and the potential incremental impacts of the proposed action when considered along  
34 with these other planned or reasonably foreseeable projects.

35 **Section 5 – List of Preparers:** provides a list of the document preparers and contributors.

36 **Section 6 – Distribution List and Agencies and Individuals Contacted:** provides lists of  
37 agencies/individuals to whom the EA will be distributed.

38 **Section 7 – References:** provides a listing of the references used in preparing this EA.

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1 This section provides a detailed description of the Proposed Action and the No Action  
2 Alternative for construction of the storm water detention system at storm water Outfall #3.  
3 Alternatives that were considered but dismissed are also discussed. In addition, a summary of  
4 impacts for each alternative is provided at the end of this chapter.  
5

## 6 **2.1 DESCRIPTION OF THE PROPOSED ACTION**

7 The USAF proposes to construct a new storm water detention pond at storm water Outfall #3 in  
8 Drainage Area 3. The following design parameters were used in the design of the proposed pond  
9 (TD&H Engineering Consultants. 2006):

- 10 • The design storm for sizing the pond is to be the 10-year 24-hour storm;
- 11 • The hourly precipitation distribution for the 10-year 24-hour storm will be defined by the  
12 *City of Great Falls Storm Drain Design Manual*, June 1990;
- 13 • A maximum discharge rate from the detention pond is to be 12.9 cubic feet per second (cfs)  
14 in order to maintain predevelopment peak flow rates from the 100-year 2-hour storm; and
- 15 • Maximum slope of the old Milwaukee Railroad fill will be 3:1.

16 Information from Malmstrom AFB's block plans and storm water drain as-built drawings were  
17 used to develop a model of the current storm drainage conveyance system for Drainage Area 3.  
18 This USEPA *Stormwater Management Model* (SWMM) was used to route the design storm  
19 through the storm drain system, proposed retention pond, and outlet structure to estimate runoff  
20 rates conveyed to the Middle Fork of Whitmore Ravine. The detention pond and outlet structure  
21 were sized to reduce outflow from the pond to below the 12.9 cfs maximum detention pond  
22 discharge rate. Figure 4 shows the storm drain lines and areas draining to inlets that were input  
23 into the SWMM model.

### 24 **Outfall Modifications**

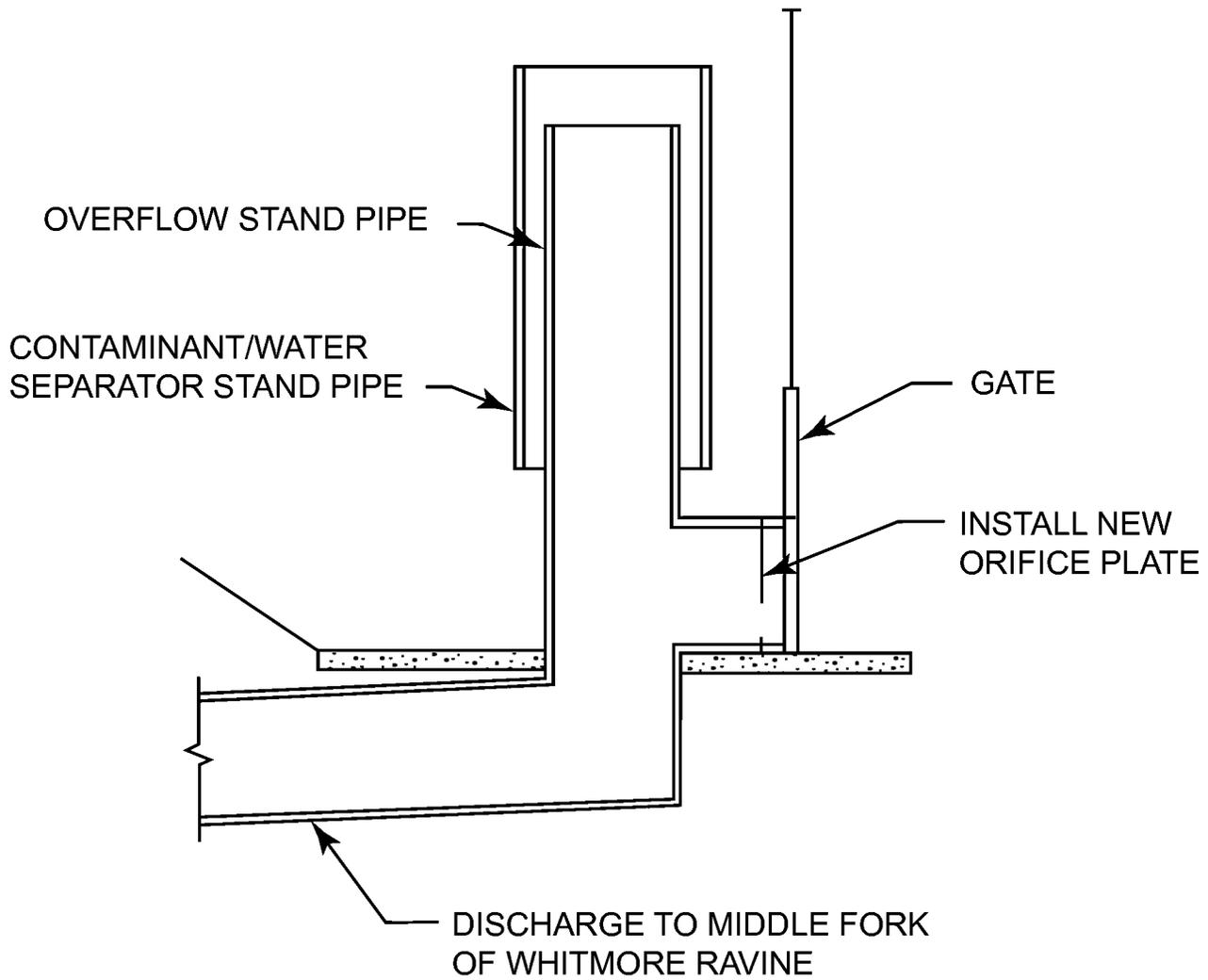
25 Outfall #3 would be modified as shown in Figure 6 with an orifice plate to regulate the outlet  
26 flow rate into Whitmore Ravine. The outlet structure would be modified as needed to provide  
27 for the proper detention pond water depth. The outlet gate would be moved upstream of the  
28 orifice plate to allow for closure of the outfall in the event of a contaminant release. The existing  
29 structure would be modified to include 4.75 ft of 3 ft diameter corrugated metal pipe (CMP) to  
30 the inner CMP overflow pipe and an orifice plate with a 0.96 in diameter orifice to the 3 ft  
31 diameter CMP outflow pipe.

32 During a storm runoff event, storm water would be released continuously from the detention  
33 pond at a reduced rate through the orifice plate with additional flows stored in the pond. After  
34 the storm had passed, water would continue to flow through the orifice plate until the pond is  
35 empty. For storms larger than the design storm, water would fill the detention pond, flow over  
36 the inner culvert, and be discharged directly to Whitmore Ravine. The outfall discharge flows in  
37 this case would be greater than the 12.9 cfs design discharge rate. However, there is a 1 percent  
38 chance of having a 100 year storm event.

39 For extremely large storms, after reaching the discharge capacity of the outlet structure,  
40 detention pond water would flow overland into Outfall #4. Again, for storms with larger runoff  
41 than the design storm, total storm water release rates would be greater than the 12.9 cfs design  
42 discharge rate.

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Source: Type A Submittal Final for Retention Area, Outfall #3, October 2006.

**Figure 6**

Modified Outlet Structure at Outfall #3 - Cross Section  
 EA for Construction of Storm Water Detention System  
 at Storm Water Outfall #3 at Malmstrom AFB, MT

1  
2 **Detention Pond Design**

3 The proposed detention pond was sized to restrict outflow from the pond to below 12.9 cfs. The  
4 pond shown in Figure 7 would store approximately 494,700 cubic feet (cu ft) of water and  
5 reduce outflow to the Middle fork of Whitmore Ravine to 12.7 cfs. Construction of the pond  
6 would require approximately 10,400 cubic yards (cu yd) of material to be excavated. The 341  
7 Civil Engineering Squadron (341 CES/CEV) would determine the location of the storage site for  
8 excavated clean fill material prior to construction. Table 1 summarizes the proposed pond  
9 design.

10 **Table 1**  
11 **Pond Design Summary**

Description	Total Pond Storage (cu yds)	Total Cut & Fill (cu yds)	Disturbed Area (acres)	Peak Inflow (cfs)	Max. Pond Depth (ft)	Peak Outflow (cfs)
Pond sized for 10-year 24-hour storm	18,324	10,400	3	34.7	11.4	12.9

12  
13 The Montana Department of Natural Resources and Conservation (DNRC) requires a  
14 downstream hazard classification for reservoirs, which include detention ponds, more than 50  
15 acre-feet in storage volume. The detention pond storage is predicted to be 11.4 acre-feet for the  
16 10-year 24-hour storm. Therefore, no permit is required for this project.

17 The Natural Resource Conservation Service (NRCS) Water Rights Bureau in Lewiston was  
18 contacted regarding possible water right filing requirements. Based on information provided by  
19 the NRCS, water detained in the pond is not used for any beneficial use and no water right  
20 permits would be required for the proposed project (*Type A Submittal Final for Retention Area,*  
21 *Outfall #3, October 2006*).

22 The slope of fill for the proposed project would be constructed to a maximum 3:1 slope. To  
23 ensure slope stability of the old Milwaukee Railroad fill when used for a detention pond  
24 impoundment structure, the current design includes an embankment and a retaining wall with  
25 gabions.

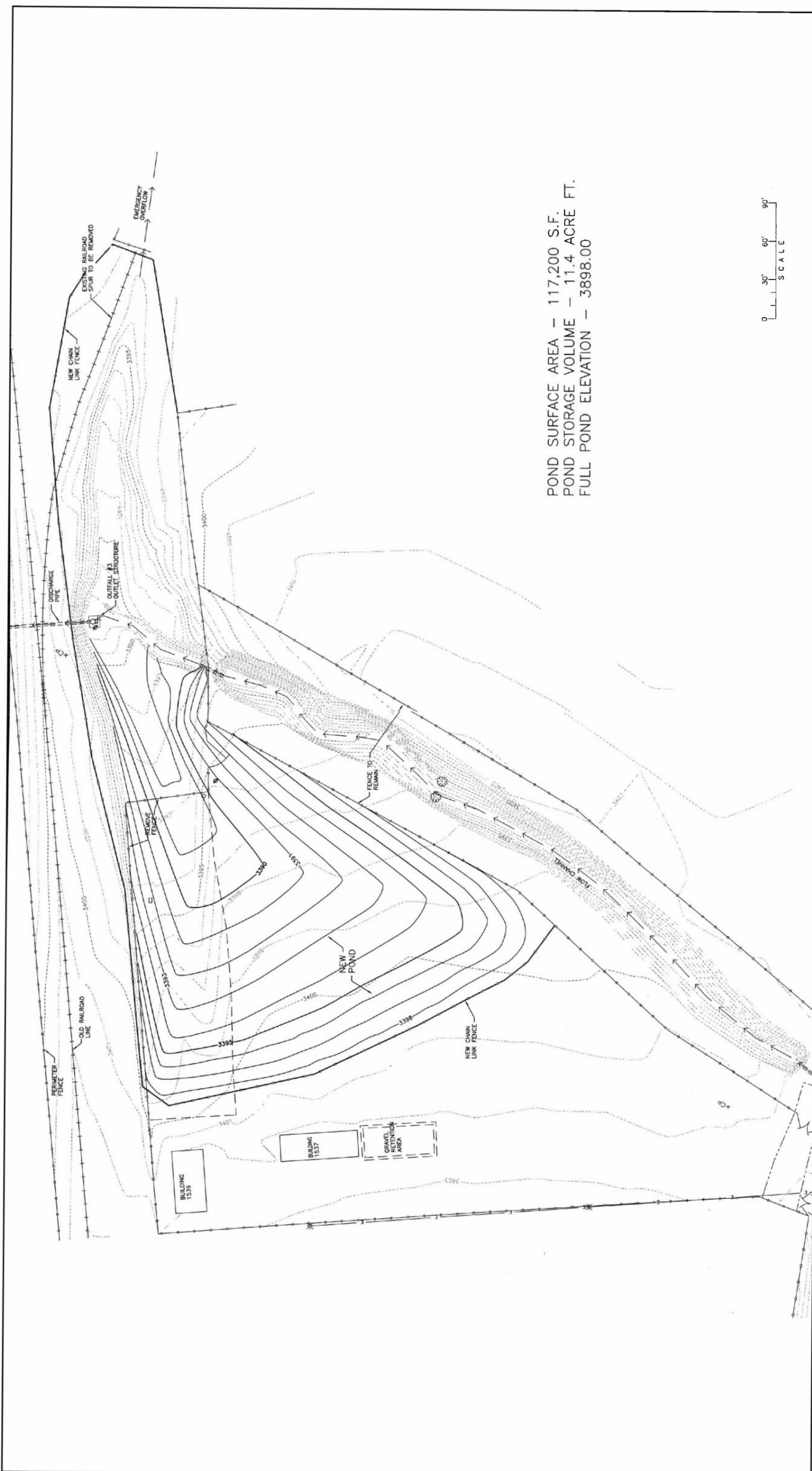
26 **2.2 NO ACTION ALTERNATIVE**

27 While the No Action Alternative does not satisfy the purpose and need for the project, it is  
28 included in the environmental analysis to provide a baseline for comparison with the proposed  
29 action and is analyzed in accordance with CEQ regulations for implementing NEPA.

30 Under the No Action Alternative, the storm water detention pond would not be built. Without  
31 this system, there would be no assurances of proper drainage and reduced flow rates of storm  
32 water off base. Erosion issues would remain an issue for the installation.

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POND SURFACE AREA - 117,200 S.F.  
 POND STORAGE VOLUME - 11.4 ACRE FT.  
 FULL POND ELEVATION - 3898.00



**Figure 7**

Proposed 10-Year 24-Hour Pond  
 EA for Construction of Storm Water Detention System  
 at Storm Water Outfall #3 at Malmstrom AFB, MT

Source: Type A Submittal Final for Retention Area, Outfall #3, October 2006.

**2.3 ALTERNATIVES CONSIDERED BUT DISMISSED**

Other design options for the proposed storm water detention pond were investigated during project development. One alternative scenario included constructing a pond suitable to detain water from a 100-year (24-hour and 2-hour) storm event. This alternative was dismissed from further consideration due to high costs, a considerably larger footprint, and would not easily adapt to the available site. The second alternative included a design to detain all water from a 10-year storm event in the pond, rather than discharging, and using this water for irrigation. This alternative was dismissed from further consideration due to high costs and a resulting loss of riparian vegetation.

**2.4 COMPARISON OF ALTERNATIVES**

Table 2 compares the impacts to resources analyzed in this EA for the Proposed Action, and the No Action Alternative for the project.

**Table 2**  
**Comparison of Alternatives with Resource Impacts**

Resources	Proposed Action	No Action Alternative
Air Quality	-	0
Noise	-	0
Soils	-	0
Water Resources	+	-
Hazardous Materials and Waste	0	0
Solid Waste and Pollution Prevention	0	0

- = Adverse, but not significant, short-term or long-term impacts.

+ = Positive/beneficial short-term or long-term impact.

0 = No change, short-term or long-term.

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# **SECTION THREE Affected Environment and Environmental Consequences**

1

## **3.1 METHODOLOGY FOR ASSESSMENT OF IMPACTS**

3 This section describes the affected environment (existing conditions) for air quality, noise, soils,  
4 water resources, hazardous materials and waste, and solid waste pollution prevention, as well as  
5 the potential impacts resulting from the implementation of the Proposed Action.

6 Potential impacts were identified and assessed for each environmental issue by comparison to  
7 existing conditions, which is the No Action Alternative. Impact areas utilized throughout this  
8 section were derived based on the following. The permanent disturbance of the pond is  
9 estimated to be 3 acres (or approximately 117,200 sq ft). The temporary construction impacts  
10 are resource-specific and discussed in the appropriate sections below.

11 Impacts are described by intensity (minor/moderate), timing (construction vs. operation), mode  
12 of action (direct/indirect), and duration of impact (short-term/long-term), where applicable.

## **3.2 AIR QUALITY**

### **3.2.1 Affected Environment**

15 This section describes existing air quality standards and air quality at Malmstrom AFB; and  
16 climatic and meteorological conditions that influence the quality of the air in the area around  
17 Malmstrom AFB.

18 The type and concentration of pollutants in the atmosphere, the size and topography of the air  
19 basin, and local and regional meteorological influences determine air quality. Comparing these  
20 values to federal and/or state ambient air quality standards determine the significance of a  
21 pollutant concentration in a region or geographical area. Under the authority of the CAA, the  
22 USEPA has established nationwide air quality standards to protect public health and welfare,  
23 with an adequate margin of safety.

24 These federal standards, the National Ambient Air Quality Standards (NAAQS), represent the  
25 maximum allowable atmospheric concentrations and were developed for six “criteria” pollutants:  
26 ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), respirable particulate matter less  
27 than 10 micrometers in diameter (PM<sub>10</sub>), sulfur dioxide (SO<sub>2</sub>), and lead (Pb). Based on measured  
28 ambient criteria pollutant data, the USEPA designates areas of the U.S. as having air quality  
29 equal to or better than the NAAQS (attainment) or worse than the NAAQS (nonattainment).  
30 Nonattainment areas that achieve attainment are subsequently redesignated as maintenance areas  
31 for a period of 10 or more years. Areas are designated as unclassifiable for a pollutant when  
32 there is insufficient ambient air quality data for the USEPA to form a basis of attainment status.  
33 For the purpose of applying air quality regulations, unclassifiable areas are treated similar to  
34 areas that are in attainment of the NAAQS.

35 In 1997, the USEPA promulgated two new standards: a new 8-hour O<sub>3</sub> standard (which will  
36 eventually replace the existing 1-hour O<sub>3</sub> standard) and a new standard for particulate matter less  
37 than 2.5 micrometers in diameter (PM<sub>2.5</sub>), which are fine particulates that have not been  
38 previously regulated. In addition, the USEPA revised the existing PM<sub>10</sub> standard. The two new  
39 standards are scheduled for implementation over the next few years, as monitoring data becomes

## SECTION THREE Affected Environment and Environmental Consequences

1 available to determine the attainment status of areas in the U.S. Meanwhile, the USEPA will  
 2 enforce the existing 1-hour O<sub>3</sub> standard for areas that are still in nonattainment of the standard.  
 3 Under the CAA, state and local agencies may establish ambient air quality standards (AAQS)  
 4 and regulations of their own, provided these are at least as stringent as the federal requirements.  
 5 For selected criteria pollutants, the State of Montana has established its state AAQS, some of  
 6 which are more stringent than the federal standards. Montana AAQS are more restrictive than  
 7 federal standards for CO, NO<sub>2</sub>, O<sub>3</sub>, and SO<sub>2</sub>. Montana does not have state standards for PM<sub>2.5</sub>.  
 8 In addition, Montana regulates emissions of settleable particulates, visibility, fluoride in foliage,  
 9 and hydrogen sulfide (H<sub>2</sub>S), for each of which no federal standards exist. A summary of the  
 10 federal and Montana AAQS that apply to the proposed project area is presented in Table 3.

**Table 3**  
**Montana and Federal Ambient Air Quality Standards**

Air Pollutant	Averaging Time	Montana AAQS	Federal (NAAQS)	
			Primary	Secondary
Carbon Monoxide (CO)	8-hour	9 ppm	9 ppm	---
	1-hour	23 ppm	35 ppm	---
Nitrogen Dioxide (NO <sub>2</sub> )	AAM	0.05 ppm	0.053 ppm	0.053 ppm
	1-hour	0.30 ppm	---	---
Sulfur Dioxide (SO <sub>2</sub> )	AAM	0.02 ppm	0.030 ppm	---
	24-hour	0.10 ppm	0.14 ppm	---
	3-hour	---	---	0.50 ppm
	1-hour	0.50 ppm	---	---
Particulate Matter (PM <sub>10</sub> )	AAM	50 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>
	24-hr	150 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>
Particulate Matter (PM <sub>2.5</sub> ) <sup>(a)</sup>	AAM	---	15 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>
	24-hour	---	65 µg/m <sup>3</sup>	65 µg/m <sup>3</sup>
Ozone (O <sub>3</sub> ) <sup>(b)</sup>	1-hour	0.10 ppm	0.12 ppm	0.12 ppm
	8-hour	---	0.08 ppm	0.08 ppm
Lead (Pb) and Lead Compounds	Calendar	---	1.5 µg/m <sup>3</sup>	1.5 µg/m <sup>3</sup>
	Quarter	---	---	---
	90-days	1.5 µg/m <sup>3</sup>	---	---
Settleable Particulates (TSP)	30-day	10 g/m <sup>2</sup>	---	---
Hydrogen sulfide (H <sub>2</sub> S)	1-hr(d)	0.010 ppm	---	---
	½-hr(e)	0.100 ppm	---	---
	½-hr(f)	0.030 ppm	---	---
Fluoride in foliage	1-month	50 µg/g	---	---
	grazing season	35 µg/g	---	---
Visibility	AAM	3 x 10 <sup>-5</sup> /m	---	---

Notes: AAM = Annual Arithmetic Mean; AGM = Annual Geometric Mean.  
 ppm = parts per million; µg/m<sup>3</sup> = micrograms per cubic meter.

(a) The PM<sub>2.5</sub> standard (particulate matter with a 2.5-micron diameter) was promulgated in 1997, and will be implemented over an extended time frame. Areas will not be designated as in attainment or nonattainment of the PM<sub>2.5</sub> standard until the 2003 – 2005 timeframe.

(b) The 8-hour Ozone standard was promulgated in 1997, and will eventually replace the 1-hour standard. The USEPA plans to implement this standard beginning in 2004. During the interim, the 1-hour ozone standard will continue to apply to areas not attaining it.

Sources: §40 CFR 50; USFS 2000.

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1    For nonattainment regions, the states are required to develop a State Implementation Plan (SIP)  
2    designed to eliminate or reduce the severity and number of NAAQS violations, with an  
3    underlying goal to bring state air quality conditions into (and maintain) compliance with the  
4    NAAQS by specific deadlines.

5    Section 162 of the CAA further established a national goal of preventing degradation or  
6    impairment in federally designated Class I areas. Class I areas are defined as those areas where  
7    any appreciable degradation in air quality or associated visibility impairment is considered  
8    significant. As part of the Prevention of Significant Deterioration (PSD) program, Congress  
9    assigned mandatory Class I status to all national parks, national wilderness areas (excluding  
10    wilderness study areas or wild and scenic rivers), and memorial parks greater than 5,000 acres.  
11    Class II areas are those where moderate, well-controlled growth could be permitted. Class III  
12    areas are those designated by the governor of a state as requiring less protection than Class II  
13    areas. No Class III areas have yet been so designated. The PSD requirements affect construction  
14    of new major stationary sources in the PSD Class I, II, and III areas and are a pre-construction  
15    permitting system.

16    CAA Section 169A established the additional goal of prevention of further visibility impairment  
17    in the PSD Class I areas. Visibility impairment is defined as a reduction in the visual range and  
18    atmospheric discoloration. Determination of the significance of an activity on visibility in a PSD  
19    Class I area is typically associated with evaluation of stationary source contributions. The  
20    USEPA is implementing a Regional Haze rule for PSD Class I areas that will also address  
21    contributions from mobile sources and pollution transported from other states or regions.  
22    Emission levels are used to qualitatively assess potential impairment to visibility in PSD Class I  
23    areas. Decreased visibility may potentially result from elevated concentrations of PM<sub>10</sub> and SO<sub>2</sub>  
24    in the lower atmosphere.

25    Malmstrom AFB is located in Montana Air Quality Control Region (AQCR) 141, which covers  
26    north central Montana. Mandatory PSD Class I areas for the state of Montana are listed under 40  
27    CFR 81. Lewis and Clark National Forest, Scapegoat Wilderness, Helena National Forest, and  
28    Gates of the Mountain Wilderness are Class I areas but are not within 50 miles of the project area  
29    and Malmstrom AFB. The Flathead Indian Reservation, west of Great Falls, is a non-mandatory  
30    Tribal Class I area, which requires similar protection as mandatory Class I areas.

31    CAA Section 176(c), General Conformity, established certain statutory requirements for federal  
32    agencies with proposed federal activities to demonstrate conformity of the proposed activities  
33    with the each state's SIP for attainment of the NAAQS. In 1993, the USEPA issued the final  
34    rules for determining air quality conformity. Federal activities must not:

- 35    •    cause or contribute to any new violation;
- 36    •    increase the frequency or severity of any existing violation; or
- 37    •    delay timely attainment of any standard, interim emission reductions, or milestones in  
38    conformity to a SIP's purpose of eliminating or reducing the severity and number of NAAQS  
39    violations or achieving attainment of NAAQS.

40    General conformity applies only to nonattainment and maintenance areas. If the emissions from  
41    a federal action proposed in a nonattainment area exceed annual thresholds identified in the rule,  
42    a conformity determination is required of that action. The thresholds become more restrictive as  
43    the severity of the nonattainment status of the region increases.

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1    The Proposed Action would occur within Cascade County, Montana. According to federally  
2    published attainment status for Montana in §40 CFR 81, Cascade County is designated as in  
3    attainment, better than the national standards, or unclassified for CO, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub>, O<sub>3</sub>, and  
4    Pb. Based on recent monitoring data, the USEPA projects that the Cascade County will be in  
5    attainment of the new 8-hour ozone and PM<sub>2.5</sub> NAAQS when designations are made in the near  
6    future (USEPA 2002). Monitoring data in Cascade County indicate generally good air quality.

### ***Climatology and Meteorology***

8    Malmstrom AFB, located in north central Montana, is on the dry eastern side of the Rocky  
9    Mountains and has a modified semiarid continental type climate. Summertime is generally  
10    pleasant, with cool nights, moderately warm and sunny days, and very little hot, humid weather.  
11    Winters are milder than would be expected of a continental location at this latitude because of  
12    the frequent occurrence of warm down slope winds (Chinooks) that produce temperature changes  
13    of 40° F or greater in 24 hours. July is generally the warmest month, with a mean daily high  
14    temperature of 83.6 degrees Fahrenheit (°F). January is usually the coldest month, with a mean  
15    daily low temperature of 12.5 °F. The growing season averages 135 days per year (USACE  
16    2005).

17    Humidity and precipitation are usually low, with associated large fluctuations in daily and  
18    seasonal temperatures. Average annual precipitation is 15 in. Most of the precipitation that  
19    occurs during the late fall, winter, and early spring falls as snow, but Chinook winds prevent  
20    large accumulations. Average annual snowfall is 43.6 in. The prevailing winds are from the  
21    southwest year round and are generally moderate with speeds exceeding 25 miles per hour (mph)  
22    only two percent of the time. Based on the average annual precipitation, the area would  
23    normally be classified as semi-arid, but about 70 percent of the annual rainfall typically occurs  
24    during the April to September growing season, so the climate is favorable for dry land farming  
25    (USACE 2005). Table 4 presents average monthly temperatures, precipitation, humidity, and  
26    wind speed data from the nearest National Weather Service station in Great Falls, Montana.

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1  
2

**Table 4  
Climate Data for Great Falls, MT**

Month	Temperature		Precipitation		Relative Humidity <sup>(a)</sup>	Wind <sup>(b)</sup>	
	Mean Daily Max °C (°F)	Mean Daily Min °C (°F)	Mean Total cm (in)	Mean Snow cm (in)	Mean (%)	Mean Speed m/s (mph)	Prevailing Direction
January	-0.5 (31.1)	-10.8 (12.5)	2.06 (0.81)	25.1 (9.9)	62	6.8 (15.3)	SW
February	2.3 (36.2)	-8.7 (16.3)	1.70 (0.67)	21.6 (8.5)	59	6.4 (14.3)	SW
March	5.8 (42.5)	-5.5 (22.1)	2.56 (1.01)	26.4 (10.4)	55	5.8 (13.0)	SW
April	12.9 (55.2)	0.2 (32.4)	3.15 (1.24)	18.5 (7.3)	47	5.1 (12.9)	SW
May	18.4 (65.1)	5.3 (41.4)	6.25 (2.46)	4.6 (1.8)	46	5.0 (11.4)	SW
June	22.9 (73.3)	9.5 (49.1)	6.75 (2.66)	0.8 (0.3)	44	4.5 (11.2)	SW
July	28.7 (83.6)	12.7 (54.9)	3.23 (1.27)	Trace	37	4.6 (10.1)	SW
August	27.6 (81.6)	11.9 (53.4)	3.40 (1.34)	Trace	39	5.1 (10.2)	SW
September	21 (69.8)	7.1 (44.7)	3.15 (1.24)	4.1 (1.6)	46	5.9 (11.3)	SW
October	15.1 (59.2)	2.6 (36.7)	1.96 (0.77)	7.9 (3.1)	46	6.5 (13.2)	SW
November	6.4 (43.6)	-3.7 (25.3)	1.82 (0.72)	19.1 (7.5)	54	7.0 (14.6)	SW
December	1.7 (35.0)	-8.2 (17.3)	1.85 (0.73)	22.6 (8.9)	60	7.4 (15.6)	SW
<b>Annual</b>	13.6 (56.4)	0.99 (33.8)	37.90 (14.9)	150.6 (59.3)	50	5.7 (12.8)	SW

Notes: °C = degrees Celsius; °F = degrees Fahrenheit; cm = centimeter; in = inches;  
m/s = mean speed; mph = miles per hour.

<sup>(a)</sup> Relative humidity measured at 11:00 a.m.

<sup>(b)</sup> Wind speed based on 1941-90 period; prevailing direction through 1963.

Source: Bair 1992.

3

## 4 3.2.2 Standards of Significance

5 The significance of impacts to air quality is based on federal, state, and local pollution  
6 regulations or standards. The proposed project would result in an adverse air quality impact if  
7 the activities associated with its construction or operation:

- 8 • Increase ambient air pollution concentrations above any NAAQS;

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- 1    • Contribute to an existing violation of any NAAQS;
- 2    • Interfere with or delay timely attainment of NAAQS; or
- 3    • Impair visibility within any federally mandated federal Class I area.

### 4    **3.2.3 Impacts**

#### 5    ***Proposed Action***

6 Emissions at military installations generally include CO, volatile organic compounds (VOCs),  
7 nitrogen oxides (NO<sub>x</sub>, commonly measured as NO<sub>2</sub>), sulfur oxides (SO<sub>x</sub>, commonly measured  
8 as SO<sub>2</sub>), and PM<sub>10</sub>. Although O<sub>3</sub> is considered a criteria pollutant and is measurable in the  
9 atmosphere, it is not often considered a pollutant when reporting emissions from specific  
10 sources. O<sub>3</sub> is not typically emitted directly from most emissions sources; it is formed in the  
11 atmosphere from its precursors (NO<sub>x</sub> and VOCs), which are directly emitted from various  
12 sources. Thus, NO<sub>x</sub> and VOCs are commonly reported instead of O<sub>3</sub>. Sources of pollutants  
13 include stationary sources (fossil fuel combustion and fuel or solvent evaporation), construction  
14 activities, and mobile sources.

15 The Proposed Action is a construction project not unique to a military installation. Construction  
16 activities produce short-term combustion emissions (exhaust emissions from heavy equipment)  
17 and fugitive dust emissions (PM<sub>10</sub>), which would cease once construction is completed.  
18 Construction activities associated with the Proposed Action would create short-term fugitive dust  
19 emissions from the following activities:

- 20    • Site grading (scrapping, bulldozing, and compacting)
- 21    • Excavation
- 22    • Utilities trenching
- 23    • Material handling (soils, aggregate, and construction debris/waste)
- 24    • Vehicle travel on paved and unpaved roads
- 25    • Pond construction
- 26    • Landscape and turf installation
- 27    • Miscellaneous emissions (equipment track out, windblown dust, etc.)

28 However, emissions generated by construction projects are short-term and temporary in nature.  
29 Fugitive dust emissions generated from construction of the proposed storm water detention pond  
30 system would depend on the extent and duration that the activities listed above are performed to  
31 complete the project. Best Management Practices (BMPs) that can be instituted onsite to  
32 minimize fugitive dust emissions may include the application of water or other chemical  
33 stabilizers on exposed earth surfaces, and other preventive techniques. The following techniques  
34 have been shown to be effective for controlling the generation and migration of dust during  
35 construction and vehicle and equipment travel activities:

- 36    • Keeping roads clean and free of dirt spilled or tracked from construction equipment

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- 1    • Applying water on haul roads and other exposed earth surfaces
- 2    • Hauling materials in properly covered or watertight containers
- 3    • Restricting vehicle speed to 10 mph
- 4    • Covering excavated areas and material after excavation activity ceases
- 5    • Reducing the excavation size and/or number of excavations (URS 2005).

6    Using the above-mentioned dust suppression techniques (within reason) would not create excess  
7    water, but would result in acceptable wet conditions. In addition, control techniques, such as  
8    chemical stabilization, reduction of surface wind speed with windbreaks (snow fence, silt fence),  
9    or source enclosures (netting, mulching) could be employed to suppress dust generation and  
10   migration without the use of water.

11   Additional preventive techniques may entail periodic street and access road sweeping,  
12   expeditious cleanup of materials spilled on paved or unpaved travel surfaces, gravelling of dirt  
13   access roads and work areas, the elimination of mud/dirt carryout on paved roads at construction  
14   sites, and vehicle washing. These measures would aid in preventing or reducing the deposition  
15   of materials that could become airborne through vehicle and equipment traffic or by wind.

16   Combustion emissions would be generated from operation of heavy equipment during the ground  
17   disturbance phase of construction, delivery of materials to the base, and commuting by  
18   contractor employees to the base in their personal vehicles. Pollutants from vehicle and heavy  
19   equipment exhaust include NO<sub>x</sub>, CO, PM<sub>10</sub>, and VOCs.

20   The Proposed Action would not increase the number of stationary sources at the Base and would  
21   not result in a net permanent increase in vehicular traffic. Therefore, the overall impact to air  
22   resources from the Proposed Action is likely to be direct, short-term and not significant.

### 23    ***No Action Alternative***

24   The No Action Alternative would not result in any impacts to ambient air quality conditions of  
25   the project area or surrounding areas since no construction activities would be undertaken.  
26   Ambient air quality conditions would remain as described in Section 3.2.

## 27    **3.3    NOISE**

### 28    **3.3.1    Affected Environment**

29   Noise is defined as unwanted sound. Human response to noise is subjective and can vary greatly  
30   from person to person. Factors that can influence an individual's response to noise include the  
31   magnitude of the noise as a function of frequency and time pattern. The amount of background  
32   noise present before an intruding noise occurs, and the nature of the work or activity (e.g.,  
33   sleeping) that the noise affects, can also influence a person's level of annoyance. The  
34   objectionable nature of sound could be caused by its pitch or its loudness. Pitch is the height of  
35   depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by  
36   which it is produced. Higher pitched signals sound louder to humans than sounds with a lower  
37   pitch. Loudness is intensity of sound waves combined with the reception characteristics of the

## **SECTION THREE Affected Environment and Environmental Consequences**

1 ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the  
2 amplitude of the sound wave.

3 The unit used to measure the loudness of noise is the decibel (dB). A dB indicates the relative  
4 amplitude of a sound. Most community noise standards utilize A-weighted decibels as the  
5 measure of noise, as it provides a high degree of correlation with human annoyance and health  
6 effects. A-weighting de-emphasizes the very low and very high frequencies of sound in a  
7 manner similar to functioning of the human ear. Because sound levels can vary markedly over a  
8 short period, a method for describing either the average character of the sound or the statistical  
9 behavior of the variations must be used. Most commonly, environmental sounds are described in  
10 terms of an average level that has the same acoustical energy as the summation of the time-  
11 varying events. This energy-equivalent sound/noise descriptor is called  $L_{eq}$ . The most common  
12 averaging period is hourly, but  $L_{eq}$  can describe any series of noise events of arbitrary duration.

13 The Air Installation Compatible Use Zone (AICUZ) program was initially established by DoD in  
14 response to the Noise Control Act of 1972 to promote an environment free from noise that  
15 jeopardizes public health or welfare. The noise zones and the accident potential zones together  
16 form the AICUZ for an air installation. AICUZ also serves to protect Air Force airfields from  
17 encroachment and incompatible land development.

18 The most recent installation AICUZ analysis was completed in 1994, when the 301 Air  
19 Refueling Wing was still assigned to Malmstrom AFB (USAF 1994a). The base does not  
20 currently host an active air wing, thus the runway is currently inactive, with the exception of  
21 Huey helicopters, a subordinate flight of the 341 SW Operations Group. The 1994 AICUZ  
22 analysis shows the proposed project area outside of the 65 dB contour.

### **23 3.3.2 Standards of Significance**

24 The proposed project would result in an adverse noise impact if it resulted in conditions that  
25 violated established noise guidelines.

### **26 3.3.3 Impacts**

27 Noise levels below the 65 dB level are not considered constraints to development. However,  
28 once the noise level meets or exceeds the 65 dB level, different functions, such as residential,  
29 administrative, commercial, and recreational, have different thresholds at which noise level  
30 reduction measures are recommended for facility design or at which no construction is permitted.  
31 Impacts would be considered adverse if there are long-term increases in the number of people  
32 highly annoyed by the noise environment, noise-associated adverse health effects to individuals,  
33 or unacceptable increases to the noise environment for sensitive receptors. A sensitive receptor  
34 is any person or group of persons in an environment where low noise levels are expected, such as  
35 schools, day care centers, hospitals, and nursing homes. This impact section analyzes the noise  
36 impacts to the surrounding site location and area.

37

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### **1    *Proposed Action***

2    The Proposed Action is a construction project not unique to a military installation. Noise  
3    impacts from the Proposed Action would be short-term, and primarily from construction  
4    activities. Noise created from construction activities could have minor on- and off-site effects.

5    Construction activities produce construction-related noise from sources such as diesel engines on  
6    construction equipment (e.g., backhoes, front-end loaders, dump trucks), air compressors and  
7    jackhammers to demolish concrete structures, back-up horns on construction equipment, and  
8    movement of construction materials. Based on previous calculations, the highest calculated  
9    cumulative energy equivalent sound levels from construction activities are estimated to be 85 dB  
10    at 50 ft from the center of the project site (URS 2005). Noise levels at 50 ft for some equipment  
11    used during construction and demolition activities are 80 dB for bulldozers, 83 dB for cranes, 85  
12    dB for backhoes, and 91 dB for trucks. The impacts from noise would vary according to the  
13    activity occurring on any given day, and impacts would cease when construction is completed.  
14    In addition, the construction of the proposed project is anticipated to occur during one  
15    construction season and construction. Nearby adjacent receptors may experience noise impacts  
16    from certain construction sites. However, noise impacts from the Proposed Action would not  
17    greatly increase ambient levels, would be short-term, and would discontinue after site  
18    construction is complete. The effects of noise during construction of the proposed project are  
19    expected to be minor, short-term and would be consistent with acceptable noise levels on  
20    Malmstrom AFB.

21    One of the most essential elements in ensuring that noise impacts do not reach a level of  
22    significance is requiring that construction occur during daytime hours and on weekdays. All  
23    internal combustion engine-driven equipment should be equipped with mufflers that are in good  
24    condition. Although the construction traffic will have increased noise levels, they are not unlike  
25    the current intermittent industrial activity in the vicinity.

26    No noise impacts as a result of a detention storm water system are expected once construction is  
27    complete. Therefore, noise impacts due to construction activities as a result of the Proposed  
28    Action are expected to be negligible and short-term.

### **29    *No Action Alternative***

30    Under the No Action Alternative, noise would remain at current levels. No change in existing  
31    noise conditions would occur.

## **32    3.4    SOILS**

### **33    3.4.1    Affected Environment**

34    Malmstrom AFB is located in a glaciated portion of the Missouri Plateau which is in the northern  
35    part of the Great Plains Province. The base is underlain by the Sweetgrass Arch, a bedrock  
36    structural feature extending northwest between the Little Belt Mountains, 24 miles to the south,  
37    past the base on the southwestern side and into Alberta, Canada. Stratigraphic units important to  
38    the framework of the region surrounding Malmstrom range in age from the Madison Limestone  
39    of the Mississippian era (360 million years) to the Eolian Sand of the Holocene (10,000 years).  
40    These units include sedimentary bedrock formations, unconsolidated glacial deposits, and

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1 windblown deposits. The occurrence of geologic hazards in the study area is low. The proposed  
2 project area does not include major areas of steep slopes

3 In the vicinity of Malmstrom AFB, Quaternary glacial deposits overlie Early Cretaceous shale  
4 and sandstone formations. The modern soils of Malmstrom AFB have developed directly on  
5 these Quaternary deposits and consist primarily of Lawther silty clay (associated with the  
6 Pleistocene till) and Dooley sandy loam (associated with the Holocene eolian sand) (SCS 1982).  
7 These two series encompass approximately 75 percent of the base. Other soils on base include  
8 sandy loams, loamy sands, and alluvial silty clay loams. Most of the soils on Malmstrom AFB  
9 are not highly subject to wind or water erosion.

10 The proposed project area is the location of a former IRP site (see discussion in Section 3.6) and  
11 has undergone cleanup and closure. Approximately 920 cu yd of contaminated on-site soils were  
12 removed to a depth of 0.5-2 feet below ground surface (bgs) and properly disposed of, and clean  
13 soil and gravel were placed, graded, and compacted on the site (341 CES/CEVC 2004).

### **14 3.4.2 Standards of Significance**

15 The proposed project would result in an adverse impact if soils classified as prime and unique  
16 farmland were affected or if the soils affected were considered unsuitable for development.

### **17 3.4.3 Impacts**

#### **18 *Proposed Action***

19 Slopes within the larger study area are generally gentle. The proposed project area is generally  
20 flat because of the former Installation Restoration Program (IRP) site cleanup and closure, which  
21 included grading and compaction (see discussion in Section 3.6). However, water and wind  
22 erosion could occur during construction activities. Engineering controls, such as those described  
23 in Section 3.1, would reduce these impacts to below significant levels. Under the Proposed  
24 Action, approximately 3 acres of soils would be permanently impacted from construction  
25 activities.

26 Preparation of Stormwater Pollution Prevention Plans (SWPPPs) are required and would be  
27 prepared to minimize potential erosion and sedimentation during the construction phase. Soil  
28 removed during the project would be used as fill material or could be stock piled for use at other  
29 locations on Malmstrom AFB. Implementation of BMPs during construction activities would  
30 limit adverse indirect effects during construction. Fugitive dust generated during construction  
31 activities would be minimized by watering and soil stockpiling, thereby reducing the total  
32 amount of soil exposed to negligible levels.

33 No adverse impacts on soil resources are expected under the Proposed Action.

#### **34 *No Action Alternative***

35 Under the No Action Alternative, no impacts to soils would occur because no grading or other  
36 earth-disturbing activities would occur.

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### 1 **3.5 WATER RESOURCES**

#### 2 **3.5.1 Affected Environment**

##### 3 ***Surface Water***

4 The Missouri River, located about 1 to 1.5 mi north of Malmstrom AFB, is the primary surface  
5 water drainage in the region. There are nine delineated drainage basins at Malmstrom AFB  
6 (Figure 8). Drainage basins 1 through 6 discharge to the north. The surface drainage is directed  
7 into pipes, coulees, or ditches that flow to the north via Outfall #3, entering one of the branches  
8 of an unnamed coulee (locally referred to as Whitmore Ravine), before discharging into the  
9 Missouri River (Figure 9). Drainage basins 7, 8, and 9 do not have a point discharge (341  
10 CES/CEVC 2006a).

11 Whitmore Ravine is located within the Upper Missouri-Dearborn Hydrologic Basin Hydrologic  
12 Unit Code 10030102) and Missouri-Sun-Smith Watershed. The storm water drainage from  
13 Malmstrom AFB flows into Segment 13 of the Missouri River (Water Body Number  
14 MT41Q001\_013), which consists of a 10.2-mi stretch from the Rainbow Dam to the Morony  
15 Dam (URS 2004). This segment currently has no USEPA approved Total Maximum Daily  
16 Loads (TMDLs) (USEPA 2006). The Montana Department of Environmental Quality (MDEQ)  
17 April 2006 TMDL for this water body is not scheduled to start until after 2009.

18 Although currently there are no TMDLs, Segment 13 of the Missouri River has been identified  
19 by the USEPA and the MDEQ as being impaired from its beneficial use as a B-3 water body on  
20 the 303(d) list published in April 2006. The MDEQ has identified arsenic (As), copper (Cu),  
21 pentachlorobenzene (PCB), sedimentation/siltation, water temperature, and turbidity as probable  
22 causes of the river's impairment (MDEQ 2006).

##### 23 ***Groundwater***

24 Groundwater resources exist in the project area and occur primarily in deep, confined aquifers  
25 (e.g., the Madison-Swift aquifer). The depth to these deep aquifers ranges between  
26 approximately 100 ft and 200 ft bgs at the base. Shallow groundwater is less than approximately  
27 25 ft to 40 ft bgs and occurs locally as noncontiguous, unconfined, perched zones. The deep  
28 confined aquifers in the area tend to flow northward. Flow in the shallow, unconfined aquifers  
29 typically follows topographic gradients.

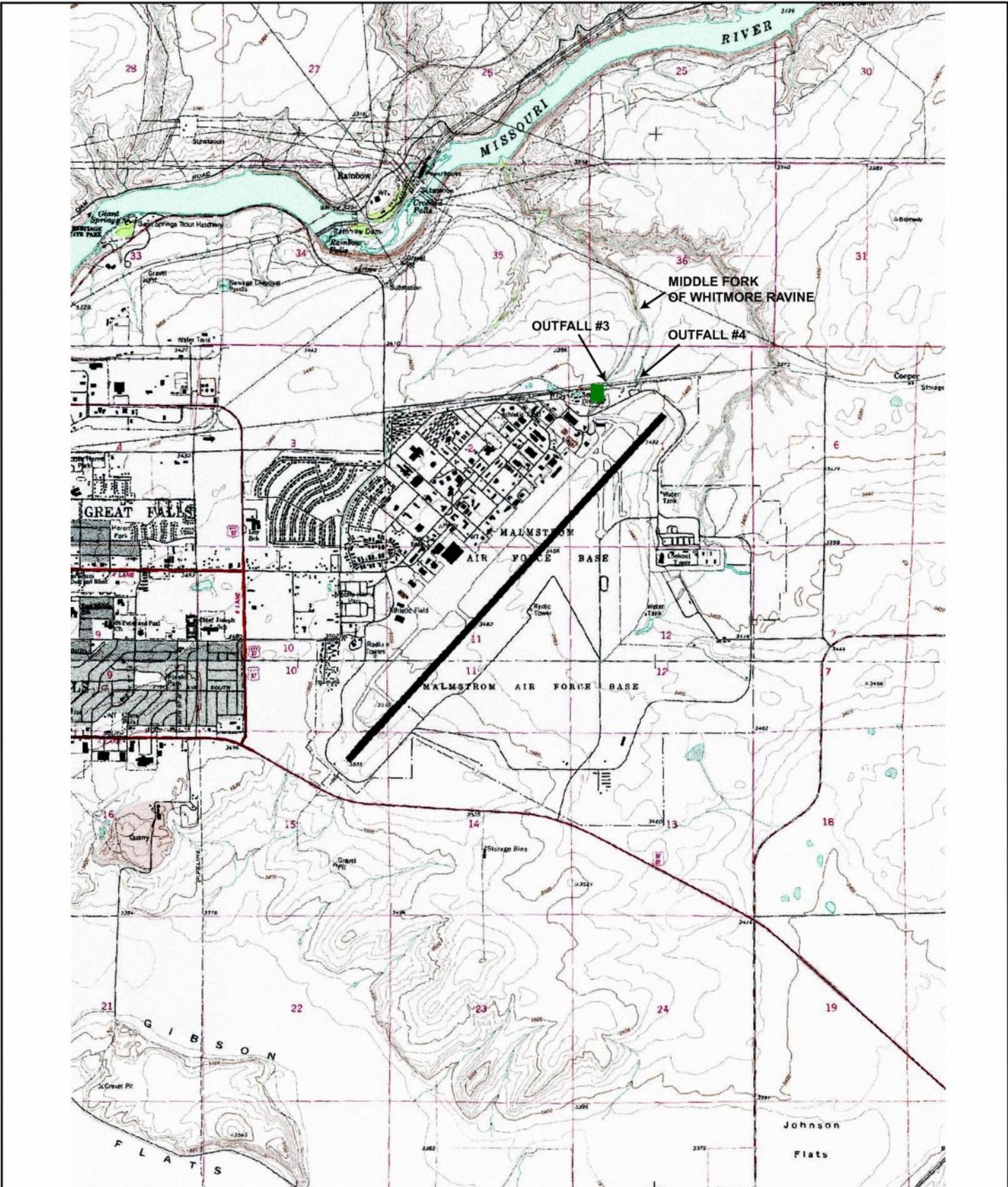
30 The deep Madison-Swift aquifer has the greatest potential for future groundwater development.  
31 Because of the limited supply of water and discontinuous nature of the shallow perched zones,  
32 they are unlikely to be used as a water source in the future. Due to the ample surface water  
33 supply and the depth of most of the aquifers, groundwater resources have not been developed on  
34 the base (USACE 2005).

# **SECTION THREE** **Affected Environment and Environmental Consequences**

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MIDDLE FORK OF WHITMORE RAVINE

OUTFALL #3

OUTFALL #4

GREAT FALLS

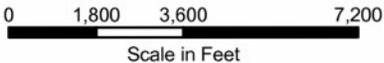
MALMSTROM AIR FORCE BASE

MALMSTROM AIR FORCE BASE

GIBSON

Johnson

Flats



Scale in Feet

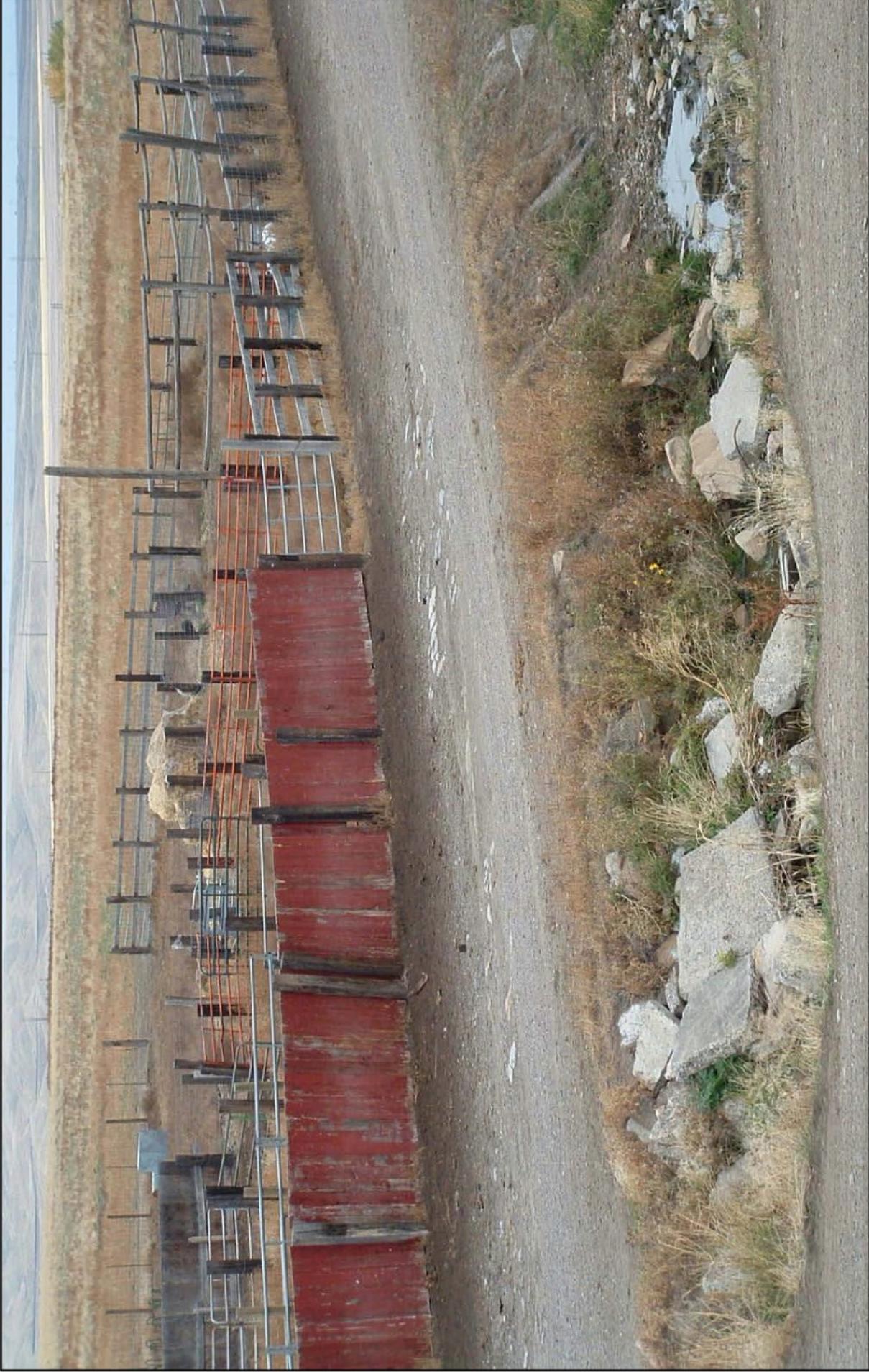
**Figure 8**

Receiving Waters at Malmstrom Air Force Base

EA for Construction of Storm Water Detention System at Storm Water Outfall #3 at Malmstrom AFB, MT

**Legend**

■ Proposed Project Area



**Figure 9**

Storm Water Outfall #3 Discharge to Middle Fork of Whitmore Ravine  
EA for Construction of Storm Water Detention System  
at Storm Water Outfall #3 at Malmstrom AFB, MT

## **SECTION THREE Affected Environment and Environmental Consequences**

1 The glacial tills have served as an impermeable barrier and have protected the usable aquifer that  
2 lies over 100 ft bgs. The tills have generally limited the migration of contaminants.

### **3 Storm Water**

4 Storm water is considered a wastewater discharge by the CWA. Storm water is discharged from  
5 the base in accordance with the following MPDES General Permits issued by the MDEQ.

- 6 • General Permit for Storm Water Discharges Associated with Industrial Activities (Industrial  
7 General Permit), Permit No. MTR 000 197
- 8 • General Permit for Storm Water Discharges Associated with Construction Activities  
9 (Construction General Permit), Permit No. MTR 100 000
- 10 • General Permit for Storm Water Discharges Associated with Small Municipal Separate  
11 Storm Sewer System (Municipal General Permit), Permit No. MTR 040 008

12 Although the Construction General Permit (Permit No. MTR 100 000) expired on December 31,  
13 2006, the permit is administratively still active until the MDEQ has published the new  
14 Construction General Permit. Construction activities for the Proposed Action would be  
15 permitted under the replacement for this General Permit. Also, the Industrial General Permit was  
16 reissued effective October 1, 2006 under Permit No. MTR 000 197. The Municipal General  
17 Permit remains in effect until the end of 2009.

18 Precipitation that falls or melts in the study area is managed in accordance with the Malmstrom  
19 AFB SWPPP (341 CES/CEVC 2006a), the Malmstrom AFB Storm Water Management Program  
20 (SWMP) (Ecosystem Research Group 2006b) and site specific construction SWPPPs developed  
21 for each project. All three permit types and their respective plans mandate that construction  
22 discharges be managed through BMPs, as appropriate.

### **23 3.5.2 Standards of Significance**

24 A proposed project would result in an adverse water resources impact if the project were to  
25 impact surface water, groundwater, or water quality.

26 Adverse surface and groundwater impacts would result if existing water resources were directly  
27 or indirectly impacted from the detention storm water system.

28 A proposed project would result in water quality impacts if federal or state water quality  
29 regulations and standards were violated or if the project did not meet water design requirements.  
30 Such violations could involve either surface water or groundwater.

### **31 3.5.3 Impacts**

32 Potential surface water impacts would include disruption of natural water flows, contamination  
33 entering storm water discharge, or heavy sediment loading from construction activities.  
34 Preparing and implementing a site-specific SWPPP can minimize adverse impacts. This plan is  
35 required by the MPDES program for construction projects with a total area of disturbance equal  
36 to or greater than one acre. The goal of a SWPPP is to provide construction and post-  
37 construction BMPs to control and manage the loading of sediment and other pollutants to levels  
38 sufficient to protect downstream water quality.

## **SECTION THREE**    **Affected Environment and Environmental Consequences**

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### ***Proposed Action***

2 This project does not propose an increase in impervious surfaces. Therefore, it is not anticipated  
3 that there would be an increase in surface water runoff due to this project. Although the existing  
4 flows would be changed, the same volume of water would be discharged. In fact, the detention  
5 of storm water under the Proposed Action would have a long-term beneficial impact on both  
6 potential water quality and potential downstream flooding. Therefore, the Proposed Action  
7 would have short- and long-term beneficial effects on natural water flows.

8 Construction activities typically produce short-term minor adverse impacts to water quality in the  
9 form of increased turbidity or contamination from construction equipment due to accidental leaks  
10 or spills of fuels or oil. Under MPDES requirements, a project with a total area of disturbance  
11 equal to or greater than 1 acre requires coverage under the Construction General Permit. The  
12 Proposed Action would disturb more than 1 acre and possibly more than 5 acres considering the  
13 entire proposed project area, lay down and staging areas, temporary parking, construction  
14 trailers, temporary access roads, spoil piles, and borrow areas. Therefore, coverage under the  
15 MPDES Construction General Permit for the construction area would be required as well as  
16 preparation and implementation of a site-specific SWPPP, including sediment and erosion  
17 control measures.

18 For the short-term, implementation of these control measures would prevent or mitigate  
19 contamination entering the storm water discharge or heavy sediment loading from construction  
20 activities. The Proposed Action would improve the long-term quality of stormwater discharges.

21 The MDEQ impairment listing for Segment 13 of the Missouri River identifies sedimentation/  
22 siltation and turbidity as probable causes for the impairment. Therefore, it is critical that the  
23 design, inspection, and maintenance of construction BMPs prevent the discharge of sediment to  
24 the maximum extent practical.

25 Shallow perched groundwater and surface water could experience short-term impacts due to  
26 leaks or spills of contaminants during construction (e.g., fuels, lubricants) of a storm water  
27 system. However, these potential contaminants would not be expected to enter the deeper  
28 confined aquifers. The Construction General Permit requires inclusion and implementation of  
29 BMPs in the SWPPP to address spill or leaks due to construction and maintenance practices.

30 Depth to groundwater is greater than 25 ft to 40 ft bgs. The proposed bottom of the pond would  
31 be anywhere from 3 ft to 13 ft bgs. The proposed project site is the location of a former IRP site  
32 (Site SS-09), which is identified as the former pole yard storage area (see detailed description in  
33 Section 3.6). Soil sampling of groundwater and soils was completed in 1996, and resulted in the  
34 excavation of contaminated soils and the placement of clean soil and gravel prior to the closure  
35 of IRP site SS-09.

36 With proper implementation of BMPs, the overall impact to water resources from the Proposed  
37 Action is likely to be direct, short-term, and not significant.

### ***No Action Alternative***

39 Water resources would remain as they currently are under the No Action Alternative. Therefore,  
40 no significant impacts to water resources are anticipated.

41

## **SECTION THREE Affected Environment and Environmental Consequences**

### **3.6 HAZARDOUS MATERIALS AND WASTE**

This section discusses hazardous materials and waste issues at Malmstrom AFB related to construction of the Proposed Action. This discussion includes Malmstrom AFB IRP sites and contaminants of concern at the base. Solid waste and pollution prevention is addressed in Section 3.7.

#### **3.6.1 Affected Environment**

The MDEQ regulates waste management, toxic substance reporting, and investigation and cleanup of contaminated sites. The State of Montana also provides technical and financial assistance for occupational health concerns such as asbestos control, radon emissions, and drinking water.

At Malmstrom AFB, the solid and hazardous waste programs are managed by the 341 CES/CEV. The responsibility to develop a Spill Prevention, Control, and Countermeasures (SPCC) Plan, which provide procedures for spill reporting, containment, cleanup, and disposal, resides with the 341 CES/CEV. A site-specific SPCC plan will be required by the contractor if the contractor meets the threshold value of 1,320 gallons of petroleum, oils, and lubricants (POL) on site. In addition, hazardous materials brought on base by a contractor are the responsibility of the contractor for proper handling and disposal. The 341 CES/CEV provides regulatory guidance to Malmstrom AFB personnel regarding safe use, storage, and disposal of hazardous and toxic substances and has a pollution prevention program that includes minimization of hazardous wastes and recycling. The fire department requests support, as needed, from local volunteer departments in the event of a spill (USACE 2005).

Hazardous waste management consists of the collection, storage and transportation of hazardous wastes as defined by RCRA. A release of certain materials, such as JP-8 fuel, could result in the generation of hazardous wastes. Hazardous wastes are recorded and processed through the Environmental Management Office and Defense Reutilization and Marketing Office (USACE 2005).

#### ***Installation Restoration Program***

The IRP is a program category under the Air Force Environmental Restoration Program (ERP). The scope of the IRP is investigation and cleanup of Air Force sites whose past activities created contamination primarily from hazardous substances, hazardous wastes, low level radioactive materials or wastes, or petroleum, oils and lubricants. Two IRP sites at Malmstrom AFB are either under investigation or undergoing cleanup activities (USACE 2005).

The proposed project area is the site of a former pole yard storage area (IRP Site SS-09 [Storm Water Management Unit (SWMU) IS-3]). This unit is an approximately 2-acre area where drums of waste and electrical equipment were historically stored. Contents of the drums were unknown. In 1996, a remediation contractor under contract to Malmstrom AFB commenced cleanup and closure activities at the former pole yard storage area. Soil sampling was conducted to determine areas of soil contamination above established action levels. The soil sampling revealed PCB contamination in excess of action levels at depths of up to 2 ft. No other

## **SECTION THREE    Affected Environment and Environmental Consequences**

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1 constituents were found. Groundwater samples did not contain contaminants above action levels  
2 (MDEQ 2001).

3 Based on the soil sampling results, the soils that contained PCB concentrations in excess of 1.6  
4 milligrams per kilogram (mg/kg) were excavated and shipped to a RCRA-licensed incinerator.  
5 A total of 2,777 tons of PCB-contaminated soil were removed and disposed. Clean soil and  
6 gravel were placed, graded, and compacted, and the site is currently fenced.

### **7    *Harmful Substances***

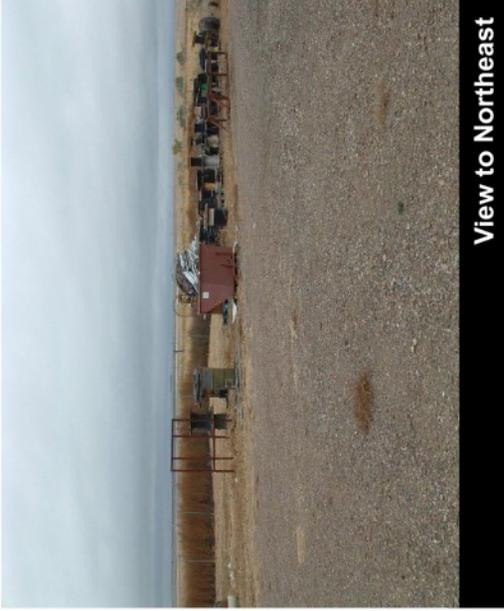
8 Past spraying of herbicides has occurred throughout the base and may have been sprayed on the  
9 Proposed Action site. Because herbicides used for base wide spraying were biodegradable and  
10 would have dissipated from the soil in less than a year, any herbicides applied at the base in the  
11 past would likely not be present at this time (USACE 2005).

12 A radon survey of the base was performed by the Bioenvironmental Engineering office in  
13 September 1988. The results of that survey indicated that Malmstrom AFB was categorized as  
14 Low Probability. This signifies that all structures sampled had less than 4 picocuries per liter  
15 (pCi/L) of radon concentration. At this level of concentration, no further action is required  
16 (USACE 2005).

17 There is an existing transformer at the proposed project area (Building 1537), however it does  
18 not contain PCBs and includes secondary containment (341 CES/CEVC 2006b).



View to North



View to Northeast



View to East



View to South

**Figure 10**  
Panoramic Views of Proposed Project Area  
EA for Construction of Storm Water Detention System  
at Storm Water Outfall #3 at Malmstrom AFB, MT

## **SECTION THREE Affected Environment and Environmental Consequences**

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### **1 3.6.2 Standards of Significance**

2 The proposed project would cause adverse hazardous substances impacts if it were not  
3 compatible with current site hazardous materials conditions or solutions, or violated federal,  
4 state, or local regulations with respect to hazardous materials or waste. In addition, the impact  
5 would be considered adverse if development of the proposed project posed an unacceptable  
6 threat to human health or private property.

### **7 3.6.3 Impacts**

8 This section discusses areas of potential environmental concern associated with construction of  
9 the Proposed Action.

#### **10 *Proposed Action***

11 Hazardous material or waste issues identified at the proposed project area include the former  
12 pole yard storage area (IRP Site SS-09 [SWMU IS-3]). An IRP cleanup and disposal of PCB-  
13 contaminated soil to a depth of 2 ft resulted in closure of the site. Clean soil and gravel were  
14 placed at the proposed project site and the site is currently fenced. It is not anticipated that  
15 hazardous material or waste would be encountered during project construction, however, if  
16 hazardous wastes or materials are discovered during construction, the safe handling and  
17 management of materials present would adhere to appropriate state and federal regulations.

18 Because this is a construction project, worker safety is the primary health and safety concern  
19 during construction activities. Construction activities on-base are governed by the rules and  
20 regulations of the U.S. Department of Labor Occupational Safety and Health Administration  
21 (OSHA) as codified in §40 CFR 1910 Occupational Safety and Health Standards.

#### **22 *No Action Alternative***

23 No direct impacts to or from hazardous materials and wastes are expected as a result of the No  
24 Action Alternative.

### **25 3.7 SOLID WASTE AND POLLUTION PREVENTION**

26 The USAF Pollution Prevention (P2) Program encompasses a range of environmental  
27 management functions, including recycling, hazardous/toxic chemicals reduction, green  
28 (environmentally friendly) procurement, and waste minimization. The USAF Solid Waste  
29 Program deals specifically with the management and reduction of solid waste streams.

30 At Malmstrom AFB, the solid waste program is managed by the 341 CES/CEV. Solid waste  
31 collection and disposal services are provided to the base by civilian contractors. Material is  
32 taken off-base to a private landfill.

33 Each Air Force base is required to have a Qualified Recycling Program (QRP), and all facilities  
34 at an installation must participate in the QRP. Under the QRP, readily accessible containers  
35 should be provided in work areas as appropriate for the accumulation of the following  
36 recyclables: copier paper, plastic, metals, glass, used oil, lead-acid batteries, cardboard,

## **SECTION THREE**    **Affected Environment and Environmental Consequences**

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1 newspaper, and tires. A recycling contractor empties recycling containers on a regular schedule  
2 and recycles the collected materials.

3 Green Procurement is the USAF initiative established to comply with federal Affirmative  
4 Procurement requirements. Green Procurement seeks to direct USAF purchasing power toward  
5 the procurement of high recycled-content goods, Energy Star® and energy-efficient products,  
6 energy-efficient standby power devices, alternative fuel vehicles/alternative fuels, bio-based  
7 products, non-ozone depleting substances (ODS), and USEPA Priority Chemicals.

8 The USAF and agencies of the City of Great Falls, Cascade County, the State of Montana, and  
9 the federal government protect public health and safety at Malmstrom AFB. The city and county  
10 provide police protection and emergency services; the Cascade County Health Department is  
11 responsible for monitoring public health and safety issues such as drinking water quality and  
12 disease control.

### **13 3.7.1 Affected Environment**

14 In addition to serving historically as the storage area for excess poles for the electrical shop at the  
15 base, the proposed project area also came to be used for unofficial storage of scrap and building  
16 material (Figure 10).

### **17 3.7.2 Standards of Significance**

18 The Proposed Action would cause adverse impacts to solid waste and pollution prevention if it  
19 were not compatible with current USAF P2 practices, or violated federal, state, or local  
20 regulations with respect to the handling of solid waste. In addition, the impact would be  
21 considered adverse if development of the Proposed Action posed an unacceptable threat to  
22 human health or private property.

### **23 3.7.3 Impacts**

#### **24 *Proposed Action***

25 Storm water detention system construction and delivery of construction supplies would increase  
26 solid waste generation during the construction performance period. Materials that may be  
27 generated during pond excavation include excess demolition debris, excess lumber (i.e., poles),  
28 or other scrap material from past construction activities. Certain forms of construction-related  
29 solid waste might be eligible for diversion to recycling. Construction contractors should attempt  
30 to recycle waste materials for which a market exists, procure materials whenever feasible per  
31 USAF Green Procurement requirements, minimize the use of hazardous materials during  
32 construction, and remove any unused hazardous and non-hazardous wastes at the conclusion of  
33 project performance.

34 Since the Proposed Action is limited to construction of a storm water detention system at  
35 Malmstrom AFB with little or no change to existing personnel and operations, no major changes  
36 to P2 initiatives or solid waste generation are anticipated following construction of the Proposed  
37 Action. Because this is a construction project, worker safety is the primary health and safety  
38 concern during construction activities. There are inherent risks associated with construction

## **SECTION THREE**    **Affected Environment and Environmental Consequences**

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1 operations. The contractor selected to implement the Proposed Action will be subject to rigorous  
2 safety management requirements associated with OSHA workplace safety practices (as codified  
3 in §40 CFR 1910 Occupational Safety and Health Standards). If the required safety precautions  
4 are enforced, no significant safety impacts are anticipated.

### ***No Action Alternative***

6 Under the No Action Alternative, solid waste generation at Malmstrom AFB would not increase.  
7 Malmstrom AFB P2 solid waste management would be unaffected.

# **SECTION THREE** Affected Environment and Environmental Consequences

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1  
2 The CEQ regulations require assessment of cumulative impacts in the decision-making process  
3 for federal projects. Cumulative impacts are defined as “the impact on the environment which  
4 result from the incremental impact of the action, when added to other past, present, and  
5 reasonably foreseeable future actions regardless of what agency (federal or non-federal) or  
6 person undertakes such actions” (40 CFR 1508.7). Cumulative impacts can result from  
7 individually minor, but collectively substantial actions undertaken over a period of time by  
8 various agencies or individuals. Informed decision-making is served by consideration of  
9 cumulative impacts resulting from projects that are proposed, under construction, recently  
10 completed, or anticipated to be implemented in the reasonably foreseeable future.

11 Cumulative effects are most likely to arise when a relationship or synergism exists between a  
12 Proposed Action and other actions expected to occur in a similar location or during a similar time  
13 period. Actions overlapping with, or in close proximity to, the Proposed Action would be  
14 expected to have more potential for a relationship than actions that may be geographically  
15 separated. Similarly, actions that coincide, even partially, in time would tend to offer a higher  
16 potential for cumulative effects. To identify cumulative effects, this EA addresses three  
17 questions:

- 18 (1) Does a relationship exist such that elements of the Proposed Action might interact with  
19 elements of past, present, or reasonably foreseeable actions?
- 20 (2) If one or more of the elements of the Proposed Action and another action could be  
21 expected to interact, would the Proposed Action affect or be affected by impacts of the  
22 other action?
- 23 (3) If such a relationship exists, does an assessment reveal any potentially significant  
24 impacts not identified when the Proposed Action is considered alone?

25 In this EA, an effort has been made to identify all related actions under consideration or in the  
26 planning phase at this time. To the extent that details regarding such actions exist and the actions  
27 have a potential to interact with the Proposed Action in this EA, these actions are included in this  
28 cumulative analysis. This combined approach enables stakeholders to have the most current  
29 information available so that environmental consequences of the Proposed Action can be  
30 evaluated.

### 31 ***Adjacent Land Use***

32 The proposed project area is bounded to the north by old Chicago, Milwaukee, St. Paul, and  
33 Pacific Railroad (Milwaukee Railroad). On the north side of the inactive railroad, lies the base  
34 perimeter fence. Agricultural land extends from the base to the Missouri River beyond.  
35 Bounding the eastern side of the proposed project area is an open storm ditch which drains  
36 through Outfall #3, under the Milwaukee Railroad right-of-way fill, and into the Middle Fork of  
37 Whitmore Ravine off of base property. On the east side of this open storm ditch is a fenced  
38 property used to store recreational vehicles (RVs) for personnel at Malmstrom AFB. To the  
39 south of proposed project area is an open vacant lot, which houses a former oil/water separator at  
40 the downstream exit of the open storm ditch. To the west of the proposed project area are base  
41 office/maintenance buildings, and the Heat Plant further to the west.

1 This cumulative impact analysis evaluates the incremental contribution of past, present, and  
2 planned or reasonably foreseeable actions on and adjacent to Malmstrom AFB.

### 3 ***Past and Present Actions Relevant to the Proposed Action***

4 Malmstrom AFB is an active military installation that undergoes continuous change in mission  
5 and training requirements. This process of change is consistent with the U.S. defense policy that  
6 the Air Force must be ready to respond to threats to American interests throughout the world.  
7 The most recent mission change at Malmstrom AFB was in 1997 when the 819 RED HORSE  
8 Squadron was assigned to the base.

9 Military family housing has been or is being constructed on base in a multi-phased plan to  
10 upgrade all of the on-base family housing. Upgrades of over 1,400 housing units at Malmstrom  
11 AFB are being coordinated through phase-specific NEPA documents. The most recent phases  
12 (Phases 6 and 7) had a FONSI signed in November 2005, for a total of 797 homes to be  
13 constructed beginning in 2006. No housing projects are proposed within drainage area #3.

14 The base, like any other major institution, also requires new occasional construction, facility  
15 improvements, and infrastructure upgrades. The recent Heat Plant Upgrade has been  
16 categorically excluded from requiring an EA because the purpose of the project was  
17 maintenance. The Installation Commander signed a FONSI for the Corrosion Control Facility  
18 upgrade that was recently completed (USACE 2005).

19 The Air Force anticipates a continuing mission for Malmstrom AFB, but the specific nature of  
20 that mission and the military units stationed at Malmstrom AFB to undertake that mission are  
21 subject to change. The DoD released a Base Realignment and Closure list on May 16, 2005, and  
22 the realignment may result in restationing of additional units to Malmstrom AFB. Such a  
23 restationing action would require the completion of a separate EA at a later date (USACE 2005).

24 Off-site land adjacent and to the north of the proposed project area is primarily agricultural and  
25 has been used for dry-land farming for decades (see Figure 11 for adjacent land use).

### 26 ***Reasonably Foreseeable Future Actions Relevant to the Proposed Action***

27 Land use planning at Malmstrom AFB follows a rational and sequential decision-making process  
28 to reach a consensus for future growth while ensuring the efficient and compatible use of  
29 available land. The land use planning process establishes long-range goals and provides starting  
30 points to discuss land acquisition or disposal actions and siting of new facilities. This planning  
31 helps to define the best layout of land uses and transportation corridors to support functional  
32 effectiveness, efficiency, and compatibility. Both on- and off-base factors are considered.

33 There are several existing and planned Capital Improvement Projects and other projects to  
34 facilitate future growth at Malmstrom AFB. These reasonably foreseeable project actions  
35 include:

- 36 • Construction of pre-engineered steel warehouse structures and temporary sprung  
37 structures at the RED HORSE east compound, assessed under previous NEPA  
38 actions.

- 1 • Adding 165 active duty positions to the 819<sup>th</sup> RHS within the next two years, bringing  
2 the manpower total to 450 active duty personnel.
  - 3 • Construction of an Army Reserve Building at the southeast corner of the eastern  
4 portion of the installation. This construction would include 36,000 SF of facilities  
5 and 7,000 square yards of pavement, and would require paving of the road to the site,  
6 as well as utilities extensions.
  - 7 • Construction of a small 900 SF Communication Building north of Building 1846.
  - 8 • Construction of a 6,000 SF Propulsion System Rocket Engine Building west of  
9 Building 11664.
  - 10 • Construction of a Truck Inspection Station (less than 3,000 SF) at the south entrance  
11 to Malmstrom AFB north of Highway 83.
  - 12 • Construction of a 3,200 SF Rivet Mile Administrative Facility just north of the horse  
13 stables.
  - 14 • Expansion of the Weapons Storage Area to the south.
  - 15 • Renovations to the existing North and South Gates to add Anti-Terrorism/Force  
16 Protection controls and lighting.
  - 17 • Military Family Housing, Phases I, II, III, IV, V VI and VII.
  - 18 • Construction of a new Fitness Center and demolition of the existing Fitness Center.
  - 19 • Mill and Overlay West Base (Phase IV) 52,500 square feet of existing pavements.
- 20 In addition, other actions announced for the surrounding community include:
- 21 • Construction of a 200 unit housing development outside the southwestern edge of  
22 Malmstrom AFB.
  - 23 • Upgrade to city sewer lines.
- 24 In addition to the base-wide projects listed above, projects scheduled for adjacent properties are  
25 also planned for 2007. The RV park to the east of the proposed project area is scheduled for  
26 expansion further to the east. As a result, a large woodpile that sits at the northeast corner of the  
27 proposed property is to be relocated elsewhere on the base to another drainage that does not  
28 discharge via the Whitmore Ravine (341 CES/CEVC 2006b).

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**Figure 11**

Adjacent Landowner to North, at location of discharge from Storm Water Outfall #3  
EA for Construction of Storm Water Detention System at Storm Water Outfall #3  
at Malmstrom AFB, MT

1 **4.1 IMPACT ANALYSIS**

2 Table 6 summarizes potential cumulative effects on resources from the Proposed Action to  
 3 construct and operate a storm water detention system at Malmstrom AFB, when combined with  
 4 other past, present, and future activities. As indicated in Table 5, significant impacts to resources  
 5 are not expected from the proposed projects.

**Table 5  
 Cumulative Effects on Resources**

Resource	Past Actions	Current Background Activities	Proposed Actions	Known Future Actions	Cumulative Effects
Air Quality	Proposed project area is in attainment area for CO, NO <sub>2</sub> , SO <sub>2</sub> , PM <sub>10</sub> , O <sub>3</sub> , and Pb. Small area in Great Falls classified as maintenance area for CO.	Emissions from limited aircraft use on base, vehicles, buildings, and other on-base construction projects (i.e., housing upgrades).	Potential dust emissions during soil removal, site grading and construction, and increased construction vehicle traffic.	Limited growth at Malmstrom AFB and Great Falls will result in increased traffic and emissions, particularly short-term adverse impacts from construction activities.	Continued attainment for Malmstrom AFB and continued maintenance area in Great Falls for CO is anticipated. Minor effect.
Noise	Aircraft activities on base, although limited, are dominant noise source.	Continued limited aircraft activities are a dominant noise source, as well as current construction of housing upgrade phases.	Short-term noise increase as a result of construction of storm water detention system.	Anticipated base construction projects and housing upgrade phases will result in increased traffic and noise, particularly short-term adverse impacts from construction activities. .	Aircraft activities would be dominant noise source; short-term construction-related noise sources. Negligible effect.
Soils	Past urban and on-base development has modified soil structure and stability.	Current construction of housing upgrade phases.	Grading, excavating, and soil recontouring would result in further soil disturbance to previously disturbed area.	Continued development of Malmstrom AFB would locally impact soils.	Impacts would be permanent but localized. Negligible effect.

**Table 5  
Cumulative Effects on Resources**

Resource	Past Actions	Current Background Activities	Proposed Actions	Known Future Actions	Cumulative Effects
Water Resources	Surface water quality moderately impacted by development and past disposal practices.	Surface water quality moderately impacted by development.	Potential sedimentation from construction to be controlled with the implementation of appropriate BMPs. Purpose of the proposed project is to limit discharge flow rate to control erosion in downstream receiving waters, providing long-term beneficial impact on water quality.	Continued development of Malmstrom AFB would result in sedimentation from construction, to be controlled with the implementation of appropriate BMPs.	Increased sedimentation from construction would be controlled with the implementation of appropriate BMPs. Minor effect.
Hazardous Materials and Waste	Proposed project area site of former pole yard storage area (IRP site SS-09). Corrective measures and cleanup of site resulted in site closure.	Current construction of on-base projects may incur use or generation of hazardous materials or wastes.	Construction of storm water detention system may incur use or generation of hazardous materials or wastes.	Continued development at Malmstrom AFB would incur use or generation of hazardous materials and wastes.	Negligible effect since all hazardous materials and wastes used or generated during project implementation would be used and disposed of according to all applicable regulations.
Solid Waste and Pollution Prevention	Past urban and on-base development has generated solid waste.	Current construction of on-base projects may generate solid wastes.	Construction-related generation of solid waste may occur or discovery of excess lumber or scrap material during construction. No major changes to USAF P2 initiatives or solid waste generation are anticipated following construction activities.	Continued development at Malmstrom AFB and Great Falls would generate solid wastes.	Negligible effect.

# SECTION FIVE

## List of Preparer(s)

1  
2 This EA has been prepared under the direction of DoD and Malmstrom AFB. The individuals  
3 who contributed to the preparation of this document are listed below.

Name	Degree	Expertise	Years of Experience
<i>URS Group, Inc.</i>			
James Denier	M.B.A., Business Administration B.A., Biological Sciences	Project Manager and Contributing Author; Senior Technical Review	27
Rachel Wieland	B.A., Biology and Environmental Science	NEPA Specialist; Principal Author	13
Eric Farrington	B.E.S., Civil Engineering	Water; Environmental Compliance and Permitting	19
Jeanne DeFauw	B.F.A., Graphic Design	Graphic Design	8

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# SECTION SIX

# Distribution List and Agencies and Individuals Contacted

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### ***Local Agencies***

Great Falls City Planning Department  
Great Falls Civic Center  
#2 Park Drive South, P.O. Box 5021  
Great Falls, MT 59403

Cascade County Commissioners  
Courthouse Annex Room 111  
325 2<sup>nd</sup> Avenue North  
Great Falls, MT 59401

### ***State Agencies***

Mark Baumler, Ph.D.  
Montana State Historic Preservation Officer  
The Montana Historical Society  
225 N. Roberts, P.O. Box 201201  
Helena, MT 59620-1201

Bob Bukantis  
Montana Department of Environmental Quality  
Metcalf Building  
1520 E. 6<sup>th</sup> Avenue, P.O. Box 200901  
Helena, MT 59620-0901

### ***Federal Agencies***

Larry Svoboda  
NEPA Program Director  
U.S. Environmental Protection Agency Region 8,  
EPR-N  
1595 Wynkoop Street  
Denver, CO 80202-1129

U.S. Environmental Protection Agency  
Montana Operations Office  
Federal Building  
10 West 15<sup>th</sup> Street, Suite 3200  
Helena, MT 59626

Mark Wilson  
Field Supervisor  
U.S. Fish and Wildlife Service  
Montana Ecological Services Field Office  
585 Shepard Way  
Helena, MT 59601

### ***Stakeholders***

Loy Estate  
c/o Helen Doney  
P.O. Box 5011  
Great Falls, MT 59403

Lisa Barton  
3241 9<sup>th</sup> Avenue North  
Great Falls, MT 59405

### ***Public Repositories***

Arden G. Hill Memorial Library  
Malmstrom Air Force Base  
7356 4<sup>th</sup> Avenue North, Building 1152  
Great Falls, MT 59405

Great Falls Public Library  
301 2<sup>nd</sup> Avenue North  
Great Falls, MT 59401

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# **SECTION SIX**

# **Distribution List and Agencies and Individuals Contacted**

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2 341 CES/CEVC. 2001. *Final Integrated Natural Resources Management Plan for Malmstrom*  
3 *Air Force Base*. Prepared February 1996, Revised December 2001.
- 4 341 CES/CEVC. 2004. *Completion of Remedy Report for Sites SWMU SS-9, SS-15, and SS-27*.  
5 April.
- 6 341 CES/CEVC. 2005. *Cultural Resources Management Plan for Malmstrom Air Force Base,*  
7 *Montana*. July.
- 8 341 CES/CEVC. 2006a. 341 CES/CEVC. *Malmstrom Air Force Base Storm Water Pollution*  
9 *Prevention Plan*. September.
- 10 341 CES/CEVC. 2006b. Site visit to Proposed Project Area conducted by URS personnel and  
11 Personal Communication with Ms. Karen J. Clavin, Project Manager.
- 12 Bair, Frank E. 1992. *The Weather Almanac*. Published by Gale Research Inc., 6<sup>th</sup> edition.
- 13 City of Great Falls. 1990. *City of Great Falls Storm Drain Design Manual*. June.
- 14 Ecosystem Research Group. 2006a. *Draft Wetland Delineation Report, Malmstrom Air Force*  
15 *Base*. September 28.
- 16 Ecosystem Research Group. 2006b. *Storm Water Management Program – Initial, Malmstrom*  
17 *Air Force Base*. February.
- 18 Montana Department of Environmental Quality (MDEQ). 2001. MDEQ’s Hazardous Waste  
19 Program, Montana Hazardous Waste Permit No. MTHWP-01-01. June 20.
- 20 MDEQ. 2006. *Clean Water Act Information Center, 2006 Water Quality Information,*  
21 *MT41Q001\_013*. Downloaded from the Internet on December 29, 2006  
22 [http://www.deq.mt.gov/CWAIC/det\\_rep.aspx?segId=MT41Q001\\_013&qryId=10971](http://www.deq.mt.gov/CWAIC/det_rep.aspx?segId=MT41Q001_013&qryId=10971).
- 23 Soil Conservation Service (SCS). 1982. *Soil Survey of Cascade County Area, Montana*. U.S.  
24 Department of Agriculture, Soil Conservation Service. U.S. Government Printing Office,  
25 Washington, D.C.
- 26 Secretary of Defense (SecDef). 1998. Secretary of Defense Environmental Security Award,  
27 *Environmental Cleanup – Installation/Civil Works Facility (CWF), Malmstrom AFB, MT*.  
28 [https://www.denix.osd.mil/denix/Public/News/Earthday99/Awards99/AFMalmstrom/mal](https://www.denix.osd.mil/denix/Public/News/Earthday99/Awards99/AFMalmstrom/malmstrom.html)  
29 [mstrom.html](https://www.denix.osd.mil/denix/Public/News/Earthday99/Awards99/AFMalmstrom/malmstrom.html)
- 30 TD&H Engineering Consultants. 2006. *Type A Submittal for Retention Area, Outfall #3,*  
31 *Malmstrom Air Force Base*. July.
- 32 URS Corporation (URS). 2004. *Evaluation of Total Suspended Solids in Storm Water at*  
33 *Malmstrom Air Force Base, Great Falls, Montana*. September
- 34 URS Group, Inc. (URS). 2005. *Requirements Document for the Education Center at Buckley*  
35 *Air Force Base, Colorado*. Project No. CRWU073003
- 36 United States Army Corps of Engineers (USACE). 2005. *Final Environmental Assessment for*  
37 *Phase 6 and Phase 7 Replace Family Housing at Malmstrom Air Force Base, Montana*.
- 38 United States Air Force (USAF). 1994. *AICUZ Study, A Citizen’s Brochure*. United States Air  
39 Force, Malmstrom Air Force Base, Montana.

- 1 United States Forest Service (USFS). 2000. U.S. Forest Service Region 1 Eastside National  
2 Forest Air Quality Assessment. Prepared by Mark T. Story, Gallatin National Forest,  
3 February 15, 2000. Available on the internet:  
4 <http://www.fs.fed.us/rl/gallatin/resources/air/reports/EastsideAQAssessment.pdf>.
- 5 United States Environmental Protection Agency (USEPA). 2002. Presentation to  
6 Environmental Council of the States (ECOS) on April 23, 2002, Maps (pdf) PM<sub>2.5</sub> and 8-  
7 hour Ozone Standards Nonattainment Counties. Available on the internet:  
8 <http://www.epa.gov/clearskise/maps.pdf>.
- 9 USEPA. 2006. U.S. *Total Maximum Daily Loads Listed Water Information. List ID:*  
10 *MT41Q001\_013, 2002 Cycle*. Downloaded from the Internet on December 29, 2006.  
11 [http://oaspub.epa.gov/tmdl/enviro.control?p\\_list\\_id=MT41Q001\\_013](http://oaspub.epa.gov/tmdl/enviro.control?p_list_id=MT41Q001_013).
- 12 Woodward Clyde Consultants (WCC). Date Unknown. *Scope of Services – Corrective*  
13 *Measures IRP Site SS-09 (SWMU IS-3) Malmstrom AFB, Montana*.
- 14

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**Appendix A**

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**Notice of Availability and Affidavit of Publication**

**AFFIDAVIT OF PUBLICATION**  
**THE GREAT FALLS TRIBUNE**  
205 RIVER DR S  
GREAT FALLS, MT 59405  
Phone: (406) 791-1444  
Te!! Free (800) 438-6600

Terri VanLieshout, being first duly sworn deposes and says that GREAT FALLS TRIBUNE COMPANY is a corporation duly incorporated under the laws of the State of Delaware, that the said GREAT FALLS TRIBUNE COMPANY is the printer and publisher of the GREAT FALLS TRIBUNE, a daily newspaper of general circulation of the County of Cascade, State of Montana, and that the deponent is the principal clerk of said GREAT FALLS TRIBUNE COMPANY, printer of the GREAT FALLS TRIBUNE, and that the advertisement here to annexed.....

**NOTICE OF AVAILABILITY – MALMSTROM AFB**

Has been correctly published **ONE** time in the regular and entire issue of said paper on the following dates:

**JUNE 14<sup>TH</sup> 2007**

*Terri VanLieshout*  
STATE OF MONTANA  
County of Cascade

On this **15<sup>TH</sup>** of **JUNE 2007**, before me the undersigned, a Notary Public of the State of Montana, personally appeared Terri VanLieshout, known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that she executed the same.

In witness whereof, I have hereunto set my hand and affixed my Notarial Seal the day and year first above written.

**Vivian A Hunter**

Print Name

*Vivian A Hunter*  
Signature

NOTARY PUBLIC for the State of Montana  
Residing in **Cascade County**

My commission expires: **11/12/09**



**NOTICE**  
**OF AVAILABILITY**  
**MALMSTROM AFB**  
Draft Environmental  
Assessment and Finding  
of No Significant Impact  
Malmstrom AFB pro-  
poses construction of a  
Storm Water Detention  
System at Storm Water  
Outfall #3. A Draft Envi-  
ronmental Assessment  
and Finding of No Signif-  
icant Impact for this ac-  
tion are located at the  
City of Great Falls Pub-  
lic Library and  
Malmstrom AFB Library  
for review. Copies of the  
document can be ob-  
tained by calling  
406-731-7227. Malmstrom  
is soliciting comments  
until July 16, 2007. Com-  
ments will be incorporat-  
ed into the final environ-  
mental assessment. Any  
comments should be ad-  
dressed to:  
341 CESCEVC  
39 78th Street North  
Malmstrom AFB, MT  
59402-11  
or e-mail: [environmental@malmsstrom.af.mil](mailto:environmental@malmsstrom.af.mil)  
(201378) 614.

# NOTICE of AVAILABILITY

## MALMSTROM AFB Draft Environmental Assessment and Finding of No Significant Impact

Malmstrom AFB proposes Construction of a Storm Water Detention System at Storm Water Outfall #3. A Draft Environmental Assessment and Finding of No Significant Impact for this action are located at the City of Great Falls Public Library and Malmstrom AFB Library for review. Copies of the document can be obtained by calling 406-731-7227. Malmstrom is soliciting comments until July 16, 2007. Comments will be incorporated into the final environmental assessment. Any comments should be addressed to:

341 CES/CEVC  
39 78th Street North  
Malmstrom AFB, MT 59402

or e-mail:  
[341ces.environmental@malmstrom.af.mil](mailto:341ces.environmental@malmstrom.af.mil)

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## **Appendix B**

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### **Interagency Coordination Letters**



msg KOB  
CY to CE —  
6/5/07

**Montana Department of  
ENVIRONMENTAL QUALITY**

71  
Brian Schweitzer, Governor

P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • www.deq.mt.gov

May 17, 2007

Colonel Sandra E. Finan  
Department of Defense, USAF  
39 78<sup>th</sup> Street North  
Malmstrom AFB, MT 59402-7538

RE: Authorization No. **MTB012407** Short-Term Water Quality Standard for Turbidity Related to Construction Activity Pursuant to 75-5-318, MCA  
VALID June 1, 2007 through May 31, 2008.

Dear Colonel Finan:

The Montana Department of Environmental Quality Water Protection Bureau has completed our review of your application for activity on **the Missouri River (Sec 2, T20N, R4E) in Cascade County**. This activity herewith is qualified for a temporary surface water quality turbidity standard if it is carried out in accordance with the following conditions:

- (1) Construction activities in or near the watercourse are to be limited to the minimum area necessary, and conducted so as to minimize increases in suspended solids and turbidity which may degrade water quality and damage aquatic life outside the immediate area of operation,
- (2) The use of machinery in the watercourse shall be avoided unless absolutely necessary. To prevent leaks of petroleum products into waterways, no defective equipment shall be operated in the watercourse or adjacent areas capable of contributing surface flow to the watercourse,
- (3) Precautions shall be taken to prevent spillage of any petroleum products, chemicals or other deleterious material in or near the watercourse, and no equipment shall be fueled or serviced in adjacent areas capable of contributing surface flow to the watercourse,
- (4) All disturbed areas on the streambank and adjacent areas created by the construction activity shall be protected with temporary erosion control during construction activities. These areas shall be reclaimed with appropriate erosion control measures and revegetated to provide long-term erosion control,
- (5) Any excess material generated from this project must be disposed of above the ordinary high water mark, not classified as a wetland, and in a position not to cause pollution to State waters,
- (6) Clearing of vegetation will be limited to that which is absolutely necessary for construction of the project

- (7) The use of asphalt or petroleum-based products as riprap is strictly prohibited. Its use as fill material is also prohibited if it is placed in a location where it is likely to cause pollution of State waters,
- (8) This authorization does not authorize a point source surface water discharge. A MPDES permit is required for said discharge, and
- (9) The applicant must conduct all activities in full and complete compliance with all terms and conditions of any permit for this activity issued pursuant to the Montana Natural Streambed and Land Preservation Act (310 permit) or the Montana Stream Protection Act (124 permit), and any valid Memorandum of Agreement and Authorization (MAA) negotiated for this activity
- (10) Precautions shall be taken to prevent spillage of any petroleum products, chemicals or other deleterious material in or near the watercourse, and no equipment shall be fueled or serviced in adjacent areas capable of contributing surface flow to the watercourse. A spill containment kit must be available at the work site

This authorization is valid for the period June 1, 2007 through May 31, 2008 only. No authorization is valid for more than a one-year period of time.

Any violations of the conditions of this authorization may be subject to an enforcement action pursuant to the applicable provisions of the Montana Water Quality Act.

This authorization is granted pursuant to 75-5-318, MCA, and only applies to the activity described by your application. Any modification of the activity described in your application which may result in additional turbidity in the stream must receive prior approval from the Department. You may contact me at (406) 444-4626.

Sincerely,



Jeff Ryan  
Water Quality Specialist  
Water Protection Bureau  
e-mail jeryan@mt.gov



# Montana Fish, Wildlife & Parks

26 April 2007

4600 Giant Springs Road  
Great Falls, MT 59405  
Phone (406) 454-5853

Colonel Sandra E. Finan  
Commander, 341<sup>st</sup> Space Wing  
21 77<sup>th</sup> St. North, Ste. 144  
Malmstrom AFB, MT 59402-7536

Subject: Permit No.: Misc-06-07  
Waterbody: Unnamed tributary to Whitmore Ravine  
Project Name: Detention pond for sub drainage area #3  
Water Code: NA  
Legal Description: T20N, R4E, S2

Relative to the Montana Stream Protection Act, we have completed our review of the proposed detention pond and outflow for sub drainage # 3 on the north perimeter of Malmstrom Air Force Base. This department is especially concerned with any activity that could contribute to the severe erosion problems in the Whitmore Ravine area. For this reason we are recommending special attention be paid to the downstream areas during implementation of the project. We approve the project with the following special conditions:

1. All work shall be completed in an expeditious manner to avoid unnecessary impacts to the stream (s);
2. All work in the stream channel shall be conducted in dry conditions with no water flowing through the stream channel during construction;
3. You are instructed to consider three points when dewatering the channel during construction;
  - a. Water in outflow # 3 shall be diverted from a point upstream of the proposed construction site to the overflow channel that connects with outflow #4. Considering the banks of the channel directly upstream of the construction site are steep, unstable and weed infested, we recommend the stream be dammed using a bladder system located in the concrete channel between the oil water separator and the RV storage lot. This water shall be discharged into the uppermost section

of the existing overflow channel in order to provide the maximum amount of filtration afforded by grass lining the overflow channel,

- b. A water energy dissipation system shall be used to prevent placer-type erosion at the point where the water enters the overflow channel,
  - c. During construction, water from outflow # 3 shall be diverted and released from outflow # 4 at a rate that shall not result in erosion at the construction site, or the Whitmore Ravine area downstream. You are responsible for monitoring the downstream effects during this diversion process, adjust the outflow rate to prevent erosion, and report any erosion to the downstream landowner and proper authorities (i.e. Montana Department of Environmental Quality);
4. Any excess or excavated materials generated from this project must be disposed of above the ordinary high water mark and not in an area classified as a wetland;
  5. Disturbed channel slopes shall be stabilized using silt fence, straw bales or geotextile mats, then reseeded with grass. A considerable amount of noxious weeds are present at the site. We recommend seeding grass in a manner that provides the maximum germination success for grass (i.e. hydro-mulch seeding);
  6. To prevent overloading of the aforementioned water containment methods, this work shall be conducted during predicted low storm event periods (July 1 and September 30);
  7. You are required to notify this department at least seven days prior to dewatering and construction so an on-site inspection can be scheduled during the construction process.

This permit is valid for **one year** from the date of the permit.

  X   This project may cause a significant increase in turbidity. Therefore, the applicant must contact the Department of Environmental Quality to determine narrative conditions required for meeting short-term water quality standards and protecting aquatic biota.

       This project will not significantly increase turbidity if completed according to the conditions listed in the permit. Therefore, application to DEQ is not required.

Sincerely,

A handwritten signature in black ink, appearing to read "Grant Grisak", with a long horizontal flourish extending to the right.

Grant Grisak  
Fisheries Biologist

cc: Glenn Phillips  
Jill Lorang - Cascade County Conservation District  
Jeff Ryan – Montana Department of Environmental Quality

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**Appendix C**  
**Public Comments**

## PUBLIC COMMENTS

The following comments were received during the public comment period for the *Environmental Assessment for Construction of Storm Water Detention System at Storm Water Outfall #3* that ran from June 14 to July 16, 2007. They include written comments received from Montana Fish, Wildlife & Parks; and Cascade County Conservation District.

The following table provides a summary of the individual comments received and the Malmstrom AFB response to the comments. Following the table are copies of the letters sent by these agencies.

### PUBLIC COMMENTS AND Malmstrom AFB RESPONSES

<b>Summary of Comment</b>	<b>Malmstrom AFB Response</b>
Montana Fish, Wildlife & Parks suggests the EA does not mention the requirement for Short Term Water Quality Standards for Turbidity during construction projects.	Appropriate permits have been applied for and received by Malmstrom AFB.
Montana Fish, Wildlife & Parks recommends consideration of an additional alternative to develop a larger detention basin off-site.	Fiscal law constraints and prohibits the Air Force to expend the funds appropriated for this project outside the installation boundaries.
Cascade County Conservation District expressed concern over maintaining stability in the downstream channel of the Whitmore Ravine	TD&H were the design engineers for the project and have provided assurances that the project is sufficient.
Cascade County Conservation District states that there are a number of areas with apparent wetland characteristics that have formed in the bottom of the ravine, and recommends that a certified wetland scientist complete a wetlands evaluation.	The base has completed wetland delineation with in the last year and there were no jurisdictional wetlands along any of the installation easements outside the boundaries of the installation.
Cascade County Conservation District suggests that only species present on base were part of the biological resources impact analysis completed for the EA, not downstream areas.	This comment exceeds the scope of the proposed action.
Cascade County Conservation District is concerned that Malmstrom AFB will continue to have adverse impacts on the soil resources.	Opinion noted and considered.
Cascade County Conservation District is concerned that the continued downstream erosion will continue to have adverse impacts on water quality.	Opinion noted and considered.
Cascade County Conservation District expressed concern over the EA being more specific about how soils will be tested at the former pole yard storage area prior to final acceptance of the proposed site for a detention pond.	This is a closed restoration site and the MTDEQ had concurred that the site is cleaned and closed. However; in an abundance of caution the government has budgeted funds for any potential contamination encountered.

rec  
7/13/07  
JC



# Montana Fish, Wildlife & Parks

4600 Giant Springs Road  
Great Falls, MT 59405  
406-454-5846  
FAX:406-761-8477  
Ref:RS071107-01

July 11, 2007

Ms. Karen J Clavin  
341 CES/CEV  
39 78<sup>th</sup> Street North  
Malmstrom AFB, Montana 59402-7536

Dear Ms. Clavin:

Attached are comments regarding the EA *"For Construction of Storm Water Detention System At Storm Water Outfall #3 At Malmstrom Air Force Base Montana"* from Montana Fish, Wildlife, & Parks.

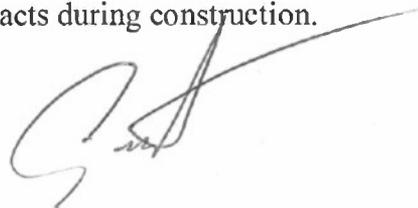
Sincerely,

Gary Bertellotti  
Region 4 Supervisor

Fisheries comments to MAFB EA to construct a detention pond at storm outflow #3.

Montana Fish, wildlife & Parks has reviewed the draft EA *For Construction of Storm Water Detention System at Storm Water Outflow #3* and we have the following comments;

- Page 1-5 indicates one purpose of the proposed project is to address erosion at storm outflow #3. Section 2-5 of the EA states that the proposed action would reduce outflow into Whitmore Ravine. The EA considers only a single action alternative to meet this objective. We recommend you consider a second action alternative such as developing a larger detention basin off-site.
- Section 1.4.1 of the EA lists only long term applicable water laws, but does not mention the requirement for Short Term Water Quality Standards for Turbidity (318 Authorization) during construction projects. Although the EA provides details of the design aspects of the project, we recommend developing the EA to disclose more details of the construction aspects of the EA, specifically temporary erosion control measures, dewatering strategies during construction, emergency contingency plans during construction, reseeding, and weed control measures. Furthermore, we recommend the EA disclose and evaluate the short term turbidity associated with this project during construction as well as turbidity abatement measures to mitigate water quality impacts during construction.

A handwritten signature in black ink, appearing to be 'S. J.', is located at the bottom right of the page. The signature is written in a cursive style and is positioned over the bottom right corner of the text area.

DRAFT  
ENVIRONMENTAL ASSESSMENT  
FOR CONSTRUCTION OF STORM WATER  
DETENTION SYSTEM  
AT STORM WATER OUTFALL #3

Malmstrom Air Force Base, Montana



*Prepared by*

Headquarters Air Force Center for Environmental Excellence  
Project Execution Division

June 2007

## Clavin, Karen J Civ 341 CES/CEVC

---

**From:** Toni Neslen [cccd@3rivers.net]  
**Sent:** Monday, July 16, 2007 3:33 PM  
**To:** Clavin, Karen J Civ 341 CES/CEVC  
**Subject:** EA comments

**Attachments:** EA whitmore ravine.doc



EA whitmore  
ravine.doc (35 KB)..

Attached please find our comments to the Environmental Assessment for Construction of Storm Water Detention System at Storm Water outfall #3 at Malmstrom Air Force Base, Montana.

thank you,

Toni Neslen  
District Administrator  
Cascade County Conservation District  
12 Third Street NW  
Great Falls, Montana 59404  
406-727-3603 ext 125

To: US Air Force, 341 Space Wing; Malmstrom AFB  
From: Cascade County Conservation District  
RE: Comments/concerns of Environmental Assessment, For Construction of Storm Water Detention System at Storm Water Outfall #3

We received a copy of your June 2007 Draft EA Assessment for a proposed detention pond and outfall structure to the middle fork, Whitmore Ravine.

As you know, since 2000 our organization (CCCD) has been actively working with agricultural producers along Whitmore Ravine to characterize and identify solutions to severe ongoing channel incision in the ravine. Our interest in this effort is both in preserving valuable farmlands within the county and in reducing sediment delivery to the Missouri River. To date, approximately 450,000 tons of sediment has been delivered to the river, which is currently listed on the 303D list by Montana Department of Environmental Quality (MTDEQ) as impaired for turbidity. That material represents 200 acres of valuable, high producing farmland.

The impacts of the watershed urbanization on stream channel morphology are well documented and widely recognized by the civil engineering profession i.e.

Arnold, C.L., P.J. Bosion, and P.C. Patton, 1982. *Sawmill Brook: An Example of rapid Geomorphic Change Related to Urbanization*. Journal of Geology 90:155-166

Booth, D.B., 1990. *Stream-channel Incision Following Drainage Basin Urbanization*. Water Resources Bulletin 26:407-417.

Hammer, T.R., 1972. *Stream Channel Enlargement due to Urbanization*. Water Resources Research 8:1530-1540

Leopold, L.B., 1973. *River Channel Change with Time: An Example*. Geological Society of America Bulletin. 84:1845-1860

Channel incision processes, such as those ongoing in Whitmore Ravine, are typical results of increased peak storm flows due to lower rates of infiltration/time of concentration on developed areas.

During the 10 years the CCCD, landowners, Cascade County and Natural Resources Conservation Service (NRCS) have worked together to address the ravine – representatives from Malmstrom have been unwilling to participate. While the proposal described in the EA is a step in the right direction for the base in reducing their impacts on the ravine, it will not provide a long-term solution to the problems. We have the following specific concerns and comments:

1. The proposed 404,700-cft-detention pond is inadequately sized to prevent further erosion in the downstream channel. The 2006 "*Whitmore Ravine*

*Erosion Control Study*” prepared by TD&H Engineering Consultants, indicates that outflows from a 5,263,000 cft pond would be in the range of 2 – 3.5 ft/sec; beyond those considered to be within permissible limits for stability in the existing channel. Flows from a pond 10% the size, then, will clearly be beyond what can be tolerated by the ravine downstream. Generally, the supposition that designing storm water facilities to pre-development discharges is reasonable, but only if the downstream channel stability can be maintained. In the case of Whitmore Ravine, the existing unvegetated incised channel (with no floodplain access) will require downstream grade control or armorment, as described in the TD&H report.

2. Section 1.3.2 indicates that there are no jurisdictional wetlands within the potential area to be impacted by the project. It appears that the EA analysis was limited to the property “on-base”. As the intent of the proposed project is to reduce off base environmental impacts, it would be appropriate for potential degradation in downstream wetlands to be evaluated. There are a number of areas with apparent wetland characteristics that have formed in the bottom of the ravine - further channel degradation would certainly endanger these areas. A field evaluation by a certified wetland scientist should be completed prior to excluding wetlands from the EA.
3. Section 1.3.2 indicates no impacts on biological resources from the process. Again, only species present on “on-base” lands were included in the analysis, not downstream areas (including the Missouri River) that will be impacted by the project.
4. Section 3.4 indicates that the main concern regarding soil erosion is sedimentation or dust generated during construction. This is hardly the case; even the worst run construction site will generate exponentially less sediment than outflows from this project. It is expected that Malmstrom storm water runoff will continue to have adverse impacts on the soils resources.
5. Section 3.5 indicates that impacts to water resources are, as with soils, primarily only a concern during construction. Although we recognize that the small detention pond proposed would have a slight beneficial effect in

reducing peak flows, the continued downstream erosion will continue to have adverse impacts on water quality.

6. Section 3.6 describes the site of the proposed pond in the former pole yard storage area. While it is understood that a past cleanup effort addressed PCB contaminated soils in the upper horizon, it would be appropriate for the proposal to be more specific about how soils below this elevation will be tested prior to final acceptance of the site for a pond.

In summary, we applaud USAF's good intentions in regards to minimizing further degradation to Whitmore Ravine, however we view the submitted proposal as inadequate both in terms of a solution and in terms of a full and complete Environmental Assessment. In particular, we are concerned about the small size of the detention basin, lack of stability measures in the existing unstable downstream channel, and the fact that the problem of a constant, year-around base flow was not addressed in the design. It is our opinion that the best solution will come through an open, public planning process involving affected landowners and all interested stakeholders.